POSSIBLE FUTURES FOR THE REPUBLIC OF SOUTH AFRICA TOWARDS 2055

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Degree of confidentiality: A

Declaration

By submitting this research report electronically, I, Chris Adendorff declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

C. M. Adendorff

ABSTRACT

Purpose – The purpose of this thesis was to develop four scenarios for South Africa over the next forty years: Mandela's Dream in which positive elements come into function for South Africa's economy and governance; the Historical African Syndrome, in which the key driving forces unfold in an uneven pattern, or have a differentiated impact on South Africa's economy; the Good, the Bad and the Ugly in which less good governance prevails, but where a fortunate economy and firm national management allow South Africa to become competitive and benefit from satisfactory economic growth; and the Pyramid Syndrome Scenario in which negative regional drivers of change corrode positive policies and initiatives in a manner which compounds the pre-existing threats to South Africa's growth.

Design/Methodology/Approach – The goal of this thesis was not only to affirm what is already known and knowable about what is happening right now at the intersections of South Africa and its economy, but also explore the many ways South Africa can strengthen judicial governance and the rule of law, by scenario planning, and Causal Layered Analyses (CLA), a methodology designed to help researchers, nations and organisations alike through exactly this creative process. This thesis begins by identifying forces of change, and then combines these forces in different ways to create a set of scenarios about how the future economy of South Africa could evolve.

Practical implications – This thesis provides a useful insight into drivers for change for South Africa and how to anticipate these changes in accordance with the latest methods of Causal Layered Analyses and scenario planning.

Originality/Value – This thesis looks at the future of South Africa over the next 40 years from a decision maker's point of view.

Keywords – Future studies, Drivers for change, Environmental scanning, Development.

Research Type – Scenario Planning

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CHAPTER 1

INTRODUCTION, PROBLEM STATEMENT AND DEMARCATION
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1.1   INTRODUCTION

On a global scale, there is growing recognition that humankind is on a non-sustainable course, which could lead to 'grand scale catastrophes' (Lovelock, 2006; Rees, 2003; UNFCCC, 2010). At the same time however, mankind is also unlocking formidable new capabilities. Some scientists and researchers argue that this could be humanity's last century, or a century that sets the world on a new course towards a spectacular future (UNEP, 2011; UNFCCC, 2010; UN, 2009a). Echoing the warnings of Hawken and Lovins (2000), and their promotion of natural capitalism as a fundamental change in the way of doing business, the global economy seems to be outgrowing the capacity of the earth to support it (Hawken & Lovins, 2000). Mankind is consuming renewable resources faster than they can be regenerated: forests are shrinking, grasslands are deteriorating, water tables are falling, fisheries are collapsing and soils are eroding. On top of this, there are climate change, rising and moving populations, an increasingly polarised world, perverse subsidies by governments, impending energy and water wars, failed nations, shanty cities and false accounting for the GDP measures that ignores natural capital (Ratcliffe & Saurin, 2007; Martin, 2006). Throughout, there is also the uncertainty of new technologies more powerful than the sum of their parts. Indeed, it is possible to think that mankind has become like the sorcerer's apprentice, having started something that can barely be controlled (Lovelock, 2006; Ratcliffe & Saurin, 2007; Martin, 2006; Hawken *et al.,* 2000).

Until relatively recently humankind retained a simplistic view of the world. Back in the 1960s, and early 1970s, it seemed possible to keep an overview of development, take future changes into account and make five to ten-year planning proposals based on ten to twenty-year forecasts. It was a period of trend projection, time series, network analysis and mathematical modelling (Ratcliffe & Saurin, 2007). Above all, perhaps, it was an era with a belief that tomorrow would mostly resemble

today. The future was a given, and planning of all kinds sought to adapt current trends to meet that predestined condition (CIB, 2008; World Bank, 2011). During the 1970s, and into the 1980s, however, the view of the future changed. With sudden and significant economic disruptions and social upheavals, the future did not seem as predictable as had previously been imagined (Quinn, 2011; Rao, 1998; World Bank, 2011). Indeed, it became recognised as uncertain towards the new millennium. There was no longer only one likely future path of development, but rather several different and possible futures. All these futures moreover, would be shaped by a number of critical challenges enforcing change (Flaherty, 2010; Ratcliffe & Saurin, 2007).

On the other hand, there is also widespread recognition that mankind is living in an era of rapid change in which new discoveries, philosophies and technologies play an ever more prominent part in shaping social and economic development (UN, 2007a; World Bank, 2008). The world is becoming increasingly complex, more competitive and better connected. There is economic internationalisation, on the one hand, and cultural decentralisation on the other (Moberg, 2012; UN, 2011a). Society has shifted from an industrial base to an information and knowledge orientation whereby advances in genetics, materials, energy, computing, robotics, miniaturisation, medicines, therapies and communication proceed apace (National School Boards Association, 2008; World Bank, 2002). The developed world moreover is now getting smaller, older and wealthier, whilst the developing world grows bigger, younger and relatively poorer (UN, 2009b; UN, 2011b). A blurring of boundaries between disciplines, industries and social enterprises is taking place and as those boundaries fade, the lines connecting the constituent parts become more critical, so that networks systems and holistic thinking are more meaningful (Mazarr, 2005; Ratcliffe & Saurin, 2007). Towards 2055, rapidly shifting trends and unforeseeable global crises will test any and all countries, leaving no power untouched (UN; 2001; Peters, 2011). Silke (2011) points out that there is a close relationship between human development and global economic and political sense. For this reason, broader long-term strategies to foster human development will be the most important goals for countries in the future. Strategic positioning will increasingly promote a competitive environment pitting nations against each other for the leading role. Therefore, a more educated and globally aware generation paired with rising global challenges (often

unforeseen) will force governments to let go of "narrow political and ideological" attitudes and policies (Bandurskî, 2009; Silke, 2011; UN, 2011c).

By the end of 2011, those who were living in poverty and who are the most susceptible to economic hardship were faced with even more difficult times as experienced during the great recession of 2008 – 2010 (Broom, 2011; Ouellet, 2011; PewResearchCentre, 2011; UN, 2011d). Rapid, dramatic and often unforeseeable changes in the global environment highlight the fact that there is no certain future to plan for. Therefore planning for any single future is likely to lead to failure, and suggests rather planning for the different ways that the future might unfold, with placing the most focus on policies and strategies that will hold the most sway over a multitude of future conditions (Chermack & Payne, 2006; Kasow & Gabner, 2008). In the decades leading up to 2055, environmental changes, population and demographic shifts, technological innovation, food and commodity scarcity amongst others, will all contribute to a very trying future for the global population (UN, 2009c; UN, 2007b). These factors that hinder economic growth, will serve to create an increasingly challenging global environment in which the Republic of South Africa will have to compete (MOA, 2009; Sibanda, 2012).

For international corporations, skills attract investment (UN, 2002; Bulgar, 2011). International corporations are attracted to countries that have proven themselves in realms such as "education, health care, infrastructure, security of tenure and combating corruption" (Silke, 2011e; Bulgar, 2011; UN, 2011; World Bank, 2011). In a fiercely competitive world, the South African story of victory over its past and its evolving new democracy will be of little consequence to corporations, which are looking for good governance in their search for possible investment opportunities (The China Post, 2011; Massaad, 2012). In order to foster this kind of environment, governments' duty now becomes to foster a healthy entrepreneurial, innovative and knowledge-based population that can be conducive to business growth (Silke, 2011; UN, 2011; OECD, 2009; World Bank, 2011f).

In "Tracking the future," Silke (2011), draws attention to global rankings that form the perceptions of global corporations and brings special attention to the Global Competitiveness Index (GCI), produced by the World Economic Forum (World

Economic Forum, 2010). The Global Competitiveness Index ranks countries according to their ability to provide "high levels of prosperity to their citizens". In order to do this, the index measures certain factors such as policies that determine present and medium-term economic prosperity in those countries (Silke, 2011; Aridas, 2011). The following 12 pillars are identified by the Global Competitiveness Index as indicators of prosperity, namely: institutions, infrastructure, macroeconomic, environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation (World Economic Forum, 2011). Such rating processes are transparent and have the potential to identify smaller countries as "fashionable" destinations for investment, while causing others to fall out of favour. In the eyes of investors, the Republic of South Africa's image has been slipping further in favour of other nations due to rankings such as the Global Competitiveness Index (World Economic Forum, 2010; Mammburu, 2011). During 2010, out of 139 ranked nations the Republic of South Africa fell from position 46 to the current 54. While retaining its position as top ranked country in Sub-Saharan Africa, this drop alludes to growing concerns pertaining to the 12 criteria. Fakir (2011) points out that this not only reflects conditions in the Republic of South Africa that may have worsened, but highlights the fact that other countries are surpassing it by improving themselves. When results are confined to the African continent alone, the Republic of South Africa fails when compared to other African countries in criteria such as the employment of adults (World Economic Forum, 2010; Silke, 2011; Anderson, 2011; African Economic Outlook, 2011a).

The International Monetary Fund (2011) also recognises the Republic of South Africa's failure to compete with its African counterparts in the area of economic growth. The IMF (2011) forecasted the Republic of South Africa's growth at 3.4% compared with 5.5% for Sub-Saharan Africa (Kime, 2011). PriceWaterhouseCoopers' world in 2050 survey, also points to the growing threat from the African continent as it highlights the Republic of South Africa exiting the top 20 GDP countries, only to be replaced by countries like Nigeria (PriceWaterhouseCoopers, 2011; Dupasquier and Osakwe, 2005). The Republic of South Africa is losing its edge within Africa and this will be a wakeup call because regional competition for global investment is likely to pit the country against others on

the continent (Van den Bosch, 2011; Silke, 2011). The main contributor to the Republic of South Africa's unfortunate ratings has been in areas to do with labour. The Republic of South Africa placed 97th in labour market efficiency and 135th out of 139 ranked states in inflexible hiring and firing practices. The Republic of South Africa is in the 9 poorest performing countries when it comes to flexibility in wage determination by companies, and labour-employer relations, where it placed 131st and 132nd respectively (World Economic Forum, 2010; Silke, 2011; Taylor, 2012).

There are however, areas in which South Africa does outshine other countries; such as intellectual property protection, where it is ranked 27th out of 139 ranked states (World Economic Forum, 2010). The Republic of South Africa also attained 29th place in property rights, 3rd place in accountability of private institutions and 40th in goods market efficiency (World Economic Forum, 2010; Silke, 2011). Silke (2011) points out that the Republic of South Africa has garnered much confidence in its financial markets, due to good ratings in these areas despite such trust experiencing a downturn globally. In financial market development, the Republic of South Africa is placed 9th and 6th in soundness of banks. South Africa's main achievement is the coveted 1st position globally, in the regulation of its security exchanges (World Economic Forum, 2010; Silke, 2011; UN, 2011g; World Bank, 2011).

Godsell, chairman of Business Leadership South Africa, argues that the country could become to Africa what Japan was to Asia in the 1950s and 1960s. Godsell (2010) makes the telling point that South Africa is leading the modernisation of a continent of a billion people with huge unmet needs (Godsell, 2010). The above-mentioned rankings therefore highlight the discrepancies in the Republic of South Africa's performance globally. The Republic of South Africa ranks 60th in wastefulness of government spending and 102nd in favouritism in decisions of government officials, while ranking 1st in strength of auditing and reporting standards (World Economic Forum, 2010; Silke, 2011; World Bank, 2011). When studying these results, it becomes clear that the Republic of South Africa is hindered by its government inefficiencies while the private or corporate sector is "racing ahead" internationally with companies like SA breweries, MTN and Vodacom (Silke, 2011). The Global Competitiveness Index summarises the most problematic factors for doing business, and here the most important factors hindering the Republic of South

Africa are inefficient government bureaucracy, an inadequately educated workforce, crime and theft, restrictive labour regulations and corruption (Pennington, 2011a; Business Anti-Corruption Portal, 2011; Baxter, 2011).

Faced with growing competition on the global market, research findings warn that if the Republic of South Africa does not "get its house in order", it will be left behind in the wake of other countries like Norway, Sweden, Denmark and Finland amongst others (World Economic Forum, 2010; Silke, 2011; Anderson, 2011; African Economic Outlook, 2011b). These countries have already shown and continue to indicate that the state can have a pivotal role in securing the confidence of the international community (Silke, 2011; OECD, 2009, Alberti & Bertucci, 2001; Banga, 2003).

However, South Africa's biggest competition might not hail from other continents, but may turn out to be the country's neighbours. Researchers argue that South Africa's political dynamics leave investors with doubt as to whether to invest or not (Seria, 2011). Countries like Zimbabwe, which researchers identify as having no restrictive labour laws, can lure investors away from South Africa to elsewhere on the continent (Silke, 2011; Seria, 2011; Mammburu, 2011). The danger for South Africa is that it might lose out as Africa's progress heats up competition between the African countries unless the South African government can act in an effective and adaptive way (Silke, 2011). Idisa (2011) points out that political events in North Africa during 2011 have raised concerns over whether South Africa will develop the same problems such as the 'people's protest'. The South African government's inability to stem the increasing dissatisfaction with service delivery (which has been characterised to be 'almost certainly violent'), adds to this perception (Idisa, 2011; Higgs, 2011).

The Republic of South Africa was recently included in the BRIC group of countries, undoubtedly bolstering South Africa's global image. This inclusion should bring with it many benefits that should motivate change in South Africa's leaders (Stuenkel, 2012; UN, 2011h). Merely being associated with the world's major growth engines of Brazil, Russia, India and China will allow South Africa to play an important role in the global dynamic (UN, 2011i). Inclusion into the BRIC will also fuel the urgency to

boost South Africa's domestic economy's growth rate (Matola, 2012; Silke, 2011; Stuenkel, 2012). Compared to its partners in the BRIC, the Republic of South Africa is a relatively insignificant domestic market that does not compete (Fakir, 2011). It is only a third of the population of the next smallest BRIC country (Russia at 142 million), South Africa has the poorest ratio of gross-domestic savings to GDP, the worst employment rate and is fourth out of five on the human development index (Cronje, 2010). The scourge of HIV/Aids has resulted in South Africa's life expectancy averaging just 51 years compared to India (64) Russia (68), Brazil (72) and China (73) (South African Institute of Race Relations Research and Policy Brief, 2010). Levels of tuberculosis are also highest in South Africa, and South Africa also has the lowest immunisation rate against measles of all BRIC countries. It is second to India in infant mortality (Cronje, 2010).

The Republic of South Africa can therefore draw a number of benefits from joining BRIC. One is that it will be exposed to growth and development models that run an 'ideological gamut' and understanding where the BRIC countries have succeeded can be vital to South Africa. On his recent visit to Brazil, South Africa's current president Jacob Zuma admitted that he would like to emulate Brazil's economic policies that were so successful in bringing millions out of poverty and establishing Brazil as a global player. The Republic of South Africa can also benefit from other BRIC member countries in various ways, such as China and India that have commendable job creation programmes which South Africa can adopt as well as in health care whereby South Africa can look to Brazil to find ways to achieve effective roll out for its citizens (Silke, 2011).

As the only African country in the BRIC, South Africa is set to play a pivotal role in steering BRIC investments not only within its own borders, but also acting as a conduit to other African nations (Kahn, 2011; White, 2011; Laverty, 2011). If the Republic of South Africa can leverage its African location, the BRIC years can boost the domestic economy beyond current predictions. A third positive for South African involvements in BRIC will be "the club's" intention to work towards sustainability and lobby globally for a massive reduction in emissions. This could place South Africa at the forefront on an issue that is likely to be a key future trend (Klomegah, 2011; Gordhan, 2012). South Africa has the potential to drive this trend and be a global

leader, with untold benefits to the South African economy (Khan, 2011; Klomegah, 2011; Matola, 2012). Inclusion in the BRIC will therefore pressure the South African body politic as never before. Large-scale intra-BRIC trade will require a more flexible approach to labour regulations if the Republic of South Africa wants to welcome Chinese or Indian investment (Business Report, 2011; Zille, 2012).

On a more negative note, various research organisations identify ill-equipped political bureaucrats whose appointments are determined by their particular affiliations and "party credentials" as the main cause of South Africa's on-going poor service delivery, hampered economic growth and inability to remain competitive on the global market (UN, 2011j; World Bank, 2011; Harding, 2012; Pennington, 2011b). The current ruling party in the Republic of South Africa has made great strides in social welfare, which acts to reduce the effects of poverty, but Silke (2011) however pointed out that these grants have almost "15 million beneficiaries" and while it does act to alleviate poverty, it fosters a dependency on the state that hampers economic growth in the long run. A parallel can therefore be drawn between the Republic of South Africa and Greece, where a "bloated" public sector becomes a danger to the economic growth of the country (US Library of Congress, 2011; Leadershiponline, 2011). It has been noted that public sector wages have been rising at a much faster rate than the private sector, with earnings in the public sector rising from 12% in 2000 above the private sector to 44% in 2010. Researchers argue that the alternatives mooted for the future show a return to state intervention from being the primary source of job creation to the protection of labour (Silke, 2011, Leadershiponline, 2011; Mkhwanazi, 2009; ANC, 2012).

1.2 PROBLEM STATEMENT

People live in an age of rapidly increasing uncertainty and change (Hartmann, 2009). The future is therefore uncertain and researchers struggle to master it (Geldenhuys, 2006). No one can predict with certainty how the future will develop, yet more than ever researchers and decision makers alike need to think about the probable futures that might originate from the unstable conditions that persist, as well as the implications for human choice and action (Herbst & Mills, 2006). Countries are

continuously exposed to the fast changing external environment of the 21st Century. Political leaders and decision makers are faced with daunting challenges associated with rapidly fluctuating regulatory and legal changes, macro-economic trends and risks, socio-political transformation, globalisation, technological innovation, increasing competition, environmental concerns and societal pressures/expectations (Dess & Pickens, 2000; Geldenhuys, 2006; Meyer & Boninelli, 2004). It is therefore important for the Republic of South Africa to position itself in this rapidly changing, complex and global environment. The Republic of South Africa in striving in the midst of a changing global environment requires the application of scenario-based planning and if possible change navigation in some form or other. Integrating scenario-based planning and institutionalised change navigation may have a positive impact on the extent to which people buy into the stories resulting from scenario-based planning and the leadership actions resulting from these scenarios (Geldenhuys, 2006; Moya, 2012; Yoe, 2004, 2012).

Researchers argue that the typical mistake that decision-makers and leadership make is disregarding the pace of change and the importance to become future orientated in developing and implementing strategies (Nell, 1999; Goldsmith, Hesselbein & Beckhard, 1997). Drucker (1995) also indicated that planning for uncertainty increasingly poses the question: "What has already happened that will create the future?" instead of asking "What is most likely to happen?" (Drucker, 1995; Geldenhuys, 2006; Adendorff, 2010). Therefore, the complex task exists of identifying amongst other things, possible futures, selecting the most desirable future and ensuring the realisation of the desired future.

1.3   RESEARCH OBJECTIVES

The primary objective of this research is to develop scenarios for the Republic of South Africa over the next forty years. The secondary objective of this study is to not only offer what is already known and knowable about what is happening right now at the intersections of the Republic of South Africa and its development, but also to explain the many ways in which environmental scanning and development could co-involve – both push and inhibit each other – in the future. Then to begin to examine what possible paths may imply for the Republic of South Africa's poor and vulnerable

population. Furthermore, this research will attempt to indicate how different approaches to or solutions provided by the scenario process, will lead to different outcomes. This research will not attempt to predict the future, but rather to illustrate the plausible futures taking into account the current prevailing and future forces and factors, both external and internal, that will make an impact on the Republic of South Africa. Future research studies indicate that too many forces work against the possibility of obtaining the right forecast (Caldwell, 2010; Hartmann, 2009; Herbst & Mills, 2006).

The future is never stable, but merely a moving target (Roux, 2010). No single 'right' projection can be deduced from past behaviour. The different maps of the future should be represented by telling alternate stories that can illustrate the possible solutions in dealing with the current and future challenges for a better future (Siwale, 2007). A framework needs to be established in order to analyse global scenarios as human civilization approaches significant branch points over the next coming decades (Gates, 2010). Global scenario analysis aims to illustrate the characteristics of the existing global system, the dynamics leading it forward and the range of possible future states (Herbst, 2005; McNamee, Mills & Napier, 2009; UN, 2011; World Bank, 2011). This venture is highlighted by a conviction, as it believes that informed human choice, arbitrated through governmental policies, individual decisions and civil initiatives, can shape the future in essential ways (Alter, 2002). To obtain a better understanding of the best plausible future for the Republic of South Africa, the nature of progress and failure in the African context will therefore be investigated. Through this action, the practical implications, implicit worldviews, ethics and the idea of progress will be analysed. The application of futures techniques will be informed by the context of the Republic of South Africa. A 'surprise free' prognosis of the future for the Republic of South Africa will be investigated, coupled with an 'ideal realisable future' as determined in terms of the concept of progress in the African context. The aim of this research is to provide practical inputs for government officials, public policy makers and governance practitioners who are involved with the development of current and future government strategic policy and plausible good governance frameworks. This will be delivered through:

- Analysing the nature of progress and failure in the African context;

- Analysing of the extent to which plausible future concepts are recognised and understood amongst decision makers and government officials;

- Analyses of factors that impede the implementation of a plausible future;

- Examination of how the Republic of South African practice has converged on or diverged from, international perceived good governance standards in terms of understanding, acknowledgement and implementation, leading to;

- Development of a "surprise free" prognosis and a set of practical recommendations addressing the main factors that impede plausible futures with the aim of improving the level of its implementation for the Republic of South Africa.

1.4   RESEARCH QUESTIONS

This research will attempt to create scenarios illustrating how the Republic of South Africa can adapt to the challenges as indicated in Section 1.3 above. In order to reinforce this research and to address the research objectives the following investigative research questions need to be incorporated and addressed:

- To what level is a plausible future understood and implemented at government level in the Republic of South Africa?

- What processes could be followed to envision a desirable future for the Republic of South Africa?

- What impeding variables exist in the implementation of a plausible future   for the Republic of South Africa?

- What factors are unique to the Republic of South Africa and can be used to create a comparative advantage over the rest of the world?

1.5   CONCEPTUAL FRAMEWORK

In order to better understand the purpose of this study, a conceptual framework has been developed.
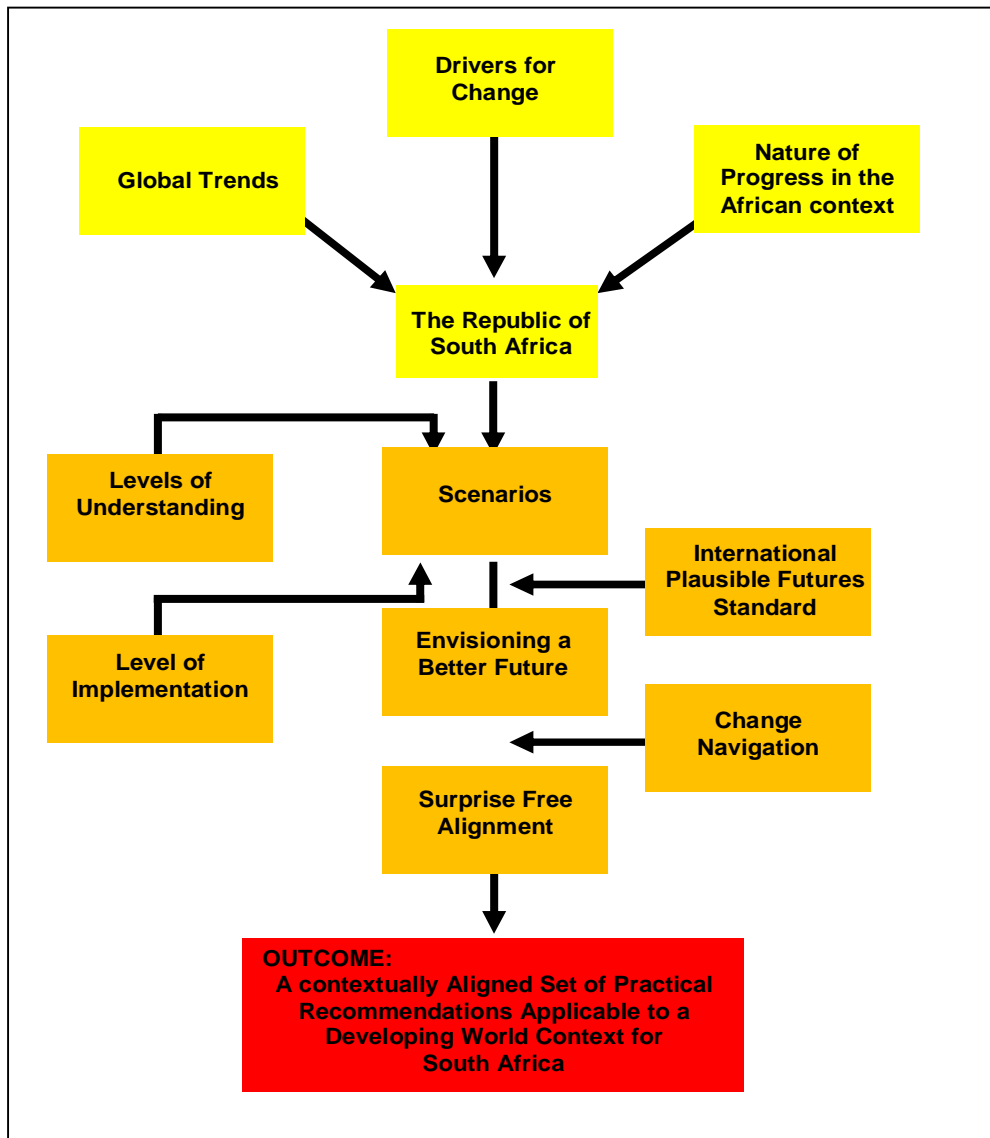
Figure 1.1 Conceptual Framework

Source: Researcher's own construction

The figure 1.1 above design identifies variables such as global trends, drivers for change, nature of progress in the African context and envisioning a better future as factors shaping the future of the Republic of South Africa. Global trends, drivers for change and the nature of progress in a African context needs to be established in order to analyse global scenarios as human civilization approaches significant branch points over the coming decades. Scenario analyses will therefore aim to illustrate the characteristics of the existing global system, the dynamics leading to forward and the range of possible future states. This thesis will therefore attempt to

address global challenges, as drivers of changes, the nature and progress in the African context, human development as well as the challenges of African development that directly affect South Africa's picture in the global sphere. Development or progress can be observed as movement, because of an improvement of a human community, from an initial state to a subsequent state that seems to be better that the original state in some respects. This is followed by the crucial advantage of scenario-based planning and its attentiveness for making logical decisions and corrective action in a central question vital to the future accomplishment of the country or continent. Scenarios on the other hand will serve as an implementation of holistic thinking. This research effort will intend to develop a long-term umbrella vision towards 2055 for South Africa to better achieve South Africa's long term goals. Such a national vision will need to represent the objectives of the people and should provide pride, hope and a sense of purpose for the nation. The vital stage of this research effort is in the development of strategies for South Africa. Together these strategic issues will create the opportunities between today and the preferred future, and become the foundation for forming appropriate strategies, programmes, action plans and projects for South Africa towards 2055.

1.6   DEFINITIONS OF THE RESEARCH BOUNDARIES

Thinking about the future has been part of human civilisation since the earliest times. Humanity needs the future and consequently strives to form adequate images of future realities (Goeminne and Mutombo, 2012; Slaughter, 2012). The future is not given, as there are multitudes of possible futures of which any one can manifest (Flaherty, 2010; Ratcliffe & Saurin, 2007). Futures Studies encourages thinking on how today's actions (or lack thereof) will become the reality of tomorrow (Van Vuuren, 2011). This includes efforts to analyse the causes, patterns and sources of change and stability with the aim of creating and designing alternative futures. Futures studies therefore take the longer view (Tebbutt, 2012). Futures Studies is mainly concerned with understanding social realities or 'constructs' which create the future as well as the development of sustainable future-orientated visions which can inspire communities and entities (Slaughter, 1999; Gracht *et al.,* 2011). In this regard, future studies serves as an instrument to research the practical attainment of such views. Social reality will then be realised as encompassing processes (How

things are done), structures (how things are interrelated), outcomes (why things are done), context (the environment's influence) and ordering (how things are kept intact) (Gharajedaghi, 2006).

Within this framework, futures methodologies could be used with the aim of making a positive contribution in search of a better life in the Republic of South Africa and Africa itself. The communication of scenarios developed by Anglo American, Nedcor/Old Mutual and Mont Fleur during the late 1980s and late 1990s, for example, played a significant role in convincing decision makers to choose the high road to a negotiated settlement and not the low road to demise (Litnet, 2011). Within the current world dilemma, this seems to be the right time for futures studies techniques to further contribute to sustainable development not only in the Republic of South Africa, but also in Africa as a continent.

New ideas are not always the most critical element for the futurist. Of greater importance is to develop strategies and to mobilise political will with the aim of implementing solutions (Litnet, 2011). Therefore, for the futurist the distinct challenge remains to create a link between the decision-maker and the possible solutions. The competitive certainty of utilising scenario-based planning and change navigation cannot be viewed without considering the circumstances within which they are to be applied. The research boundaries therefore comprise process research concepts (i.e. scenario-based planning and scenarios, change navigation and governance) and context-related research concepts (Geldenhuys, 2006; Herbst & Mills, 2006; Litnet, 2011).

1.6.1 Governance

The phrase 'governance', as commonly used, incorporates all aspects of the way a country is governed, including its economic policies and regulatory framework (Subramaniam, 2001). Good governance points to a clean government that provides quality service for its society/community, is transparent and participative in its decision making process and is responsible for its activities at all times; both under legal and society scrutiny (Alter, 2002; Bardhill, 2000; Beeson, 2001; Berman, 2006; Caddy, 2001; Doig, 1995; Doornbos, 2001; Gilbert, 2006; Gorontalo, 2004;

Kranenborg, 2003; Lindsey, 2004; Morrison, 2004; Northover, 2005; Ray, 1999; Rogers, 2003; Simpson, 2006; Subramaniam, 2001; Tisdell, 1997; Weis, 2000).

It is recognised that good governance is the essential order for prosperity and stability in all countries, where nations which are able to maintain good standards of governance will be successful whilst others will struggle (Elsner, 2004; Roy & Tisdell, 1998). The Asian Development Bank (2004) has acknowledged that good governance incorporates the following fundamentals: rule of law, transparency, participation, equity, accountability, efficiency and effectiveness, professionalism, effective management services orientation and reviewing of performance. According to the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the accurate assessment of "good" governance is the level to which it delivers on the guarantee of human rights: civil, political, cultural, economic and social rights (UNESCAP, 2006).

In a financial vocabulary, good governance permits public funds to be gathered and utilised in a more transparent, accountable and efficient manner, leading to a more proficient public financial management system (ADB, 2004b). This highlights a method where the planning for a budget, enactment and the processes by which funds are allocated, disbursed and monitored is recognised and well implemented (Bird, 2001; Ciborra, 2005; ILGR, 2004; Schwartz & Clements, 1999). It also includes suggested understanding of international good governance standards and carrying out of such standards at all levels of government, both central and regional governments (Simonis, 2005; Sripati, 2005; Tisdell, 1997); as well as the performance of suitable policy framework, legislation and control mechanisms (Gingerich & Hadiputranto, 2002; Leung & Cooper, 2003; Redding, 2004). Evidently, good governance practices have become ever more vital in global capital markets; demanded as enhanced value in the eyes of premium paying investors and because of environment pressure due to heightened levels of economic interdependence between countries (Manheim, 2004; Hamilton, 2004; Bonn, Yoshikawa & Phan, 2004; Venaik, Midgley & Devinney, 2005).

1.6.2 Economic growth

According to Sloman (2008), economic growth is the annual rate of increase in real GDP, where GDP stands for "gross domestic product". GDP is one of the primary indicators used to gauge the health of a country's economy, as GDP reflects the country's total production of goods and services for a particular year, valued at market prices (World Bank, 2004; Sloman, 2008; Stanford, 2008; Investopedia, 2012). Economic growth not only enables the government to achieve its people's aspirations but it also makes it easier to relieve poverty, which is a top priority for the Republic of South African's government (Sayagues, 2008; World Bank, 2001). One of the biggest factors affecting growth is spending. When a country's people spend more, its firms will sell more and this will encourage them to produce more, thus increasing the country's GDP. Whether such spending is by individuals, business, the government or people abroad on the country's exports, higher demand (spending) will always lead to higher output (Sloman, 2008; Moudud, 1999). Investors therefore compare a country's GDP growth rate to decide where the best opportunities are. Most investors prefer to purchase shares of companies that are in rapidly growing countries (Amadeo, 2011). Economic production and growth, what GDP represents, have a large impact on nearly everyone within that economy. For example, when the economy is healthy, people will typically see low unemployment and wage increases as businesses demand labour to meet the growing economy. A relatively struggling economy usually indicates lower profits for companies, which in turn indicates lower stock prices (Investopedia, 2012; Rosenbrugh, 2012; Blanchard, 2004). Economic growth however does come with its negative side, and according to some researchers economic growth may actually have a negative effect on a population's well-being. As with pollution, greater output tends to lead to greater pollution (Oak, 2012; Cleveland, 2003). Countries like China with its rapidly increasing population, and the USA which has the highest GDP are major contributors of CO_2, aggravating global warming. What is more, economic growth may lead to the depletion of resources – a problem that is likely to get worse as world population and world consumption grow (Oak, 2012; Cleveland, 2003).

1.6.3 Developing worlds

Geldenhuys (2006) argued that in order to comprehend the various definitions of the term "developing", it is initially essential to consider the connotation of the word "develop" from which it stems. Definitions of the verb "to develop" imply that it means to change slowly, progressing through a number of stages in the direction of some sort of state of improvement (or totality) in which the subject's true character is shown (Geldenhuys, 2006; Wilber & Jameson, 1979).

The procedure of development was initially established in conditions of economic growth until the mid-1960s (Cleveland and Jacobs, 1999a; Geldenhuys, 2006). The concepts for development that followed were characterised by reasonably fewer concerns with material needs (or monetary gain), the quantity of production and added concern about the general quality of human life and the natural environment (Bhutan National Human Development Report, 2000; Kiggundu, 1989; Schnurr & Swatuk, 2010). This was reflected in dissatisfaction with the use of indicators such as per capita income (i.e. national income divided by the size of the population) or the average annual rate of growth of national income as measurements of development. This led to an escalating concern with the non-economic aspects of development as substitutes (or additional) indicators of development. These non-economic aspects incorporated factors such as standards of health (or literacy); life expectancy; freedom of speech; access to various social (or public) services; the level of participative decision-making and environmental preservation. Consequently, development in the late 1960s was established and calculated as a state of transparency of political structures, social or human well-being and the quality of the physical environment rather than the state of the national economy (Conyers and Hills, 1984; Geldenhuys, 2006).

The expression "Developing World" also commonly refers to the economically underdeveloped countries of Africa, Asia, Oceania and Latin America. Some researchers favour other terms such as underdeveloped countries, the South, non-industrialised countries, undeveloped countries, mal-developed countries or emerging nations (Geldenhuys, 2006; UN, 2011l; World Bank, 2011). Developing countries are not a homogeneous component but they are rather characterised by

diversity, contrasts and contradictions both between and within themselves. The differences are so convincing that when one makes generalisations about developing countries or treating them as a single concept, researchers must exercise caution. Differences revolve around factors such as population density; geography and size; urbanisation; levels of social and economic development; natural resources endowment; political systems; technological advances; languages; racial and ethnic composition; culture; religions; history; distribution of income and quality of life (Desker, Herbst & Mills, 2009; Geldenhuys, 2006; Kiggundu, 1989).

1.6.4 Scenarios

Scenarios are a way of producing alternative futures based on various mixtures of assumptions, facts, trends and areas where extra understanding is needed for a particular scenario project (Herbst & Mills, 2006). These mixtures are called "scenarios" because they are similar to "scenes" in the theatre – a series of differing views or presentations of a similar common topic (Hughes *et al.,* 2003). The aim for researchers and decision makers alike is to see several scenarios at the same time in order to comprehend better their options or possibilities. A very good set of scenarios should leave the reader questioning which option is more likely or probable, thus causing the reader to think more. That is the whole point of the scenario method (Herbst & Mills, 2006). Researchers should therefore structure and develop their scenarios to arguably educate and not to postulate the preferred future (Carpenter, Bennett & Peterson, 2006).

Inayatullah (2001) pointed out that scenarios clarify alternative futures and went on to state that scenarios have four dimensions. The first assumes that the present will remain unchanged and present conditions will continue into the future. The second scenario results when the system cannot maintain continued growth or when the contradictions of the current conditions lead to internal collapse. The third scenario reflects a previous state, a return to a historical state that is often less industrial, and less populated. The final scenario reflects a fundamental change, whether it be economic or political etc (Inayatullah, 2001).

Scenarios should not only find alternative routes out of the present; they also need to configure the present differently using foreign and unfamiliar notions of the future. The task is not only to imagine alternative futures but also to rethink governance, power and structure in general. This calls into question current notions of how we organise our social and political life (Inayatullah, 2001). Moll (2000) pointed out that these future scenarios can never truly foresee complex future events, and that is impossible to pinpoint exactly how the future will unfold in any specific way (Moll, 2000). Researchers, however, assert that these scenarios attempt to help detect, avoid and overcome possible dangers that may lie ahead, and inform individuals by considering fragments of possible developments, options and dangers that may arise. Such researchers emphasize that exploring these alternative futures should be done with the goal of improving the welfare of mankind and the sustainability of the Earth (Bell, 2001; Moll, 2000). Bell (2001) indicates that any future is a consequence of present actions of people and that the present day is constantly being reconstructed as people act, react and interact. Therefore, to understand how these consequences might unfold the researcher must understand other's actions and reactions, and forces beyond control (Bell, 2001). As result of this, researchers contribute to informed and wise actions in our present day by studying possible future scenarios, distinguishing between possible, probable and preferable future scenarios (Bell, 2001).

1.6.5 Change navigation

Change is defined as a lasting transformation in the character of an entity that extensively changes its performance (Mohrman *et al.,* 1989). Change as a result is defined as the difference in the condition of the entity at two detached locations (or points) in time and/or space. The earlier location refers to the "what is" state of the entity and the latter location to its "what should/must be" state. "State" refers to the form of existence and performance of the entity (Geldenhuys, 2006). The "what is" state is real. In contrast, the "what should/must be" state resides only in the thoughts, needs and words of those who imagine this state. Change as a procedure incorporates the conversion of the "what is" state into the "what should/must be" state (Smit & Carstens, 2003). This is recognised as the "in between" state or the void whilst moving from the present state to the future state. The "change navigation

action" serves to smooth out the tensions created from the differentiation between the presence of the two states in the entity, and how to plot a course for the "in between" state effectively (Geldenhuys, 2006; Veldsman, 2002). The quantitative and qualitative sources of change that form the future comprise factors such as globalisation of markets, competition, economics, technology, innovation and socio-political issues (Cummings & Worley, 1997; Geldenhuys, 2006; Nadler & Nadler, 1998).

1.7   IMPORTANCE/BENEFITS OF THE STUDY

An initial literature survey, as indicated above, revealed several gaps, potentially unfounded assumptions and under-examined contexts for plausible future outcomes for the Republic of South Africa. In terms of research on possible futures for the Republic of South Africa, several benefits for this study are identified.

First, although the increased importance of survival for the Republic of South Africa is acknowledged, there is a need in the literature on good governance and plausible futures implementation in the Republic of South Africa. There is also a need for literature discussing impeding variables to a plausible future outcome for the Republic of South Africa that are beyond concepts of collation, corruption and nepotism (Cole, 2001; Dalton, 2005; Fogel, 2006; Geldenhuys, 2006; Pillay, 2004; Win, 2005).

Secondly, literature limitations exist with regard to convergence with (or divergence from) international good governance standards, where there is an absence of South African companies meeting international standards. This research will explore variables that impede the implementation of good governance plausible outcomes, by examining contrasting views and detailing variables that could impact the development of a "surprise free" prognosis that leads to a set of practical recommendations addressing the main factors that impede plausible futures with the aim of improving the level of implementation for the Republic of South Africa.

This research will also examine the degree of convergence/divergence currently existing in the Republic of South Africa as a whole.

1.8   RESEARCH METHODOLOGY

The researcher has undertaken an exploratory study of the literature relevant to the research topics. The data were interpreted to form an understanding of the relevant key issues pertaining to the research objectives and relevant questions; and these were drawn up in an inductive effort. Exploratory studies are a valuable means of finding out what is happening, to seek new insights; to ask questions and to assess phenomena in a new light (Robson, 2002:59; Siwale, 2007). With an inductive approach, qualitative and quantitative data have been collected and analysed to obtain a better understanding of the research objectives and questions (Palgrave, 2008).   Inductive approaches offer a more flexible methodology that permits alternative explanations of what is really happening (Siwale, 2006). Lewis, Saunders and Thornhill (2003) argued that if researchers are more interested in understanding why something is happening, rather than being able to assume what is happening, it may be more appropriate to adopt the inductive approach rather than the deductive approach (Lewis *et al.,* 2003; Overmars, Verburg & Veldkamp, 2005). In other words, this research was conducted in the following manner:

- Identifying the focal objectives and questions;
- Identifying and grasping key global driving forces;
- Uncovering the constant predetermined and critically uncertain key global driving forces;
- Selecting key local factors;
- Selecting plausible storylines;
- Giving memorable names to the scenarios and fleshing out the scenarios as a compelling narrative;
- Identifying the probable implications of the different scenarios for the Republic of South Africa;
- Cross-checking for internal consistency and significant differences, and testing the policies against the scenarios;
- Setting a revised vision for the Republic of South Africa;

- Identifying leading indicators and change navigation factors, enabling a surprise free alignment and establishing a contextually aligned set of   practical recommendations applicable to a developing world context for the Republic of South Africa.

The literature review, supported by an environmental scan and interviews with experts, provided the major source of information in this research effort. The results are presented and analysed in terms of the frameworks provided by Causal Layered Analyses (CLAD) and systems thinking. The futures research methodologies used are described in detail in Chapter 2. Ultimately, the building of the four scenarios was the aim and outcomes of this research effort. The objective therefore of this research is to determine through the scenario-building process how South Africa could leapfrog to the country that the world will aspire towards in 2050.

The key variables of the scenarios are grouped under "governance" and "competitive economic growth". Four scenarios have been developed, one with both sets of factors positive, one scenario with reasonable governance but less favourable growth, one scenario with less good governance, but favourable economic conditions, and one scenario as poor in both key areas. Each scenario starts from the actions of the Republic of South Africa's government leading up towards 2055, supported by the current "status quo" as derived from international observation by researchers, scientists and global perceptions.

1.9   CHAPTER OUTLINE

Chapter 1 presents the initial literature review and the research proposed which was designed to investigate possible futures for the Republic of South Africa – the central objective of this research. This chapter discusses the challenges faced by the Republic of South Africa, followed by the research objectives as well as the research questions.

Chapter 2 discusses the research methodology followed by the researcher. Scenario planning as well as the scenario process is discussed in detail.

Chapter 3 outlines an analysis of the basic human needs, the African worldview, current African progress, the challenges and the sustainability notion faced by the Republic of South Africa.

Chapter 4 elaborates on the key forces and issues faced by the Republic of South Africa. This presents a PESTE analysis of the macro and micro environment, which in turn focuses on analysing and scanning the environment. The modus operandi of this chapter is to identify the key forces of the change affecting the Republic of South Africa.

Chapter 5 discusses the results section of this research; scenarios as prepared by this research, the vision, the "surprise free" prognosis and change navigation.

Chapter 6 consists of the conclusion as well as the contextually aligned set of practical recommendations applicable to a developing world context for the Republic of South Africa.

Chapter 7 gives an overview of the research, as well as recommendations and conclusions.

CHAPTER 2

RESEARCH METHODOLOGY

2.1 INTRODUCTION

Chapter 1, the introductory chapter sets the context of this research and introduced the definition of the problem directing the research. A description of the research parameters to establish the focus and define the boundaries of the research was also formulated. It introduced the concept of futures thinking and its possible role in South Africa's planning process. During this research, a systematic approach was used in developing the scenarios that follow from this chapter. In Chapter 3 an analysis will be presented to understand the influences of the basic human needs, Africa's progress, the sustainability notion and challenges faced by mankind, including South Africa. Chapter 4 discusses Africa's macro and micro-environment in a development context. These analyses of the micro and macro levels set the scene regarding the research design and its constituent elements followed to construct the scenarios suitable for application in a developing world and in a South African context. More specifically, this chapter covers future methodologies, scenario planning, the research process, the rationale for the restricted scope and research process and the evaluation of the design criteria to ensure an acceptable 'surprise free' research outcome. The scenario building is based on Peter Schwartz's (1991) method, as explained in his work, *The art of the long view*.

2.2 ORIENTATION AND SCOPING

The future is said to be rapidly changing and unpredictable, with change no longer being an option, but the only way to survive. This pace of change within the past two decades has increased dramatically when compared to the past century (Meyer and Boninelli, 2004; Veldsman, 2002; Geldenhuys, 2006). Due to this rapid pace, organisational capabilities such as adaptiveness, flexibility, and responsiveness have become highly important (Nadler, Shaw & Walton, 1995). The degree of confidence with which future possibilities can be accurately forecasted has become increasingly more difficult for any company, due to the radically changing circumstances

companies face in the modern world. This leads to a sense of loss of control over their future for many companies (Vermeulen, 2003; Geldenhuys, 2006). Researchers point out that leadership must be at ease with an unstable environment, uncertainty and turbulence. However as Weeks (1990) suggests, many leaders are still basing their decisions on past trends (Geldenhuys, 2006; Weeks, 1990)
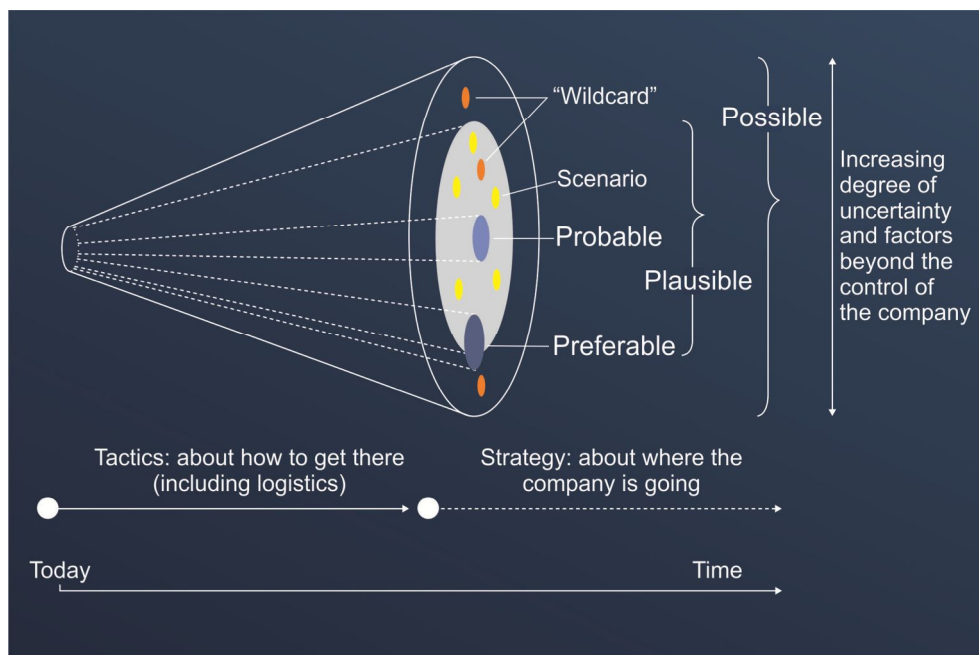
Figure 2.1: The core of uncertainty
Source: Geldenhuys, 2006.

As depicted in figure 2.1 above, "A change navigation-based scenario planning process" Geldenhuys (2006) demonstrates how the future becomes ever more unpredictable the further away it is. This is due to the relative increasing of factors that are beyond the control of the company (Geldenhuys, 2006). Ilbury and Sunter (2005) point out that this calls for a long-term strategy that is both more adaptable and more imaginative (Ilbury and Sunter, 2005).

Leaders generally believe that by manipulating the means under their control, they could achieve any goal (Geldenhuys, 2006). However, as Geldenhuys points out, the present day environment for organisations is one of continued disruption and disorientating changes. Many of these changes occur concurrently or follow each other very closely. Due to these rapid changes companies have little control in the current environment and must adapt in a skilful way (Geldenhuys, 2006; Vaill, 1991).

Anticipating possible futures in this turbulent environment calls for greater creativity, skills, insight and understanding. Leaders are required to consider a whole range of new opportunities and possibilities. Geldenhuys (2006) highlights the fact that traditional methods for forecasting may have become out-dated, due to the new "turbulent context" (Geldenhuys, 2006). Researchers urge a more flexible planning approach, which considers a wider range of possible future scenarios as opposed to conventional forecast efforts (Veldsman, 2002; Weeks, 1990; Geldenhuys, 2006).

Bood and Postma (1998) argue that when there is a high level of uncertainty, scenario-based planning yields greater value when compared to other estimating and forecasting processes. Using this method the signals of change can be identified much earlier. By identifying these signals, leaders can turn unexpected occurrences and situations into opportunities that can be exploited ahead of the competitors (Bood and Postma, 1998; Geldenhuys, 2006). Geldenhuys (2006) states that scenario-based planning appeared to be more aligned with the present day business environment in this rapidly changing time.

Veldsman (2002) highlighted the fact that many Developing World countries borrow planning practices such as scenario-based planning from the Developed World. Veldsman (2002) warns that this practice is high-risk, as this happens without testing contextual validity in the new context. Such planning can only be successful if the socio-economic structure of the particular society, its political system and ideology of the ruling power are taken into account. These factors are said to have a direct impact on the "role, processes and organisation of planning" (Geldenhuys, 2006:265-295). Political factors play a more prominent role in developing worlds. In this context, political power is always applied, along with technological and socio-cultural values. These prominent factors result in substantial differences when considering different countries. Situations in African nations, or developing worlds differ greatly from other countries such as those in Western Europe and North America where basic concepts and techniques of planning have evolved and been developed. Thus, strategic planning concepts and techniques may not be appropriate for the African context (Conyers & Hills, 1984; Kiggundu, 1989).

Geldenhuys (2006) highlights the importance of developing worlds adopting some developed world planning practices, reliance and imitations. However Geldenhuys (2006) goes on to say that because of the change in context, these practices may not provide companies with a competitive edge. Geldenhuys (2006) also states that there must be a marriage between scenario-based planning and leadership in order for there to be a noteworthy contribution in the developing world context, otherwise such planning would undoubtedly be labelled as foreign and be unwelcome in many developing world companies (Geldenhuys, 2006; Mbigi & Maree, 1995).

2.3   FUTURES STUDIES

Futures studies is a rigorous discipline that has evolved from futures thinking (Masini, 1993; Ratcliffe, 2011). Although futures thinking is as old as humankind, the field of futures studies has only been developing over the past five decades. Bell (2003) sees futures studies as a part of the field of modern humanism, and as both philosophical and scientific. In Section 2.4, the main concepts underlying futures thinking and consequently futures studies will be discussed. This section will focus on the purposes and characteristics of futures studies as a discipline and will explore the issues of values and ethics in context.

2.3.1   The purposes of the futures studies field

Various researchers argue that for people the future can be "an object both of curiosity and of intense practical concern" (Resher, 1998:11; Krawczyk, 2008; Ilbury and Sunter, 2009). The universal purpose of Futures Studies is "to maintain or improve the freedom and welfare of humankind" (Bell, 2003:73). This statement can be broadened to include all forms of life. More detailed purposes of Futures Studies, recognised by many futurists (Toffler, 1978; Coates & Jarratt, 1989; Amara, 1991; Masini, 1993; Ratcliffe, 2011) are "to discover or invent, examine and evaluate, and propose possible, probable and preferable futures" (Bell, 2003:73). Bell (2003) and Krawczyk (2008) distinguished nine major tasks (purposes) of Futures Studies. These are presented in Figure 2.2 and discussed below.

- **The study of possible futures –** One of the main assumptions of Futures Studies is the recognition that there is no single determined future, but instead many possible futures that can unfold. The present holds the seeds of the future change (Malaska, 1991; Bell, 2003); therefore, the explorations of possible futures should begin with looking at the present in order to identify the possibilities embodied in it. This requires a fresh new way of thinking about the present, which would be creative and without preconceptions. With such an approach, the question asked is 'what could be' rather than 'what is' and present problems are seen as opportunities for change in the future (Krawczyk, 2008).
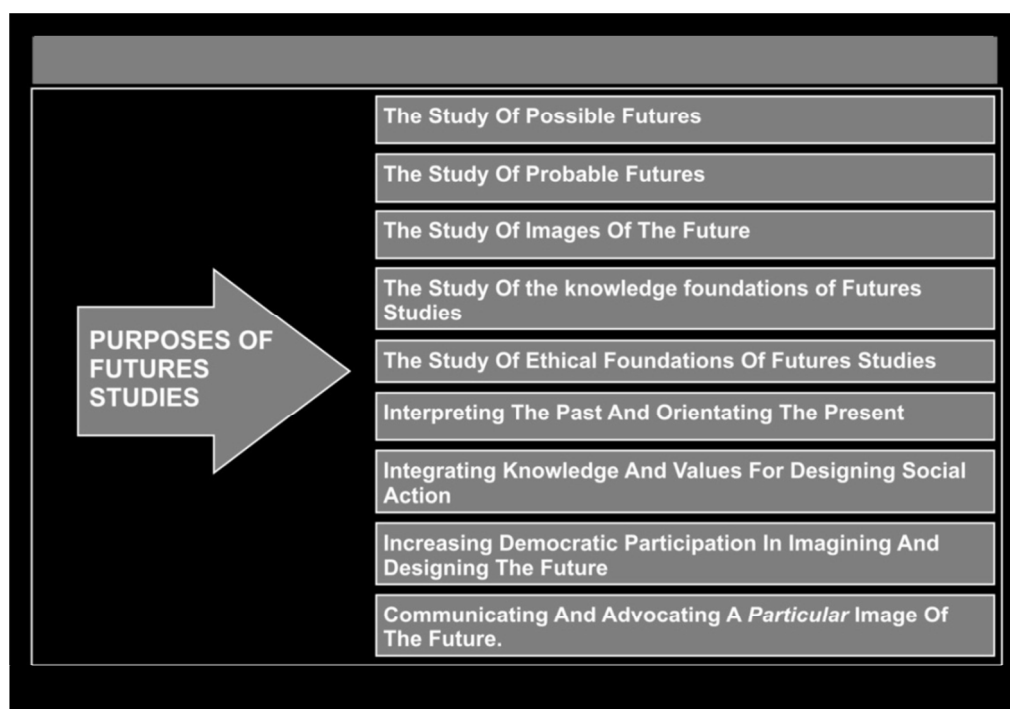
Figure 2.2: Purpose of futures studies
Source: Adapted from Bell, 2003; Krawczyk, 2008

- **The study of probable futures –** This focuses on identification of the most probable futures for a given phenomenon in a given set of conditions. The questions asked are: what is the most probable future *if* the past and present conditions continue? And what is the most probable future *if* one or a number of conditions have changed? Consequently, not only the most probable future is explored, but a number of probable futures that may unfold if given circumstances occur. Identification of the most probable futures is strictly related to the consideration of

what set of circumstances is most likely to occur (Krawczyk, 2008; Ilbury & Sunter, 2009; Roux, 2010).

- **The study of images of the future –** 'Image of the future' can be defined as a representation of expectations, anticipations, hopes and fears for the future (Krawczyk, 2008). Images of the future influence human behaviour in the present, as people act in the present according to their expectation of what the future may be like or in accordance with their wishes for the future they desire (Bell, 2003; Roux, 2010). A study of the 'images of the future' and their impact on behaviour can provide valuable insights in the exploration of possible, probable and preferred futures. An important part of such a study is analysing the content of such images and identification of the values underlying them (Krawczyk, 2008).

- **The study of the knowledge of foundations and Futures Studies –** Futures Studies, like any other field, needs to present the epistemological grounds on which knowledge is created. The fact that the future 'does not exist' and there are no facts about the future positions it among disciplines that deal with intangibles, such as law, aesthetics, and religion (Slaughter, 1999; Bell, 1997). Futures Studies have developed an entire range of methods for the systematic investigation of the future, which are being continuously improved. On the other hand, there are gaps in the knowledge about philosophical foundations for the exploration of possible, probable and preferred features (Krawczyk, 2008; Ratcliffe, 2011; Adendorff, 2011).

- **The study of ethical foundations of Futures Studies –** This task is directly linked to the purpose of exploring preferable futures. Some researchers (Ozbekhan, 1960; Masini, 1993; Krawczyk, 2008; Roux, 2010) also observed a connection of ethical issues to the study of possible and probable futures, especially in relation to technological forecasting.

- **Interpreting the past and orientating the present –** As it was argued above, people use the past to guide their present actions and to formulate their images of the future. The experience gained in the past can also be used to rationalise present choices and to improve behaviour according to the lessons learned previously (Bell, 1997; Krawczyk, 2008; Ilbury & Sunter, 2011).

- **Integrating knowledge and values for designing social action –** The aim of Futures Studies is to assist decision-makers in developing appropriate policies and designing action (Geldenhuys, 2006; Ilbury & Sunter, 2011). In order to do so,

futurists need to integrate knowledge and expertise from a number of different fields. Bell (2003) argued that for effective action and policy design the identification of what knowledge is relevant and required should be based on the nature of the problem that is being considered, the policy goals, social context and the technological means available (Bell, 2003; Krawczyk, 2008; Ratcliffe, 2011).

- **Increasing democratic participation in imagining and designing the future -** Although this goal may not be relevant to all futurists, it is perceived as a primary responsibility by many researchers. Futures Studies encourages the participation of citizens in proposing and evaluating alternative images of the future that affect their lives (Krawczyk, 2008). Recently, increasing democratic participation of citizens in imagining and designing the future has been observed in cities, where the general public together with stakeholders actively participate in the development of future visions for their cities and neighbourhoods (Bell, 2003; Krawczyk, 2008).

- **Communicating and advocating a particular image of the future –** One of the key assumptions of Futures Studies is that "some futures are better than others" (Bell, 2003; Roux, 2010), therefore, futurists promote images of the future that would lead to actions resulting in the betterment of humanity. These images can be seen as both desirable and an inspiration of a warning (Spies, 1982; Bell, 2003; Krawczyk, 2008; Ilbury & Sunter, 2009; Ratcliffe, 2011).

2.4   CHARACTERISTICS IN FUTURES STUDIES

The characteristics of Futures Studies are a set of qualities that define the field and differentiate it from other disciplines. Masini (1993) characterises Futures Studies as trans-disciplinary, complex, global, normative, scientific, participative and dynamic.

Krawczyk (2008) argued that as a result of increasing complexity and interconnectedness in the contemporary world, futures phenomena have many different aspects to them. In order to understand and analyse such phenomena, knowledge from various fields is required. A *trans-disciplinary* approach is characteristic for many modern disciplines, but it is especially important in Futures Studies, which incorporate "both diverse subject matter and experts trained in many different fields" (Bell, 2003:73; Krawczyk, 2008) in order to analyse changes taking

place and their possible consequences. It is important to not only use different approaches and different disciplines in the analysis of the same problem, but also to exchange methodological tools and assumptions between different fields (Ilbury & Sunter, 2009). This can lead to the development of new methods. Many methods used in Futures Studies, such as the Delphi technique, scenarios and global models, involve a combination of approaches from various disciplines (Peterson, 1997; Ratcliffe, 2011).

The concept of being trans-disciplinary can be enriched by the notion of multi-dimensionality. Krawczyk (2008) argued that Futures Studies are not only trans-disciplinary, but also benefit from a variety of backgrounds, different schools of thought and different cultures that contributed to the development of many disciplines. Another aspect raised by Godet (2001) claimed that the emergence of alternative futures depends on different mental attitudes that people have toward the future (Nell, 1999; Bell, 1997; Godet, 2001).

There is an on-going debate among futurists as to whether Futures Studies is a *science* or an *art.* According to many scholars, Futures Studies is an art by its very nature (Jouvenel, 1967; Bell, 1968). Others see the futures field as both a science and an art (Hahn, 1985; Amara, 1986; Coates, 1987; Kurian & Molitor, 1996). Another group, including Beckwith (1984), Encel (1975) and Malaska (1995), perceives it predominantly as a science (Bell, 2003). This discussion can be settled by Helmer's (1983) conclusion that it is not a subject matter that makes a discipline scientific, but the way in which knowledge is approached (Kurian & Molitor, 1996).

The *dynamic* character of Futures Studies is derived from the continuous changes taking place. The world evolves continuously as the pace of transformations accelerates and complexity and uncertainty increase. Futures Studies, in order to fulfil its primary purpose of the examination of the future, needs to understand the nature and direction of change, and, therefore, to gather knowledge describing these changes to constantly improve the methods and techniques used for the examination of the future (Wells, 2004).

Participation, like scientificity, is an arguable characteristic of Futures Studies. It is related to the democratic values. Its underlying assumption is that all those who would be a part of the future should participate in decision making about the future as well as its implementation (Jungk, 1973; Hawaii, 2000). This characteristic can be realised only at the local level of Futures Studies (Bell, 1997; Ilbury & Sunter, 2009).

In Futures Studies, normativity refers to its connection to specific values, desires, wishes and needs of the future. Studies of the future can have an explorative or normative character. In explorative studies, the images of the future are being created by building upon the knowledge of the past and present, while in normative studies images of desirable and/or unwanted futures are based on wishes, desires and fears. Values, clearly visible in normative studies, are also present to a certain extent in the explorative studies, as they indirectly influence the assumptions on which explorative images of the future are created (Pohl, 1996; Ratcliffe, 2011).

Another aspect related to normativity is the role of imagination and creativity in Futures Studies. Imagination and creativity help to recognise new trends and elements that may emerge in the future. Creativity and imagination are strongly connected to values, as often they are an indication of preferences, wishes and fears (Ilbury & Sunter, 2009; Ratcliffe 2011).

2.5   FUTURES METHODOLOGIES AND TECHNIQUES

Over recent decades, a number of different methodological approaches and techniques have been developed in order to explore and imagine possible, probable, preferable and plausible futures. These approaches and methods are being constantly advanced as the new accelerating pace of change and increasing complexity and uncertainty pose new challenges for those involved in the study of the future (Krawczyk, 2008). In this thesis, the terms methodology and technique are used according to the meaning assigned by Ratcliffe (2011). The words 'method' and 'technique' are used as substitutes, and they refer to individual methods, such as the Delphi method, scenario technique, cross-impact analysis, and visioning.

The terminological confusion of the Futures Field also relates to various terms used as names for various activities involving futures thinking. Although most researchers use the term 'Futures Studies' as a name for the discipline, which is fundamentally concerned with futures thinking, some researchers also call it 'Futures Research', 'Futurism', 'Prospective', and 'Prognostics'. There are also quite considerable differences between meanings given to these terms by various researchers. Slaughter (1997) distinguishes 'Futures Field' as a main frame of reference for futures thinking. According to Krawczyk (2008), the Futures field involves three main areas of activity:

- **Futures research -** where emphasis is placed on forecasting, planning and exploring futures using mainly quantitative and analytical techniques.
- **Futures studies -** that are concerned with understanding the Futures Field as a whole, developing various futures concepts and communicating these to different groups.
- **Futures movements -** such as woman, peace and environmental groups which have an impact upon the goals of the Futures Field and the society as a whole (Slaughter, 1999; Dator, 2005; Krawczyk, 2008; Ilbury & Sunter, 2009).

Glenn (2004) described "Future Studies as any exploration of what might happen and what might become" (Glenn, 2004), "Futures Research as the use of methods to identify systematically the consequences of policy options and to identify alternative futures with policy implications for the decision makers" (Glenn, 2004) and "Prospective as the study of the future to develop a strategic attitude of the mind with a long-range view of creating a desirable future" (Glenn, 2004; Krawczyk, 2008). For Ratcliffe (2001), the terms Futures Studies, Futures Research, Foresight and Prospective describe various methodologies. Some researchers, for example Martin (1989), considered Prospective and Foresight as two terms (French and English) describing the same thing– a futures methodology. Prospective originated in France and is widespread in French-speaking countries, while Foresight is a term mainly used in English-speaking countries (Krawczyk, 2008). Futures Studies tend to explore more general issues and are often seen as the 'academic face' of the

Futures Field, while Futures Research tends to be more policy and decision-making orientated and could be perceived as the 'professional face' of the futures field (Geldenhuys, 2006; Krawczyk, 2008; Roux, 2010). Considering various meanings given to the terms discussed above, in the context of this thesis, they will be used as follows:

- Foresight and Prospective as the names of methodologies.
- Futures Studies and Futures Field as a name for the entire discipline.

2.6 TYPOLOGY OF FUTURES RESEARCH METHODOLOGIES

Futures methodologies and techniques can be classified in many different ways. From the broad literature two main classifications arise, explorative and normative, and quantitative or qualitative (described by some researchers as objective and subjective).

2.6.1 Explorative and normative

Explorative methodologies are described by Masini (1993) as 'opportunity-orientated' and explore possible futures without regard to what is desirable (Glenn, 1994; Krawczyk, 2008). The starting point is the present and alternative futures are projected (Foren, 2001). Normative methods, 'mission-orientated' (Masini, 1993; Krawczyk, 2008), are based on values and wishes and address the question of what future is desirable (Glenn, 1994). At first, the image of a desired future is created and then it is worked backwards, to establish how this future can be achieved (Foren, 2001; Krawczyk, 2008).

2.6.2 Quantitative and qualitative (objective and subjective)

Quantitative methods involve mathematical calculations, which can operate on sets of real data (different variables and indicators) or may be based on assumptions opposite to reality. Qualitative methods do not involve numerical measurements and statistical analysis (Bell, 2003). Qualitative methods often are based on abilities such

as intuition and creativity (Puglisi, 2002) and the knowledge, experience and personal skills of experts (Masini, 1993; Krawczyk, 2008; Ilbury & Sunter, 2009).

2.6.3 Other classifications

Futures methods can also be classified as those "that study futures *for* and those that study futures with the final users of the future images" (Puglisi, 2002: 3). The development of participatory futures approaches was underlined by a greater importance being given to involving clients of those studies and different actors who have a stake in the future (e.g. communities, business, administrative bodies) (Bezold, 1991). Another distinction can be made between structured and unstructured processes. The structured processes involve a series of steps, so called 'method paths', which comprise different techniques and allow a deepening of this research, building connections and exploring possibilities. The unstructured processes further involve experts and are based on expert knowledge and experience to explore the future possibilities (Puglisi, 2002; Geldenhuys, 2006; Krawczyk, 2008; Ilbury & Sunter, 2009).

The popularity of different types of methods used in Futures Studies has been changing continuously. In the 1950s and 1960s, most studies had an explorative and objective character. The 1970s brought increased interest in subjective and systematic studies, and in the 1980s most approaches had a mixed character (Masini, 1993). In the past 20 years, a growth in participatory Futures Studies was observed as well as the tendency to combine different approaches (Krawczyk, 2008; Ilbury & Sunter, 2007). Table 2.1 presents the most popular futures methods and techniques and their position within the categories presented above.

Table 2.1: Classification of futures methods and techniques

	QUALITATIVE	QUANTITATIVE	EXPLORATIVE	NORMATIVE	'WITH'	'FOR'	STRUCTURED	UNSTRUCTURED
FORECASTING METHODS		X	X			X	X	
TREND ANALYSIS		X	X			X	X	
HORIZONTAL SCANNING	X	X				X		X
CROSS-IMPACT ANALYSIS		X	X			X	X	
SIMULATION AND MODELING		X		X		X	X	
BACK-VIEW MIRROR ANALYSIS	X	X	X		X	X		X
DELPHI		X		X		X	X	
SCENARIOS	X	X	X	X	X	X	X	X
VISIONING	X			X	X			X
FUTURES BIOGRAPHIES	X			X	X			X
FUTURES WORKSHOPS	X		X		X		X	
CASUAL LAYERED ANALYSIS	X					X		X

Source: Puglisi, 2002; Krawczyk, 2008

From Table 2.1 it can be deduced that futures methods can be classified in view of whether or not they are used for a study of possible, probable or desirable features. Techniques employed in the study of possible futures aim at extending human perception of future paths that can be taken (Krawczyk, 2008). The 'best perceptions' are not obtained or managed by formal means, but rather created by intuitive and personal processes that resist analysis and formalisation. Among formal methods to improve human capabilities of imagining the possible paths are strategic interviews, structured workshops, brainstorming sessions, focus groups and so on (Krawczyk, 2008; Ilbury & Sunter, 2010). The primary objective for the study of *probable* futures is to examine the structure of possible futures in order to look for links and relationships that would help to understand the situation as a whole. Such understanding helps to estimate the probabilities of individual futures (Geldenhuys, 2006; Krawczyk, 2008). Techniques, which are used in the study of probable features, include block diagrams, tree structures, matrices, influence diagrams, flow diagrams and scenarios. Methods used in the study of *desirable* futures seek to discover and examine people's preferences for the alternative futures. The most important among them are those with a participative character, such as role playing, joint problem solving (bargaining, negotiation, conflict resolution) and mediation

techniques (Amara, 1991; Bell, 2003; Krawczyk, 2008; Roux, 2010; Adendorff, 2011).

2.7   VALUES AND ETHICS IN FUTURES STUDIES

The aspect of values, already mentioned in the context of normativity above, was discussed by many futurists, who approached it from many different perspectives (Amara, 1991; Schwarz, 1991; Masini, 1993; Bell, 2003). One of the first researchers to pose a question about the role of values in Futures Studies was Ozbekhan (1960) as he was interested in the social consequences of technological forecasts. Ozbekhan (1960) pointed out a need to differentiate between 'what will be' and 'what people would want to be'. Ozbekhan also indicated a danger attached to technology – when a capacity for technological advancement exists then its development has to be realised and used. Ozbekhan (1960) later warned that in such a situation, human-will (what people want to be) is being substituted by compulsion (what will be) (Ozbekhan, 1960).

Schwarz (1982) distinguished three broad types of values underlying studies of the future: **political,** which "underline or condition the way in which alternatives are outlined" (Schwarz, 1982); **professional,** which relate to how people involved in the study of the future perceive their own role in such a study; and **paradigmatic,** which indicate methodological principles and criteria of quality such as accuracy, predictability and reproducibility. Any discussion of values and ethics cannot omit the issue of the responsibility of those engaged in the study of the future. The primary responsibility arises from the obligation to fulfil the universal purpose of Futures Studies – to sustain or advance the freedom and well-being of humankind. This purpose is not exclusive to the Futures Studies field, but can be attributed to many other disciplines and professions (Krawczyk, 2008). The unique contribution from futurists is prospective thinking (Bell, 1997). However, exploring the future does not remain the preserve of futurists, but rather is a moral duty of all people (Fuchs, 1977; Bell, 1997; Krawczyk, 2008). Futurists are responsible not only for the activity of looking into the future, but also for the consequences of such activities. Masini (1993) argued that those engaged on Futures Studies clearly have a specific responsibility to those forecasts, in turn linked to specific choices that will have a

direct or indirect impact on the future. Such forecasts should incorporate cultural and societal values of individuals and groups, whose lives these studies may influence. It is very important to analyse the values and the culture that underlie the choices about the future (Slaughter, 1999; Krawczyk, 2008; Ilbury & Sunter, 2010).

In general, the purpose of future studies is to maintain or improve the welfare of humankind and, some futurists would add, the welfare of all living beings, plants, and the biosphere. Thus, the broad goal of futurists is to contribute towards making the world a better place to live in for the benefit of people and the life-sustaining capacities of the Earth itself. Of course, the same may be said of any number of other occupations, form scientist, physician, and religious leader to artist, carpenter, farmer, and garbage collector. Most members of such groups like to believe that, in addition to working for money, power or fame, they are contributing something to human wellbeing, whether it be knowledge, health, peace of mind, a beautiful or useful object, food, or the safe removal and storage of waste (Bell, 2003).

Despite a concern for values in society at large, research have seen little efforts in the futures literature about a code of professional ethics for futurist themselves (Kidder, 1992; Bell 2003). This is a much-neglected topic. No written, agreed-upon standards of training, professional conduct, and ethical guidelines yet exist for futurists, despite the fact that they are increasingly involved in professional activities as futurist: teaching, researching, publishing, consulting, and advising both governments and private organisations (Bell 2003). 'Professional ethics' on the other hand refers to those virtues, values, prescriptions that define proper behaviour for a person occupying a particular occupational role requiring specialised training or learning, such as a doctor, lawyer, teacher or minister. Professional ethics are codes of conduct that define both exemplary and prohibited behaviour for member of a professional group, including behaviour toward their clients, be they patients, students, or practitioners. Such codes are often written up and formally approved by members of particular professional groups or organisations representing them, and enforces by some formal procedures through which grievances can be reported, investigated, and resolved (ASA, 1989; Bell 2003).

Many futurists are members of above-mentioned non-futurist professional groups and, presumably, their professional behaviour is governed by their own codes of conduct to some extent. Also, there is an informal and rather vague futurist code of ethics that rests on examples (and tall tales) of the behaviour of past and present leading futurists, as well as on the often casual conversations at professional and other meetings. Today, these informal ethical guides are no longer sufficient (if they ever were) to govern the professional behaviour of futurists. For futurists *qua* futurists have become important researchers, advisers, and consultants to some of the most influential decision-making of our day (Bell, 2003).

This research effort will therefore attempt to maintain or improve the welfare of all South Africans, general living beings and the effected eco system at large.

2.8   DATA RELIABILITY AND METHODOLOGICAL RIGOUR

As with any other discipline, important aspects in the discussion of methodology are the availability and reliability of data, and the adoption of methodological rigour. In considering these issues, it is necessary to consider a number of important assumptions related to data in Futures Studies:

- There are no hard facts about the future; therefore, any knowledge about it is based on speculation (Reichenbach, 1951; Bell, 2003; Krawczyk, 2008).
- The exploration of possible, probable and desirable futures is based on knowledge of the past and present (Masini, 1993; Tiberius, 2011).
- The study of the future has a multidisciplinary character and uses information from all fields (Glenn, 2004; Dator, 2005).
- Intuition, creativity and imagination play an important role in generating the knowledge of Futures Studies (Krawczyk, 2008).
- The role of Futures Studies is not to predict only one future, but to discover the alternative possibilities and analyse the risks associated with these possibilities and their consequences (Masini, 1993; Krawczyk, 2008; Ilbury & Sunter, 2009).

The availability of reliable data is therefore essential for Futures Studies (Krawczyk, 2008; Roux 2010). It has been indicated that a lack of reliable data is a limitation especially for forecasting activities that require sufficient historical series of data on which forecasts can be based (Roux, 2010). Problems can also arise from a lack of comparable information between different countries and regions (Krawczyk, 2008). Although in the last generation, global standards in data have been developed by many world organisations, the difficulties regarding data reliability have not necessarily been solved (Glenn, 2004; Krawczyk, 2008). Therefore, many researchers postulate rigorous examination and evaluation of any data (quantitative and qualitative) being employed (Masini, 1993; Glenn, 2004; Krawczyk, 2008). As important as the availability of reliable data, is the issue of methodological rigour, which relates to the way in which data and methods are applied. Study of the future, like any other study, begins with the formulation of a research problem or question. In order to achieve useful results it is necessary to ensure that, firstly, the right question or problem is being examined. As Krawczyk (2008) puts it: "there are no right answers to wrong questions". Krawczyk (2008:139) sees conformism and conventional thinking as factors that can lead to formulation of a false problem or question.

When considering Futures Studies as a science, it is expected that the result of a study of the future must be testable, either before or after the problem or question is analysed (Lehman-Wilzig, 1997). Lehman-Wilzig (1997) criticized the Futures Field for the lack of rigorous assessment of past predictions. His point can be countered with Amara's (1991) words:

"One of the major criticisms of Futures Studies is that quality or validation criteria are non-existent. Actually, such criteria do exist but they are seldom applied, or quite inappropriate ones are suggested. For example, of the most common questions the practising futurist hears is, 'What is your record of hits and misses?', or, 'What fraction of the time have you been 'on target' in your forecast?' These criteria are inappropriate because our purpose is not to predict – much as we would dearly like to do so. Rather our primary purpose is to generate images and to analyse and understand them so that we can act to increase the probability of producing futures we prefer" (Amara, 1991: 645-649).

However, high quality results of futures exercises can be achieved by ensuring rigour in the application of futures methods. Krawczyk (2008) believes that there are five conditions to introduce rigour: relevance, coherence, plausibility, importance and transparency. She emphasises transparency as a condition vital to appropriation. Amara (1991) proposed a set of initial quality criteria for Futures Studies that should be embodied in futures methods. For the study of possible futures the major quality criterion could be plausibility (Geldenhuys, 2006; Krawczyk, 2008; Roux, 2010; Adendorff, 2011). The images of possible futures are based on speculation; therefore, they do not need to meet any rigorous tests of comprehensiveness, completeness or probability of occurrence. The main elements of plausibility involve general compliance with fundamental physical and behavioural principles, internal consistency and reasonability (Krawczyk, 2008; Ilbury & Sunter, 2011).

The main criterion for the study of probable futures could be reproducibility, the reproducibility of hypothetical statements about trends and events. In the sciences there is 'experimental reproducibility', which in the case of Futures Studies can be substituted with 'informational reproducibility'. This can be defined as "the extent to which a given state of information (input) leads to a given forecast (output)" (Krawczyk, 2008). The criterion of reproducibility relates mainly to the level of uncertainty accepted for the forecast. The key criteria for the study of preferable futures could be value explicitness and impact explicitness. In the case of value explicitness, the values under scrutiny should be those that are the most relevant to the preferred alternative future. In the case of impact explicitness, the important features are the active participation of key stakeholders, distribution of possible future benefits and losses and the development of common perceptions (Amara, 1991; Krawczyk, 2008; Ilbury & Sunter, 2009).

2.9   THE SCENARIO PLANNING RESEARCH PROCESS

Based on the above-mentioned arguments, there are three distinct processes that can be utilised to predict future events (Tangredi, 2000; Geldenhuys, 2006; Roux, 2010; Adendorff, 2011):

- **Forecasts** - depend mainly on trends-based analysis and signify long-range assessments. Forecasts are attempts at a seemingly accurate and predictive

depiction of the future. The most authentic forecasts are subject specific. An issue-area leader is best experienced to make an estimation regarding the continuity of current trends

- **Estimates** - rely on an evaluation of existing conditions to identify possible future events.
- **Scenario-based planning** – scenarios are inclined to be opulently developed portrayals of alternative future worlds based on credible changes in the current driving forces. The outcome is not a precise picture of tomorrow, but it rather allows for making improved decisions about the future.

Table 2.2 contains a comparison of the strengths and weaknesses of forecasts, estimates and scenario-based planning as outlined by Bood and Postma (1998), Geldenhuys (2006), IBM Advanced Business Institute (2002), Mintzberg (1994), Tangredi (2000) and Adendorff (2011).

Table 2.2: Processes used to anticipate futures events

STRENGTHS	• Greater definition of current conditions • Quatitative orientation • Application to immediate decisions • Appeal to practical decision makers	• Longer time frame • Diverse view points • Simplified planning Encouraging expert creativity	• Longer time frame • Heuristic orientation • Contrarian thinking • Appropriate for developing hedge strategies • Deals with uncertainty • Focuses on variables outside the control of the company. • Uses stories • Multiple plausible futures
WEAKNESSES	• Short time frame • Reliance on linear trends Discussion of strategic intent is often avoided	• Little emphasis on a holistic approach • Accuracy is based on continuity of trends • Tendency towards extreme assessments • Assume most likely future • Use only familiar factors under the control of the company • Outcome provides a narrow view of the future • Rely on analysis may therefore fail when formulating strategies that require synthesis of insight	• Translation required for application to immediate decision-making • Unappealing to practical thinkers • Involves a fairly large commitment of time and investment of resources • Difficult to understand before going through the experience • People hold different mental models and hence differ in the importance they attach to factors and occurrences

Source: Adapted from Mintzberg, 1994; Bood and Postma, 1998; IBM Business Institute, 2002; Tangredi, 2000; Geldenhuys, 2006; Adendorff, 2011.

From Table 2.2 it appears that scenario-based planning needs not reveal precise predictions. However, scenario-based planning does not essentially lend itself to

instant problem-solving decisions, but the aim is to be inclusive of all possibilities. A longer-range look at alternative futures is therefore promoted. This allows for the growth of hedge strategies towards improbable, but possible events. Scenario-based planning allows uncertainty to be captured in plausible stories towards learning about the business environment. The heuristic approach requires a procedure for translating insight into realistic considerations that require a variety of intellectual efforts (Geldenhuys, 2006; Roux, 2010; Adendorff, 2011). The requirement for translation renders scenarios less appealing to practical decision-makers. The various mental models and assumptions held by different role players result in their thinking differently about variables outside the control of the country (Simpson, 1992; Bood & Postma, 1998; Nell, 1999; Schnaars, 2001; Geldenhuys, 2006; Ilbury & Sunter, 2009; Adendorff, 2011).

2.10   PRINCIPLES ENSURING SUCCESSFUL SCENARIO-BASED PLANNING

Table 2.3 depicts a summary of principles ensuring successful scenario-based planning. These principles will be further disccussed in section 2.13 as part of the rationale for constructing scenarios.

Table 2.3: Principles ensuring successful scenario-based planning

CATEGORIES	PRINCIPLES
Context (where?)	• Recognise the uncertainty and complexity in the macro and micro environment
Rationale for doing scenario-based planning (why?)	• High degree of organisational learning • Development of alternative future worlds • Existence of signposts and a process to monitor and update scenarios over time
Process (how?)	• Simple, credible, informal, reflective and inclusive/interactive process • Enough time allowed to develop and learn more from scenarios • Free, focused and holistic thinking • Factual and logic-based discussions • Scenario-based planning and strategic conversation cascaded through the entire country/government/decision-makers level
Participants (who?)	• Government, role players and decision-makers involvement • Diverse internal and external inputs
	Service and infrastructure delivery • Team must be respected, open-minded and representative of all the important perspectives of the focal question at hand • Passing on ownership of the scenarios • Having a sense of fun and enjoyment
Outcome/value-add (what/result?)	• Internally consistent and plausible scenarios supported by a dynamic story • Institutionalised scenarios in the company • Replicating the scenario-based planning process under similar conditions with the same purpose yielding similar results • Being proactively ready for the future

Source: Courtney, 2003; Geldenhuys, 2006; Kahane, 2012; Ratcliffe, 2002;

2.11 BENEFITS OF SCENARIO-BASED PLANNING

Table 2.4 below, provides a list of benefits derived from scenario-based planning.

Table 2.4: Benefits of scenario-based planning

CATEGORIES	BENEFITS
Context (where?)	• Integrates and creates an awareness (or sensitivity) of the dynamics, uncertainties and discontinuities of various socio-cultural, economic/ financial, political/legal, technological, ecological and knowledge/ information forces • Allow for the exploration of fundamentally different outlooks on the future
Rationale for constructing scenarios (why?)	• By recognising the warning signs in advance, decision makers can anticipate better what could happen and more rapidly modify its strategic direction (or rehearse the future) as actual events unfold, i.e. proactive decision in a more orderly fashion • Serves as a guide for monitoring change and risk management • Assists with providing leadership, i.e. making key strategic decisions • Serves to develop policy and testing tools • Creates competitive advantage
Process (how?)	• Provides a common vocabulary and a simple, effective basis for communicating complex conditions and options • Opens the minds of people to a range of possibilities and stretches mental models well beyond what traditional forecasting would have achieved, i.e. achieving a higher degree of organisational learning • Helps avoid rigid strategy development that carries decision makers too far down a given road to change easily/without great cost • Allows various new and unique ideas to rise through communication channels without being prejudged (or automatically dismissed) • Allows decision-makers to explore and experiment with diverse ideas within a formal planning process
Participants (who?)	• Grouping discussions on possible variations in the macro and micro environment often helps to crystallise and clarify different perceptions and assumptions of decision-makers. • Facilitates diverse stakeholder participation
Outcome/value-add (what/result?)	• Allows multiple points of view, implicit and widely held beliefs and assumptions about the likely future of the business

Source: Bloom *et al.,* 2004; Bood and Postma, 1998; Geldenhuys, 2006; MetaBridge Limited, 1996; Nell, 1999; Schnaars, 2001; Simpson, 1992; Scenario-based Planning at CA International, 2000; Van der Heijden, 2005

Table 2.4 indicates that the crucial benefit of scenario-based planning is the preparedness for making rational decisions and corrective action on a central question critical to the future accomplishments of South Africa. Scenario-based planning assists in producing a new sensitivity to knowledge of the shifting micro and macro environment, allowing leaders and organisational members to become part of the thinking process of the aspect more rapidly (Geldenhuys, 2006). By acknowledging the "warning signs" beforehand and in a more orderly fashion, decision-makers can better anticipate what could take place. Decision-makers can then adjust their strategic course more swiftly as actual events unfold (Simpson, 1992; Bloom & Menefee, 1994; MetaBridge Limited, 1996; Wood, 1997; Bood &

Postma*, 1998; Nell, 1999; Strategic Scenario-based Planning at CA International, 2000; Schnaars, 2001; Van der Heijden, 2005; Geldenhuys, 2006; Ilbury & Sunter, 2009).

2.12   THE SCENARIO-BASED PLANNING PROCESS

Geldenhuys (2006) argues that there is no specific purpose in the scenario-based planning approach/practice that is assured of resulting in a satisfied country or continent. There is not a one-size-fits-all scenario methodology that can be bought off the shelf (Schnaars, 2001; Van der Heijden, 2005; Roux, 2010; Adendorff, 2011). Each exercise has to be custom designed and based on the particular objectives and needs of the country or continent (Simpson, 1992; Bloom and Menefee*, 1994; Geldenhuys, 2006; Roux, 2010).

2.12.1 Building blocks of the scenario-based planning process

Van der Heijden (2005) indicated that strategising for the future is fundamentally based on the unpredictability of the future, some aspects of which are assumed to be foreseen. The scenario-based planning process follows a decision-based approach that is different from traditional strategic business planning (Geldenhuys, 2006; Roux, 2010). Instead of trying to forecast (or predict) the future, scenario-based planning enables decision-makers to think the 'unthinkable'. Scenario-based planning helps to consider 'what if' questions, identifies multiple divergent plausible futures, and determines what strategies could be the most effective to address future uncertainties (Geldenhuys, 2006; Ilbury & Sunter, 2009; Adendorff, 2011).

Creating and utilising scenarios is an extremely creative and collaborative procedure that applies the expertise of diverse role players. The course of action is tantamount to thinking freely and broadly about a problem and not screening it from the viewpoint of a single discipline (Ratcliffe, 2000; Geldenhuys, 2006; Roux 2010). A flexible approach to the future is thus utilised. This warrants a readiness towards the bending of trends in diverse scenario worlds due to the unmanageable driving forces in the external environment (Simpson, 1992; Davis, 1998; Geldenhuys, 2006).

It is therefore essential to move throughout the scenario-based planning process numerous times. It can be weighed against a process of action learning in which the scenarios play the significant role of 'question raisers' (Van der Heijden, 2005). This fundamentally iterative scenario-based planning process is prepared in order to seek out more driving forces, improve a critical decision, carry out more research, engage in new plots and practise the inference of the different scenarios yet again. Two simple structures can be implemented when moving through the process, namely 'future backward' or 'future forward' or rather an arrangement of both (Van der Heijden, 2005; Geldenhuys, 2006). 'Future backward' engages in deciding on a number of important futures after which efforts are made to determine the paths that lead to them. 'Future forward' involves assembling several sets of plausible futures based on a breakdown of present forces and their likely evolution (Spies, 1982; Ratcliffe, 2000; Geldenhuys, 2006; Ilbury & Sunter, 2009).

According to Table 2.4, the scenario-based planning process is supported by the theory that the future is unpredictable. The future is a moving target for which no single 'right' projection can be constructed from past activities (Roux, 2010). Through the formation of a few consistent paths into the future, which take the shape of plausible stories, the complication of uncertainty is lessened to controllable segments and structurally integrated into action maps. The scenario-based planning process commences by distinguishing the focal question for which answers need to be produced, i.e. unarticulated 'big issues' (Geldenhuys, 2006). The driving forces (macro and micro) affecting the focal question under consideration are identified. The challenge is then to divide the key driving forces about which one is very certain from those that are largely uncertain (Ratcliffe, 2000; Roux, 2010). The storylines assist with characterising and driving the different scenarios. A set of descriptions of future worlds that attempt to satisfy the standards of internal consistency and plausibility is shaped. Principal indicators/signposts are chosen to observe the implementation of scenarios and to warn against unfolding scenarios (Geldenhuys, 2006; Krawczyk, 2008; Roux, 2010).
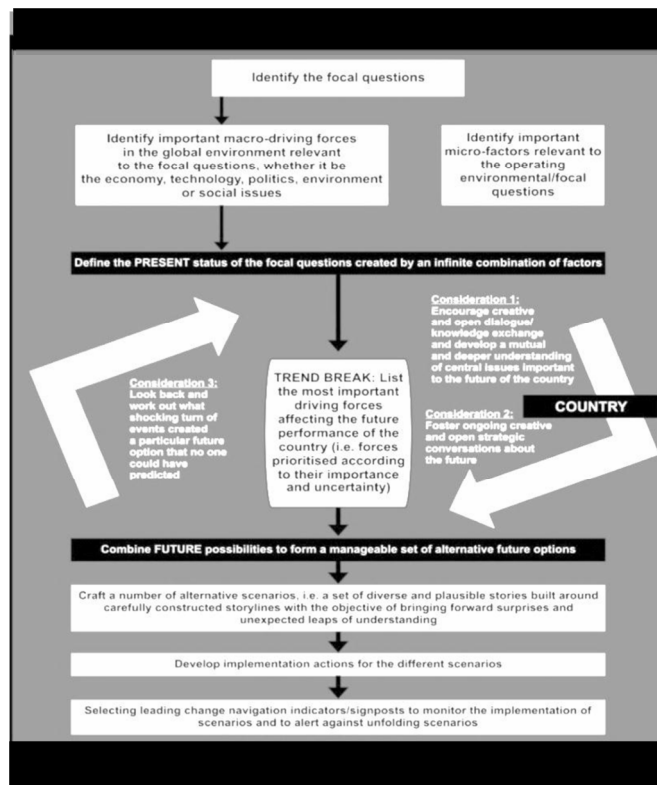
Figure 2.3: The scenario-based planning process

Source: Adapted from Daum, 2001; IBM Advanced Business Institute, 2002; Geldenhuys, 2006; Saunders and Harris, 2000; The Futures Group, 1994

2.12.2 The scenario-based planning process overview

A variety of scenario-based planning processes are extensively used to compile future probabilities, yet there is no standard procedure or collectively accepted doctrine for creating scenarios (Geldenhuys, 2006; Ilbury & Sunter, 2009). Practitioners are recommending their own individual processes ranging from qualitative to quantitative and simplistic to complex. Most practitioners have distinctive features and often use different terminology. The diverse processes are very flexible and able to adapt to the requirements of the given situation (Adendorff, 2011). The processes that are utilised depend mainly on the requirements specified by the researchers and decision-makers (Saunders &Harris, 2000; IBM Advanced Business Institute, 2002; Geldenhuys, 2006; Krawczyk, 2008; Roux, 2010). The following steps introduced in the majority of the scenario-based planning processes studied in the literature review are:

• categorising and combining key global driving forces;

- recognising the focal question;

- deciding on key local factors;

- selecting plausible storylines;

- exposing the predetermined, constant and critically uncertain key global driving forces;

- giving memorable names to the scenarios and fleshing out the scenarios as a compelling narrative;

- pinpointing the likely implications of the different scenarios for the country or continent; and

- identifying leading indicators and signposts to monitor the execution of scenarios/strategies on an on-going basis (The Futures Group, 1994;   Saunders & Harris, 2000; Daum, 2001; IBM Advanced Business Institute,   2002; Geldenhuys, 2006; Roux, 2010; Ilbury & Sunter, 2009).

2.12.3 Mapping the scenario-based planning process

Table 2.5 indicates the stages and steps proposed for inclusion in a scenario-based planning process. This is based on the re-evaluation and comparison of the various processes in most of the scenario-based planning processes described in the literature review.

Table 2.5: Stages and steps in the African built environment scenario-based planning process towards 2055

STAGE 1: PREPARATION	
STEP 1	Lay the foundation
STEP 2	Identify the focal objectives and questions
STAGE 2: EXPLORING AND BUILDING	
STEP 3	Rank the key global driving forces in terms of importance and uncertainty
STEP 4	List the key local factors relevant to the operating environment
STEP 5	Selected plausible storylines, give memorable names to the scenarios and compose scenarios
STAGE 3: TEST	
STEP 6	Cross-checking for internal consistency and significant differences, and testing the impact of the key driving forces in each scenario
STAGE 4: USE AND ASSESS	
STEP 7	*Review existing strategies and develop new strategies, including casual layered analyses *Setting of a vision for Africa's Built Environment towards 2050
STAGE 5: TRACK AND LEARN	
STEP 8	Identifying leading indicators and change navigation factors, enabling a 'surprise free' alignment and establishing a contextual aligned set of practical recommendations applicable to a developing world context for Africa's Built Environment
STEP 7	Maintain ongoing learning

Source: Researcher's own construction

2.12.3.1 Stage 1: Foundation Layout

Step 1: Foundation layout

Bood and Postma, (1998) indicated that the scope and objectives of the scenario-based planning exercise must be explained and the design process developed. Decisions have to be made concerning the types of scenarios to be constructed, and the execution of the scenarios.

Step 2: Identify the focal questions and objectives

Scenario-based planning must highlight the focal questions, i.e. unanswered questions of main strategic significance to South Africa (Bloom & Menefee, 1994; Davis, 1998; Kleiner, 1999; Schnaars, 2001; Daum, 2001; Van der Heijden, 2005; Geldenhuys, 2006).

2.12.3.2 Stage 2: exploring and building

Step 3: Positioning of the key global driving forces in terms of importance and uncertainty

Geldenhuys (2006) indicated that the key global driving forces of the macro-environment must be recognised. Key macro driving forces are external events outside a country or continents' direct control, which have a major impact on the country or continents' success. Key macro driving forces determine the framework within which the local forces function (Porter, 1985; Arbor, 2001; Daum, 2001; Geldenhuys, 2006).

Geldenhuys (2006) also further indicated that the key global driving forces must be inspected and classified as constant, predetermined or, most importantly, critically uncertain driving forces:

- **Constant driving forces** (i.e. which remain the same about the future) will persist, are not likely to change and are the same for every scenario (Bood & Postma, 1998; Geldenhuys, 2006).

- **Predetermined driving forces** (i.e. what is inevitable about the future) are not reliant on any particular chain of events. They are the same for each scenario. Whilst they will change, the change is plausibly predictable no matter which scenario comes to pass (IMB Advanced Business Institute, 2002; Analysis Consulting Services, 2003; Geldenhuys, 2006). The usual examples of predetermined driving forces are the education and health systems of a country or continent, urbanisation, demographics, cultural beliefs and economic development to name a few (Geldenhuys, 2006; Ilbury & Sunter, 2009).

- **Most important critically uncertain driving forces** (i.e. what is unpredictable or a matter of choice about the future) depend on irresolvable and unknown uncertainties. They depict different future states and form the basis for developing dissimilar scenarios (Spies, 1982; Kleiner, 1999; Analysis Consulting Services, 2003; Geldenhuys, 2006). An example of this kind of driving force is technological breakthroughs. The main uncertainties must be recognised by positioning the key global driving forces on the foundation of two criteria, specifically the level of importance for the success of the focal questions as highlighted in **step 2**, and the level of uncertainty around key driving forces. The appropriate driving forces that are both most essential (i.e. having the utmost impact on the focal question) and most uncertain (i.e. impossible to predict their floating up to the surface) must be cross-ranked and their relationship illustrated (Flower, 1997; Daum, 2001; Geldenhuys, 2006). Figure 2.4 helps to identify the most important critically uncertain key global driving forces.
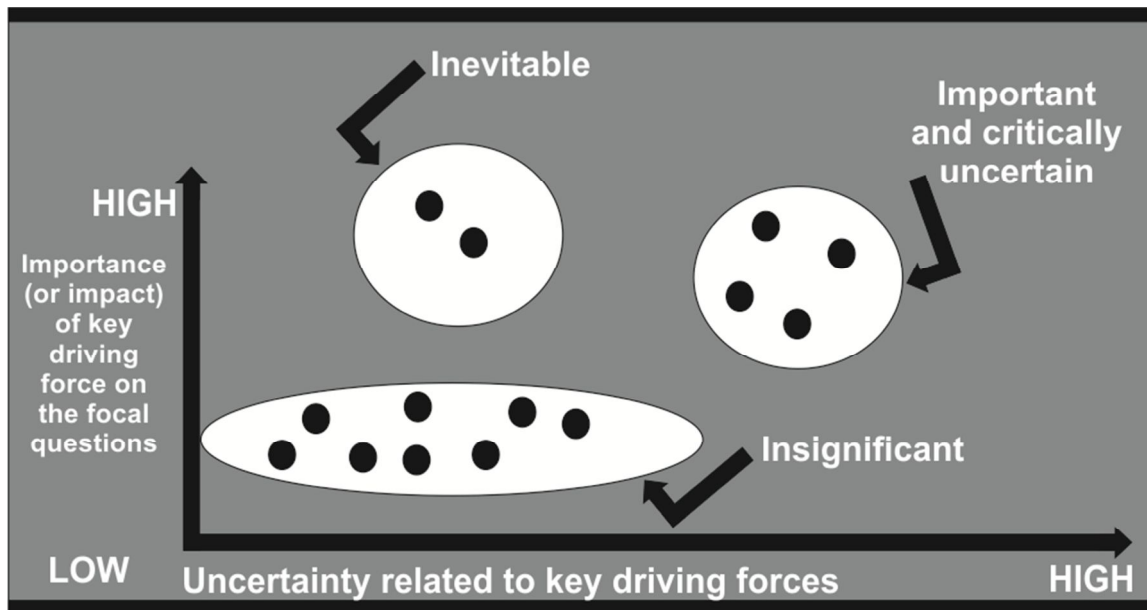
Figure 2.4: Ranking key driving forces in terms of their importance and uncertainty

Source: Adapted from Analysis Consulting Services, 2003; Geldenhuys, 2006

Step 4: List the key local factors applicable to the operating environment

Davis (1998) indicated that information on the key local (or micro) factors must be investigated. These local factors influence decisions important to the success (or failure) of the focal questions, as highlighted in **step 2** (Geldenhuys, 2006).

Step 5: Decide on plausible storylines, assign memorable names to the scenarios and generate scenarios

Plausible storylines that depict probable futures compellingly must be identified. This is supported by the result of particular combinations of the most vital and critically uncertain key global driving forces identified in **step 3** (Kleiner, 1999; Geldenhuys, 2006; Ilbury & Sunter, 2009). Memorable names must be specified to the end-state scenarios. Each scenario must then be examined in as much detail as possible based on research and analysis. The scenarios must be spun into a convincing and consistent narrative (Schnaars, 2001; Analysis Consulting Services, 2003; Geldenhuys, 2006).

2.12.3.3 Stage 3: test

Step 6: Test the impact of the key driving forces in each scenario

Ilbury and Sunter (2009) indicated that the key global and local driving forces must be highlighted (identified in **steps 3 and 4**), due to the extent to which they influence the different scenarios. The dynamics of these driving forces in each scenario develop into 'characters' in the stories being examined. The focal question identified in **step 2** must be examined in the light of the constructed scenarios. The implications of the different worlds must be contrasted. The scenarios must be reviewed for internal consistency and major differences (Schwartz, 1996; Flower, 1997; Mercer, 2005; Geldenhuys, 2006; Ilbury & Sunter, 2009).

2.12.3.4 Stage 4: use and assess

Step 7: Review existing strategies and develop new strategies

Full-bodied strategies must be allocated to each scenario (Geldenhuys, 2006; Ilbury & Sunter, 2009). The sets of strategies for each scenario must then be compared. The common strategies shape the core business plan for all the scenarios. Those strategies differentiated by scenario develop into a sequence of choices for the future. The selection regarding the various business options depends on the balance between risk and reward that decision-makers wish to preserve (Schnaars, 2001; Geldenhuys, 2006; Ilbury & Sunter, 2009).

2.12.3.5 Stage 5: track and learn

Step 8: Choose and observe leading indicators and signposts
A few leading indicators and signposts have to be selected (Geldenhuys, 2006; Ilbury & Sunter, 2009). This exercise informs decision-makers in a continuous manner which scenario (or combination of scenarios) is beginning to unfold. The leading indicators create an effective early-warning system and allow decision-makers to test the future route. Decision-makers must be all set to adapt its strategic

direction/approach if needed (Wilkinson, 1993-1998; Daum, 2001; Analysis Consulting Services, 2003; Geldenhuys, 2006; Ilbury & Sunter, 2009).

Step 9: Maintain on-going learning

Scenario-based planning is not a once-off exercise. It is an existing procedure, gathering continuous business learning as it evolves. The scenarios must be updated and applied at regular intervals (MG Taylor Corporation, 1997; Analysis Consulting Services, 2003; Geldenhuys, 2006; Ilbury & Sunter, 2009).

2.13 SCENARIOS

2.13.1 Rationale for constructing scenarios

Scenarios are the result (or output) of the scenario-based planning process (Flower, 1997; Schnaars, 2001; Geldenhuys, 2006). Scenarios act as a tool for free and holistic thinking. They broaden the mind and compel decision-makers to visualise the future in tangible terms by centring the attention of decision-makers on particular basics of the environment (Coates, 2000; Ratcliffe, 2000; Schnaars, 2001). Scenarios, in addition, are utilised to produce a framework for the planning environment and present decision-makers with common reference points. Scenarios therefore act as a tool for testing by identifying probable plans through typical "what if" questions (Geldenhuys, 2006; Spies, 1985, Krawczyk, 2008; Ilbury & Sunter, 2009).

Scenarios are a set of stylised stories featuring and linking a series of events and alternative futures. These scenarios do not describe an end situation alone, but also describe the path the present will follow to reach that state. Researchers state that scenarios are more "grammatical and contextual" than mathematical, in this way scenarios communicate facts and perceptions in a way that provides order and meaning to events (Boom & Menefee, 1994; Brown, 1968; David, 1987; Klinec, 2004; Leemhuis, 1985; Lusch & Laczniak, 1985; Mitchel, Tydeman & Georgiades, 1979; Nell, 1999; Ritson, 1997; Schnaars, 2001; Taylor, 1987; Wack, 1991; Weeks, 1990; Wright, 2005; Zentner, 1985).

2.13.2 Functions of scenarios

Scenario-based planning can be specified on three diverse planning levels, specifically the operating environment (day-to-day activities), the macro-economic and business environment (industry) and the global and strategic environment (competitive). Table 2.6 indicates that scenario-based planning could be either internal or external to South Africa and its decision-makers.

Table 2.6: Funtions of scenarios

INTERNAL FUNCTIONS	EXTERNAL FUNCTIONS	
Operating environment (day-to-day activities)	Macro-economic and business environment (industry)	Global and strategic environment (competitive)
• Decision support systems • New product development • Career Planning • Change Navigation	• Examining evolving industry states • Political and legal • Economic and financial • Socio-economic/political • Technological • Ecological • Knowledge	• Considering longer term invetments • Competitive analysis • Crisis management • Corporate (or portfolio) analysis

Sources: Adapted from Georgantzas *et al.,* 1995; Geldenhuys, 2006; Ratcliffe, 2000

2.13.3 Vision-driven and decision-driven scenarios

Table 2.7 summarises how decision-driven and vision-driven scenarios provide diverse functions. Geldenhuys (2006) argued that a crucial concern in any flourishing scenario-based planning procedure is in the first instance to illuminate the reason for scenario-based (decision-driven or vision-driven) planning and the expected product. These expectations will classify which of the two very different scenarios need to be considered.

From Table 2.7 it emerges that vision-driven scenarios aid decision-makers to think outside of the box, questioning leaders' notions about altering the future. Decision-driven scenarios are mainly used to expand a joint obligation for the need for

change, ease strategic dialogue and organisational learning, as well as producing new options (Geldenhuys, 2006). Decision-driven scenarios are used to highlight a well-specified strategic choice where the best option is uncertain due to doubt over the impact of that choice (Ratcliffe, 2000). It is assumed that vision-driven scenarios will be used more often in a developing world and Afrocentric leadership context as contrasted to decision-driven scenarios. This is due to the initiating source of change in a developing world context being more often established in the normative foundations of society, i.e. the most hidden and abstract arrangements such as values, beliefs and norms upon which society rests (Veldsman, 1997; Geldenhuys, 2006; Ilbury & Sunter, 2009; Adendorff, 2011).

Table 2.7: Vision-driven and decision-driven scenarios

	VISION-DRIVEN SCENARIOS	DECISION-DRIVEN SCENARIOS
Nature of scenarios	• Emphasis on broad macro-economic and global drivers of change • Longer term (5 to 10/20 plus years)	• Focus on specific uncertainties driving decision making • Generally shorter term (driven by time necessary to evaluate pay-off to decision)
Nature of process	• Emphasis on divergent thinking and broad perspective • Rely on outside experts, consultants and facilitators	• Data-driven and analytical when possible • Rely on internal expertise and industry experts (unless major confidentiality concerns are present)
Use of scenarios	• Generate new strategic ideas and develop a shared sense of possible futures and need for change • Launch follow-on projects and analyses to develop implications of the scenarios	• Test options for a specific decision against the range of potential outcomes • Develop implications for a specific option chosen

Source: Courtney, 2003; Geldenhuys, 2006; Veldsman, 1997

2.13.4 Conditions for producing successful scenarios

Conditions for producing 'good' scenarios comprise the following (Spies, 1982; Veldsman, 1997; Ratcliffe, 2000; Van der Heijden, 2005; Geldenhuys, 2006; Ilbury & Sunter, 2009):

- Scenarios must be internally constant (i.e. events within a scenario must be linked through cause/effect lines of argument that cannot be faulty), plausible (i.e. a scenario must develop logically in a cause/effect way from the past and the present and reveal current knowledge), robust and outcomes based.

- Scenarios are theoretical or hypothetical and should not be confused with a forecast.

- Scenarios must be applicable to the focal question over which the country has no control.

- The number of scenarios in the set must be two, three or four.

- Scenarios must be versatile and holistic in approach.

- Scenarios are sketches (or outlines) of the subject under study.

2.14 CAUSAL LAYERED ANALYSES IN SUPPORT OF SCENARIOS

In studying the future, researchers are afforded tremendous independence. The universe of potential clients is so large that researchers can at best satisfy only a small percentage of them (Coates, Mahaffie & Hines, 1996). Therefore, researchers can exercise full independence in their work and tell their potential clients what they think they need to know rather than be influenced by what may or may not be congenial to them, or reflect their preconceptions (Slaughter, 1999). When researchers work with their potential clients, one of their criteria is that the process and the tools and techniques researchers use, must be so transparent that the client understands what they are doing and why they are doing it (Stolterman, 2008). Researchers' ultimate goal is then to have clients come away from futures work with a feeling that they not only understand what has been done, but what they could do themselves and that if they had done it, they would have come up with similar results (Coates *et al.,* 1996). As with any art form, the test of quality is not the hard work, the diligence, the effort, or the earnestness going into the product. The test is the utilitarian marketplace and supporting that test is the credibility and legitimacy of futures research (Roux, 2010).

The key is a process that brings together as many perspectives as possible to contribute to, and to review and expand, our futures insights, scenarios and imagery

(Roux, 2010; Spies, 1982). Researchers find in all their work that they have to encourage external criticism and to be prepared to change their thinking as they learn from review (Coates *et al.,* 1996). Researchers imagine the future as many possible scenarios, created by the complex and subtle interactions among many demographic, technological, social, political and environmental trends (Bostrom, 2004). Some interactions can be induced, or controlled, by collective choices; thus researchers as individuals in groups and as a society can to some extent choose the preferable future (Spies, 1982). Researchers can therefore help people and organisations to think about their possible futures and shape their present actions and policies to move toward their most desirable future (Roux, 2010). Although researchers use many techniques, their greatest strength is systematic monitoring and tracking of trends and developments in all sectors, and their long experience in perceiving the relationships and cross-impacts among seemingly separate, even disparate, patterns of developments (Coates *et al.,* 1996; Roux, 2010; Spies, 1982; Adendorff, 2011). The reasons for exploring the future within a particular context have little to do with making specific forecasts – such and such will occur with this or that probability in X time frame (Galtung *et al.,* 1997; Roux, 2010). Those forecasts are, at best, a step along the way toward what researchers really wish to accomplish.

Researchers see three desirable accomplishments from exploring the future (Coates, 2000). Most organisations are expert-based and they depend upon experts at every stage and in every function to generate and sustain the organisations. Those experts, in order to remain experts, devote a large part of their time and their intellectual effort toward staying on top of their subject (Norton, 1979). Consequently, one principal reason for studying the future is to widen intellectual horizons and make people aware of factors outside of their normal expert concerns that may converge on their interests at any time from 5 to 50 years, presenting an opportunity or substantial risk, or demanding change for other reasons (Cetron *et al.,* 1991; Roux, 2010; Spies, 1982; Adendorff, 2011). After creating greater awareness of time and topic, researchers need to indicate how the knowledge generated in the exploration of the future has implications for current planning. If the future does not reflect itself in planning, then it would be merely expensive entertainment (Fowles, 1978). The final reason for exploring the future is argued to be far and away the most important one from which all other reasons are derived. It comes out of the

recognition that organisations of all sorts, not only corporations, fail. Projects, plans and programmes founder, and even entire organisations can disappear. The central feature of all organisational failure is that an individual or a few people at the top had assumptions about the future that originally were unsound (Coates, 2000). Consequently, the primary reason for exploring the future is to help people become aware of their own assumptions (Bell, 1997). The obvious step (asking individuals about their assumptions) does not necessarily work because their most important assumptions are so deeply embedded in their intellectual structure that they are not even aware of them (Masini, 1993; Roux, 2010).

The study of the future can therefore be seen as a technique for jabbing, probing, pushing and squeezing people into awareness of what they believe, and making that explicit to themselves and, even better, explicit to a working group (Coates, 2000). Researchers and decision-makers then have matters for discussion that are truly important to the future of the organisation (Dator, 2002). Internationally, decision-makers alike so often hear, "That's impossible'' or "The Chinese will never..." or "It's unthinkable that woman would..." These are the kinds of statements that researchers hope a futures study will evoke, because in explaining the rejection of any statement about the future individuals cannot help but reveal some of their own assumptions (Coates, 2000).

The future does not exist. To influence the future, it is necessary to discover the concepts of reality in the "past", then to consider the facts of the "present" and infer the possible and probable "future" (Inayatullah, 2007). To develop country scenarios this research effort uses Causal Layered Analysis as a platform for the scenarios. Causal Layered Analysis (CLA), developed by Sohail Inayatullah (2004), was chosen as a methodology to assist and map the most common images of South Africa, because it allows an opening up of the present and past to create alternative futures rather than simply forecasting a particular future based on a narrow empiricist viewpoint. In CLA, the way in which a problem is framed ultimately provides its solution, thus framings are not neutral, but part of the analysis (Slaughter, 2005). CLA does not claim or argue for any particular 'truth', but to explore how a discourse becomes privileged – that is who gains and who loses when a particular discourse becomes dominant. For this reason it is useful in examining the conclusions made by

popular images of the future of South Africa and testing whether or not they have enough depth to support their conclusions (Inayatullah, 2007). As such CLA requires the user to travel through a number of layers, which ultimately question or 'undefine' the future and make the units of analysis problematic. This unique layered approach allows the user to deepen the future and unpack the unconscious stories used to make sense of the way reality is formed. Importantly CLA explores not just the noise of litany and systems, but the deeper worldviews and myths to support these underlying layers of data (Inayatullah, 2001).

The following is a brief summation of his concept and how it applies within this analysis across four overlapping layers: Litany, Systemic Causes, Discourse/Worldview and Myth/Metaphor. The litany level identifies facts often presented by news or media for political purposes and often exaggerated (Inayatullah, 2003). These facts are not value free, and they are hard to challenge because they are presented as the 'truth' on which the system, worldview or myth rests. The focus of the first layer, or 'litany', is on quantitative trends, such as, for instance, that of overpopulation. The perspective concerns numbers, with scant analysis taking place. In this layer, the discussion, which is rarely about multiple factors and influences, often results in a 'politics of fear', characterised by such utterances as "There are too many people!", "What can we do!?" or "They must do something!" (Bezuidenhout, 2012). The next level, systemic causes and their effects, is concerned with exploring the interrelated social, technological, economic, environmental, political and historical factors of an issue and the underlying data (Graves, 2012). The data can be questioned, but not the paradigm within which the question is framed. At this level, the government, experts from academia or other researchers are expected to solve the problem. These two levels are considered 'shallow' and short term in their focus. In order to move into deeper and more complex analysis, the next two levels are necessary to uncover. The third level concerns discourse and worldview. The key here is to recognise what deeper positions are shaping the assumptions behind the systemic and the litany views (Ramos, 2003). Who are the stakeholders? How do their worldviews and vested beliefs about themselves, others, the future, time and space provide the deeper discourses, which ultimately constitute the issue? This level is critical in determining how the first two levels are legitimised. Whether to include or exclude a particular

discourse can ultimately privilege the issue and the scenarios, which emerge (Shevellar, 2011). This level allows other perspectives or epistemologists to place claims on how the scenarios are framed, so whether one has a realist versus idealist worldview, a South African versus a macro-historical worldview or even a South African versus a Western worldview; will have consequences for how scenarios are constituted (Inayatullah, 2010). At a deeper level, the paradigm of, for example, world views about population growth is explored to find out the deeper social, linguistic and cultural structures. Possibly opposing world views, such as a Roman Catholic view that one should not use contraception ('go forth and multiply'), as opposed to a feminist view that proposes greater control for women over the number of children that they would like to have, are analysed. It is at this level that abstract structures and cultural constraints, which are most probably beyond the direct control of governments, are reviewed (Bezuidenhout, 2012).

The practices of the first layer of the litany form part of the societal structures that might be the topic of conversation in the third layer. The fourth level is that of unconscious myths and metaphors. Myths create a sacred image of the future which is an unconscious archetype which instructs the perceptions and worldviews and hence a person's experience of the world (Kellden, 2010). This level is reliant on specific cultural and civilisational assumptions about the nature of time, rationality and agency. Most importantly, the ability to open up or transform the future can require unlearning particular myths or worldviews held dear so as to learn new ways of thinking about the future (Inayatullah, 2010). The fourth layer, which provides analysis in the realm of metaphor and myth, describes emotional, subconscious views, in the absence of data or analysis of the information. The perspective takes a step back from the actual future to where deeper assumptions about the future are discussed, with specific reference to the non- or post-rational world (Bezuidenhout, 2012).

CLA is very useful in stimulating out-of-the-box thinking. Combining movement up and down the various layers and then horizontally within them is very useful in the creation of a more nuanced view. As the layers are intended to foster new thinking, one should not fret too much about what concept fits into what layer. The analysis is very useful in ensuring that there is more depth in scenario sketching and it improves

policy decision-making, as it allows for suggestions to be made regarding the actions to be taken on any of the levels. Simple short-term solutions usually address a concern in the first two layers, whilst more complex actions are required to address issues in the third and fourth layers (Inayatullah, 2009). Slaughter (1999) provides details of some criticism that was lodged against the above method by The Millennium Project in 1999. There seems to be a view that one is likely to stray from the original purpose of futures studies if one digs too deep, with the results of the studies becoming 'narrow or parochial'. Slaughter (1999) argues that it is rather the narrowing of futures studies to horizontal views that causes the forming of superficial and uninformed results. A combination of vertical methods, such as CLA, of more horizontal views, such as environmental scanning, and systems management concepts, of which the latter is discussed in Chapter 5, Section 5.3, should allow for the development of a better understanding of what the future might hold.

2.15. SYSTEMS THINKING

Such systems thinking concepts as 'emergence', 'change of phase' and 'recursive causality' are valuable tools for thinking in foresight development (Sterling, 2003). Systems thinking provides a method of identifying holistic notions, patterns of change and interrelationships, rather than unrelated static snapshots lacking in explanation and the method is useful for problem-solving and for identifying actions that require little effort, but that could solve problems that seem beyond our reach (Senge, 1990: 114). The reason then, to include a description of systems thinking is a way of providing a framework for problem-solving rather than analysis for the sake of taking all factors into account. The method rather assists with looking at the interactions between the factors that are identified through the other frameworks mentioned. Gharajedaghi (2004: 11) describes four characteristics of *emergence* and its application in systems thinking:

- Traditionally, we tend to describe variables in the way in which they are, rather than in the way in which they may change shape or in terms of what they might become.

- A team with the best individual players might not be the best team, but rather the one that can come up with the most creativity/synergised view as a result of the nature of its interaction.

- The compatibility between the variables and the sum total of the interaction   of their forces may provide a greater force than the variables viewed in   isolation would have.

- "Emergent properties are the spontaneous outcome of on-going processes; life, love, happiness and successes are not one-time propositions; they have to be reproduced continuously. If the process that generates them ends, the phenomena will also cease to exist."

Taking a nuanced view of systems that are in flux and that exist of various components that make the systems greater than the sum total of the components apart, could lead to insights into present day conditions and the past that will inform our measuring and scoping of the future. The conditions that are necessary for the cultivation of life, love and happiness are valuable areas of study if forecasting entails the making of the future as well as its measuring and scoping. As the word 'emergence' sounds closely similar to the expression 'what we may become', it might well be used in the area of normative forecasting. Senge (1994) argues that one often only needs a point of leverage that requires little effort to create a huge positive effect. For instance, one could say that a feeling of unity amongst the South African population emerged right after the Springboks had won the Rugby World Cup in 1995. When the then South African State President Mr Nelson Mandela lifted the trophy high into the air the previously largely divided nation shared in the joy of the victory as one. With the addition of a single variable to the existing situation, a whole new characteristic, in the form of the feeling of unity, emerged within the country (Bezuidenhout, 2012).

Gharajedaghi (2011: 52) also provides an explanation of the concept of 'change of phase': "A commonly accepted principle of systems dynamics is that a quantitative change, beyond a critical point, results in a qualitative change. Accordingly, a difference in degree may become a difference in kind. This doesn't mean that an increased quantity of a given variable will bring a qualitative change in the variable

itself. However, when the state of a system depends on a set of variables, a quantitative change in one variable beyond the inflection point will result in a change of phase in the state of the system. This change is a qualitative one, bringing about a whole new set of relationships between the variables involved."

A similar inflection point is also described in catastrophe theory, which states that, usually, at an inflection point, systems tend to display catastrophic behaviour. If a key activity in forecasting is looking for tipping points, then change of phase could be one of the most important concepts in systems thinking. For example, if the Gini coefficient (a way of measuring the income gap between rich and poor) increases to a certain level, a stable society might move towards becoming a conflict-ridden society. In conflict studies, a key variable that might be a cause for conflict in a society is the number of unemployed young males present in the society under consideration. The state of the variables, in combination with a number of others, is analysed in the field of conflict studies to create early warning signals for peacekeeping or conflict prevention interventions. Recursive causality provides a framework for a break away from linear thinking. Circles of influence are identified in preference to the description of straight lines that might end up in unconnected statements about outcomes without seeing how events interact with one another and form a whole. According to Senge (1992: 75), "by tracing the flows of influence, you can see patterns repeat themselves, time after time, making situations better or worse." A systems thinking map (Figure 5.1) was drawn up to show the relationships between some of the most important drivers and indicators dealt with in the study.

2.16   CONCLUSION

The existing popularity of scenarios in forecasting is mainly the consequence of Pierre Wack's work prepared for the Shell International Petroleum Organisation in the early seventies (Wack, 1991; Ilbury & Sunter, 2009; Ntombela, 2010). In the literature, there is evidently an inclination to position an accent on scenario-based planning becoming more appealing than conventional linear and single-point forecasting for prognostication.   This is due to the scenario-based planning producing choice images instead of drawing conclusions from current trends in the

present (Geldenhuys, 2006; IPCC Expert Meeting Report, 2007; Ilbury & Sunter, 2009).

Scenario-based planning is about discussions (Geldenhuys, 2006; Gates, 2010). Flourishing scenario-based planning however must guarantee leaders' contribution; varied inputs; holistic thinking; widespread involvement; factual-based conversations; adequate time to build and learn from the scenarios; internally reliable scenarios sustained by a dynamic story; the growth of different future worlds; procedure being linked to the budgetary provision processes; organisational learning; and the existence of signposts as well as a course of action to scrutinize and revise scenarios over time (Spies, 1982; Ratcliffe, 2000; Natsios, 2004; Geldenhuys, 2006; Ilbury & Sunter, 2009; Adendorff, 2011). The crucial advantage of scenario-based planning is its attentiveness for making logical decisions and corrective action on a central question vital to the future accomplishment of the country or continent. It is therefore important that scenario-based planning should necessitate widespread and costly assets to execute scenario-based planning. People embrace diverse mental models that influence the images that they interpret of the future, both consciously and unconsciously (Spies, 1982; Briton, 2002; Geldenhuys, 2006; Gates, 2010).

Scenarios on the other hand serve as an implementation of holistic thinking (Geldenhuys, 2006; Ilbury & Sunter, 2009). They create a framework for planning and setting and providing decision-makers with universal reference points (Gates, 2010). Scenarios assist to centre the attention of countries on exacting fundamentals of the environment and serve as a tool for conducting tests by highlighting 'what if' questions (Spies, 1982; Briton, 2002; Geldenhuys, 2006). Scenario-based planning can then be adapted in the operating environment (day-to-day activities); the business and macro-economic environment (industry); and the strategic and global environment (competitive) (Geldenhuys, 2006; Gates, 2010). Refining the reason for scenario-based planning and the envisaged product will clarify whether decision-driven or vision-driven scenarios need to be produced. Vision-driven scenarios will assist the generation of new strategic ideas, whilst decision-driven scenarios function to check options for a precise decision against the range of possible conclusions (Ratcliffe, 2000; Van der Heijden, 2005; Geldenhuys, 2006). Successful scenarios in summary are robust; internally consistent; plausible;

outcomes based, applicable to the central question, hypothetical narratives, multifaceted and holistic in approach (Van der Heijden, 2005; Geldenhuys, 2006; Ilbury & Sunter, 2009).

The next chapter contains a literature review of challenging trends, the sustainability notion and African development affecting South Africa.

CHAPTER 3

AFRICAN DEVELOPMENT IN A GLOBAL CONTEXT

3.1   INTRODUCTION

The world is getting richer, healthier, better educated, more peaceful, better connected and people are living longer; yet half the world is potentially unstable (Oppenheimer, 2007). Food prices are rising, water tables are falling, corruption and organised crime are increasing, environmental viability for life support is diminishing, debt and economic insecurity are increasing, climate change continues, and the gap between the rich and poor continues to widen dangerously (Glenn, Gordon & Florescu, 2011). There is no question that the world could be far better than it is but only if people make the right decisions. When considering the many wrong decisions and good decisions not taken – day after day and year after year around the world – it is remarkable that mankind is still making as much progress as currently being experienced. Hence if people can improve on decision-making as individuals, groups, nations, and institutions, the world could be surprisingly better than it is today (Glenn, Gordon & Florescu, 2011).

Humankind now lives in an age of rapidly increasing uncertainty and change (Hartmann, 2009). No one can predict with certainty how the future will develop; yet more than ever researchers and decision-makers need to think about the probable futures that might originate from the unstable conditions that persist, as well as the implications for human choice and action (Herbst & Mills, 2006). A framework needs to be established in order to analyse global scenarios as human civilization approaches significant branch points over the coming decades (Gates, 2010). Global scenario analysis aims to illustrate the characteristics of the existing global system, the dynamics leading it forward and the range of possible future states (Herbst, 2005; McNamee *et al.,* 2009; Adendorff, 2011). This venture is highlighted by a conviction, as it is believed that informed human choice, arbitrated through governmental policies, individual decisions and civil initiatives, can shape the future in essential ways (Alter, 2002; Gallopin, Hammond, Raskin & Swart, 1997). This chapter will attempt to address global challenges, as drivers of change, the nature

and progress in the African context, human development as well as the challenges of African development that directly affect South Africa's picture in the global sphere. Development or progress can be observed as movement, because of an improvement of a human community, from an initial state to a subsequent state that seems to be better than the original state in some respects (Caddy, 2001; Northover, 2005; OECD, 1995; Wilber & Jameson, 1979). The measure of progress is the quality of development with respect to a particular human need that is met by innovation (Brinkerhoff & Goldsmith, 2005). This chapter also aims to highlight the concepts of 'progress' and 'failure' in the African context as it affects South Africa.

Africa, a continent with 54 countries and more than 2 000 languages, offers an intricate framework and the analysis presented in this chapter, explains this rich diversity. Even though it is certainly not the intention of the researcher to overlook this nuance, the outlook in this thesis takes a long-term and macro view. This approach has weaknesses and strengths; a critical strength is its contemplation of interactions across main global systems, and countries, helping us to see the 'big picture' of change. A key weakness of this type of representation is that it is not as considerate of trends at the micro-level (including 'weak-signals') that can ultimately have a broad impact. In the same way, researchers cannot forecast isolated events, though researchers and decision-makers alike can consider their consequences (Cilliers, Hughes & Moyer, 2011).

Key transitions are quickly reforming Africa (Cilliers *et al.,* 2011 Gbla & Rugumamu, 2003; Hartmann, 2009). Populations are rising considerably and urbanising is the trend that economic growth has rapidly increased over the past decade. New technologies, including solar cells and mobile phones, are widely spread across the continent (Unwin, 2008). On the wider spectrum, but with vital regional implications, the rise of India, China and other main emerging countries, are altering Africa's investment and trading patterns (Balakrishna, 2004; Global Economic Outlook, 2011). However, important uncertainties still face Africa, such as:

- How quickly will Africa bring communicable diseases under control and improve the education of its populace?

- Can Africa expand its economies and provide work for its growing populations in sectors such as services and manufacturing, as well as lucratively manage the wealth produced by its raw materials?

- Will climate change add to pressures on agriculture or will Africa have its own green revolution?

- How will Africa build the widespread infrastructures that it desperately needs?

- What will be the quality of Africa's governance?

- How will outside actors, both firms and governments, approach and influence Africa? (Cilliers *et al.,* 2011; Desker, Herbst, Mills & Spicer, 2008; Forje, 2005).

It is argued that Africans share similar goals and search for sustainable and extensive human development (Gbla & Rugumamu, 2003). Africans strive for the reduction of conflict and extensive acceptance of and even support for diversity (Cilliers *et al.,* 2011). Africans desire to see human rights respected everywhere (Sripati, 2005). As Africans follow their goals in the frameworks of both great uncertainty and rapid change, Africans need insight into the path that Africa is on and where that path will lead Africans, as well as insight into the control that African choices provide its people (Gbla & Rugumamu, 2003; Gopal & Tyler, 2010; Hartmann, 2009; Niamir, 2009).

The following sections discussing the welter of global challenges, sustainability, basic human needs and human development will be straight forward: if governments are to navigate this dangerous period towards 2055, government will have to respond concretely, despite the political obstacles. This is all the more important for South Africa that is struggling to achieve the level of growth needed to meet the demands and inspirations of all its people.

3.2   GLOBAL CHALLENGES

The 15 main global challenges as proposed by the 2011 State of the Future Millennium Project provide a framework to assess the global and local prospects for humanity. The challengers are interdependent: an improvement in one makes it easier to address others; deterioration in one makes it harder to address others.

Arguing whether one challenge is more important than another is regarded as arguing that the human nervous system is more important than the respiratory system (Glenn *et al.,* 2011).
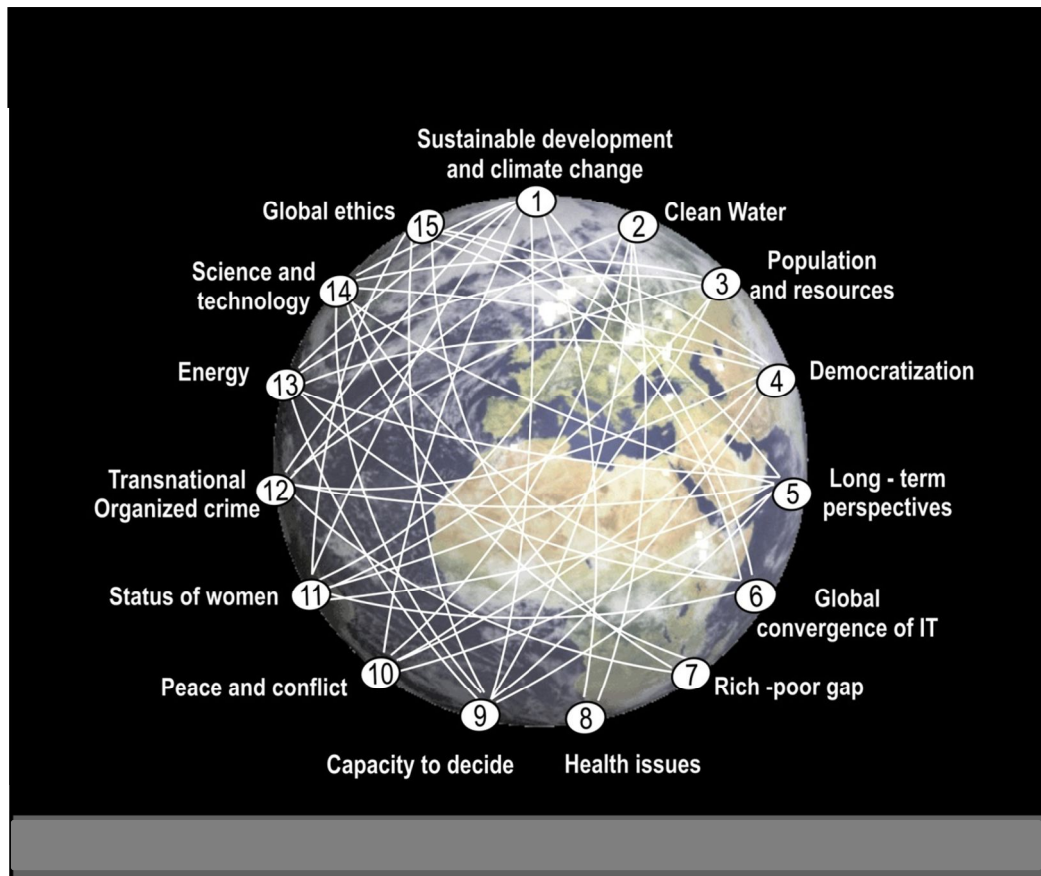
Figure 3.1: Fifteen global challenges facing humanity
Source: Adapted from Glenn *et al.* (2011)

The abovementioned challenges are transnational in nature and transinstitutional in solution and these challenges cannot be addressed by any government or institution acting alone. They require collaborative action among governments, international organisations, corporations, universities, nongovernmental organisations, and creative individuals. Although listed in sequence, Challenge 1 on sustainable development and climate change is no more or less important than Challenge 15 on global ethics (The Millennium Project, 2010). There is greater consensus about the global situation as expressed in these challenges and the actions to address them than is evident in the current news media (Glenn *et al.,* 2011).

3.2.1 Sustainable development and climate change: How can sustainable development be achieved for all while addressing global climate change?

Atmospheric CO_2 was established at 394.35 parts per million as of May 2011, the highest in at least 2 million years (Glenn *et al.,* 2011; The Millennium Project, 2010). Each decade since 1970 has been warmer than the preceding one; 2010 tied 2005 as the warmest year on record. Therefore the world is warming faster than the latest Intergovernmental Panel on Climate Change projections. Even the most recent estimates may understate reality since they do not take into account permafrost melting. Humans add about 45 gigatons of CO_2 equivalent of Greenhouse gases per year; half is processed by nature and half accumulates in the atmosphere (Glenn *et al.,* 2011). By 2055 another 2.3 billion people could be added to the planet and income per capita could more than double, dramatically increasing greenhouse gases. Climate change therefore threatens the well-being of all humans, especially the poor, who have contributed the least to the problem. The poor are the most vulnerable to climate change's impacts because of the dependency on agriculture and fisheries, and the lack of financial and technological resources to cope. The amount of global wealth exposed to natural disasters risk has nearly tripled from $525.7 billion 40 years ago to $1.58 trillion. Large reinsurance companies estimate the annual economic loss due to climate change could reach $300 billion per year within a decade (Glenn *et al.,* 2011).

Climate change is argued to be accelerated by dangerous feedbacks: melting ice/snow on tundras reflect less light and absorb more heat, releasing more methane, which in turn increases global warming and melts more tundra; warming ocean water releases methane hydrates from the seabed to the air, warming the atmosphere and melting more ice, which further warms the water to release more methane hydrates; the use of methane hydrates or otherwise disturbing deeper sea beds releases more methane to the atmosphere and accelerates global warming; Antarctic melting reflects less light, absorbs more heat, and increases melting; and the Greenland ice sheet (with 20% of the world's ice) could eventually slide into the ocean (The Millennium Project, 2010).

The synergy between economic growth and technological innovation has been regarded as the most significant engine of change for the past 200 years, but unless mankind improves in economic, environmental, and social behaviours, the next 100 years could be disastrous (The Millennium Project, 2010). According to a United Nations Environment Programs towards a Green Economy report, investing 2% of global GDP ($1.3 trillion per year) into 10 key sectors can kick-start a transition toward a low-carbon, resource-efficient green economy that would increase income per capita and reduce the ecological footprint by nearly 50% by 2055 compared with business as usual (Glenn *et al.,* 2011; The Millennium Project, 2010). During 2011, the world spent 1–2% of global gross domestic project on subsidies that often led to unsustainable resource use (Glenn *et al.,* 2011). The World Bank on the other hand established a $100 million fund to support developing countries to set up their own carbon-trading scheme (World Bank, 2011).

Environmental researchers argue that glaciers are melting, polar ice caps are thinning, and coral reefs are dying (Glenn *et al.,* 2011). Some 30% of fish stocks have already collapsed, and 21% of mammal species and 70% of plants are under threat. Oceans absorb 30 million tons of CO_2 each day, thereby increasing their acidity (Glenn *et al.,* 2011). The number of dead zones (areas with too little oxygen to support life) has doubled every decade since the 1960s. Over the long term, increased CO_2 in the atmosphere leads to proliferation of microbes that emit hydrogen sulphide, which is a very poisonous gas (Glenn *et al.,* 2011). International negotiations on the post-Kyoto framework have shown insufficient progress since the voluntary national reduction targets of the Copenhagen Accord (Huetteneret *et al.,* 2010; Glenn *et al.,* 2011). UNEP (2011) estimates that these pledges would lead to a 20% overshoot in emissions in 2020 compared with the levels required to limit global warming to 2°C and stabilise at 450 parts per million CO_2. There is also a growing fear that the target itself is inadequate—that the world needs to lower CO_2 to 350 parts per million or else the momentum of climate change could grow beyond humanity's ability to reverse it (Glenn *et al.,* 2011; The Millennium Project, 2010). Emissions from increased production of internationally traded products have more than offset the emissions reductions achieved under the Kyoto Protocol. Although the Montreal Protocol is expected to restore the ozone layer by 2050, depletion of that layer this spring reached an unprecedented level over the Arctic due to the

continuing presence of ozone-depleting substances in the atmosphere and a very cold winter in the stratosphere (The Millennium Project, 2010). Humanity's material extraction increased by eight times during the twentieth century. Today our consumption of renewable natural resources is 50% larger than nature's capacity to regenerate. Global ecosystem services are valued at $16–64 trillion, which far exceeds the sums spent to protect them. Researchers argue that it is time for a United States–China Apollo-like 10-year goal and global R and D strategy to address climate change, focusing on new technologies like electric cars, saltwater agriculture, carbon capture and reuse, solar power satellites (a Japanese national goal), pure meat without growing animals, maglev trains, urban systems ecology, and a global climate change collective intelligence to support better decisions and keep track of it all (Glenn *et al.,* 2011). These technologies would have to supplement other key policy measures, including carbon taxes, cap and trade schemes, reduced deforestation, industrial efficiencies, cogeneration, conservation, recycling, and a switch of government subsidies from fossil fuels to renewable energy (Glenn *et al.,* 2011).

Given the difficulty of reaching a unanimous agreement, researches also argue that alternative forums such as G-20, the Montreal Protocol, or the Major Economies Forum may be a more realistic platform to manage climate change. Without a global strategy to address climate change, the environmental movement may turn on the fossil fuel industries. The legal foundations are being laid to sue for damages caused by Greenhouse gases (Joyce, 2010; Glenn *et al.,* 2011). Climate change adaptation and mitigation policies should therefore be integrated into an overall sustainable development strategy. Without sustainable growth, billions more people will be condemned to poverty, and much of civilization could collapse, which is unnecessary since mankind possesses sufficient knowledge to address climate change while increasing economic growth.

3.2.2 Water: How can everyone have sufficient clean water without conflict?

Water should be central to development and climate change strategies. Over half the world could live in water stressed areas by 2055 due to population growth, climate change, and increasing demand for water per capita (The Millennium Project, 2010).

According to the International Foundation of Production Research (2011), this would put at risk approximately $63 trillion of the global economy just 39 years from today. By 2030 global water demand could be 40% more than the current supply. This in turn could change with new agricultural practices, policy changes, and intelligently applied new technologies. On the other hand, conflicts over trade-offs among agricultural, urban, and ecological uses of water are likely to increase, along with the potential for mass migrations and wars. Although water-related conflicts are already taking place, water-sharing agreements have been reached even among people in conflict and have led to cooperation in other areas.

During 2011, some 2.4 billion people lived in water-scarce regions. Falling water tables worldwide and increasing depletion of sustainably managed water led some researchers to introduce the concept of "peak water", similar to peak oil (Glenn *et al.,* 2011). Nevertheless, the world is on track to meet the MDG target on drinking water, but it is likely to miss the MDG sanitation target by almost 1 billion people (The Millennium Project, 2010). Since 1990, an additional 1.3 billion people gained access to improved drinking water and 500 million got better sanitation (Glenn *et al.,* 2011). Yet 884 million people still lack access to clean water today (down from 900 million 2010), and 2.6 billion people still lack access to safe sanitation. About 80% of diseases in the developing world are regarded as water-related; most are due to poor management of human excreta. At least 1.8 million children under five die every year due to unsafe water, inadequate sanitation, and the lack of hygiene. Diarrheal disease in children under 15 has a greater impact than HIV, malaria, and tuberculosis combined. The World Health Organisation (2011) estimates that every dollar invested in improved sanitation and water produces economic benefits that range from $3 to $34, depending on the region and types of technologies applied.

Agriculture accounts for 70% of human usage of fresh water; the majority of that is used for livestock production. Such water demands will increase to feed growing populations with increasing incomes towards 2055. Global demand for meat may increase by 50% by 2025 and double by 2055, further accelerating the demand for water per capita. The UN (2011a) estimates that $50–60 billion annually between 2011 and 2030 is needed to avoid future water shortages. Some 30% of global cereal production could be lost in current production regions due to water scarcity,

yet new areas in Russia and Canada could open due to climate change. Cooling systems for energy production require large amounts of water and therefore energy demand may increase 40% in 20 years; coupled with increased food demands, dramatic changes in water management will therefore be required. Breakthroughs in desalination, such as pressurization of seawater to produce vapour jets, filtration via carbon nanotubes, and reverse osmosis, are needed along with less costly pollution treatment and better water catchments (UN, 2011b). Future demand for fresh water could be reduced by saltwater agriculture on coastlines, producing pure meat without growing animals, increasing vegetarianism, fixing leaking pipes, and the reuse of treated water (Earth policy institution, 2003; Graphic Ghana, 2006).

Development planning should therefore integrate the lessons learned from producing more food with less water via drip irrigation and precision agriculture, rainwater collection and irrigation, watershed management, selective introduction of water pricing, and successful community-scale projects around the world. Plans should also help convert degraded or abandoned farmlands to forest or grasslands; invest in household sanitation, reforestation, water storage, and treatment of industrial effluents in multipurpose water schemes; and construct eco-friendly dams, pipelines, and aqueducts to move water from areas of abundance to scarcity (The Millennium Project, 2010). Just as it has become popular to calculate someone's carbon footprint, people are beginning to calculate their "water footprint" (Glenn *et al.,* 2011). The United nations General Assembly (2010) declared access to clean water and sanitation to be a human right (UN, 2010).

3.2.3 How can population growth and resources be brought into balance?

There were 1 billion humans in 1804; 2 billion in 1927; 6 billion in 1999; and 7 billion in 2011 (UN, 2011c). The UN (2011d) forecasts for 2050 range from 8.1 billion to 10.6 billion, with 9.3 billion as the mid-projection. Nearly all the population increases will be in urban areas in developing countries, where the slum population expanded from 767 million in 2000 to 828 million in 2010 and is expected to reach 889 million by 2020 (UN, 2011e). Without sufficient nutrition, shelter, water, and sanitation produced by more intelligent human-nature symbioses, increased migrations, conflicts, and disease seem inevitable. Information and communication technology

continues to improve the match between needs and resources worldwide in real time, and nanotech will help reduce material use per unit of output while increasing quality (The Millennium Project, 2010). However, food prices may continue to rise due to increasing affluence (especially in India and China), soil erosion and the loss of cropland, increasing fertilizer costs (high oil prices), market speculation, aquifer depletion, falling water tables and water pollution, diversion of crops to bio fuels, increasing meat consumption, falling food reserves, diversion of water from rural to urban, and a variety of climate change impacts. The World Bank (2011) estimates that rising food prices pushed an additional 44 million people into poverty between June 2010 and January 2011.

Population dynamics are changing from high mortality and high fertility to low mortality and low fertility (UN, 2011). If fertility rates continue to fall, world population could actually shrink to 6.2 billion by 2100, creating an elderly world difficult to support; if not, however, the UN (2010) projects 15.8 billion by 2100. Currently life expectancy at birth is 68 years, which is projected to grow to 81 by 2100; with advances in longevity research, this projection will increase. About 20% of the world will be over 60 by 2055, and 20% of the older population will be aged 80 or more. Some 20% of Europeans are 60 or older, compared with 10% in Asia and Latin America and 5% in Africa. Over 20 countries have falling populations, which could increase to 44 countries by 2050, with the vast majority of them in Europe. Countering this "retirement problem" is the potential for future scientific and medical breakthroughs that could give people longer and more productive lives than most would believe possible today. People will work longer and create many forms of tele-work, part-time work, and job rotation to reduce the economic burden on younger generations and to keep up living standards (UN, 2011f).

The UN (2011g) argues that 925 million people were undernourished in 2010 (reduced from over 1 billion in 2009), while 30–40% of food production from farm to mouth is lost in many countries. The world food program provides food assistance to more than 90 million people in 73 countries, yet in some of these countries, agricultural lands (mostly in sub-Saharan Africa) are being sold or leased to foreign investors to feed their own countries. The Organisation for Economic Co-operation and Development estimates that the private sector's investment in farmland and

agricultural infrastructure is as much as $25 billion and could double or triple over the next three to five years. Responsible agricultural Investment, backed by the World Bank and UN agencies, aims to promote investment that respects local rights and livelihoods, but it is heavily criticized by NGOs as a move to legitimise land grabbing (World Bank, 2011; UN, 2011h).

To keep up with population and economic growth, food production should increase by 70% by 2050 (UN, 2011j). Meat consumption is predicted to increase from 37kg/person/year in 2000 to over 52kg/person/year by 2050; if so, then 50% of cereal production would go to animal feed. Monocultures undermine biodiversity, which is critical for agricultural viability (Glenn *et al.,* 2011) Conventional farming relying on expensive inputs is not resilient to climatic change. Agricultural productivity could decline 9–21% in developing countries by 2050 as a result of global warming. Small-scale farmers can double food production within 10 years by using ecological methods as agro-ecological farming projects have shown an average crop yield increase of 80% in 57 countries, with an average increase of 116% for all African projects (Glenn *et al.,* 2011).

New agricultural approaches are however needed, such as producing pure meat without growing animals, better rain-fed agriculture and irrigation management, genetic engineering for higher-yielding and drought tolerant crops, precision agriculture and aquaculture, and saltwater agriculture on coastlines to produce food for humans and animals, biofuels, and pulp for the paper industry as well as to absorb CO_2, reduce the drain on freshwater agriculture and land, and increase employment (UN, 2011). Population growth and resources will be addressed seriously when the annual growth in world population drops to fewer than 30 million, the number of hungry people decreases by half, the infant mortality rate decreases by two-thirds between 2000 and 2015, and new approaches to ageing become economically viable (Glenn *et al.,* 2011).

3.2.4 How can genuine democracy emerge from authoritarian regimes?

Peaceful protests with unrelenting public courage to demand democratic transitions from authoritarian regimes made history across the Arab world in 2011. It is argued

that unparalleled forms of social power are shaping the future of democracy (Frank, 2012). Tensions between an expanding global consciousness and old structures that limit freedom are giving birth to new experiments in governance. Although the perception and implementation of democracy differ globally, it is generally accepted that democracy is a relationship between a responsible citizenry and a responsive government that encourages participation in the political process and guarantees basic rights (Freedom in the World, 2008). Social revolutions in 2011 are not yet reflected in Freedom House's 2010 ratings, which showed political and civil liberties declined for the fifth consecutive year, the longest decline since 1972, when the annual analysis began. Freedom declined in 25 countries and improved in 11. Those living in 87 "free" countries constituted 43% of the world population, while 20% live in 60 "partly free" countries, and 35% (over 2.5 billion people) live in 47 countries listed as "not free". There were 115 electoral democracies in 2010, compared with 123 in 2005. Press freedoms have declined for nine consecutive years; 15% of the world lives in the 68 countries with a "free" press, 42% in 65 countries with a "partly free" press, and 43% live in 63 countries without free media (The Millennium Project, 2010).

Predominantly young and increasingly educated populations are using the Internet to organize around common ideals, independent of conventional institutional controls and regardless of nationality or languages. These new forms of Internet-augmented democracy are beginning to wield unparalleled social power, often bypassing conventional news media, as happened in the Arab Spring Awakening, where 60% of the population is below the age of 30. It is argued that new democracies must address previous abuses of power to earn citizens' loyalties without increasing social discord and slowing the reconciliation process (AC/UNU Millennium Project, 2012; Freedom in the world, 2006). Some global trends nurturing the emergence of democracy include increasing literacy, interdependence, Internet access, e-government systems, international standards and treaties, multipolarity and multilateralism in decision-making, developments that force global cooperation, improved quality of governance assessment systems, transparent judicial systems, and the growing number and power of NGOs (The Millennium Project Nodes, 2012). It is critical to establish legitimate tamper-proof election systems with internationally accepted standards for election observers. Some 20 countries offer legally binding

Internet voting. Direct voting on issues via the Internet could be next to augment representative democracy (The Millennium Project Nodes, 2012).

Since an educated and informed public is critical to democracy, it is important to learn how to counter and prevent disinformation, cyber warfare, politically motivated government censorship, reporters' self-censorship, and interest-group control over the Internet and other media (The Millennium Project, 2010). Organized crime, corruption, concentration of media ownership, corporate monopolies, increased lobbying, and impunity all threatens democracy. Old ideological, political, ethnic, and nationalistic legacies also have to be addressed to maintain the long-range trend toward democracy (Inglis, 2012; UNESCO, 2012a). Fortunately, injustices in different parts of the world become the concern of others around the world, which then pressure governing systems to address the issue. Despite restrictions and intimidations, independent journalists, intellectuals, and concerned citizens are increasing global transparency via digital media (Glenn *et al.,* 2011; The Millennium Project, 2010).

Although making development assistance dependent on good governance has helped in some countries, genuine democracy will be achieved when local people – not external actors – demand government accountability (OECD, 2008). Since democracies tend not to fight each other and since humanitarian crises are far more likely under authoritarian than democratic regimes, expanding democracy should help build a peaceful and just future for all (Shah, 2008). Democracy will be addressed seriously when strategies to address threats to democracy are in place, when less than 10% of the world lives in nondemocratic countries, when Internet and media freedom protection is internationally enforced, and when voter participation exceeds 60% in most democratic elections (Glenn *et al.,* 2011).

3.2.5 How can policymaking be made more sensitive to global long-term perspectives?

The enormous earthquakes, tsunamis, and nuclear disaster during 2011 in Japan exposed the need for global, national, and local systems to possess resilience – the capacity to anticipate, respond, and recover from disasters while identifying future

technological and social innovations and opportunities (Howalt & Schwarz, 2010; The Millennium Project, 2010). The Ministry of Foreign Affairs in Denmark notes that for every $1 invested in resilience and prevention, $4–7 are saved in response (The Millennium Project, 2010). Related to resilience is the concept of collective intelligence – emergent properties from synergies among brains, software, and information, which will be increasingly required to cope with accelerating knowledge explosions, complexities, and interdependencies. Implementing and integrating resilience and collective intelligence systems is one way to make policymaking more sensitive to global long-term perspectives (The Millennium Project, 2010; State of the future, 2010; Glenn, 2010).

Heads of government could benefit from establishing an Office of the Future connected to related units in government agencies whose functions would continue from one administration to the next. These offices can be augmented by advisory councils of futurists and be connected to resilience and collective intelligence systems that scan for change around the world and can identify and assess expert judgments in real-time (the Real-Time Delphi is only one example). The staff for such systems should synthesize futures research from others, calculate State of the Future Indexes (SFIs) for relevant subjects or countries, and produce annual state of the future reports. Existent government future strategy units are being networked by Singapore's Future Strategy Unit to share best practices, just as the UN Strategic Planning Network connects 12 UN agency strategy units (UNDP, 2011). These two networks could also be connected with the Office of the UN Secretary-General to help coordinate strategies and goals (The Millennium Project, 2010). Leaders should make these new systems as transparent and participatory as possible to include and increase the public's intelligence and resilience. As a result, more future-oriented and global-minded voters might elect leaders who are sensitive to global long-term perspectives (Frey & Ramalingam, 2011; The Millennium Project, 2009).

National legislatures could also establish standing "Committees for the Future," as Finland has done (The Millennium Project, 2010; Future Studies, 2011). National foresight studies should then be continually updated, improved, and conducted interactively with issue networks of policymakers and futurists and with other national long-range efforts. Futurists should create more useful communications to

policymakers and alternative scenarios could be shared with parliamentarians and the public for feedback. These institutions should show cause-and-effect relations and expose decision points leading to different consequences from different strategies and policies. Decision-makers and their advisors should be trained in futures research for optimal use of these systems. It is proposed that government budgets should consider 5–10 year allocations attached to rolling 5–10 year SOFIs, scenarios, and strategies. Governments with short-term election cycles should consider longer, more-stable terms and funds for the staff of parliamentarians (World Bank, 2011; Wehner, 2011).

It could be that humanity needs and is ready to create a global, multifaceted, general long-range view to help it make better long-range decisions to the benefit of the species. Communications and advertising companies could create memes to help the public become sensitive to global long-term perspectives so that more future-oriented educated publics could support more future-oriented, global-minded politicians. Participatory policymaking processes augmented by e-government services could also be created that are informed by futures research. Universities should arguably fund the convergence of disciplines, teach futures research and synthesis as well as analysis, and produce generalists in addition to specialists. Efforts to increase the number and quality of courses on futures concepts and methods should be supported, as well as augmenting standard curricula with futures methodologies converted to teaching techniques that help future-oriented instruction (Glenn *et al.,* 2011).

Although there is increasing recognition that accelerating change requires global longer-term perspectives, decision-makers correctly feel little pressure to consider them (AU/UNU Millennium Project; 2011). However, attaining long-range goals like landing on the moon or eradicating smallpox that were considered impossible inspired many people to go beyond selfish, short-term interests to great achievements. To some degree, the G20 was initiated to improve global long-range policymaking, and in the future the G2 (United States and China) may lead global climate change and other long-range policies. Governments could add foresight as a performance evaluation criterion, add foresight to their training institutions, and require a "future considerations" section be added to policy reporting requirements.

Each of the 15 Global Challenges in this chapter and the eight United Nations Millennium Development Goals could be the basis for trans-institutional coalitions composed of self-selected governments, corporations, nongovernmental organisations, universities, and international organisations that are willing to commit the resources and talent to address a specific challenge or goal. Challenge 5 will be addressed seriously when foresight functions are a routine part of most organisations and governments, when national state of the future indexes are used in at least 50 countries, when the consequences of high-risk projects are routinely considered before they are initiated, and when standing Committees for the Future exist in at least 50 national legislatures (The Millennium Project, 2010; Pound, 2000).

3.2.6 How can the global convergence of information and communications technologies work for everyone?

During 2011, 2 billion Internet users, 5 billion mobile phones, and uncountable billions of hardware devices were intercommunicating in a vast real-time multinetwork, supporting every facet of human activity (Frank, 2012). New forms of civilization will arguably emerge from this convergence of minds, information, and technology worldwide (Tucker, 2011). The eG8 was created in 2011 to explore government-business roles in managing this evolution. It is reasonable to assume that the majority of the world will experience ubiquitous computing and eventually spend most of its time in some form of technologically augmented reality (The Millennium Project, 2010). Today mobile devices have become personal electronic companions, combining computer, GPS, telephone, camera, projector, music player, TV, and intelligent guides to local and global resources (State of the Future, 2011). As Moore's Law continues, costs fall, and ease of use increases, even remote and less developed areas will participate in this emerging globalization. The collaborative systems, social networks, and collective intelligences are self-organizing into new forms of transnational democracies that address issues and opportunities. This is giving birth to unprecedented international conscience and action, augmenting conventional management (Glenn *et al.,* 2011). Such open systems seem natural responses to increasing complexity that has grown beyond hierarchical control and open source software's non-ownership model may become a significant element in the next economic system (Amagoh, 2008). In future businesses will be building

offices and holding meetings in cyber worlds that compete with conventional reality (The Millennium Project, 2010).

One of the next "big things" towards 2055 could be the emergence of collective intelligences for issues, businesses, and countries, forming new kinds of organisations able to address problems and opportunities without conventional management (The Millennium Project, 2010). Collective intelligence can be thought of as a continually emerging property that mankind creates (hands on) from synergies among people, software, and information that continually learns from feedback to produce just-in-time knowledge for better decisions than any one of these elements acting alone (Glenn, 2011). Real-time streamed communications shorten the time it takes from situational awareness to decisions as search engines and Wikipedia give instant access to "all" the world's stored knowledge (The Millennium Project, 2010). The Web is in the process of evolving from the present user-generated and participatory system (Web 2.0) into Web 3.0, a more intelligent partner that has knowledge about the meaning of the information it stores and has the ability to reason with that knowledge. Most mobile phones being sold today have computer capabilities, with thousands of apps and access to cloud computing (Wyld, 2009*;* ELC Technologies, 2010)*.*

However, the explosive growth of Internet traffic, mainly from video streaming, has created a stress on the Net's capacities, requiring new approaches to keep up with bandwidth demand, while the ubiquity of the Internet in society makes its reliability critically vital (The Millennium Project, 2010). People and businesses are entrusting their data and software to "cloud computing" on distant Net-connected servers rather than their own computers, raising privacy and reliability questions (State of the Future, 2011). The Amazon cloud data centre's outage and Sony PlayStation's release of personal data for millions of users are examples. Even though Wikipedia has become the world's encyclopaedia, it struggles to counter disinformation campaigns fought through its pages. Governments are wrestling with how to control harmful content (The Millennium Project, 2010; UNESCO, 2011; Akdeniz, 2012) A vigorous debate continues on net neutrality, the doctrine that technical and economic factors for Net users should not be affected by considerations of equipment, type of user, or communications content (State of the Future, 2011). Humanity, the built

environment, and ubiquitous computing are becoming a continuum of consciousness and technology reflecting the full range of human behaviour, from individual philanthropy to organized crime (The Millennium Project Nodes, 2012). Low-cost computers are replacing high-cost weapons as an instrument of power in asymmetrical warfare and cyberspace is also a new medium for disinformation among competing commercial interests, ideological adversaries, governments, and extremists, and is seen as a battleground between cybercriminals and law enforcement (Glenn *et al.,* 2011). The full range of cybercrimes worldwide is estimated at $1 trillion annually (Florencio and Herley, 2012). Fundamental rethinking will be required to ensure that people will be able to have reasonable faith in information, but mankind have to learn how to counter future forms of information warfare that otherwise could lead to the distrust of all forms of information in cyberspace (The Millennium Project Nodes, 2012).

It is very difficult to imagine how the world could work for mankind without reliable tele-education, tele-medicine, and tele-everything. Internet bases with wireless transmission are being constructed in remote villages; cell phones with Internet access are being designed for educational and business access by the lowest-income groups; and innovative programs are being created to connect the poorest 2 billion people to the evolving nervous system of civilization (State of the Future, 2010; The Millennium Project, 2010; The Millennium Project Nodes, 2012.) Social networking on the other hand spurs the growth of political consciousness and popular power, as in the "Arab Spring." E-government systems allow citizens to receive valuable information from their leaders, provide feedback to them, and carry out needed transactions without time-consuming and possibly corrupt human intermediaries (The Millennium Project Nodes, 2012). Telemedicine capabilities are now also uniting doctors and patients across continents (Glenn *et al.,* 2011). E-government systems exist to some degree for the majority of the world; and the United Nations assists by conducting comparative assessments of the e-government status of its member states (UN, 2011i). Researches argue that developing countries and foreign aid should have broadband access as national priorities, to make it easier to use the Internet to connect developing country professionals overseas with the development processes back home, improve educational and business usage,

and make e-government and other forms of development more available (Glenn *et al.,* 2011).

3.2.7 How can ethical market economies be encouraged to help reduce the gap between rich and poor?

The United Nations development programme (2010) reports that nearly half a billion people grew out of extreme poverty ($1.25 a day) between 2005 and 2010 and that the number and% in extreme poverty is falling. During 2011, about 900 million or 13% of the world (The Millennium Project, 2010). The World Bank (2011) forecasts this to fall to 883 million by 2015 (down from 1.37 billion in 2005), while those living on less than $2 a day are expected to fall to 2.04 billion from 2.56 billion. UNDP's (2010) new Multidimensional Poverty Index finds 1.75 billion people in poverty. The number of countries classified as low-income has fallen from 66 to 40. However, the gap between rich and poor within and among countries continues to widen due to globalization, some argue, and the number of unstable states grew from 28 to 37 between 2006 and 2011 (World Bank, 2011). Nevertheless, global economic recovery from the recession of 2009 (–0.5% world gross domestic product) is expected to continue. The world's economy grew 5% in 2010, and the International Monetary Fund expects growth to be 4.5% for 2011 and 2012.

The world's gross domestic product passed $74 trillion (purchasing power parity) in 2010 and $78 trillion in 2011, while per capita income grew from $10 800 (2009) to $11 100 (2010). The International Monetary Fund (2010) forecasts economic growth to average 4.6% from 2011 to 2015, led mostly by emerging and developing economies. These are expected to average 6.6% growth compared with advanced economies averaging 2.5% growth over that same period. The contribution of Brazil, Russia, India and China to world Gross Domestic Product in 2010 was over 17.5%. With the addition of South Africa to that group, this ratio is expected to increase to 33% by 2015 (State of the Future, 2011). World trade shrank 12% in 2009, but grew 14.5% in 2010, another 6.5% in 2011 (Glenn *et al.,* 2011). Developing economies' exports however grew 16.5% (The Millennium Project, 2010) as remittances increased to $440 billion in 2010. The net official development assistance from the development assistance committee of the Organisation for Economic Co-operation

and Development for countries reached a record $128.7 billion in 2010, a 6.5% increase over 2009, but Foreign Direct Investment inflows remained stagnant in 2010 at $1.1 trillion, and the International Labour Organisation estimates that some 210 million people (about 32 million more than in 2007) are looking for jobs, bringing global unemployment to 6.2% (The Millennium Project, 2010). Industrial economies' unemployment accounted for 55% of the increase in worldwide unemployment between 2007 and 2010. The United Nations population fund notes that in the 48 poorest countries, where population is expected to double by 2055, some 60% of the people are under age 25 (UNFPA, 2012).

It is argued the world needs a long-term strategic plan for a global partnership between rich and poor. Forbes counts 1 210 billionaires, with 108 of the 214 added over the past year from the BRIC nations. Such a plan should use the strength of free markets and rules based on global ethics. Conventional approaches to poverty reduction (technical assistance and credit) that work in low- and middle-income stable countries do not work in fragile countries, which need stability first (The Millennium Project, 2010). Ethical market economies however require improved fair trade, increased economic freedom, a "level playing field" guaranteed by an honest judicial system with adherence to the rule of law and by governments that provide political stability, a chance to participate in local development decisions, reduced corruption, ensured property rights, business incentives to comply with social and environmental goals, a healthy investment climate, and access to land, capital, and information (State of the Future, 2011). Direction from central government with relatively free markets is competing with decentralized, individualized private enterprise for lifting people out of poverty (Glenn *et al.,* 2011).

New indicators for measuring progress and economic development are being developed to help managers move from short-term profit-based strategies to long-term viability (The Millennium Project, 2010). Technical assistance to leapfrog into new activities via tele-education and tele-work should be coupled with microcredit mechanisms for people to seek markets rather than non-existent jobs. An alternative to trying to beat the less developed countries brain drain is to connect people overseas to the development process back home by a variety of Internet systems. If the World Trade Organisation eliminated agricultural export subsidies, less

developed countries would gain $72 billion per year, according to UNDP (2010). Structural imbalances in world trade have to be corrected to assure fair competition, respect of human rights, and labour and environmental standards, as well as efficient management of the global commons and prevention of monopolies (UN, 2007a). China's monetary policy adjustments could also help other countries' economic development and access to world markets (Morrison & Labonte, 2010). The low-carbon green economy has attracted over $2 trillion in private investment since 2007 and is a driving force for foreign direct investment (Glenn *et al.,* 2011). Climate Investment Funds of $6.4 billion help implement pilot projects in 45 developing countries through MDBs. Financing to the private sector by the MDBs increased from less than $4 billion in 1990 to $40 billion per year in 2010, while the International Finance Corporation committed a record $18 billion in investments in private companies in 129 countries (The Millennium Project, 2010).

3.2.8 How can the threat of new and re-emerging diseases and immune microorganisms be reduced?

UNDP (2010) reports that world health is improving, the incidence of diseases is falling, and people are living longer, but many old challenges remain and future threats are serious. Globally over 30% fewer children under five died in 2010 than in 1990, and total mortality from infectious disease fell from 25% in 1998 to less than 16% in 2010 (WHO, 2011). Funding for global health increased to an estimated $26.8 billion in 2010, which has also increased the need for better coherence among the many new actors in world health (OECD, 2011). However non-communicable diseases and emerging and drug-resistant infectious diseases are increasing (The Millennium Project, 2010). Because the world is ageing and increasingly sedentary, cardiovascular disease is now the leading cause of death in the developing as well as the industrial world (WHO, 2011; The Millennium Project Nodes, 2012). However, infectious diseases are the second largest killer and cause about 67% of all preventable deaths of children under five (pneumonia, diarrhoea, malaria, and measles). Poverty, urbanization, travel, immigration, trade, increased encroachment on animal territories, and concentrated livestock production move infectious organisms to more people in less time than ever before and could trigger new pandemics (The Millennium Project Nodes, 2012). Over the past 40 years, 39 new

infectious diseases have been discovered, 20 diseases are now drug-resistant, and old diseases have reappeared, such as cholera, yellow fever, plague, dengue fever, meningitis, hemorrhagic fever, and diphtheria. In the past five years, more than 1 100 epidemics have been verified and about 75% of emerging pathogens are zoonotic (they jump species) (Fauci, 2005, 2012).

During 2011 there were six potential epidemics. The most dangerous may be the NDM-1 enzyme that can make a variety of bacteria resistant to most drugs. Previously only found in hospitals, it was found during 2013 in New Delhi's drinking water and sewers, making it easier to spread (McKenna, 2011). Other notable developments during 2011 included the European E. coli/ Hemolytic Uremic Syndrome foodborne outbreak; the progression of arteminisin-resistent malaria near the Cambodian border; the cholera epidemic in Haiti; the continued global threat from MDR and XDR TB in the AIDS population; and the potential for epidemics and nuclear contamination in post-earthquake, post-nuclear-meltdown Japan (The Millennium Project, 2010).

The H1N1 (swine flu) that infected millions around the world came to an end in August 2010 due to the ability of World Health Organisation and the global network to detect, isolate, genetically evaluate, vaccinate, and persuade the public to act (Simon, 2011). Mexico (where the virus was first identified) responded with praiseworthy professionalism in handling the A/H1N1 flu outbreak. The H5N1 (avian flu) of 2007–08 killed half of the people infected, spread slowly, has mutated three times in 15 years, and could mutate again (Department of Health and Human Services, 2008; WHO, 2011). The best ways to address epidemic disease remain early detection, accurate reporting, prompt isolation, and transparent information and communications infrastructure, with increased investment in clean drinking water, sanitation, and hand washing. World Health Organisation eHealth systems, international health regulations, immunization programs, and the Global Outbreak Alert and Response Network are other essentials of the needed infrastructure (The Millennium Project, 2010).

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Neglected tropical diseases are a group of parasitic and bacterial infections that are the most common afflictions of the world's poorest people. They blind, disable, disfigure, and stigmatize their victims, trapping them in a cycle of poverty and disease (Building Equality, 2010; Sabin Vaccine Institute, 2010). Many low-cost interventions are available, yet the majority of affected people do not have access. Some of the largest health impacts remain: schistosomiasis (200 million cases),

dengue fever (50 million new cases a year), measles (30 million cases a year), onchocerciasis (18 million cases in Africa), typhoid and leishmaniasis (approximately 12 million each globally), rotavirus (600 000 child deaths per year), and shigella childhood diarrhea (600 000 deaths per year). About half of the world's population is also at risk of several endemic diseases (WHO, 2011). There is more TB in the world now than ever before, even though TB treatment success with DOTS exceeded 85%. Between 1995 and 2008, over 43 million people have been treated and 36 million people cured. There is progress with malaria: 38 countries (9 in Africa) documented reductions of more than 50% in the number of malaria cases between 2000 and 2008, and more than 100 million long-lasting insecticide treated bed nets have been distributed in the fight against malaria (The Millennium Project, 2010).

People are living longer, health care costs are increasing, and the shortage of health workers is growing, making telemedicine and self-diagnosis via biochip sensors and online expert systems increasingly necessary (Azerbaijan Future Studies, 2012). Better trade security however will be necessary to prevent increased food- or animal-borne disease. Researchers argue that future uses of genetic data, software, and nanotechnology will help detect and treat disease at the genetic or molecular level (State of the Future, 2011; Glenn & Gordon, 2007).

3.2.9 How can the capacity to decide be improved as the nature of work and institutions change?

The increasing complexity of everything for much of the world is forcing humans to rely more and more on computers. The world has far more data, evidence, and computer models to make decisions today, but that also means mankind has far more information overload and excessive choice proliferation (Gray & Watson, 2011). The number and complexity of choices seem to be growing beyond mankind's abilities to analyze, synthesize, and make decisions yet the acceleration of change reduces the time from recognition of the need to make a decision to completion of all the steps to make the right decision (Gherson, 2011). Many of the world's decision-making processes are inefficient, slow, and ill informed (The Independent, 2008). Today's challenges cannot be addressed by governments, corporations, NGOs, universities, and intergovernmental bodies acting alone; hence, transinstitutional

decision-making has to be developed, and common platforms have to be created for transinstitutional strategic decision-making and implementation (Azerbaijan Future Studies Society, 2010). Previous economic models continue to mistakenly assume that human beings are well-informed, rational decision-makers in spite of research findings to the contrary. And relying on computer models for decisions proved unreliable in the financial crisis (Penalba, 2009).

However, some progress has been made. Adaptive learning models such as cellular automata, genetic algorithms, and neural networks are growing in capability and accuracy, and databases describing individual behaviour are becoming even more massive (Reza & Karim, 2011). In the social sciences it has been difficult to develop "laws" to forecast social behaviour and, hence, make good decisions based on forecasted consequences (Foxall, Oliveira-Castrom James, Yani-de-Soriano & Sigurdsson, 2006). With the advent of massive digital databases and new software, we can let the computer make more empirically based forecasts of the plausible range of how people will react to various decisions. At the same time, increasing democratization and interactive media are involving more people in decision-making, which further increases complexity. This can reinforce the principle of subsidiary decisions made by the smallest number of people possible at the level closest to the impact of a decision (Bosnich, 2012). Fortunately, the world is moving toward ubiquitous computing with institutional and individual collective intelligence (emergent properties from synergies among brains, software, and information) for "just-in-time" knowledge to inform decisions (Wang & Garlan, 2000). Ubiquitous computing will increase the number of decisions per day, constantly changing schedules and priorities. Decision-making will be increasingly augmented by the integration of sensors imbedded in products, in buildings, and in living bodies with a more intelligent Web and with institutional and personal collective intelligence software that helps us receive and respond to feedback for improving decisions (Resch, Mittlboeck, Girardin, Britter & Ratti, 2012). Cloud computing, knowledge visualization, and a variety of decision support software are increasingly available at falling prices (Frost and Sullivan, 2012). Decision Support Systems improves decisions by filtering out bias and providing a more objective assessment of facts and potential options. Some software lets groups select criteria and rate options, some averages people's bets on future events, while others show how issues have

alternative positions and how each is supported or refuted by research (Wilczynski & Haynes, 2010).

The MIT Collective Intelligence Centre sees its mission as answering "How can people and computers be connected so that collectively they act more intelligently than any individuals, groups, or computers have ever done before?" They are trying to develop measures of collective intelligence (like IQ tests for individuals). Rapid collection and assessment of many judgments via on-line software can support timelier decision-making. Google invited "citizen cartographers" to refine the United States map. This sort of activity is fundamentally different than the "wisdom of crowds" in which the average judgment is taken to be an answer to unresolved issues (Vermeulen, 2009). The "wisdom of crowds" approach is essentially a vote, while collective intelligence is a continually emergent property from synergies among data-information knowledge, software-hardware, and individual and groups of brains that continually learn from feedback. Self-organisation of volunteers around the world via Web sites is increasing transparency and creating new forms of decision-making as well as blogs are increasingly used to support decisions (Jadad, Haynes, Hunt & Browman, 2000). Issues-based information software in e-government allows decision-making to be more transparent and accountable, although cognitive neuroscience promises to improve decision-making, little has been applied for the public (Daw & Shohamy, 2008).

Political and business decisions include competitive intelligence and analysis to guide decision-making; as the world continues to globalize, increasing interdependencies, synergetic intelligence and analysis therefore should also be considered. Training programs for decision-makers should bring together research on why irrational decisions are made, lessons of history, futures research methods, forecasting, cognitive science, data reliability, utilization of statistics, conventional decision support methods (e.g., PERT, cost/benefit, etc.), collective intelligence, ethical considerations, goal seeking, risk, the role of leadership, transparency, accountability, participatory decision-making with new decision support software, e-government, ways to identify and better an organisation's improvement system, prioritization processes, and collaborative decision-making with different institutions (The Millennium Project, 2010).

3.2.10 How can shared values and new security strategies reduce ethnic conflicts, terrorism, and the use of weapons of mass destruction?

Although the vast majority of the world is living in peace, half the world continues to be vulnerable to social instability and violence due to growing global and local inequalities, outdated social structures, inadequate legal systems and increasing costs of food, water, and energy (UN, 2011j). In areas of worsening political, environmental, and economic conditions, increasing migrations however can be expected (Kriesberg and Dayton, 2012). Add in the future effects of climate change, and there could be as many as 400 million migrants by 2055. While inter-state conflicts decreased, internal unrest is however increasing. The UN (2011k) estimates that 40% of the internal conflicts over the past 60 years were natural resource-related. As growing populations and economies increase the drain on natural resources, social tensions are expected to increase, triggering complex interactions of old ethnic and religious conflicts, civil unrest, terrorism, and crime (UNECE, OSCE, 2005). Substantial technological and social changes will be needed to prevent this as countries will need to include non-traditional security strategies for addressing the root causes of unrest. Since many countries affected by conflict return to war within five years of a cease-fire, more serious efforts are required to dismantle the structures of violence and establish structures of peace (Collier, Elliot, Hegre, Hoeffler, Reynal-Querol & Sambanis, 2003). Conflicts however have decreased over the past two decades as cross-cultural dialogues are flourishing, and intra-state conflicts are increasingly being settled by international interventions. During 2011, there were 10 conflicts (down from 14 in 2010) with at least 1 000 deaths per year: Afghanistan, Iraq, Somalia, Yemen, NW Pakistan, Naxalites in India, Mexican cartels, Sudan, Libya, and one classified as international extremism. Yet the 27.5 million internally displaced persons is the highest total since the 1990s (Albuja *et al.,* 2010). The probability of a more peaceful world is increasing due to the growth of democracy, international trade, global news media, the Internet and new forms of social networks, NGOs, satellite surveillance, better access to resources, and the evolution of the UN and regional organisations (The Rand Corporation, 2012). The United States and Russia signed the new START nuclear arms reduction treaty, and new arms races are being pre-emptively addressed. Yet the Global Peace Index's rating of 144 countries' peacefulness again declined slightly towards

2010, reflecting intensification of some conflicts and the economic crisis (Institute for Economics and Peace, 2011).

During 2011, there were 122 000 UN peacekeepers from 114 countries in 15 operations. Total military expenditures were about $1.5 trillion per year (Krieger, 2011). There are an estimated 8 100 active nuclear weapons, down from 20 000 in 2002 and 65 000 in 1985. However, there are approximately 1,700 tons of highly enriched uranium and 500 tons of separated plutonium that could produce nuclear weapons (Isenberg, 2002). The nexus of transnational extremist violence is changing from complex organized plots to attacks by single individuals or small independent groups. Mail-order DNA and future desktop molecular and pharmaceutical manufacturing, plus access (possibly via organized crime) to nuclear materials, could one day give single individuals the ability to make and use weapons of mass destruction from biological weapons to low-level nuclear ("dirty") bombs (Holton, 2002). The International Atomic Energy Agency reports that between 1993 and the end of 2010 the Illicit Trafficking Database confirmed 1 980 incidents of illicit trafficking and other unauthorized activities involving nuclear and other radioactive materials. During 2010, the International Atomic Energy Agency received reports of 176 nuclear trafficking incidents (compared with 222 during 2009), ranging from illegal possession and attempted sale and smuggling to unauthorized disposal of materials and discoveries of lost radiological sources (The Millennium Project, 2010).

Military power has yet to prove effective in asymmetrical warfare without genuine cultural engagement (Johnston, 2006). Peace strategies without love, compassion, or spiritual outlooks are less likely to work, because intellectual or rational systems alone are not likely to overcome the emotional divisions that prevent peace (The Millennium Project, 2010). Conflict prevention efforts therefore should work in and with all the related factions, including conversations with hardliner groups, taking into consideration their emotional and spiritual sensibilities. Public education programs are also needed to promote respect for diversity and the oneness that underlies that diversity as it is less expensive and more effective to attack the root causes of unrest than to stop explosions of violence (Tivona, 2005). Early warning systems of governments and UN agencies could better connect with NGOs and the media to help generate the political will to prevent or reduce conflicts. User-initiated

collaborations on the Web should be increasingly used for peace promotion, rumour control, fact-finding, and reconciliation. Back casted peace scenarios should be created through participatory processes to show plausible alternatives to conflict stories (Glenn & Coates, 2012). It is still necessary, however, to bring to justice those responsible for war crimes and to support the International Criminal Court. The Geneva Convention should be modified to cover intra-state conflicts (Odermatt, 2012). Some researchers believe that the collective mind of humanity can contribute to peace or conflict, and hence mankind can think itself into a more peaceful future (Jennings, 2012). However, governments should destroy existing stockpiles of biological weapons, create tracking systems for potential bio weapons, establish an international audit system for each weapon type, and increase the use of non-lethal weapons to reduce future revenge cycles (Allison, Kelley & Garwin, 2004).

3.2.11 How can the changing status of women help improve the human condition?

Empowerment of women has been one of the strongest drivers of social evolution over the past century, and many argue that it is one of the most efficient strategies for addressing the global challenges in this chapter (The Economist, 2009). Only two countries allowed women to vote at the beginning of the twentieth century; today there is virtually universal suffrage, the average ratio of women legislators worldwide has reached 19.2%, and over 20 countries have women heads of state or government (Mirth and Motivation, 2009). Patriarchal structures are increasingly challenged, and the movement toward gender equality is therefore irreversible (Jackson, 2000). With an estimated control of over 70% of global consumer spending, women are strongly influencing market preferences (O'Donnell & Kennedy, 2011). Analysis shows a direct interdependence between countries' Gender Gap Index and their Competitiveness Index scores and that Fortune 500 companies with more gender-balanced boards could outperform the others by as much as 50% (Schwartz-Ziv, 2012). Yet the Gender Equity Index 2010 shows that significant differences still remain in economic participation and political empowerment (Lippa, Collaer & Peter, 2009).

Gender stereotyping continues to have negative impacts on women around the world, and although progress is being made on closing the gender gap in terms of establishing global and national policies, real improvement will only be achieved when conflicts between written laws and customary and religious laws and practices are eliminated (PRWeb, 2011). Environmental disasters, food and financial crises, armed conflicts, and forced displacement further increase vulnerabilities and generate new forms of disadvantages for women and children (Anderson, Marcovici & Taylor, 2009).

However, women account for only 40% of the world's workforce, earning less than 25% of the wages, and represent about 70% of people living in poverty (Pelletier, 2005). An OECD survey found that women spend more time on unpaid work than men do worldwide, with the gap ranging from 1 hour per day in Denmark to 5 hours per day in India (PRWeb, 2011). FAO estimates that giving women the same access as men to agricultural resources could reduce the number of hungry people in the world by 12–17%, or 100–150 million people (Raney, 2011). Child malnutrition levels are estimated to be 60% above average where women lack the right to land ownership and 85% above average where they have no access to credit (The Millennium Project, 2010). Microcredit institutions reported that by 2010, nearly 82% (about 105 million) of their poorest clients were women. However, many of their businesses are too small to transform their economic status, points out FEMNET. Empowerment of women is also highly accelerated by the closing gender gap in education. Most countries are reaching gender parity in primary education, and 50% of university students worldwide are women. Yet regional disparities are high, and UNESCO estimates that women represent about 66% of the 796 million adults who lack basic literacy skills (Wos, 2012).

Although the health gender gap is closing, family planning and maternal health remain critical. Determining the size of the family should be recognised as a basic human right, and more attention should be given to women's health and social support for affordable child care worldwide, including industrial countries, which are facing demographic crises due to low fertility rates (World Savvy Monitor, 2009). Of the more than 500 000 maternal deaths per year, 99% happen in developing countries, with the highest prevalence in Africa and Asia due to high fertility rates

and weak health care systems (UNICEF, 2007; MMIIHR, 2009). Unless providing effective family planning to the 215 million women who lack it is seen as a key component of development, the UN (2010) goal to reduce maternal mortality to 120 deaths per 100 000 live births by 2015 will not be achieved (UNDP, 2010). Regulations should also be enacted and enforced to stop female genital mutilation, which traumatizes about 3 million girls in Africa each year, in addition to the 100–142 million women worldwide affected by it today. While the prevalence of this in Egypt, Guinea, and some parts of Uganda is at over 90%, communities in India, Indonesia, Malaysia, and even in the EU are also affected (AWEPA, 2009).

Violence against women is the largest war today, as measured by death and casualties per year. While the proportion of women exposed to physical violence in their lifetime ranges from 12% to 59%, as a function of region and culture, sexual assaults remain one of the most underreported crimes worldwide, continuing to be perpetrated with impunity (Paludi, 2010). According to UNODC, 66% of the victims of the $32 billion global industry of human trafficking are women and children. The Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children, has 142 parties and 117 signatories thus far, but it has yet to be adopted and enforced by some key countries (Polaris Project, 2010). Female vulnerability increases during conflict, when sexual violence is often used as a weapon and recovery from conflict and disaster should be used as opportunities to rectify inequalities. On the contrary, women make up only 8% of peace negotiators, and only 25 countries have developed National Action Plans supporting UN Security Council Resolution 1325 on women's protection in conflict and participation in peace processes (Parrasch, 2011). Traditional media have had limited success influencing gender stereotyping, and women represent only one-third of full-time workers in journalism, reveals an IWMF survey. However, 78% of women (versus 66% of men) are active users of social media, a new powerful medium for change. It is argued that mothers should use their educational role in the family to more assertively nurture gender equality. School systems should consider teaching self-defence in physical education classes for girls and Infringements on women's rights should be subject to prosecution and international sanctions. Challenge 11 will only be addressed seriously when gender-discriminatory laws are gone, when discrimination and

violence against women are prosecuted, and when the goal of 30%+ women's representation in national legislatures is achieved in all countries.

3.2.12 How can transnational organised crime networks be stopped from becoming more powerful and sophisticated in global enterprises?

The Millennium Project (2011) argues that although the world is waking up to the enormity of the threat of transnational organized crime, it continues to grow; while a global strategy to address this global threat has not been adopted. The UN Office on Drugs and Crime has called on all governments to develop national strategies to counter Transnational Organized Crime as a whole in its report The Globalisation of Crime: A Transnational Organized Crime Threat Assessment. The transition of much of the world's activities to the Internet and mobile phones has opened up a wealth of opportunities for Transnational Organized Crime to profitably expand its activities from drugs and human trafficking to all aspects of personal and business life (UNODC, 2012; McCuser, 2006). The 2009 financial crisis and the bankruptcy of financial institutions have opened new infiltration routes for Transnational Organized Crime, and the world recession has increased human trafficking and smuggling (Shelley, 2010). UNODC also notes governments are not seriously implementing the UN Convention against Transnational Organized Crime, which is the main international instrument to counter organized crime. INTERPOL has started construction of an international complex in Singapore that will open around 2013 with 300 staff, to serve as a centre for policy, research, and worldwide operations. UNODC, with other agencies, has founded the International Anti-Corruption Academy, near Vienna, having as one of its goals tackling the connection of Transnational Organized Crime and corruption.

Havocscope.com estimates world illicit trade to amount to about $1.6 trillion per year (up $500 billion from 2012), with counterfeiting and intellectual property piracy accounting for $300 billion to $1 trillion, the global drug trade at $404 billion, trade in environmental goods at $63 billion, human trafficking and prostitution at $220 billion, smuggling at $94 billion, and weapons trade at $12 billion. The International Carder's Alliance is based mostly in Eastern Europe, the heart of cybercrime, which the FBI estimates costs United States businesses and consumers billions annually in lost

revenue. These figures do not include extortion or organized crime's part of the $1 trillion in bribes that the World Bank estimates are paid annually or its part of the estimated $1.5–6.5 trillion in laundered money (Seagar, 2011). Hence the total income could be $2–3 trillion – about twice as big as all the military budgets in the world. The UN Global Commission on Drug Policy concluded that the law enforcement of the "War on Drugs" has failed and cost the United States $2.5 trillion over the past 40 years. The UN (2011l) recommends a "paradigm shift" to public health over criminalisation. OECD's Financial Action Task Force has made 40 recommendations to counter money laundering.

There are more slaves today than at the peak of the African slave trade (Kloer, 2009). Estimates range from 12 million to 27 million people are being held in slavery today (the vast majority in Asia). UNICEF (2010) estimates that 1.2 million children are trafficked every year. The online market in illegally obtained data and tools for committing data theft and other cybercrimes continues to grow, and criminal organisations are offering online hosting of illegal applications. International financial transfers via computers of $2 trillion per day make tempting targets for international cyber criminals.

The Millennium Project (2011) believes that it is time for an international campaign by all sectors of society to develop a global consensus for action against Transnational Organized Crime. Two conventions help bring some coherence to addressing TOC: the UN Convention against Transnational Organized Crime, which came into force in 2003, and the Council of Europe's Convention on Laundering, which came into force in May 2008. Possibly an addition to one of these conventions or the International Criminal Court could establish a financial prosecution system as a new body to complement the related organisations addressing various parts of Transnational Organized Crime. In cooperation with these organisations, the new system would identify and establish priorities on top criminals (defined by the amount of money laundered) to be prosecuted one at a time. It would prepare legal cases, identify suspects' assets that can be frozen, establish the current location of the suspect, assess the local authorities' ability to make an arrest, and send the case to one of a number of preselected courts. Such courts, like UN peacekeeping forces, could be identified before being called into action and trained, and then be ready for

instant duty. When all these conditions are met, then all the orders would be executed at the same time to apprehend the criminal, freeze access to the assets, open the court case, and then proceed to the next Transnational Organized Crime leader on the priority list. Prosecution would be outside the accused's country. Although extradition is accepted by the UN Convention against Transnational Organized Crime, a new protocol would be necessary for courts to be deputized like military forces for UN peacekeeping, via a lottery system among volunteer countries. After initial government funding, the system would receive its financial support from frozen assets of convicted criminals rather than depending on government contributions.

3.2.13 How can growing energy demands be met safely and efficiently?

Investments in alternatives to fossil fuels are rapidly accelerating around the world to meet the projected 40–50% increase in demand by 2035. The combined global installed capacity of wind turbines, biomass and waste-to-energy plants, and solar power reached 381 GW, exceeding the installed nuclear capacity of 375 GW (figure prior to the Fukushima disaster). The Japanese nuclear disaster has put the future of nuclear energy in doubt, increasing costly safety requirements and reducing public and investor confidence. This, plus the BP oil disaster and the growing awareness of climate change, are accelerating the transition to renewable energy sources. However, without major breakthroughs in technological and behavioural changes, the majority of the world's energy in 2055 will still come from fossil fuels. Therefore, large-scale carbon capture and reuse has to become a top priority to reduce climate change, such as using waste CO_2 from coal plants to grow algae for biofuels and fish food or to produce carbonate for cement. The short-term gainer may be natural gas. Energy efficiencies, conservation, and reduced meat consumption are near-term ways to reduce energy GHG production. To keep atmospheric CO_2 concentration below 450 ppm, an estimated $18 trillion investment in low-carbon technologies will be needed between 2010 and 2035. Meanwhile, the world spends more than $310 billion on energy subsidies every year; eliminating these could reduce GHGs by 10% by 2055 (UN, 2013).

Internationally, investments in clean energy reached $243 billion in 2010, up from $186.5 billion in 2009. China leads the world in total investments in renewable energy and energy efficiency. IPCC's best-case scenario estimates that renewable sources could meet 77% of global energy demand by 2050, while the WWF claims 100% is possible. Setting a price for carbon emissions will stimulate investments. For the past decade, coal has met 47% of new electricity demand globally. Assuming that countries fulfil their existing commitments to reduce emissions and cut fuel subsidies, IEA estimates that the world primary energy demand will still increase by 36% from 2008 to 2035, or 1.2% per year, with fossil fuels accounting for over half of the increase. World energy consumption increased 5% in 2010 after shrinking 1.1% in 2009. The International Energy Agency says $36 billion/year will connect the remaining 1.4 billion people around the world with electricity. About 3 billion people still rely on traditional biomass for cooking and heating, and 1.4 million people die every year due to indoor smoke from traditional cooking stoves. The United Nations has declared 2012 as the International Year of Sustainable Energy and set 2030 for universal access to modern energy sources (UN, ,2012).

Auto manufacturers around the world are racing to create alternatives to petroleum-powered cars. Mass production of fuel-flexible plug-in hybrid electric cars at competitive prices could be a breakthrough in decarbonising the transport sector (The Millennium Project, 2010). The global share of bio fuel in total transport fuel could grow from 3% today to 27% in 2055. Massive saltwater irrigation along the deserted coastlines of the world can produce 7 600 litres hectare-year of bio fuels via halophyte plants and 200 000 litres hectare-year via (The Millennium Project, 2012).

Innovations are accelerating: concentrator photovoltaic to dramatically reduce costs; pumping water through micro-channels on the surface of a solar panel to make it more efficient and make seawater drinkable at the same time; producing electricity from waste heat from power plants, human bodies, and microchips; genomics to create hydrogen-producing photosynthesis; buildings to produce more energy than consumed; solar energy to produce hydrogen; microbial fuel cells to generate electricity; and compact fluorescent light bulbs and light-emitting diodes to significantly conserve energy, which can also be done by nanotubes that conduct electricity. Solar farms can focus sunlight atop towers with Stirling engines and other

generators. Estimates for the potential of wind energy continue to increase, but so do maintenance problems (The Millennium Project, 2010). Drilling to hot rock (two to five kilometres down) could make geothermal energy available where conventional geothermal has not been possible. Plastic nanotech photovoltaic printed on buildings and other surfaces could also cut costs and increase efficiency. The further transition to a hydrogen infrastructure may be too expensive and too late to affect climate change, while flex-fuel plug-in hybrids, electric, and compressed air vehicles could provide alternatives to petroleum-only vehicles sooner. National unique all-electric car programs are currently being implemented in Denmark and Israel, with discussions being held in 30 other countries. Japan plans to have a working space solar power system in orbit by 2030. Such space-based solar energy systems could meet the world's electricity requirements indefinitely without nuclear waste or GHG emissions (The Millennium Project, 2012).

Eventually, such a system of satellites could manage base-load electricity on a global basis, yet some say this costs too much and is not necessary with all the other innovations coming up. Above-mentioned challenges therefore can be addressed seriously when the total energy production from environmentally benign processes surpasses other sources for five years in a row and when atmospheric CO^2 additions drop for at least five years.

3.2.14 How can scientific and technological breakthroughs be accelerated to improve the human condition?

The acceleration of S and T continues to fundamentally change the prospects for civilization, and access to this knowledge is becoming universal. The ability to learn this knowledge is also improving with Web-based asynchronous highly motivational educational systems, adaptive learning models such as cellular automata, genetic algorithms, neural networks, and emerging capabilities of collective intelligence systems. Computing power and lowered costs predicted by Moore's Law continue with the world's first three-dimensional computer chip introduced by Intel in 2010 for mass production. Computational chemistry, computational biology, and computational physics are changing the nature of science, and its acceleration is attached to Moore's law. China currently holds the record for the fastest computer

with Tianhe-1, which can perform 2.5 petaflops per second; IBM's Mira, ready at the end of 2012, is four times faster. Watson is currently the IBM computer that beat the top knowledge contestants on a TV quiz show; it is a massively parallel processing computer capable of reading an essentially unlimited number of documents, digesting the information, and answering questions posed in natural language. It is now being readied to use vast amounts of medical data to accelerate improvements in health knowledge and decision-making (State of the Future, 2011).

Craig Venter created a synthetic genome by placing a long strand of synthetic DNA into a bacterium that followed the synthetic DNA's instructions and replicated. A United States Presidential Commission concluded that it was not yet the invention of "life" but that synthetic biology research should continue with scientific self-regulation. Venter forecasts that as computer code is written to create software to augment human capabilities, so too genetic code will be written to create life forms to augment civilization (The Millennium Project Nodes, 2012).

In a process known as trans-differentiation, scientists have manipulated human cells, converting pancreatic cells into liver cells and skin cells into heart cells; skin cells were converted into functioning neurons that could integrate into neuron networks of the sort found in the human brain. A new anti-virus strategy is being pursued to develop artificial "proto-cells that can lure, entrap and inactivate a class of deadly human viruses" (Tosh *et al.,* 2003)

Nano-robots now roam inside the eyes in tests to deliver drugs for conditions such as age-related macular degeneration. Swarms of manufacturing robots are currently being developed that should be able to manage nano-scale building blocks for novel material synthesis and structures, component assembly, and self-replication and repair. At an even smaller scale, nanometer robots have been demonstrated and appear able to link with natural DNA. Nanobots the size of blood cells may one day enter the body to diagnose and provide therapies and internal virtual reality imagery. Although nanotech promises to make extraordinary gains in efficiencies needed for sustainable development, its environmental health impacts are in question (The Millennium Project, 2010).

Scanning electron microscopes can now see 0.01 nanometres (the distance between a hydrogen nucleus and its electron), and the Hubble telescope has seen 13.2 billion light-years away. Photons have been slowed and accelerated. External light has been concentrated inside the body for photodynamic therapy and powered implanted devices. DNA scans open the possibility of customized medicine and eliminating inherited diseases. MRI brain imaging shows primitive pictures of real-time thought processes. Paralyzed people have controlled computers with their thoughts alone (The Millennium Project, 2010).

Antimatter has been trapped (in the form of 309 atoms of antihydrogen) in electro-magnetic containment and observed for an astonishing 17 minutes in the *Conseil Europeen pour la Recherche Nucleaires* particle physics laboratory. This may facilitate research into how gravity and time affect antimatter. Some scientists predict that if the Large Hadron Collider succeeds in producing the Higgs boson, it may also create a second particle called the Higgs singlet that should have the ability to jump into an extra, fifth dimension where they can move either forward or backward in time and reappear in the future or past (Weiler & Man Ho, 2011). On another frontier one group is attempting to entangle billions of particle pairs (quantum entanglement is the simultaneous change of entangled objects separated in space). Quantum building blocks, qubits, have been embedded into nanowires, important steps toward quantum computers. Quantum theory also encompasses the "many worlds interpretation" of our existence. In the many worlds interpretation, every event is a branch point that may go this way or that, creating an almost infinite set of branches. Follow any one and it describes a simultaneously existing alternate world, a remarkable and counterintuitive reality. Although seemingly remote from improving the human condition, such basic science is necessary to increase the knowledge that applied science and technology draws on to improve the human condition (The Millennium Project, 2012).

Globally, mankind needs a global collective intelligence system to track S and T advances, forecast consequences, and document a range of views so that politicians and the public can understand the potential consequences of new S and T. Science and technology challenges will have been addressed seriously when the funding of R and D for societal needs reaches parity with funding for weapons and when an

international science and technology organisation is established that routinely connects world S and T knowledge for use in R and D priority setting and legislation.

3.2.15 How can ethical considerations become more routinely incorporated into global decisions?

The moral will to act in collaboration across national, institutional, religious and ideological boundaries that is necessary to address today's global challenges requires global ethics. Public morality based on religious metaphysics is challenged daily by growing secularism, leaving many unsure about the moral basis for decision-making. Unfortunately, religions and ideologies that claim moral superiority give rise to "we-they" splits. The United Nations Global Compact with 8 000 participants, including over 5 300 businesses in 130 countries was created to reinforce ethics in decision-making. It has improved business-NGO collaboration, raised the profile of corporate responsibility programs, and increased businesses' non-financial reporting mandates in many countries. The UN Global Compact has been used to encourage corporations to urge their countries to ratify the United Nations Convention against Corruption, which has been ratified by 143 states. As of March 2011 there were 26 first-year country reviews of corruption under way through the convention. Article 51 calls on states parties to return stolen assets and the unethically acquired wealth by Arab dictators is being uncovered, and this might be a test of this article (State of the Future, 2011).

Some researchers believe that Wiki leaks will ultimately improve ethical considerations in global decisions, since, it is argued, it shows that many unethical decisions led to poorer results than expected. The global financial crisis demonstrated the interdependence of economics and ethics. Although quick fixes have pulled the world out of recession, the underlining ethics has not been addressed sufficiently to prevent future crises. The Universal Declaration of Human Rights continues to shape discussions about global ethics and decisions across religious and ideological divides. The UNESCO's Global Ethics Observatory is a set of databases of ethics institutions, teaching, codes of contact, and experts. Collective responsibility for global ethics in decision-making is however embryonic but growing. Corporate social responsibility programs, ethical marketing, and social investing are

therefore on the increase. Global ethics also are emerging around the world through the evolution of ISO standards and international treaties that are defining the norms of civilization. Yet 12–27 million people are slaves today, more than at the height of the nineteenth-century slave trade; the World Bank (2010) estimates over $1 trillion is paid each year in bribes; and organized crime takes in $2–3 trillion annually (The Millennium Project Nodes, 2012).

Transparency International's Corruption Perception Index measures perceived levels of corruption in the public sector in 178 countries. In 2010 the least corrupt countries were seen to be Denmark, New Zealand, and Singapore; the most corrupt were Equatorial Guinea, Burundi, and Chad. Sixty percent of the people surveyed said that they thought corruption in their countries had increased over the past three years; in Europe, almost 75% said they thought things were getting worse. Around the world, 25% said that they had paid bribes in the last year to police (mentioned most often), tax authorities, and other officials. In poor countries, half the people reported paying a bribe in the past year, usually for permits, improved services, and to "avoid problems with authorities".

Mankind needs to create better incentives for ethics in global decisions, promote parental guidance to establish a sense of values, encourage respect for legitimate authority, support the identification and success of the influence of role models, implement cost-effective strategies for global education for a more enlightened world, and make behaviour match the values people say mankind believes in. Ethical and spiritual education should grow in balance with the new powers given to humanity by technological progress. Ethical challenges will be addressed seriously when corruption decreases by 50% from the World Bank estimates of 2006, when ethical business standards are internationally practised and regularly audited, when essentially all students receive education in ethics and responsible citizenship, and when there is a general acknowledgment that global ethics transcends religion and nationality.

3.3   THE HUMAN PREDICAMENT

Throughout history, it has been observed that the challenge for the human race has been survival against natural forces that have often been unpredictable and cruel (Ouattara, 1997). The influence to control, transform and to shape nature developed slowly over several million years (Akiwumi & Butler, 2007; Sogolo, 2005). Then the industrial revolution, in the framework of the surfacing of the capitalist economic system and the modern world-view, instigated a 200-year course of fast change in population, the social order and technology (Musa, 2006). The progressively more interdependent global system that researchers and decision-makers observe today is a catalyst in this extensive process of transformation, expansion and growth (Strategies for National Transformation, 2003). However, a new feature of the current phase of history is how human impacts on the environment have arrived at a global level (Gallopin, Hammond, Raskin & Swart, 1997).

In the 20th century, humanity attained powerful military weapons, which resulted in serious threats to humankind (Tangredi, 2000). This threatened state has escalated with the recent unrests in the Middle East, Afghanistan and Iraq as well as the constant threat of human terror posed by Islamic extremists. However, a new and more understated challenge awaits humanity in the 21st century (Gallopin *et al.,* 1997; Northover, 2005). The challenge is for creating a sustainable global civilization. There is unmatched potential for economic and technological progress that could eliminate hunger and many diseases, develop better human conditions, supplement knowledge and cultural accomplishment and amplify choice and prospects (Hartmann, 2009; Sierra Leone Poverty Reduction Strategy Paper, 2006; Sogolo, 2005). Simultaneously, the increase of the number of people, rising levels of material utilization and production may surpass the carrying capacity of the planet (Gbla & Rugumamu, 2003). Human standards of living and the industrial systems that sustain them threaten to destroy ecosystems, alter the climate and reduce the earth's biological wealth, thus changing the natural environment on a global scale. The 21st century may relegate billions of the yet unborn to a life of hunger, hardship and poverty (Grindle, 2004). The impoverishment of multitudes amidst unparalleled levels of comfort and wealth for the privileged could threaten violence and social

unrest on unprecedented levels, challenging the very notion of a global civilization (Gallopin *et al.,* 1997; Hartmann, 2009: Tangredi, 2000).

3.4   THE SUSTAINABILITY NOTION

The typical formulation that sustainable development "meets the needs of the present without compromising the capability of future generations to meet their own needs" mimics these broad concepts (Martiz, 2010:6, WCED, 1987). Two legitimate social and moral aspects have to be reconciled: the needs of the present and the needs of the future (Gallopin *et al.,* 1997). Living standards of the billions today (many of whom cannot satisfy even their basic needs) must be improved (Caddy, 2001). Simultaneously, development patterns in both wealthy and poor countries have to be changed in order not to leave an acid environmental and social legacy to future generations (Conyers & Hills, 1984; Gopal &Tyler, 2010). If the difference between the wealthy and poor countries and classes continues to grow, the prospects are not optimistic for developing a global community and international stability (Gallopin *et al.,* 1997). What might symbolize a sustainable world? Gallopin *et al, (*1997) proposed the following goals:

- The eradication of poverty, famine and malnutrition and making access to basic education and health care universal.
- Improving the quality of life with suitable material conditions and increasing opportunities for the fulfilment of all.
- Diminishing the inequity between the rich and the poor.
- Increasing environmental quality with critical biological resources and controlling pollution and stability.
- Decreasing violence and armed conflict.
- Improving human solidarity with regard to family and the community.
- Halting global population growth.

The propositions above reflect widely held principles – freedom from fear and from want, desire for a more equitable world and higher quality lifestyle, as well as a concern for preserving the environment. For example, stabilization of the global

population almost certainly entails orchestrating a world economy in which access to basic human needs such as shelter, food, education, health care and security is universal (Gallopin *et al.,* 1997; McNamee *et al.,* 2009; Unwin, 2008).

3.5   AN ANALYSIS OF BASIC HUMAN NEEDS

To better comprehend the notion of human progress, in spite of cultural bias and in a developing world context, this research effort must initially consider what might be 'universal' human needs, if indeed they exist. Maslow (1943) in his influential study formed a hierarchy of human needs; opening with the most fundamental of needs that must be met for the daily survival of an individual. The next layer proposed by Maslow (1943) in Figure 3.2 is made up of the safety and security needs, required for longer-term survival. The hierarchy then builds up to higher notions of esteem, love and self-actualisation at the summit (Maritz, 2010; Maslow, 1943)
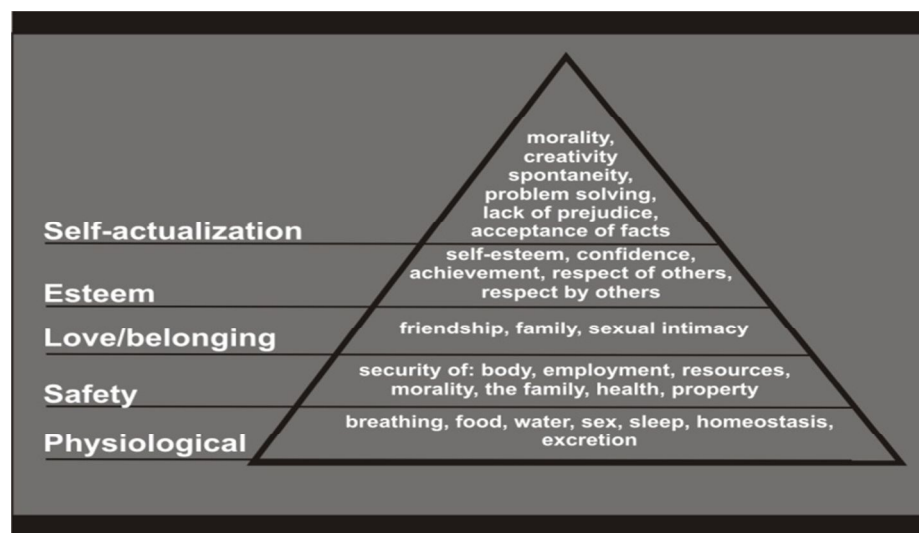
Figure 3.2: Maslow's hierarchy of human needs
Source: Maslow, 1943

Maslow's (1943) study has recently been reassessed by researchers.   The agreement seems to be that whilst the first two layers of the hierarchy (physiological and security) are common to all cultures, the emphasis on the assorted fundamentals of the higher layers are culturally foretold (Hofstede, 1984; Maritz, 2010). For the purpose of this research the researcher acknowledges that the first two layers of needs apply directly to the African cultures, and their two layers would

be necessary circumstances for the 'good life'. The exact order of items in the upper three layers may fluctuate distinctly from the European/Western culture, as well as the particular content (i.e. what composes satisfactory family life or expressions of morality or creativity) might also vary (Maritz, 2010).

Human beings are determined to fulfil an assortment of needs: Firstly, to safeguard and protect our own lives as well as our families. Secondly, we long for finding expression in friendship, intimacy, sexuality and family (Martiz, 2010). Simultaneously, humankind fits into a cultural group, and human beings aim to express in circumstances in various ways: achievement, pursuit of happiness, contribution and acknowledgment to the group. Progress then is the fulfilment of desires in the whole range of human needs (Hofstede, 1984; Maritz, 2010; Spies, 1982).

3.6   HUMAN DEVELOPMENT

The Human Development Index (HDI) of the United Nations Development Programme (UNDP) offers the most extensively used index through which to follow living conditions of populations across the world and their human development. It portrays progress in three essential capacities: being educated and knowledgeable, living a long and healthy life and benefiting from a decent standard of living (Cilliers *et al.,* 2011). The most recent UNDP report, released in 2010, reveals that "the past 20 years have seen considerable progress in numerous facets of human development. Most people today live longer, are healthier, are more educated and have more access to goods and services." The world's average HDI (which merges information on schooling, life expectancy and income) has increased by 18% since 1990 and in general, poor countries are catching up with rich countries in the HDI. Nearly all countries have gained from this development, with only three – all in Africa, namely Zambia, Zimbabwe and the DRC – having a lower HDI today than in 1970 (Cilliers *et al.,* 2011; UNDP, 2010). This union, the UNDP (2010) report notes, 'paints a far more positive picture than a viewpoint limited to trends in income, where variance has persisted'.

Figure 3.3 illustrates that on the HDI gauge India pulled away from Africa over the past two decades, mainly because of the HIV/AIDS pandemic and the related decrease in life expectancy in Africa. However, African HDI values have started to turn upward again and the International Futures (IFs) base case forecast advises that the continent will approximately track the rates of rise in India and even China going forward towards 2051. To be certain, poverty as measured in education, income and health is at present particularly common in sub-Saharan Africa, particularly in countries such as Niger, Lesotho, Swaziland and Gabon. As highlighted by the UNDP, a quarter of the world's multidimensional poor (458 million people) live in Africa (Cilliers *et al.,* 2011).
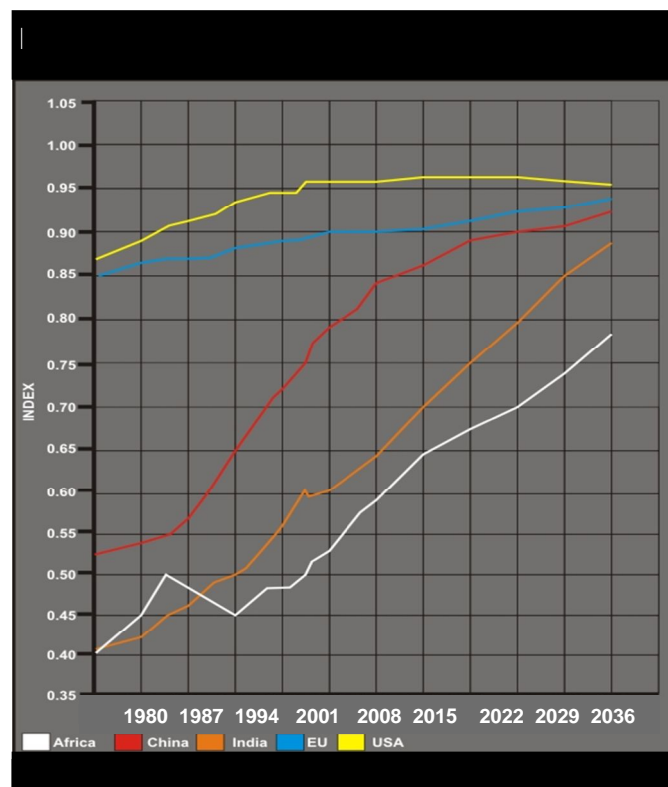
Figure 3.3: Human Development Index (HDI), Africa in Global Context
Source: Cilliers, *et al* 2011.

An analysis of HDI movers offers some interesting results. Separately from the leading performances of countries such as Indonesia, South Korea and China, the list of top 25 improvers include a number of African countries, specifically Algeria (9th), Morocco (10th), Ethiopia (11th), Botswana (14th), Benin (18th) and Burkina Faso (25th). The main obstacle to improvements in HDI in Africa in modern years is the impact of the HIV pandemic, and life expectancy has reduced below 1970 levels in

six sub-Saharan countries. Within the continent, Northern Africa at present has the highest HDI level (at about 0, 7, well exceeding India and close to the present level of China). Central Africa has the lowest level, nearly 0,45. Worldwide, sub-Saharan Africa is usually considered the region facing the biggest challenges in human development. Globally, it has the lowest HDI indicators of any region (Cilliers *et al.*, 2011; Gopal & Tyler, 2010; UNDP, 2010).

3.6.1 Literacy and education

Literacy and education are main components of the HDI (as are income and life expectancy). Education is a significant driver of countries' economic potential and performance. Passable primary education is crucial, and the accessibility and quality of secondary and higher education will be even more significant for ascertaining whether these societies productively graduate up the value-added production ladder. With respect to literacy, often linked with a finished primary education, Figure 3.4 reveals that Africa is at present very close to the same level as India and is expected to track the advance of that country closely (Cilliers et al., 2011; UNDP, 2010).
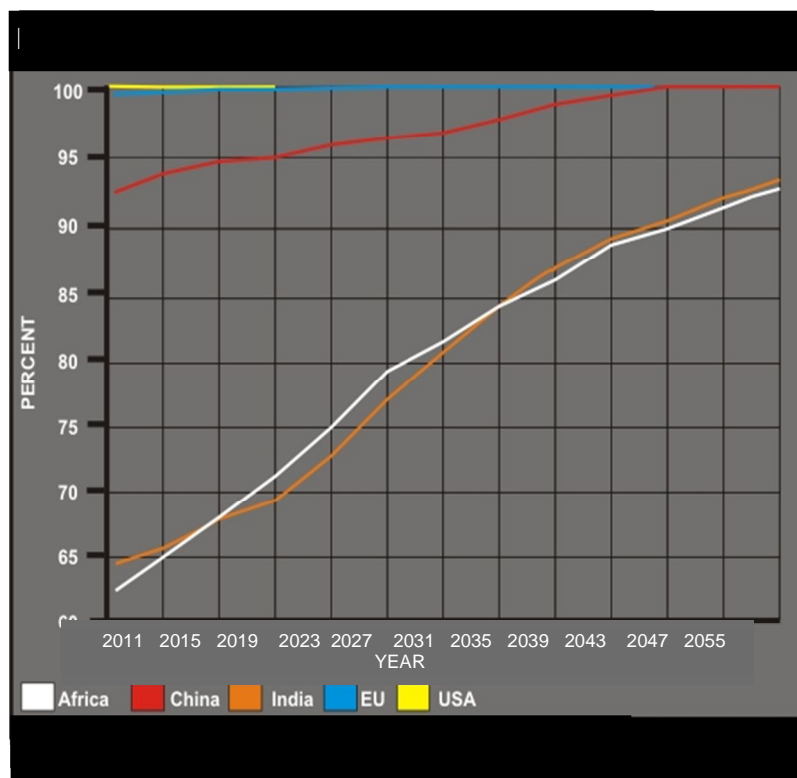
Figure 3.4: Literacy, Africa in a Global Context
Source: Adapted from Cilliers *et al.*, 2011; UDPN, 2010
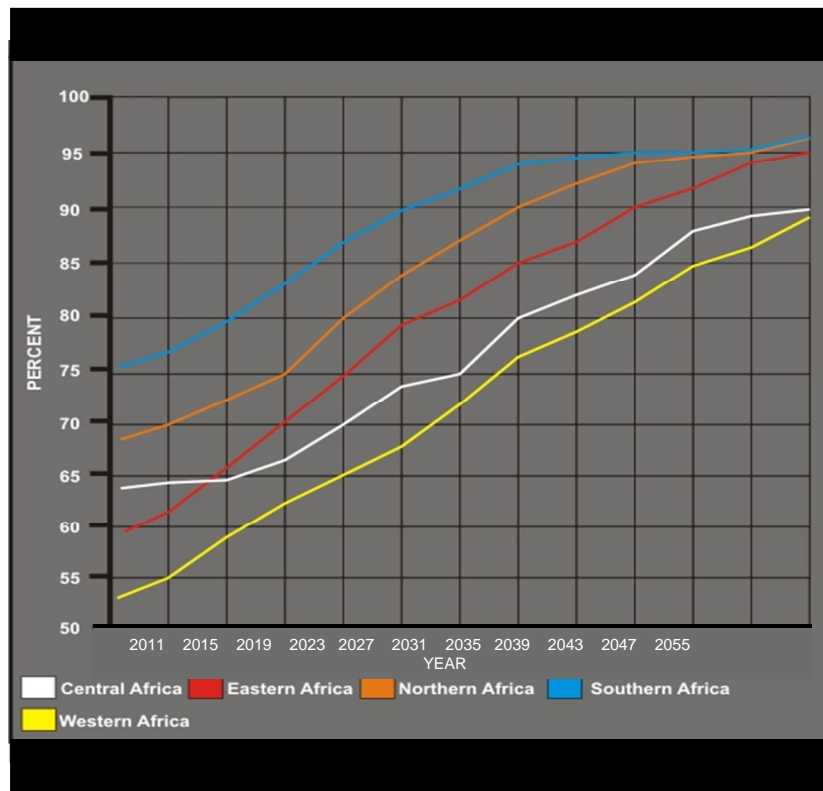
Figure 3.5: African Literacy

Source: Adapted from Cilliers *et al.*, 2011; UNDP, 2010

The outlines of literacy within Africa are dissimilar from those for the HDI overall, in which Northern Africa is clearly the regional leader (UNDP, 2010). In terms of literacy (see Figure 3.5), it is Southern Africa in front, with rates of nearly 80%. All regions are expected to progress gradually through mid-century, although Central Africa may well have the slowest rate (correlated in part to the extremely high population growth and fertility rates) (Cilliers *et al.,* 2011).

3.6.2 Health

It is the loss of life expectancy, owing to HIV/AIDS, that cut back the increased upward movement of human development overall in Central and Southern Africa (see Figure 3.6). The AIDS epidemic has definitively distinguished opinions globally on African development (World Health Organisation, 2008). Even though there are progressively more clear indications that the corner has been turned, it is also the future course of the plague that generates the most uncertainty around human development across much of the continent (Cilliers *et al.,* 2011).
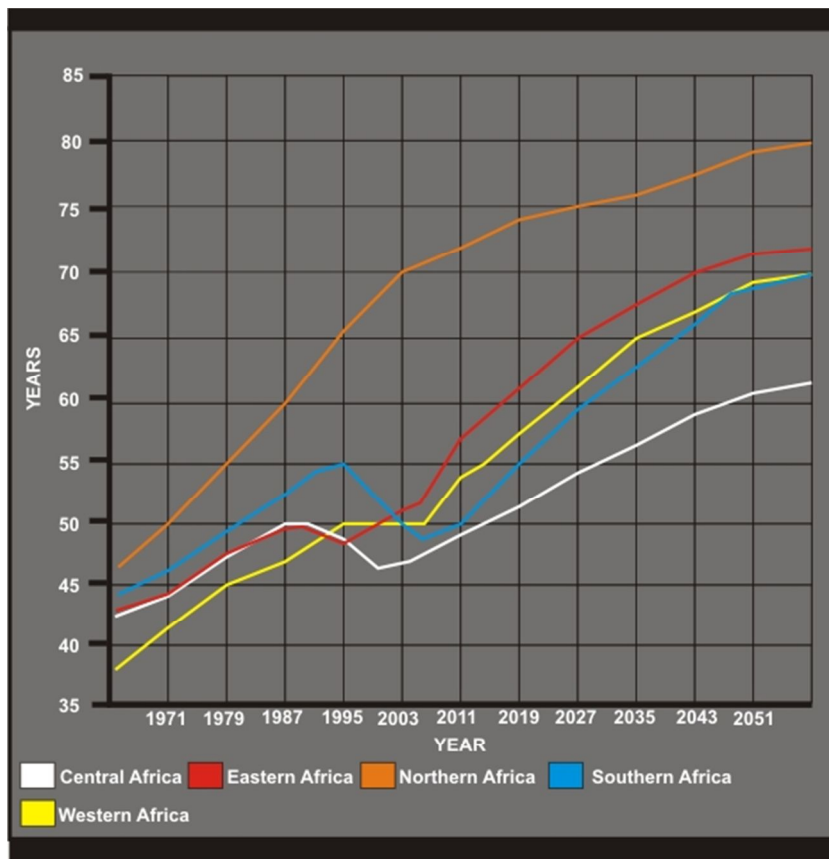
Figure 3.6: African life expectancy

Source: Adapted from Cilliers *et al.,* 2011; UNDP, 2010

Communicable diseases have long been the focal point of development aid in Africa, and a great deal of improvement is expected in these areas (UNDP, 2010). People who die of communicable diseases are inclined for this to happen at a young age, often as infants or children, whilst those who pass away from non-communicable diseases, are inclined to die older (UNDP, 2010). Consequently, the authentic existing differentiation in annual deaths from the two cause groups tends to be smaller than the difference in years of life lost as shown in Figure 3.7. In particular in 2010, 72 million died in Africa from communicable diseases and 3 5 million died from chronic diseases (UNDP, 2010). The movement in deaths from the two cause categories will cross in about 2025. At present greater attention will be paid to chronic diseases across the continent (Cilliers *et al.,* 2011).
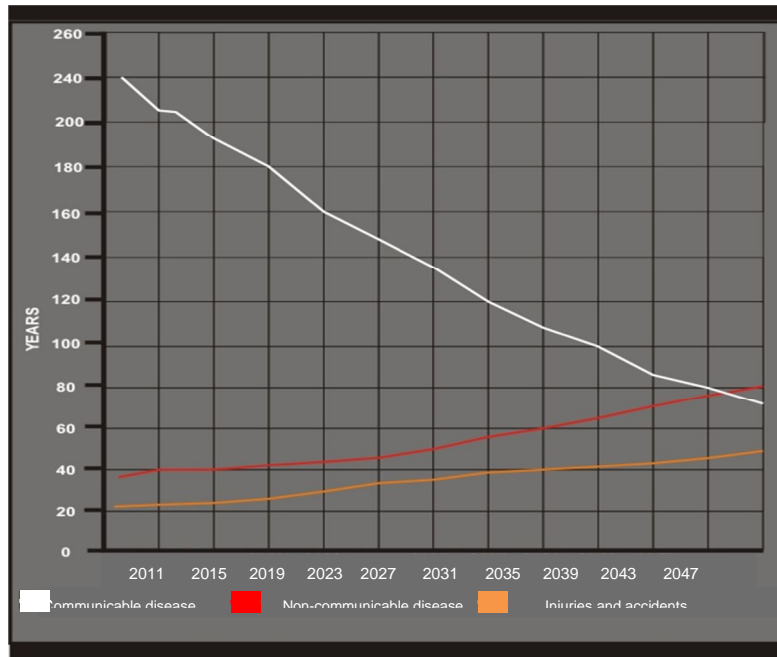
Figure 3.7: Years of life lost in Africa through major death cause groupings
Source: Adapted from Cilliers *et al.,* 2011; UNDP, 2010

Overall, and in spite of the HIV/AIDS epidemic, the human conditions in Africa are recovering quite progressively (UNDP, 2010). There are vital, extensive transformations well in progress. Population growth rates and fertility rates are diminishing, although these rates stay high in East, West and Central Africa and the populations of East and West Africa particularly will grow noticeably by 2051. Education is progressing gradually, with the big emphasis placed on the Millennium Development Goal (MDG) of universal primary completion. Deaths from communicable diseases remains far too elevated, however the rates of mortality are declining, and the burden of disease is moving inevitably, towards chronic ones (UNDP, 2010). The forecasts are predominantly optimistic in the requisites for human development. One clear omission is that numbers in acute poverty will remain high even as rates continue to diminish (UNDP, 2010). On the whole, the progress in human development will overflow in important ways to accelerated economic advance.

3.7   AFRICAN POPULATION GROWTH IN A GLOBAL CONTEXT

A persistent population growth rate of 2 3%, as documented by Africa in 2010, would result in a doubling of the population in 31 years (UNDP, 2010). Whilst its population and fertility growth rates are diminishing, Africa still has a very young and swiftly

growing population (UNDP, 2010). In 2051, approximately one in four people globally will live on the African continent. Populations of West and East Africa will increase particularly rapidly and turn out to be much larger than those of the central, northern or southern regions (Cilliers *et al.,* 2011). By 2051, East and West Africa will both have populations that are almost 2, 5 times greater than those of any of the other three regions. This will most likely lead to a transition in the way that regional institutions are controlled and run, perhaps also in political leadership on the continent, as well as in frameworks of external commitment (UNDP, 2010). Finally, diminishing population growth rates in Africa will raise the bar for a growing demographic dividend (larger shares of the population in the working years) and potentially faster economic growth. This transition in relation to the working-age population to total population will result in a fast rise in urbanisation, which will boost economic activity, but also place huge demands on urban development. Cilliers *et al.* (2011) argue that the problems such growth rates cause for policy-makers are clear. Annually they must supply more teachers, more health facilities, more classrooms and more services of all categories to purely preserve current standards. Urban areas will increase rapidly and become the key drivers of African futures (Cilliers *et al.,* 2011; UNDP, 2010).

In conditions of human development, Africa continues to improve access to primary education, resulting in increases in levels of HDI and literacy (UNDP, 2010). Regionally, whilst Northern Africa has the maximum HDI due to its income, Southern Africa has the highest levels of literacy. Globally, African literacy is approximately at the same level as in India and is considered to progress at almost the same rate (UNDP, 2010). The HIV/AIDS epidemic seems to have reached a turning point and the forecasts illustrate a lessening burden of communicable disease across the continent. A great deal still needs to be invested to maintain this decrease in levels of malaria, diarrhoea and other preventable and curable diseases. However, with development come new kinds of lifestyle-related diseases, such as heart disease and diabetes. These will develop into increasing problems for Africa as it approaches mid-century (Cilliers *et al.,* 2011).

The demographic size of Africa globally has increased from 9% of the total in 1960 to 15% in 2010 (Haldenwang, 2011). By 2051, its portion of global population will

reach 23% and it will be significantly bigger than either India or China (see Figure 3.8).
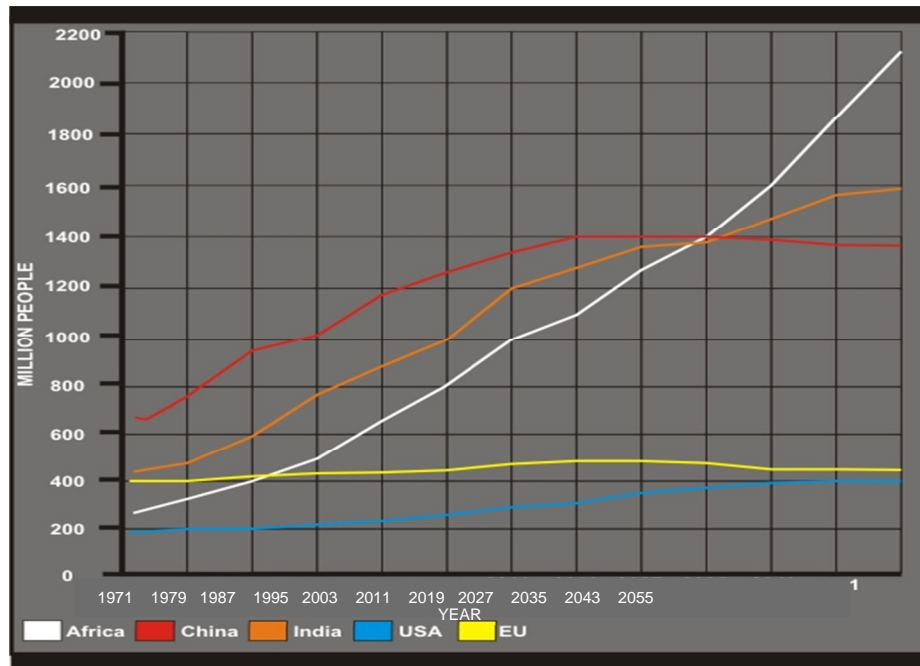
Figure 3.8: African population size in global context
Source: Adapted from Cilliers *et al.,* 2011; UNDP, 2010

Africa's population will continue to grow by more than 1% per annum, well above the rate of other global regions (Haldenwang, 2011). This extensive growth will greatly fuel Africa's importance in the world, despite what occurs in other facets of its development. The population growth of Africa will nevertheless not be consistent. In actuality, the demographic balance within Africa will swing rather brusquely towards Eastern and Western Africa due to their higher total fertility rate (Cilliers *et al.,* 2011; Haldenwang, 2011; UNDP, 2010). Figure 3.9 indicates that the two sub-regions will both have virtually 700 million people and be more than 2 5 times as big as Central, Southern or Northern Africa.
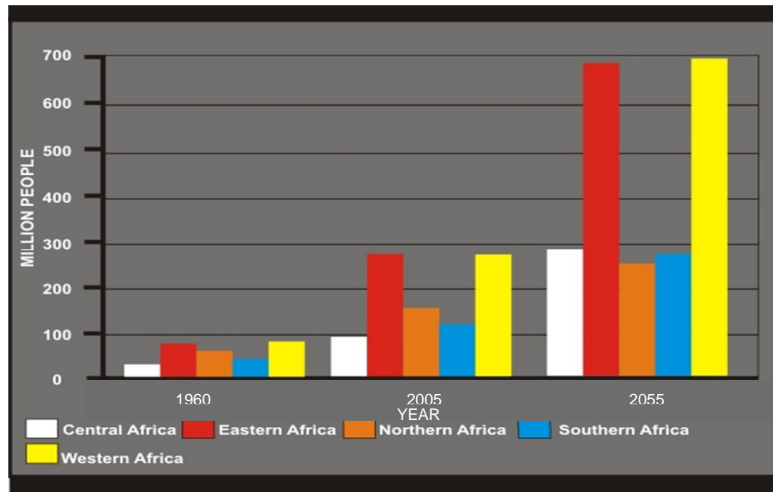
Figure 3.9: African population size in regional context
Source: Adapted from Haldenwang, 2011; UNDP, 2010

Fertility is high and is expected to remain high (see Figure 3.10) in Central Africa (Haldenwang, 2011). Whilst that region is at present considered less populated than the other regions of the continent, it will be similar in size to Southern and Northern Africa by 2051 (Haldenwang, 2011).
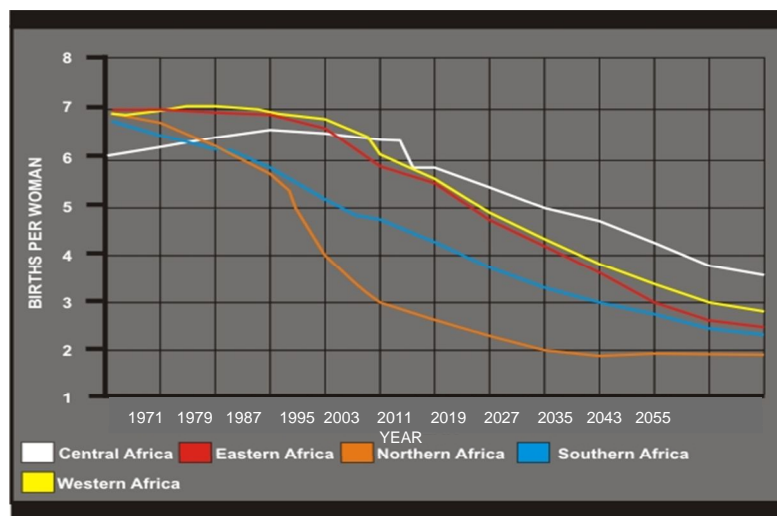
Figure 3.10: African fertility rates
Source: Adapted from Haldenwang, 2011; UNDP, 2010

Unless existing patterns alter considerably (and there is substantial socio-political advantage in this area in the longer run), fertility rates in 2051 will have diminished to replacement levels only in Northern Africa. This means that population increases across almost the complete continent, and particularly in Central Africa and is expected to have substantial momentum even in 2051, shortly before the size of the global population will peak. Additionally, the African population might not reach stability until close to or even shortly after the end of the century, by which time it

could be nearly 3 billion people, or 32% of the global totality (Cilliers *et al.,* 2011; Haldenwang, 2011).

This constant growth in the African population will cause numerous problems. Simultaneously, however, at least two demographic opportunities will emerge. The first is the demographic dividend, the occurrence of the increasing share of working age in the total population (it results when fertility rates drop and decrease the relative size of the population less than 15 years of age, before the population ages considerably and consequently quickly increases the share of the elderly) (Haldenwang, 2011).

Figure 3.10 indicates that, at present, the working age share of the African population (those between 15 and 65 years of age) is a great deal lower than that in the EU, the US, China or India. That share is increasing for Africa and will continue to do so through 2051, which is a sharp contrast to most of the rest of the world. Only India (and South Asia) is expected to have a continuous demographic dividend throughout most of the first half of the century (Ingle and Suryawanshni, 2011). The working population share of China is at present reaching its peak and is hovering before swift decline. The entire size of the African workforce will surpass that of China before 2030 and India before 2035 and continue to grow from then on (Cilliers *et al.,* 2011). Africa previously had more middle-class households (with an income of more than $20 000) than India did (McKinsey Global Institute, 2010).
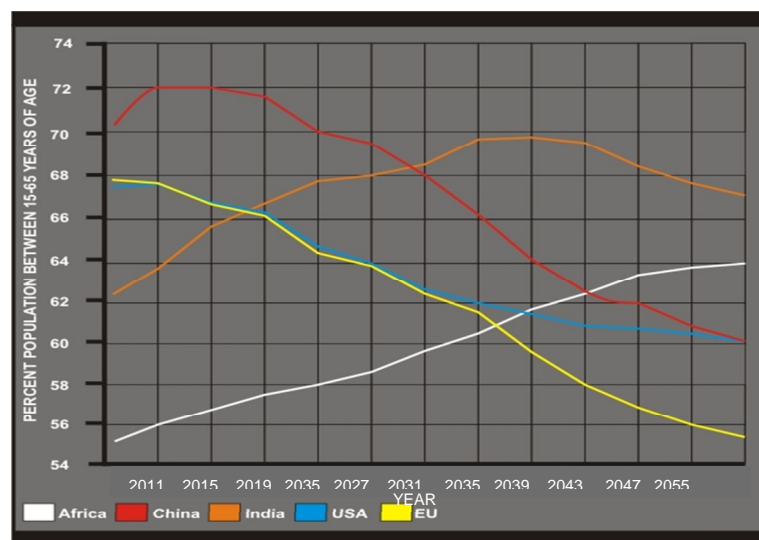
Figure 3.11: Demographic dividends

Source: Adapted from Haldenwang, 2011; UNDP, 2010

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The share of population in the working-age grouping is at present highest in Southern Africa (nearly 65%) and is significantly lower elsewhere on the continent (Cilliers *et al.,* 2011). Even in Southern Africa, the demographic dividend will increase somewhat until around 2040, as the other regions of the continent slowly meet with its higher levels by 2051. Whilst possibly a good thing, increasing demographic dividends can in addition be very challenging with regard to unemployment rates when an insufficient number of jobs are accessible (Haldenwang, 2011). In particular, in the beginning stages of growth in demographic dividends, those newly available for work are inclined to be the younger generation. Therefore, a 'youth bulge' is frequently associated with that stage of the demographic dividend and can be socially destabilising, particularly when unemployed (unemployed young men are known to be troublesome and in a global context, the main source of violence and crime). Secondly, urbanisation offers both opportunities and challenges (Cilliers *et al.,* 2011; Haldenwang, 2011; UNDP, 2010).
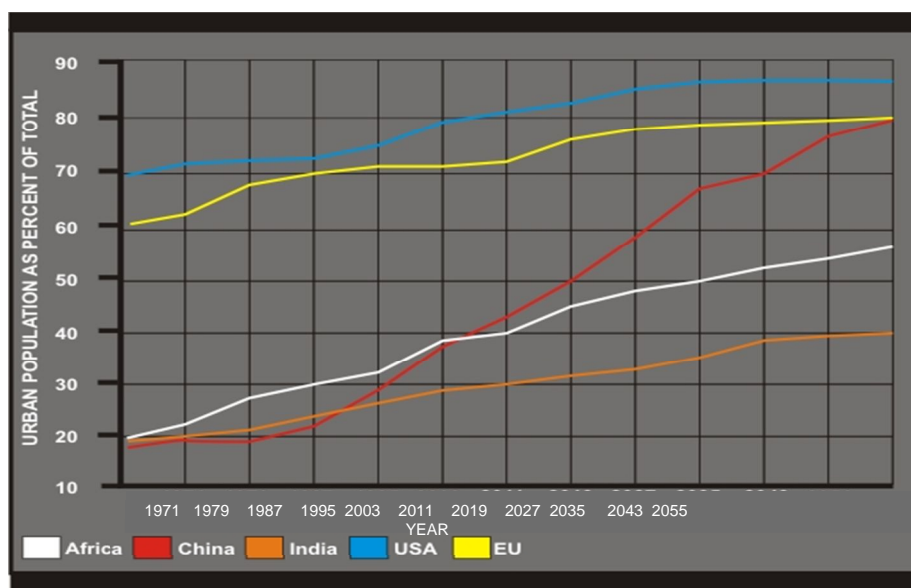
Figure 3.12: Urban population as share of the total
Source: Adapted from Haldenwang, 2011; UNDP, 2010

Figure 3.12 above reveals that urbanisation rates are now particularly fast in China, and that China is expected to urbanise a great deal more rapidly than Africa, and more than 50% of the continent's population is liable to live in cities, before 2025 (The UN-Habitat's State of African Cities, 2010). This growth will take place across African regions. The urbanisation progression is very significant for the continent. A recent study by the McKinsey Global Institute (2010) established that the move from

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rural to urban employment accounts for 20 to 50% of productivity development. In 1980, McKinsey found a mere 28% of Africans inhabited cities. The share in 2010 was nearer to 40% and increasing quickly. In 2031, the continent's top 18 cities may well have combined spending power of $1 3 trillion (Haldenwang, 2011). Industries connected to consumers (such as banking, retail and telecommunications), agriculture, infrastructure development and resources would be worth $2 6 trillion in annual revenues by 2020 (Cilliers *et al.,* 2011; Haldenwang, 2011; UNDP, 2010).

3.8   AFRICAN PROGRESS THROUGH DEVELOPMENT

Of concern in an African context, Sogolo (2005) argued that Western views of what comprises the 'good life' or 'progress' clashes with African ideals. The appraisal of quality of life depends on a large number of factors and the emphasis placed on these factors is culturally determined. Sogolo (2005) agrees with Maslow in the recognition of the very essential or basic universal human needs, such as security, health, happiness and absence of suffering. Sogolo (2005) declares "That the Western model of development is an imposition on Africa which must be re-orientated in search of new directions for the futures of African societies".

3.8.1 Science, technology and innovation

In spite of Sogolo's (2005) statement that the customary African mindset is constantly to return to the past when things were good, modern Africans are undeniably eager adopters of technology, as long as it fulfils a legitimate need (Hartmann, 2009). If the researcher agrees with the principle that the appliance of suitable technologies benefits man (parallel to Maslow's highest tier of human needs: problem solving), then the development of an indigenous and independent scientific and technological ability to solve local challenges in Sierra Leone is a vital display of progress. Maritz (2010) indicated the key principles for progress should be:

- Indigenous research ability to tackle key problems, locally (such as basic health issues, beneficiation of mineral resources, tropical diseases, hydroelectricity, tropical agriculture, conservation and forestry).

- Basic science needs to be promoted to sustain the technical aims as part of a well-conceived national innovation policy.

- A brain drain should be halted by imploring the bright young minds to devote their attention to solving the many problems and challenges of Sierra Leone.

- A culture of respect for the contribution of scientists and engineers should be developed, in conjunction with the suitable compensation of such scarce skills.

The operational definition of progress in the African context as judged by the African community is the movement of an African community because of innovation, from their initial state to a following state that is perceived to be better than the initial state in some respect. The measure of progress is thus the quality of improvement with reference to a particular African need that is satisfied by innovation (Maritz, 2010; Sogolo, 2005). However, where legitimate needs are met, there is a clear reason to implement technology. This implementation of technology can be challenging, such as importing artefacts (i.e. tractors) with no coupled understanding of the framework in which the artefact is operational, will lead to an unsuccessful effort. The import must be in reaction to a legitimate need, the related knowledge (technological dependencies) must be understood and the required environment for the imported technology to be victorious, must be present (Martiz, 2010).

3.8.2 African development

In *Africa in the New World* (Cilliers, 2008), it was concluded that African development would in actuality look similar to that of India, and that Africans should be looking towards Delhi in order to visualise their most probable path or paths to development. A recent economics report by Freemantle and Stevens (2010) supplied considerable support for this type of interpretation. Recognising the multifaceted convergence of domestic and global factors that support Indian growth, the author acknowledged three vital elements, each with particular developmental significance for Africa (Cilliers *et al.,* 2011; Freemantle & Stevens, 2010).

The first is India's green revolution (Latin America following several years later), driven mainly by genetically superior grains and a variety of improvements that have

enabled the country to become broadly food secure instead of using agriculture as a means of producing foreign exchange. That India was able to attain this whilst its population doubled after 1960 is extremely astonishing and a challenge very similar to what Africa currently faces. Staple foods must be predominant over cash crops. Investment must be directed into better use of fertilisers and irrigation and government subsidies for local producers must sustain domestic production and output. That outside demand is shaping African economies is mainly evident in the agricultural sector (Cilliers *et al.,* 2011; Freemantle & Stevens, 2010).

Since independence, according to a recent study, African governments and policy makers have mainly viewed agriculture as a key generator of foreign exchange, rather than as a channel for domestic food security (Ntombela, 2010; Roux, 2010; Schnurr and Swatuk, 2010). As an outcome, whilst agricultural exports are a main donor to GDP in many countries in Africa, the continent remains a net importer of food (Mkandawire & Soludo, 2003). The significance of agriculture should be obvious if the researcher believes that it is usually accepted that agriculture contributes about 40% of the total export value with 65% of the continent's population depending on this division for their livelihood even though figures fluctuate slightly between sources (Cilliers *et al.,* 2011; Ntombela, 2010; Schnurr & Swatuk, 2010).

Essential continental proposals such as the Alliance for a Green Revolution in Africa (AGRA) and the African Union's Comprehensive Africa Agriculture Development Programme (CAADP) are together making remarkable progress in restructuring African agriculture (United Nations Development Programme, 2010.). The second aspect was India's 1991 economic reform programme, which reversed the weak 'Hindu rate of growth' by laying the groundwork for quick increases in productivity, mainly apparent in the rise of the service sector in India (Cilliers *et al.,* 2011; Balakrishna, 2004). India's developmental model has therefore been exclusive in the way in which it has changed from agriculture to services without huge industrial development (Gerhaeusser, Iwasaki & Tulasidhar, 2010). India's inward-looking economic model has therefore relied on consumption more than investment, on domestic markets more than exports, on high-tech more than low-skilled manufacturing and on services more than industry (Freemantle & Stevens, 2010).

For this reason, Freemantle and Stevens (2010) argue that Africa needs to build economies of range to offer the local supply-side of dynamics to support the materialization of a globally competitive and strong private sector. For this to ensue, markets need to integrate on a regional basis. These developments will permit regional markets to meet demand and release demographic dividends, thus attracting larger levels of foreign direct investment. Essentially, local firms need to manufacture goods applicable to local and regional demand, in this manner protecting themselves from exogenous trade-related shocks (Cilliers *et al.,* 2011; Freemantle & Stevens, 2010).

The concluding factor is that India released the potential of its demographics through the private sector, thus shielding the home market from global competition when needed and banking on small and large domestic firms to produce an entrepreneurial culture of 'can do' and hope by means of the forces of globalisation to stimulate domestic consumer consumption. Harvard Business School Professor Michael Porter 20 years ago offered scholarly backing to the universal sense of the notion that well-designed guidelines in fact encourage rather than obstruct competitiveness and economic growth and the need to supply limited protection and state support to Africa's own industries is equally clear (Bassanini & Scarpetta, 2001; Cilliers *et al.,* 2011; Rivera-Batiz, 2002).

3.9   CHALLENGES OF AFRICAN DEVELOPMENT

Can Africa in its entirety or at least a large number of its countries, break free of development traps and meet the severe challenges the continent faces? Will the continent be able to do better than the previously moderately optimistic base-case scenario presented? Is Africa under serious threat of doing less well? There are clearly large doubts around these questions and many choices will assist the shaping of the path that Africa follows (Cads Global Network, 2010; Brinkerhoff & Goldsmith, 2005; Ouattara, 1997). For example, Morocco and Côte d'Ivoire measured by the variables that go into the HDI had related levels of development in 1970 and so might be expected to have trailed parallel development paths. Nevertheless, their human development courses digressed extensively (Haldenwang, 2011). Over the 40 years to 2010, life expectancy rose 11 years in

Côte d'Ivoire and a hefty 20 years in Morocco. At present, 61% of Moroccan children are attending school, in comparison with just 38% in Côte d'Ivoire, and Morocco's per capita income is 2 7 times greater than Côte d'Ivoire's (Haldenwang, 2011). The causes of some of these different outcomes include bad policy and poor leadership, epitomised by the rejection, at the end of 2010, of the election results by the serving president Laurent Gbagbo (Cilliers *et al.,* 2011; Haldenwang, 2011). To investigate alternative futures, the AFP (African Futures Project) has taken the first step of recognising some of the most vital uncertainties and choices that may put Africa on diverse development paths through 2051. These can create a scenario gap that the AFP finally seeks to examine in future studies and publications.

Figure 3.13 reveals a two-by-two schematic depiction of alternative scenarios. This research has highlighted the extent to which the external environment and African governance, together will aid and shape alternative African futures. Figure 3.13 utilises the two main dimensions of choice and uncertainty to outline a scenario space. Within that space might develop, for example, 'Opportunities lost', a world in which a benign global context provides an improved future, but that is wasted by poor governance. Alternatively 'Arrested development', in which in spite of the top efforts on the continent, the global environment overcomes it.
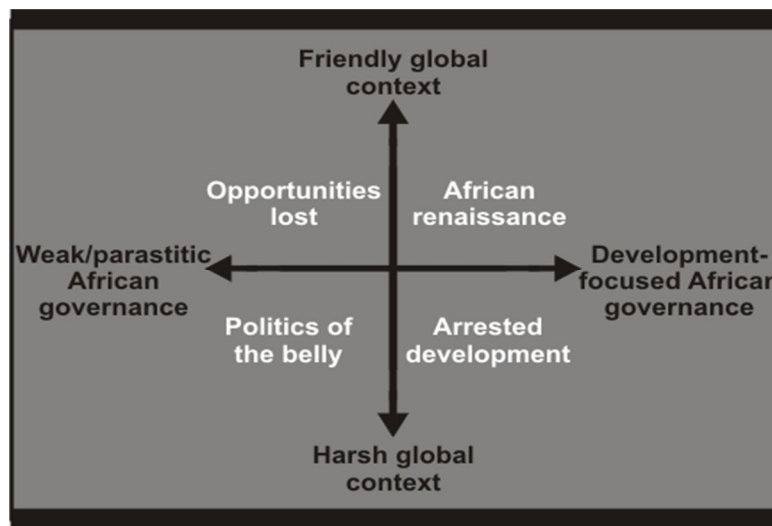
Figure 3.13: Alternative African futures
Source: Adapted from Cilliers *et al.,* 2011; UNDP, 2010

At the extremes, things may go somewhat effortlessly both domestically and internationally and increase chances of an 'African renaissance' and a new period of opportunity, or all may go badly wrong and lead to the 'Politics of the belly'. An initial

study of these scenarios proposes dramatic variations in continental GDP per capita. The short-term political challenge should be noticeable, as Africa requires competent and strong development-focused governance. The result of decisions taken now may have long-term and dramatic impacts, although it may take countless years before the results of such leadership become unmistakable (Cilliers *et al.,* 2011; Courtney, 2003; Meyer & Boninelli, 2004).

3.9.1 Developing Africa's infrastructure

Africa's infrastructure needs are broad-based and existing investment levels are far lower than those needed (Africon, 2008; Lindsey, 2004). During 2010, the World Bank, on behalf of the Africa Infrastructure Country Diagnostic project, published in its first comprehensive report on the conditions in 24 African countries that collectively account for 85% of the GDP, the infrastructure and population aid flows of sub-Saharan Africa. Due to widespread research across Africa, the report found the following:

- Infrastructure has been accountable for more than half of Africa's current improved growth performance and has the potential to donate even more in the future. The majority of this growth came from improvements in the infiltration of telecommunication services as examined below. For most countries, the harmful consequences of lacking infrastructure are as large as those of corruption, crime, red tape and financial market restraints.
- Africa's infrastructure systems trail behind those of other developing   countries and are distinguished by stagnant household access and missing regional links.
- Africa's complex economic layout (rapid urbanisation, low overall population density, large number of landlocked countries and copious small economies) presents a specific challenge for the region's infrastructure growth.
- Africa's infrastructure services are twice as costly as elsewhere, reflecting both diseconomies of scale in high profit margins and production caused by lack of competition.
- Power is by far Africa's biggest infrastructure challenge, with 30 countries facing regular power shortages and several paying high costs for emergency power.

Afterpower, water supply, sanitation and then transport are the most important items.

- The cost of dealing with Africa's infrastructure requirements is around $93 billion per annum, about one-third of which is for maintenance. This is considerably higher than estimated previously and around 15% of the region's GDP.

- The infrastructure challenge differs significantly by country type – fragile states face an impractical burden and resource-rich countries lag behind regardless of their wealth. It appears that meeting the needs of middle income countries seems more controllable and the World Bank calculates that these countries should be able to do so with about 10% of the GDP.

- Domestic expenditure on infrastructure in Africa is higher than formerly considered (at around $45 billion per annum) and includes the bigger share of the central government budget, which is the main driver of investing in infrastructure.

- Still if large potential efficiency gains are acquired Africa would still face an infrastructure-funding gap of $31 billion per annum, mostly in power.

- Africa's regulatory, administrative and institutional reforms have made substantial progress and even though they are only halfway along, are showing their effect on operational efficiency (Foster & Briceňo Garmendia, 2010; World Bank, 2010).

Undoubtedly, landlocked states need access to the sea to increase their options of trade partners; large but extensive populations need transportation networks that inflate individuals' choices of where to live, work, shop and play; energy-starved populations, as examined above, need access to modern telecommunications. The World Bank report reflects a picture of a continent in need of enormous infrastructure investment, with related prospects (Foster & Briceňo-Garmendia, 2010; World Bank, 2010).

3.10 SUMMARY

Socio-political change develops on a base of human development (Bhutan National Human Development Report, 2000). Healthy, well-fed and educated people,

independently and through civil society, insist on improved governance in all of its facets: reduced corruption, democratisation and more effective and efficient public policies (Bongaarts, 2009). Nevertheless, without basic sound governance, mainly to protect the physical security of citizens, human development is challenging (Forje, 2005). It is unlikely to direct efforts at only one or particular elements of the development process; immediate attention to all is necessary (Grindle, 2004). Just as there has been apparent progress in individual human conditions across most of Africa and just as one sees rising evidence of accelerated economic growth, Africa has begun to show advancement in governance (UNDP, 2010).

The on-going development course of Africa itself is supporting old challenges, including disagreement over the wealth that commodity production produces and it is giving rise to new challenges, together with those related with rapidly growing urban slums (Gilbert, 2006). Nevertheless, domestic, regional, pan-African and global forces are all at work to see the continent through its socio-political transitions (Gopal & Tyler, 2010). There is good reason to be vigilantly optimistic that this vital element of the development process will mostly continue to change positively (Gopal & Tyler, 2010; Northover, 2005; Sherman, 2009).

Constructing its most modern strategy for Africa, the World Bank acknowledged that Africa could be on the brink of an economic take-off, much like China was 30 years ago, and India 20 years ago. Not only are the internal dynamics shifting, but so too is Africa's importance globally. Already the US and China import respectively 22 and 30% of their oil from Africa and the continent is rising as a calculated player internationally (Kim & Jones, 2008). In a world where global governance development necessitates the aid or at least compliance of the majority of the 192 members of the UN, the African block of 53 affiliates is a union large enough to establish the fate of any proposal (World Bank, 2010). Even though Africa will be notably more significant that it was 40 years earlier, its combined authority upon world affairs will still be somewhat small whilst quickly gaining impact (McNamee *et al.*, 2009).

No single country will surface as an undeniable heavyweight in Africa, able to conduct continental leadership (World Bank, 2010). Nigeria should develop towards

2051 in influence due to its enormous population and size, but its GDP per capita will recover only gradually. Generally, Southern and Northern African smaller populations will live longer and be significantly much better off (Haldenwang, 2011). Throughout this period, the influence of East and West Africa will develop due to their growing economies and larger populations. The world and Africa will, thus, be very different by 2051 (Cilliers *et al.,* 2011).

Urban politics will prevail in Africa and the huge youth bulge (proportion of persons aged 15 to 29 years) presents vast challenges to the management of Africa's urban spaces. Only North Africa has less than 50% of its population in this age group. The strains on urban management will consequently be extremely high and the possibility of social instability similar. Human development, like human security, resists standardised policy prescriptions that can be applied across the bulk of the countries. The limitations or shortcomings of externally imposed, one-size-fits-all models of democracy, stability and development, are now unmistakable and widely acknowledged (UNDP, 2010). Therefore, national deviation and specificity are vital to recognise. Africa is not one country, but a complex framework of communities. The comparisons presented can consequently be very deceptive, hiding the vast differences amongst countries and regions of Africa. The diversity of the continent means that different regions and countries face incredibly different growth challenges and opportunities, an actuality that will also aid large portions of the continent to move ahead, even whilst others have less or no success in dealing with the expected problems that the future throws at them.

The next chapter will discuss the macro and micro factors affecting South Africa towards 2055.

CHAPTER 4

MACRO AND MICRO ENVIRONMENT AFFECTING THE REPUBLIC OF SOUTH AFRICA

4.1   INTRODUCTION

Analysing the macro and micro environment assists this research effort in answering the research questions by identifying the key factors that have an impact on South Africa either positively or negatively.   This chapter seeks to identify the drivers for change affecting South Africa by doing a Political, Economic, Social, Technological and Environmental (PESTE) analysis of the macro and micro environment affecting South Africa.   First, by identifying the drivers for change, this research strives to determine the risks and problems that prevent South Africa's progress and development.   Secondly, a PESTE analysis may help to identify areas that could be of mutual benefit between South Africa and developing countries and globally. These synergies may assist South Africa to draw lessons from other parts of the world and can be used to assist and structure South Africa towards being knowledge-based and prepared.

4.2   DRIVERS FOR CHANGE AFFECTING SOUTH AFRICA

A definition of a driver involves the result of the transformation in an environment brought on by any natural or human-induced factor that directly or indirectly causes a change (Nelson *et al.,* 2006; Carpenter *et al.*, 2006).   A direct driver indisputably influences specific processes.   An indirect driver operates more diffusely by altering one or more direct drivers (Nelson *et al.,* 2006).

Driving forces can be viewed as uncertain, as they are influenced by the rapidity of change.   This makes it harder to anticipate the future (Kasperson, Kasperson & Turner, 1995). This uncertainty is not only influenced by the rapidity of change, but also the new ways and values of looking at change (and the inherent conflicts of these new values and the existing and familiar ones) and of course, the driving forces of change (Bassanini & Scarpetta, 2001).   Researchers and decision-makers

will need to understand paradigm shifts and driving forces in order to combat this uncertainty (Caldwell, 2010).

Driving forces are adequately strong, which enables a direct course of expansion of the society and changes in the environment (Bassanini & Scarpetta, 2001; Nelson *et al.,* 2006). Driving forces set the preliminary course for development, and their impacts are powerful enough to change the course of progress. Their effects can be short and sharp, or long lasting (Caldwell, 2010; Nelson *et al.,* 2006). Driving forces function at various levels of intensity and scale, reverse direction, appear or disappear as the case may be (Kasperson *et al.*, 1995). The development of the scenarios is then based on the identification and articulation of the driving forces. Driving forces therefore are elements that can cause change to occur and their unfolding and interaction are responsible for the trends envisaged in each scenario (Hartmann, 2009; Nelson *et al.,* 2006).

Generally, driving forces are categorized by science and technology, economics, demographics, political and social science and then there are some that focus on a particular interest area (e.g., environment or education). There is no single right answer for selecting the components of driving forces (Nelson *et al.,* 2006). Researchers and decision-makers can locate trends with many variations; some are emerging, some disappearing, and some are long term. However, it is more important to understand the fundamental "forces" that drive trends in whichever direction, so that researchers and decision-makers will have a framework in which to relate to the more detailed trends (Caldwell, 2010).

"There has always been a vacuum in most developing countries – not just South Africa up to 2007 – simply because we are never focused on the drivers of growth." - Dr Samura Kamara, Sierra Leone's minister of finance and economic development (Ministry of Finance, 2010). Dr Kamara also indicated that in the past developing countries focused more on domestic and donor resource mobilisation, and that at this time developing countries would bring in trade and private sector development. Globalization of the world economy is the incorporation of economies throughout the world through trade, financial flows, the trade of technology and information, and the progress of people (Balakrishan, 2004; Ouattara, 1997). The rising importance of

world trade and capital flows in the world economy reflects the extent of the trend toward integration. A progressively large share of world GDP is generated in performance linked directly or indirectly to international trade (Herbst, 2005; Herbst & Mills, 2009; Ouattara, 1997).

A series of processes and conditions operates as basic drivers of change (Stockholm Environment Institute, 2011). The energy built into these drivers powerfully manipulates the near-term development of the global system and lessens even the likelihood of many long-range scenarios (Duinker & Greig, 2007). While existing trends are not certainly persistent, they definitely form the primary direction of economic, environmental and social change and may strongly influence even the long-term future. It is vital to distinguish, however, that ultimately these processes are themselves influenced by economic, social and environmental circumstances; they are human processes that can and do alter as expectations and social attitudes adjust to changed circumstances (Cleveland & Jacobs, 1999).

Table 4.1 includes a summary of facets describing the strategic planning process in Developed Worlds in contrast to Developing Worlds. These facets are examined and discussed in terms of the PESTEL analysis, i.e. for the political/legal (P), economic/financial (E), socio-cultural (S), technological (T), ecological (E) and knowledge/information (K) dimensions.

Table 4.1: Developed worlds in contrast to developing worlds

DIMENSIONS	DEVELOPED WORLDS	DEVELOPING WORLDS
Political/legal	• Reasonably stable governments • Institutional stability and service delivery excellence	• Relatively unstable governments and political power relationships • Institutional weaknesses in terms of policy setting and service delivery
Economic/ financial	• Self-sustained and growing economies • High degree of global/foreign exchange investment • Limited import threats and/or sophisticated protection mechanisms • Large and globally positioned companies • Well-stabilised industries and markets • Fairly well-distributed economic development among population groups • Modest public debt • Nominal lead-lag development of infrastructure	• Economics dependent on advanced Developed Worlds • Struggling to attract significant global/ foreign exchange investment • High import threats to local industries • Large overseas controlled and/or dominant, highly concentrated local companies • Struggling and/or young industries and emerging markets • Unfair distribution of economic development among population groups • Increasing huge budget deficits and significant public debt • Lead-lag development of infrastructure with commensurate incongruencies and the absence of synergies, for example, job opportunities fall short of available qualified people
Socio-cultural	• Strong focus on personal accountability • Fairly stable norms and values • Various unifying symbols • Social structures based on best practices • Well-structured and sophisticated urban management structures, mechanisms and processes • Relatively minor distinction between different social and/or economic classes with permeable boundaries between classes • Relatively even distribution of income, wealth and opportunities between different societal groups • Sufficient capacity to satisfy basic requirements • Well-advanced social services • Fairly high employment rates	• Abuse of power, lack of accountability and mistrust/misunderstanding • Fundamental transformation at the foundational level of society (i.e. in the norms, values, beliefs and assumptions underpinning society) • Lack of common and unifying symbols • Traditional rural social structures • Increasing urbanisation and problems of urban management • Strong and rigid social and/or economic class distinctions resulting in mistrust, suspicion, questions of legitimacy and feelings of exploitation • Gross inequalities in the distribution of income, wealth and opportunities between the various groups in society (despite the widespread poverty, the ruling elite are wealthy) • Limited capacity to satisfy even the most basic requirements • Poor social services such as education and health • High unemployment

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Table 4.1: (CONTINUED)		
DIMENSIONS	**DEVELOPED WORLDS**	**DEVELOPING WORLDS**
Socio-cultural (continued)	• Acceptable health standards • Medium-sized families • Medium to low violent crime rates and fraudulent activities • Well-developed/maintained infrastructure	• Diseases and poor health such as HIV/AIDS, which is often associated with prostitution • High birth rates (or population explosions) preventing any substantial short-term improvements in living standards • High violent crime rates and fraudulent activities • Underdeveloped and poorly maintained infrastructure such as roads
Technological	• Advanced and adequate technology • High degree of information technology specialisation/usage	• High technology pockets in a sea of outdated, less advanced, inadequate and dysfunctional technology • Lack of understanding and consequent lack (or incorrect) use of information technology
Ecological	• Safeguarding natural resources	• Exhaustion of natural resources in order to satisfy basic requirements and exploitation of natural resources by foreign companies/ pollution of land, water and the atmosphere
Knowledge/ information	• Growth in local expertise and knowledge • Adequate education • High literacy levels	• Brain drain • Inadequate education • High rates of illiteracy and low/inappropriate skill levels

Source: Adapted from Chailand, undated; Conyers et al, 1984; Kiggundu, 1989; Meyer et al, 2004 Saeed, 1986, Veldsman, 1997; Veldsman, 2002

According to Table 4.1, developed world countries have reasonably stable governments that add to first-rate service delivery, thereby proving that their economies, markets and industries are self-sustained and well established. Economic development is dispersed fairly well amongst population groups, public debt is restricted and values and socio-cultural norms are shared widely. Income, opportunities and wealth are distributed fairly well amongst diverse economic and/or social classes and there is a mobility or movement between the economic/social classes. There is also adequate capability to satisfy basic needs and a high standard of delivery of social services takes place. Families are medium sized and employment rates are high. Fraudulent activities and violent crime rates are low. Developed world countries have advanced technology and the environment and natural resources are relatively sheltered against exploitation. Adequate education is the result of high literacy levels (Chailand, undated; Conyers & Hills, 1984;

Kiggundu, 1989; Meyer & Bonnelli*., 2004; Saeed, 1986; Veldsman, 1997; Veldsman, 2002).

The drivers of change identified by this research to be discussed in the following sections are

- demographic drivers;
- economic drivers;
- social cultural drivers;
- political drivers;
- environmental drivers; and
- technological drivers.

4.3   DEMOGRAPHIC DRIVERS FOR CHANGE

Demography is defined as the scientific study of human populations, including their sizes, distribution, composition, growth, densities, and other features, as well as the origins and consequences of changes in these aspects (Business Futures, 2010; Haldenwang, 2011; PRB, 2004).   Demography is the foundation of all planning actions and developmental procedures and has significant implications for policy-makers and decision-makers alike, in both the private and public sectors (Haldenwang, 2011). Demographically, the world has undergone considerable changes over the past century and will do so yet again towards 2050. The 20th century observed sharp declines in mortality rates, followed by more steady declines in fertility rates with important increases in life expectancy at birth, brought about by social and technological changes. Together with economic development, these changes resulted in population growth patterns. Even though the 21st century is likely to be one of moderately slower global population growth, substantial demographic diversity can be likely in the population growth of countries and regions, resulting in wide disparities in health, economic prospects and living standards (Haldenwang, 2011).

Each person is a part of a population, and population aspects have an impact on many components of life – from the prices we pay for goods and services, to where we live (Hall, Madrigal & Robalino, 2008). The health care need preoccupies the political leaders of the more developed countries whose population are "ageing", whilst the need for employment opportunities, classrooms and housing preoccupies the leaders of countries that are still less developed. Population information is conveyed best in terms of rates and numbers (Engelman, 2011). It is not sufficient to know that life expectancy is growing, but also how many years are being added. In addition, over what period has the change taken place? Which people are affected? What percentage of the population do they embody? Thus, demography is the scientific study of population. In this section, some of the most vital demographic profile information (growth rates; population sizes; age structures; sex structures; total fertility rates; life expectancy at birth; infant mortality rates; net migration rates) as well as an analysis of the main proposed demographic trends for South Africa will also be discussed.

A major driving force for the future and development of the global environment, as well as the growth of societies in particular, is the population (Bongaarts, 2009). Demographic characteristics, which include migration, urbanisation patterns, health, level of skills and changes in the population numbers, are an important consideration (Hartmann, 2009). Alterations in demographics as well as the increase in population growth put pressure on most countries to advance standards of living and to offer essential social, economic and environmental services (Herbst & Mills, 2009). These factors also limit their ability to deal with poverty. Increased population growth rates may lead to political and social conflicts among various ethnic, religious and social groups over environmental resources (Knoerr, 2002). In the long run, however, population growth rates are expected to diminish, for many reasons together with the HIV/AIDS pandemic and the fact that African countries are addressing issues of population growth in a determined way (Hartmann, 2009).

The main setback with all of this is that, as fertility rates decline as standards of living increase, it would seem apparent that the bulk of the world's population growth will occur in the nations least able to maintain it (Avramov & Cliquet, 2003; Future Agenda, 2011). Additionally, as fertility decreases it alters the structure of the

population by growing the size of the workforce relative to the number of children and old people. More women can work and since there are fewer dependants, they have extra money to spend. Consequently, researchers and decision-makers must bear in mind how rapidly fertility rates in some high-population developing economies such as Indonesia and India are declining and how low they are going. This might lead to adjustments that will change the world's long-term population growth in a more viable direction (Future Agenda, 2011).

4.3.1 The arc of demographic growth

The dynamics of human development – overall quality of life and economic well-being – also take place along fairly universal patterns. By tracking ageing against human development, it is possible to determine the journey that countries take as they strive to create prosperity and equality. This arc of growth also indicates a country's position relative to other countries and, by inference, the societal, economic, and environmental issues it faces. There are almost 200 nations in the world and they fall into four clusters on the arc of growth.

- **Nascent countries,** in which the dependent population is dominated by people below the age of 15. These countries are also characterized by marginal increases in prosperity and equality levels (rapid increases from a   very   low base).

- **Momentum countries,** in which the population is dominated by people in the working-age group. These nations have higher levels of prosperity and equality than nascent countries, but the rate of marginal increase has dropped from the nascent stage. Countries at this stage need to save and invest efficiently to gain a high level of economic growth before they age.

- **Less developed countries,** in which the dependent population is dominated by people above the age of 65. These countries have moderately high levels of economic development, but minimal increases in prosperity and equality.

- **More developed countries,** in which the dependent population is dominated by people over 65. These countries are characterized by very high levels of economic development and minimal increases in prosperity   and equality.

These trajectories are not set in stone, which makes the active use of demographic analysis a powerful policy tool. Governments dissatisfied with their current arc of growth can make policy decisions, such as the decision to improve the quality of the education system, increase workforce productivity, raise the retirement age, or better integrate immigrants into society, that propel their countries to higher arcs of growth. At each stage, a country's development agenda should build on the progress made in previous stages. For example, in the nascent stage, most countries should focus their employment and labour market strategies on creating job opportunities. As a country progresses into the momentum stage, it will need to develop a talent base to ensure that these jobs are filled (Shediac, Moujaes & Najjar, 2011).

4.3.2 Countries along the arc of growth

Countries move along the arc to the right as their populations age, and have the potential to move up as their economies mature (Figure 4.1). They will follow either the "more developed" or the (less prosperous) "less developed" path, depending on whether they have the necessary measures, such as support for education and productivity, in place.
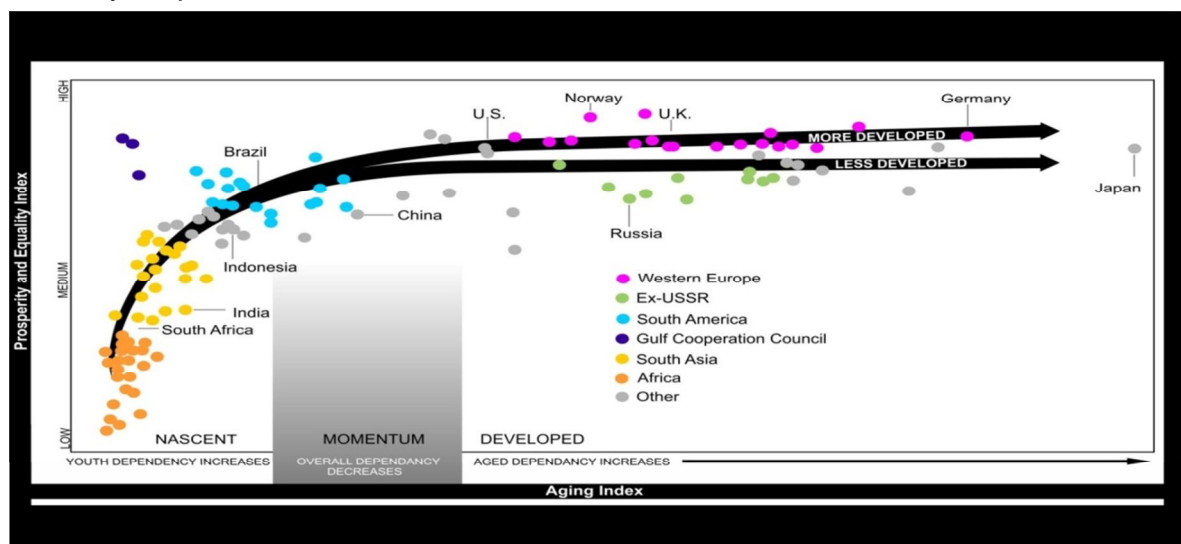
Figure 4.1: Countries along the arc of growth
Source: UN Population Division, UDPN, 2009

Shediac *et al.* (2011) argue that once it reaches the partially developed stage, its focus should be on maximizing the productivity of these workers. Finally, in the advanced developed stage, the country needs to ensure that it is capitalizing on

productivity gains from game-changing innovation and R and D. Companies, too, must take demographics into account as they plot their corporate strategies. Companies will have to adjust their products and services for countries at varying points on the arc of growth. Changing demographic profiles makes for new consumer priorities. As countries move along the arc from nascent to momentum, for instance, households begin to spend money on such previously unaffordable goods and services as furnishings, transportation, and communication (Haldenwang, 2011). Such spending rises for a time as a percentage of consumers spending, and then levels off. After that, a greater percentage of spending shifts to housing and electric power, as well as luxuries (such as recreation and culture, restaurant meals, and hotel rooms). Such spending increases continuously as countries move along the arc from nascent to advanced developed (Shediac *et al.,* 2011).

For employers, companies must also make policy adjustments to accommodate changing market dynamics and needs by developing a more diverse workforce. In a company's initial stages, this may be as simple as outsourcing some basic activities to nascent and momentum countries to capitalize on their large labour pools. Over time, companies can make nascent and momentum countries true anchors in their corporate strategies — for example, creating R and D hubs that tap the insights of regional workers to develop customized products and services for those markets (Shediac *et al.,* 2011). Companies can then take a similar approach as in the developed economies by revisiting the structure of career paths to keep older workers on the payroll; doing so will have the dual benefit of keeping the knowledge and experience of these employees in the service of the company and increasing the company's odds of success in tailoring products and services for older consumers in the "grey economy" (Shediac *et al.,* 2011; Engelman, 2011; Haldenwang, 2011).

4.3.3 Major demographic trends to affect South Africa towards 2050

To achieve the twin objectives of reducing poverty and inequality, it is necessary to understand what South Africa's population looks like today – and what it will look like in the decades to come. Demography is a vital tool in helping South Africa meet the needs and expand the capabilities of the young, the middle-aged and the old; of

women and men; and of rural and urban dwellers (National Development Plan, 2012).

Developed and developing countries are at very different stages in their demographic transitions.   Like most developing countries, South Africa has an urbanising and youthful population. For the next 20 years, policies should be viewed through a "youth lens", reflecting the rise of a largely youthful working-age population. After about 2025, however, there will be new challenges to address as the proportion of elderly citizens rises. South Africa's transition is different in two key respects.   First, fertility rates are much lower than elsewhere in Africa, and are comparable to middle-income countries in Latin America and Asia. Second, South Africa has experienced a marked deterioration in the population growth rate due to a high level of HIV/AIDS-related mortality.   HIV/AIDS has drastically affected South Africa's demographic profile, but forecasts suggest that the number of infections has begun to stabilise and hopefully this is a trend expected to continue. This does not mean that the effects of HIV/AIDS are fading however.   With more effective treatments that increase life expectancy, the number of people living with HIV will continue to grow, and public health systems will have to be capable of providing for their needs (National Development Plan, 2012).

Table 4.2: Population for South Africa towards 2055

South Africa
Population (Millions)
UN 2010 Medium- Variant Projections
2000 - 2050

Year	Population
2000	44 760
2005	47 793
2010	50 133
2015	51 431
2020	52 573
2025	53 751
2030	54 711
2035	55 472
2040	56 040
2045	56 425
2050	56 757

South Africa
Population sex ratio (males per 100 females)
UN 2010 Medium- Variant Projections
2000 - 2050

Year	Population sex ratio
2000	96.9
2005	97.3
2010	98.1
2015	98.6
2020	99.4
2025	100.3
2030	100.9
2035	101.4
2040	101.6
2045	101.5
2050	101.3

South Africa
Population growth rate (%)
UN 2010 Medium- Variant Projections
2000 - 2050

Period	Population growth rate
2000 - 2005	1.31
2005 - 2010	0.96
2010 - 2015	0.51
2015 - 2020	0.44
2020 - 2025	0.44
2025 - 2030	0.35
2030 - 2035	0.28
2035 - 2040	0.20
2040 - 2045	0.15
2045 - 2050	0.11

South Africa
Dependency ratios
UN 2010 Medium- Variant Projections
2000 - 2050

Year	Total	Child	Old-age
2000	60	54	6
2005	56	49	6
2010	53	46	7
2015	52	44	8
2020	51	42	9
2025	51	40	11
2030	49	38	12
2035	48	36	12
2040	46	34	12
2045	45	32	13
2050	45	31	15

South Africa
Total fertility (children per women)
UN 2010 Medium- Variant Projections
2000 - 2050

Period	Total fertility
2000 - 2005	2.80
2005 - 2010	2.55
2010 - 2015	2.38
2015 - 2020	2.24
2020 - 2025	2.13
2025 - 2030	2.03
2030 - 2035	1.95
2035 - 2040	1.88
2040 - 2045	1.83
2045 - 2050	1.79

South Africa
Life expectancy at birth by sex (males per 100 females)
UN 2010 Medium- Variant Projections
2000 - 2050

Period	Both sexes combined	Male	Female
2000 - 2005	52.3	50.4	54.2
2005 - 2010	51.2	50.1	52.1
2010 - 2015	53.8	53.1	54.1
2015 - 2020	55.9	55.5	55.8
2020 - 2025	57.0	56.7	56.8
2025 - 2030	58.5	57.9	58.6
2030 - 2035	60.0	59.0	60.6
2035 - 2040	61.3	60.1	62.4
2040 - 2045	62.7	61.4	64.1
2045 - 2050	64.2	62.7	65.9

South Africa
Infant mortality rate by sex
UN 2010 Medium- Variant Projections
2000 - 2050

Period	Both sexes combined (infant deaths, per 1,000 live births)	Male (infant deaths per 1,000 live male births)	Female (infant deaths per 1,000 live female biths)
2000 - 2005	59.2	63.3	52.9
2005 - 2010	54.8	61.0	48.5
2010 - 2015	45.9	51.1	40.6
2015 - 2020	40.2	44.3	35.9
2020 - 2025	35.7	38.9	32.3
2025 - 2030	31.9	34.4	29.4
2030 - 2035	28.9	30.7	27.1
2035 - 2040	26.3	27.4	25.1
2040 - 2045	23.9	24.6	23.3
2045 - 2050	21.8	22.0	21.6

South Africa
Net migration rate (per 1,00 population)
UN 2010 Medium- Variant Projections
2000 - 2050

Period	Net migration rate
2000 - 2005	3.0
2005 - 2010	2.9
2010 - 2015	-1.2
2015 - 2020	-1.2
2020 - 2025	0.2
2025 - 2030	0.2
2030 - 2035	0.2
2035 - 2040	0.2
2040 - 2045	0.2
2045 - 2050	0.2

South Africa
Median age (years)
UN 2010 Medium- Variant Projections
2000 - 2050

Year	Median age
2000	22.9
2005	23.9
2010	24.9
2015	26.0
2020	27.1
2025	28.1
2030	29.1
2035	30.2
2040	31.2
2045	32.4
2050	33.5

South Africa
Population aged 0 - 14
UN 2010 Medium- Variant Projections
2000 - 2050

Year	(thousands)	(%)
2000	15 074	50.4
2005	15 155	50.1
2010	15 105	53.1
2015	14 920	55.5
2020	14 532	56.7
2025	14 193	57.9
2030	13 789	59.0
2035	13 376	60.1
2040	12 932	61.4
2045	12 465	62.7
2050	12 003	

South Africa
Population aged 15-64
UN 2010 Medium- Variant Projections
2000 - 2050

Year	(thousands)	(%)
2000	28 037	62.6
2005	30 679	64.2
2010	32 704	65.2
2015	33 771	65.7
2020	34 760	66.1
2025	35 712	66.4
2030	36 652	67.0
2035	37 537	67.7
2040	38 327	68.4
2045	38 687	68.9
2050	39 040	68.8

South Africa
Population aged 65+
UN 2010 Medium- Variant Projections
2000 - 2050

Year	(thousands)	(%)
2000	1 649	3.7
2005	1 959	4.1
2010	2 324	4.6
2015	2 740	5.3
2020	3 282	6.2
2025	3 846	7.2
2030	4 270	7.8
2035	4 560	8.2
2040	4 781	8.5
2045	5 099	9.0
2050	5 715	10.1

South Africa Percentage urban (%) UN 2011 Medium- Variant Projections 2000 - 2050		South Africa Percentage rural (%) UN 2011 Medium- Variant Projections 2000 - 2050	
Year	Median age	Year	Median age
2000	56.9	2000	43.1
2005	59.3	2005	40.7
2010	61.5	2010	38.5
2011	62.0	2011	38.0
2015	63.8	2015	36.3
2020	65.9	2020	34.1
2025	67.9	2025	32.1
2030	69.8	2030	30.2
2035	71.7	2035	28.3
2040	73.5	2040	26.5
2045	75.2	2045	24.8
2050	76.8	2050	23.2

Source: Researcher's own construction based on UN 2010
medium-variant report

4.3.3.1 Decline in fertility rates

Fertility relates to the number of live births women have. The term fertility differs from fecundity, which refers to the physiological capability of women to reproduce (Abdalla, 2011). The general fertility rate is the figure of live births per 1 000 woman aged 15 – 49 in a given annum (Haldenwang, 2011). The general fertility rate is a fairly more advanced gauge than the birth rate because it refers to the age-sex group at risk of giving birth (typically defined as women aged between 15 – 49). This modification aids the elimination of misrepresentations that might occur because of different sex and age distributions amongst populations. Therefore, the general fertility rate is a better foundation to evaluate fertility levels among populations than the changes in the crude birth rate (Abdalla, 2011; Haldenwang, 2011).

Fertility is moulded by social, cultural, health and economic factors (Haldenwang, 2011; Haupt & Kane, 1998). Most of these four factors are influenced by the following variables:

- **The percentage of women in sexual unions** – this percentage is reflected by other demographic factors including: the pervasiveness of marriage, the age at first marriage, separation, rates of divorce, remarriage and male mortality rate;

- **The proportion of women using contraceptives** – the contraceptive prevalence rate is the number of women of reproductive age who are using contraception per 100 women of reproductive age;

- **The percentage of women who are not currently fecund** (primarily because of breastfeeding); and

- **The level of induced abortion.**

Information about these factors supplies clues to potential changes in fertility and supports our understanding of past change. The entire fertility rate of South Africa was projected for 2000 – 2005 at 2.80 children per woman, and was relatively high in comparison to the rest of the world (UN, Medium-Variant Report, 2010). Nonetheless, life expectancy at birth is projected at only 52.3 years (both sexes), and is connected with the high maternal and baby mortality rates of 59.2 (UN, Medium-Variant Report, 2010), as well as the severe weight of communicable and non-communicable diseases in the country (Haldenwang, 2011; Musa, 2006; World Health Organisation, 2008).

Generally, it is in less developed countries where the most steady fertility rates will persist to be found over the next decade, and consequently where the rates of population growth will be highest (Future Agenda, 2011; Haldenwang, 2011). South Africa, on the contrary, will have declined fertility rates towards 2050 to a negative of 1.79%, which are at present running at over 2.38% (UN, Medium-Variant Report, 2010). Associated population growth rates for South Africa vary from 4.36% during 2000 to 1.09% towards 2050. This means that around 6.5 million people will be added to the South African population over the next forty years (Future Agenda, 2011).

The main hindrance with all of this in South Africa is that, as fertility rates decline and the standards of living increase, it would seem obvious that the majority of South Africa's population growth will take place during 2015 – 2040 (Avramov & Cliquet, 2003; Future Agenda, 2011). In addition, as fertility diminishes it adjusts the configuration of the population by increasing the size of the workforce in relation to the number of children and old people. More women can work and because there are fewer dependants, they would have additional capital to spend. Consequently, researchers and decision-makers must bear in mind how rapidly fertility rates in some less developed economies such as South Africa are declining and how low they are going (1.79%). This might lead to adjustment that could change the long-term population growth in a more feasible direction (Future Agenda, 2011).

The importance of understanding the estimated reductions of fertility is brought into the spotlight by bearing in mind that, if fertility were to stay constant at the levels projected for 2005 – 2010, the population of South Africa would expand drastically towards 2050 instead of the 56.75 million projected by presuming that fertility declines. That is, without further declines of fertility, South Africa's population could grow by nearly twice as much as the present population of 50.13 million (UN, 2010).

4.3.3.2 Demographic trends in South Africa

South Africa's total fertility rate (TFR) is estimated to have been in decline from at least the early 1950s when it was at a level of 6.1 live births per woman. Current national levels are estimated at 2.38, which is higher than that of more developed countries, some of which have fallen below replacement level of 2.1. However, in regional terms, South Africa is already at a very low level compared to that of Africa as a continent (5.0), and individual neighbouring countries, such as Angola (7.2), Botswana (3.9), Mozambique (5.9) and Swaziland (4.4). Persistent declining fertility in South Africa has recently resulted in a demographically significant turning point where by the number of annual births has started to decline, leading to a decline in the size of successive birth cohorts. Persistent fertility decline is a concern to South Africa as there will be a progressive decrease in the availability of kin upon whom future cohorts of older persons can rely for various forms of support. Such support

includes financial and subsistence support, as well as assistance with health care and activities of daily living (Joubert & Bradshaw, 2006).

4.3.4 Total population growth

Three demographic processes establish population growth (or decline): fertility (births), mortality (deaths) and migration (McFalls, 2003). Generally, fertility rates have decreased and will persist in doing so (Carey, 2003). Mortality rates which have been decreasing are beginning to increase again, either as a result of population ageing, or as a result of AIDS whilst international migration has expanded and will carry on doing so (Steck, 2010). The hasty and unmatched growth of the world population throughout the past century can mostly be linked to enhanced health conditions globally, which have drastically lowered mortality rates, particularly in South Africa (UN, Medium-Variant Report, 2010). Although fertility will be below the replacement value of 2.1 children per woman in South Africa over the period 2030 – 2035, the constant decline in mortality will fuel population growth as births will still exceed deaths in South Africa towards 2050 (Business Futures, 2010).

It is argued that the future size of the world population will mainly depend on fertility trends (Bongaarts, 1982; Business Futures, 2010). Regardless of the fact that fertility rates are waning globally and some populations are facing increased mortality risks because of the threatening AIDS epidemic, the world population will continue to expand in absolute numbers (Leahy, 2007). Given that fertility decline has not taken place concurrently in all countries, the pace of population growth also fluctuates considerably between less developed and more developed countries. According to the 2010 UN Medium-Variant report, population growth is projected to slow down towards 2050. However, whereas the growth rate remains positive for South Africa until 2050, it could turn negative after 2050.

The population growth rates of the main regions of the world are different as a result of dissimilar fertility, mortality and migration trends. According to the 2010 UN Medium-Variant report, populations will continue to increase in all major regions, except Europe where the population is likely to decline from 733 million in 2010 to 691 million in 2050 due to remarkably low fertility rates. In spite of the expected

increase in mortality because of AIDS, South Africa will continue to experience a population growth between 2010 and 2050, increasing from 50.13 million people in 2010 to 56.75 million in 2050.

Persistent rapid population growth, often outpacing economic growth, in less developed countries, generally appears least capable to deal with its ramifications. According to the Population Resource Centre (2010), some of the most significant implications of constant population growth are the following:

- Rising food insecurity and shortages.
- Freshwater shortages and water scarcity.
- Deforestation.
- Acceleration in the depletion of scarce natural resources leading to higher commodity prices.
- Slowdown in progress made toward improved child and maternal health.
- Increase in global greenhouse gas emissions.
- Delays in meeting the primary target of the Millennium Development Goals (MDGs) to reduce the proportion of populations living in poverty and   inhumane conditions by 2015.

Currently, the population of South Africa is still young with children under the age of 15 accounting for 30.1% of the population and young persons aged between 15 – 24 accounting for a further 28%. In fact, the numbers of children and young people in South Africa are at an all-time high (15.04 million children and 14.04 million young people), posing a major challenge for South Africa which is faced with the necessity of providing education or employment to large cohorts of children and youth. According to the UN Medium-Variant Report (2010) estimates for 2010 – 2015, for South Africa, the number of people in the main working ages of 15 to 65 is at an all-time high of 32.70 million. That number is expected to peak over the next forty years, by reaching 39.04 million in 2050 and therefore increasing by nearly 6.7 million over the next forty years. These population trends rationalise the necessity of supporting employment creation in South Africa as part of any scheme to address

the global economic crisis that the world is currently experiencing (UN, Medium-Variant Report, 2010).

South Africa also faces a serious HIV/AIDS epidemic that is overturning hard-won achievements in life expectancy and is slowing down population growth (Lamptey, Wigley, Carr & Collymore, 2002). However, it is not estimated to experience a negative population growth because of AIDS, but rather is projected to slow down significantly in its worst affected areas. The race between population growth and economic development in South Africa is one of the major problems currently faced. High rates of population growth and stagnating or slow-growing economies all through most of the region have hindered sustainable development and modernisation efforts (UN, Medium-Variant Report, 2010). South Africa struggles to offer housing, employment, education and health care for its growing population, while trying to contend in the world economy, coupled with internal and international political conflicts and epidemics (Bevan, 2001; McNamee *et al.*, 2009). Due to the rates of population growth and increasing population pressure, South Africa would decrease the fertility rate (Business Futures, 2010; UN Medium-Variant Report, 2010).

The proposed population trends also depend on attaining a large increase in the number of AIDS patients who receive anti-retroviral therapy in order to treat the disease and on the achievement of successful efforts to manage the further spread of HIV. In the UN 2008 Revision, the outcome of the epidemic was modelled in 58 countries where adult HIV prevalence reached 1% or higher at some point during 1980 – 2007 or where the number of people living with HIV/AIDS was at least half a million in 2007. Among those 58 countries, 38 are in Africa and 15 had an adult HIV prevalence of at least 5% in 2007. In foretelling the effect of the disease, it has been believed that 26 of the affected countries will by 2015 be able to supply anti-retroviral treatment to 70% or more of the persons inflicted with AIDS and that an additional nine will reach treatment levels extending from 50% to 60% by 2015 (Business Futures, 2010; UN, 2012; Adendorff, 2011).

Another demographic impact of fertility decline and increased life expectancy is population ageing. Africa's population over the age of 60 is projected to increase

from the current 6% to 10% by mid-century giving Africa the fastest rate of ageing among geographic regions (Population Divisions ESA/UN, 2011). This is an important shift because it signifies a compositional redistribution of the African population. These changing proportions of child and elderly populations are an important shift because they signify a redistribution of the African population. It is also projected that there will be a lower dependency ratio on the population, thus resulting in a larger population available to participate in the workforce (UN, 2012). The implications for food security are an overall larger demand from the sub-Saharan Africa population for agricultural output both domestically and internationally. Perhaps technological innovation will play a necessary and important role in enhancing the agricultural output locally on the African continent (Juma, 2011).

4.3.5 Life expectancy

Life expectancy is an estimation of the average number of extra years a person could expect to live if the age-precise death rates for a given year prevailed for the rest of their lives (Evandrou, 2005; Haldenwang, 2011; Haupt & Kane, 1998). Life expectancy is a theoretical appraisement because it is established on current death rates and actual death rates change over the course of a person's life span (Bongaarts & Feeney, 2003). Every person's life expectancy alters as he or she grows older and as mortality trends vary (Evandrou, 2005; Haldenwang, 2011; Haupt & Kane, 1998; Adendorff, 2011). Since life expectancy changes considerably depending on present age, sex and race, these segments are usually given separately. Life expectancy at birth is the most frequently cited life expectancy calculation (Haldenwang, 2011; Salomon, Mathers, Murray & Ferguson, 2001; Adendorff, 2011). It is a good indicator of current health conditions as life expectancies vary extensively amongst countries (Haldenwang, 2011; Haupt & Kane, 1998; Adendorff, 2011).

It should be noted that low life expectancies in less developed countries are in large part the result of high infant mortality rates. In 2000 – 2005 the UN 2010 Medium-Variant Report, for example, reported life expectancy at birth for South Africa (both sexes) at only 45.80 years. This was amongst the lowest life expectancy rates in the

world (UN Medium-Variant Report, 2010). The current projections (2010 – 2015, UN Medium-Variant Report (2010) is 49.80 years for both sexes and expected to increase to an encouraging 67 years by 2045 – 2050. The advantage for South Africa would be an increased working force contributing towards the economy, while the disadvantage on the other hand would be the increased pressure/dependency of the aged. Careful provisions should be catered for. Towards 2050, 10% of South Africans will be over the age of 65 (UN, Medium-Variant Report, 2010).

Improving all around health today is a vital social goal, globally, which has apparent straight payoffs in terms of better and longer lives for millions (Becker, Tomas, Philipson, Rodrigo & Soares, 2005). There is also a rising consensus that improving health can have just as important indirect payoffs through increasing economic growth (Alleyne & Cohen, 2002; Gallup & Sachs, 2001). For example, Gallup and Sachs (2001) argue that wiping out malaria in South Africa could also reflect a strong connection between measures of health (for example, life expectancy or infant mortality) and both the level of economic development and recent economic growth (Acemoglu & Johnson, 2006; Haldenwang, 2011).

4.3.6 Population ageing

The main demographic result of lower mortality and reduced fertility, particularly if combined with increases in life expectancy, is population ageing, a process whereby the percentage (and number) of older persons in a population increases and that of younger persons decreases (Haldenwang, 2011; Mandishona, 1987; Schroll, 2005; Adendorff, 2011). Additionally, the median age (the age at which 50% of the population is older and 50% is younger than that age) increases and the age structure changes (Crimmins & Saito, 2001; Haldenwang, 2011). Population ageing was one of the most distinguishing demographic events of the 20th century and will certainly remain significant throughout the 21st century (Haldenwang, 2011; Passarino et al., 2002). In addition, according to UN classifications, a population is regarded as 'old' in demographic terms if more than 7% of the population is aged 65+ (Business Futures, 2010; Adendorff, 2011; Haldenwang, 2011).

In South Africa, the population aged 65 or over is growing at a pace (0.12% per annum) and is expected to increase by more than 110% over the next four decades rising from 2.23 million in 2010 to 5.71 million in 2050. South Africa's ageing is progressing slowly, but it is more encouraging when compared to the current 2010, life expectancy. Currently in South Africa 4.6% of the population is aged 65 years or older, compared with 30% being children (0-14 years). By 2050, the proportion of older persons is expected to be half that of children (30.1% vs. 21.1%) whilst the number of older persons is projected to be more than double that in 1950 (2.32 million vs. 5.75 million). As a result of these changes the median age in South Africa rose from 22.9 years in 2000 to 24.9 years in 2010, and is projected to reach the unprecedented level of 33.50 years in 2050 (Business Futures, 2010; UN, Medium-Variant Report, 2010).

The numbers of children and young people in South Africa are currently at an all-time high (15.10 million children <15 years), creating a major challenge to South Africa, which is faced with the obligation of offering education to large groups of children in the future (UN Medium-Variant Report, 2010). Nevertheless, in the future, the pace of population ageing in South Africa is likely to increase ever so slightly and the shift from a young to an old age structure will be more compacted in time.

4.3.6.1 Population ageing in South Africa

The UN (2010) and Haldenwang (2011) population census found that 4.6% of the total population in South Africa were 65 years or older. This proportion may be perceived as low, or at least considerably lower than the 2000 proportions of some developed nations, such as Italy (24.1%), Greece (23.4%) and Japan (23.2%), but it is higher than the proportions of almost all other African nations in 2000, with the exception of the two island populations of Mauritius (9%) and Reunion (9.9%). South Africa's 4.6% was noticeably lower than the 5.1% for the African continent as a whole, but displayed different levels of ageing than those in such nations as Brazil (7.8%), India (7.6%), Mexico (6.9%), Samoa (6.8%) and Vietnam (7.5%). The average proportion for the Southern African region in 2000 was 5.7%, and neighbouring countries' proportions ranged from 4.5% in Angola and Botswana to

6.5% in Lesotho. Despite the demographical impact of HIV/AIDS, the South African proportion is projected to increase over the next two decades, and by 2025 more than one person in seven will be 65 years or older.

The above data have an important role to play in a discussion of population ageing, but percentages alone cannot portray the momentum of growth in the older population (Kinsella & Phillips, 2005). Although the proportion of the older population will increase moderately over the projection period, the absolute size is projected to increase by 112%, from 2.47 million in 1985 to 5.23 million in 2025, i.e. a doubling over the course of 40 years. Census 2001 counted 3.28 million older persons. In the year 2000 South Africa had the second highest number of older persons on the African continent, only surpassed by the older population of Nigeria (5.42 million), while dwarfing the numbers in Reunion (71 000) and Mauritius (104 000), the nations with the highest and second highest proportions, respectively, in Africa (UN, 2002). The projected numbers indicate that the total number of older persons is expected to increase more rapidly over the next two decades than over the past two decades.

According to the UN (2009), the effective age of retirement differs significantly amongst populations. Generally, older persons in countries with higher per capita incomes can retire earlier and as a result tend to have lower labour force participation rates at older ages (Business Futures, 2010). Thus, just 14% of men aged 65+ (and 24% of men aged 60+) are active economically in more developed countries, whereas 35% of men aged 65+ (and 47% of men aged 60+) are in the labour force of less developed countries. The difference is similar amongst woman. In more developed countries 8% of woman aged 65+ (and 14% of woman aged 60+) are economically active, compared to 19% and 24% in less developed countries. Consequently, it is argued that older persons should remain economically active for longer in South Africa because of the limited coverage of pension programmes and the relatively small incomes they provide (Business Futures, 2010; Medium-Variant Report, 2010).

4.3.7 International migration and brain-drain

People moving across national borders (international migration) is a worldwide challenge for the 21st century and a progressively more significant feature of global integration (Haldenwang, 2011; Martin & Widgren, 2002). The 2009 United Nations Human Development Report (UNHDR) reasons that there is potential for migration (or human mobility) to improve human development, amongst movers (migrants), people that stay and the majority of those in destination societies – by increasing a person's health, education and income prospects (UNHDR, 2009). Nevertheless, it is imperative to note that even though migration is a tremendously essential process that establishes population growth or decline, the data are typically inaccurate and poor quality since official migration statistics eliminate illegal migration. As a result, international migration is the component of population change most tricky to estimate and measure with reliability (UN, 2012).

During 2009 the UNHDR proposed that the pressure for enlarged migrant flow will increase in coming decades in the face of deviating demographic and economic trends (e.g., persistent fast population growth in less developed countries; population ageing, particularly in more developed countries; and growing numbers of working age people in less developed countries, leading to labour abundance) (UNHDR, 2009). The current growth in international migration can be related to three key transformations (or so-called revolutions) in the past half-century, i.e., the transportation and communications revolutions which allowed potential migrants to search for job opportunities in other countries and to move to where these jobs are, as well as the human rights revolution which safeguarded immigrants from deportation and improved their opportunities in receiving countries (Business Futures, 2010; Haldenwang, 2011; Kent & Haub, 2005; Martin & Zürcher, 2008; Adendorff, 2011).

Although it is usually supposed that the existing movement of international migration is mainly from less developed countries to more developed countries, the 2009 UNHDR indicated that most movement in the world did not necessarily take place between developing and developed countries. One possible reason why there is less movement from less developed to more developed countries is because moving

is costly and moving over longer distances is more expensive than undertaking short journeys (UNHDR, 2009). Quite the contrary: three quarters of international movers move to a country with a higher HDI (Human Development Index) than their country of origin; among those from developing countries, this share exceeds 80%. However, their destinations are often not developed countries but rather other developing countries with higher living standards and/or more jobs (Business Futures, 2010; Adendorff, 2011; UNHDR, 2009).

In many of the more developed countries with fertility rates well beneath the replacement level, migration constitutes an important part of the actual population growth. It is foreseen that in the future many governments of industrial countries experiencing population ageing will more and more attempt to draw qualified migrants to restore a declining workforce (Haldenwang, 2011). It is proposed that international migration will carry on increasing towards 2050 due to persistent demographic and economic inequalities and because of the many advances in communications and the increased transportation mobility facilities (Martin & Zürcher, 2008; Adendorff, 2011).

The UN (2012) also indicated that even though the recent global economic crisis might have started to diminish, migration flows in contrast to those registered over the recent past, the main economic and demographic asymmetries that will continue are likely to remain potent generators of international migration from Africa to Europe; only 3% of Africans reside in a country other than their country of birth and fewer than 1% of Africans live in Europe (UN, 2009; UNHDR, 2009; Adendorff, 2011). In reality, the amount of migration between African countries is far larger than the movement out of the continent overall (Haldenwang, 2011). According to the UN Economic Commission for Africa (UNECA, 2010), migration movements within and out of Africa are inclined to exhibit the following characteristics:

- Cross-border and internal migration as tactics to handle economic and ecological issues.

- Movements towards regions of relative stability and prosperity that are generated by intra-regional inconsistencies as characterised by the Southern Africa migration system.

- Amplified transit migration through North Africa, the gateway to Europe.

- Increased concealed and irregular migration due to restrictive immigration policies of the North, but also concerning trafficking of persons from within Africa.

- Higher international mobility of qualified and skilled persons from Africa to developed countries.

- The increased feminisation of migration.

It is accepted that the movement of migrants from Africa to Europe will continue as long as disparities in welfare, income levels and wellbeing between Africa and Europe remain as they are at present (Business Futures, 2010; Adendorff, 2011; Van Moppes, 2006). International migration influences development in Africa in general in various ways such as loss of human capital, but also allowances received and the attainment of new skills (Business Futures, 2010). A major challenge for many African countries that previously faced grim human resource shortages is skills migration or the 'brain-drain' (Haldenwang, 2011). The African human resource pool is constantly dwindling as the educated choose to emigrate and apply their skills in a foreign country (Haldenwang, 2011; UNECA, 2010). It is projected that since 1990, some of the 20 000 scarce skilled professionals have been leaving Africa on a yearly basis, depriving the continent of nurses, doctors, engineers and teachers. (Haldenwang, 2001; Tebeje, 2005 in UNECA, 2006; Adendorff, 2011)

Data provided by the global Commission on International Migration in 2012 suggest that international migrants (changing country of residence over the past five years) make up about 3% of the world population, with levels ranging from about 0.1% in China to 65% in Kuwait. South Africa's figure has been estimated by the UN (2010) to be about 2.7%, which is modest in global terms, although Gauteng, the international migrant gateway to South Africa, has a figure of about 13%. The difficulty, however, is that there is no accurate means to count international migrants in South Africa and their country of origin. At best, there are indicators for the growth

in international migration. For example, annual total border crossings have risen by over 2 million since 1996, from 5.1 million to 7.5 million (National Academy of Science, 2001). This reflects growth in tourism, but may also indicate increased transnational movement. Future migration flows are difficult to predict because they are driven by constantly changing social and economic factors. South Africa's economic position in Africa will affect migration flows, as will the political circumstances of neighbouring states and the livelihood effects of changing weather patterns. International migration will need to be understood as a contingency in the planning process. The scale and nature of its impact should be addressed with flexibility as sources of data collection and analysis are strengthened (National Development Plan, 2012).

In the past, international migration was primarily a response to poverty or political instability. The scale of migration was often directly linked to the economic and income differential between a country of origin and host country (Statistics South Africa, 2011). This remains important, but reasons for migration are becoming increasingly diverse, while the practical risk and emotional costs of moving have reduced with the diffusion of cheap, versatile communications. In future, individuals with skills and greater access to resources, education and networks are more likely to be international migrants than the destitute (Golden, Cameron & Balarajan, 2011). If international trends are reflected in South Africa, migration patterns will become increasingly complex, involving diverse social groups and a combination of permanent and temporary migrants. There will be more youthful and female migrants, and a growing number of migrants moving from regions severely affected by climate change (National Development Plan, 2012).

Some argue that, if properly managed, migration will serve as an important instrument to fill gaps in the labour market and will contribute positively to South Africa's development (National Development Plan, 2012). Energetic and resourceful migrant communities can contribute to local and national development, and diverse, cosmopolitan populations are often the focus of cultural, economic and intellectual innovation. If poorly managed, however, the skills and potentials of migrants will be neglected to the detriment of the country (National Development Plan, 2012).

Migration will remain a source of conflict and tension, and migrants will be increasingly vulnerable, subject to continued abuse, exploitation and discrimination. South Africa's immigration policy has sought to respond to the need for skilled immigrants (for example, the 2004 amendments to the Immigration Act, which facilitate the arrival of scarce skills). The country's political leadership has also attempted to respond to the scourge of xenophobia. In all spheres of government, migration and social policy needs to do more to ease the entry of skilled migrants and to counter xenophobia (National Development Plan, 2012). It should also more effectively address the rights and vulnerabilities of migrants; support programmes to regularise migrant residence; promote cultural dialogue and language transfer; ensure better and more consistent law enforcement (by protecting victims and prosecuting perpetrators); and strengthen transnational infrastructure (transport, electronic communications, banking services). In addition, more needs to be done to address the specific need of migrants in South Africa, such as education for children and treatment for HIV/AIDS, which has spread at a disproportionately rapid pace among immigrants because of South Africa's history of circular labour migration (National Development Plan, 2012).

4.3.8 Urbanisation vs. rural development

Urbanisation is considered to be one of the most influential and irreversible forces in the world and consequently the process of urbanisation is likely to continue towards 2050 (however, slower than in the recent past). Unpredictable growth and rapid changes are happening and will continue to take place, in the cities of the less developed regions and will largely involve poor people (Haldenwang, 2011). Cities represent some of society's most serious challenges, from disease to pollution, to lack of adequate shelter and unemployment (Business Futures, 2010). Nevertheless, cities are also locations where fast, dramatic change is not likely but expected. As a result, they offer real opportunities for reducing disparities in development, increasing energy efficiency and enhancing living conditions in general (Haldenwang, 2011). National and local governments can encourage harmonious urbanisation by supporting pro-poor, inclusive and equitable urban development and by reinforcing urban governance processes and structures (Business Futures, 2010; Adendorff, 2011; UN-Habitat, 2008). If managed correctly, urbanisation can aid in

fighting inequality, environmental degradation and poverty. However, action to benefit from the opportunities it offers and to attend to the challenges it raises must be sustained and prompt (Business Futures, 2010; Adendorff, 2011; UN, 2009).

According to the latest population and urbanisation projections of the 2010 UN Medium-Variant report (2010), South Africa's population is expected to increase by 6 624 000 between 2010 and 2050, while the urban population is also projected to gain. South Africa's population is projected to increase from 50.13 million (2010 estimate) to 56.75 million (2050 estimate). As a result, the rural population of South Africa started to decline from 2000 (43.1% of population) and will decline even further to 23.2% of the total population towards 2050. During 2012 the vast majority of South Africans already resided in the urban areas (61.5% vs. 38.5% rural). The urban population of South Africa had been growing considerably and will continue to do so towards 2050 (UN Medium-Variant Report, 2010). By 2050, the urban population of South Africa will be 43.58 million compared to the 2010 estimate of 30.83 million. It can be argued that for South Africa the increase in urbanisation growth is resulting from the in-migration of South Africans into the poorer towns, not from natural population growth. It can also be disputed that without immigration, the urbanisation population growth of South Africa is likely to decline if one compares this to the overall population growth of South Africa towards 2050. The sustained increases of urban population, combined with the pronounced declaration of rural population growth will result in continued urbanisation (Haldenwang, 2011; UN Medium-Variant Report, 2010). These changes will have vast implications for both human well-being and the environment (Haldenwang, 2011).

Rural depopulation has long been a phenomenon in South Africa, where the rural population has been experiencing a negative growth rate since the 1950s, as South Africans leave their rural homes in favour of the more developed cities in search of better working opportunities. It must however also be mentioned that South Africans also hold on to their family owned properties and farms in the rural areas and as a result are still indirectly connected to their rural roots. The urban sprawl however is coupled with a trend that real estate developers are pushing for westernised lifestyles and development (Business Futures, 2010). The current developing norm found in South Africa is twofold. One is characterised by informal and illegal patterns

of land use, combined with a lack of infrastructure and public facilities, basic services and inadequate accessible roads. The other is where development takes place in high and middle class residential homes as well as highly valued commercial and retail complexes (Business Futures, 2010; Haldenwang, 2011).

Urban growth in South Africa can also be attributed to negative events such as conflicts experienced, coupled with draughts, famine, civil strife and the search for medical care. If well managed, the cities of South Africa can offer important opportunities for economic and social development (Business Futures, 2010: 16). On the other hand, if not well managed, urban built environments will not adequately accommodate the sheer increase of populations, the concentrations of business activity, population density, the movement of people and goods, the waste and pollution by products, unhealthy conditions in burgeoning slums and lack of clean energy all will severely compromise the quality of the urban environment (Business Futures, 2010; Haldenwang, 2011). The further lack of adequate housing in South Africa will lead to one of the most foremost problems for South African decision-makers towards 2050, as the cost of providing adequate shelters for all its citizens will be immense. On the brighter side, urbanisation will however encourage sustained economic growth and rapid social development (Haldenwang, 2011). Urbanisation on the other hand also stimulates social change (i.e. educational and cultural opportunities) as well as economic change as there is a positive correlation between per capita income and level of urbanisation (Business Futures, 2010; Adendorff, 2011; Haldenwang, 2011).

The National Planning Commission's Diagnostic Report (2012) showed that different migration patterns largely reflect national patterns of job creation and job loss. Between 2001 and 2007, for example, Gauteng had a net gain of about 3 million people and the Western Cape just over 1 million. The Eastern Cape had a net loss of about 1.4 million and Limpopo 1.2 million. These trends are likely to continue, although possibly at a reduced rate. Although rural-urban migration is significant, about 78% of migration from rural areas and small towns was to other rural areas and small towns. Consequently, while the growth of large urban centres needs to be properly managed, planning must also respond to changing patterns of population distribution in rural areas (National Development Plan, 2012).

4.3.9 Smaller households

Households are referred to as one or more persons occupying a housing unit (Business Futures, 2010).   Smaller households provide a trend indicator of households getting smaller due to increasing strain factors on housing and infrastructure resources and in turn indicate that more and smaller households will be in need of housing and other basic services (Haldenwang, 2011; Business Futures, 2010).   The lack of adequate housing in South Africa is one of the most pressing problems that decision-makers in South Africa will have to face towards 2050, as the cost for providing adequate shelter for all will be immense.   It can be argued that one in four dwellers in South Africa lives in slum conditions and the figure could be expected to increase if this problem is not addressed.   Slums are a manifestation of the two main challenges facing human settlement development, namely rapid urbanisation as well as the urbanisation of poverty (Haldenwang, 2011; Adendorff, 2011; Business Futures, 2010).   The immediate consequence of poverty is poor health (Business Futures, 2010).

South Africa on the other hand tends to be more geared to providing adequate shelter than our African neighbours; but in spite of the numerous human settlement projects underway will have to bear in mind that informal settlements will continue to grow as a result of the rapid urbanisation trend that is likely to continue towards 2050.   Urbanisation trends in South Africa will further be sparked by the influx of people from Africa into South Africa.

4.3.10 Summary and critical demographic findings

The future implications affecting the demographic term trends at large for South Africa indicate that future population growth will occur in South Africa towards 2050. There is continued rapid population growth, often outpacing economic growth in South Africa.   This is concerning since South Africa as a less developed country, appears to struggle to deal with its consequences. The population Resource Centre (2010) indicated that some of the most important implications of continued population growth would be: water shortages; rising food insecurity and food shortages; acceleration in the depletion of scarce natural resources; deforestation,

extinction of animal and plant species; the increase in greenhouse gas emissions and the slowing down of the progress towards improved child and maternal health. The decline in birth rates is positively affecting the composition and distribution of South Africa's population, because it creates an opportunity to exploit a demographic dividend. Changes in population structure can significantly affect national performance, because individual economic behaviour varies with age. The young and the old tend to consume more than they produce, and nations with a high ratio of dependants to workers devote a relatively high proportion of resources to these groups, often limiting economic growth. In contrast, nations with a relatively large share of the population in prime working age can experience a boost in income and savings, because the working-age population tends to produce more than it consumes. However, demographic dividends can only stimulate substantial economic growth where there are appropriate economic and labour policies that allow the young to enter the workplace, investments in health and education, and a stable and effective government. The key is to identify economic policies that can harness the benefits of a larger working-age population (National Development Plan, 2012).

South Africa's demographic profile could also help to tackle poverty and inequality. The country has fewer very old and very young people relative to those of working-age, and young people make up over 25% of the total population. A similar profile proved to be a boon for economic growth in Asian countries. But reaping the benefits will only be possible if sound education and skills training are provided whereby jobs must follow. If South Africa fails to do this, its large youth cohort could pose a serious threat to social, political and economic stability (National Development Plan, 2012). Given the high HIV/AIDS prevalence, particular attention needs to be also given to health care provision to ensure that the large number of working age are not debilitated and can participate gainfully in the economy.

4.4 ECONOMIC DRIVERS FOR CHANGE AFFECTING SOUTH AFRICA TOWARDS 2050

The international economic system as constructed following the Second World War will be almost unrecognizable by 2025 owing to the rise of emerging powers, a

globalizing economy, an historic transfer of relative wealth and economic power from West to East, and the growing influence of non-state actors (Grant, 2010). By 2025, the international economic system will be a global multi-polar one with gaps in national power continuing to narrow between developed and developing countries (NIC, 2008). Concurrent with the shift in power among nation states, the relative power of various non-state actors including businesses, tribes, religious organisations, and criminal networks is increasing (Fingar, 2009). The players are changing, but so too are the scope and breadth of transnational issues important for continued global economic prosperity. Ageing populations in the developed world; growing energy, food and water constraints; and concerns about climate change will limit and diminish what will still be a historically unprecedented age of prosperity (NIC, 2008; Global Risks, 2012; Hansen, 2008).

Internationally, economic activity is regarded as a result of humans' determination to develop their own well-being. The outcome of this action is determined by natural resource endowments, including ecosystem services, the number and skills of humans, the stock of built resources and the character of human institutions, both formal and informal (Helling, 2005). The economies of most countries are categorized by their reliance on the mining and export of natural resources, and thus by a high level of weakness to worldwide economic fluctuations, especially in mineral and agricultural commodity prices (Hartmann, 2009; Hirsch, 2000). The global outline of economic activity, now focused in the industrial countries, is likely to alter.

Much has been written about the economic shift in relative material power and influence towards Asia and especially China (Zakaria, 2008). This transition will fundamentally influence African futures. The signs of realignment are there to see, most prominently in the growing importance attached to the G20. Whereas the original G7 (Canada, Germany, France, United Kingdom, Italy, Japan and the US), produced 67-70% of global gross domestic product (GDP) during the 40 years between 1960 and 2000, this dropped to around 59% by 2010 and is likely to decline to about 30% by 2050. The more inclusive G20, largely through its inclusion of countries such as China, India and Brazil, has produced about 80% of global GDP since 1960 and still will do so in 2050. Mankind may be seeing the rise of what some describe as interpolarity (inter-dependent multipolarity) (Grevi, 2009).

Interpolarity reflects, on the one hand, a return to multiple centres of power across the world with a number of competing centres of power emerging globally. Part and parcel of this trend is an accelerating shift away from Western dominance and towards greater heterogeneity and complexity. This hot, flat and crowded world (Friedman, 2008) will also see the rising influence of non-state actors, including criminal networks, civil society and financial institutions. At the same time, the world will become more interdependent than ever before through its trade, financial systems, energy interdependence and global communications systems. The extent to which globalisation continues to deepen (as it has for many decades) is evident when one considers that global GDP, in nominal terms, increased from $32.1 trillion in 2000 to $61.2 trillion in 2008, i.e. almost doubling. World trade, also in nominal terms, increased from $13.1 trillion to $32.2 trillion over the same period an increase of 245%. Clearly, trade growth has outstripped GDP growth by a substantial margin (Freemantle & Stevens, 2010). Global institutions are also increasingly called upon (with different levels of success) to respond to global challenges such as climate change and organised crime.

Economic growth rates in numerous developing regions are higher than in the current industrial countries, heralding their rising role in the world's economy (Global Economic Outlook, 2011). China's economy, for instance, during 2007 was already the second largest in the world (when calculated in currency) and growing more than twice as fast as that of the United States (The Economist, 2007). India, Latin America and Southeast Asia are also growing more swiftly than the current industrial economies. If these trends persist, the world economy will no longer be dominated by the United States, Japan and Europe but will increasingly include a number of major new participants, possibly including the revitalized and resurgent BRICS countries. Average per capita incomes in developing regions, nevertheless, are likely to remain far below those in the current industrial countries (Global Economic Prospects, 2007). Global consumption of raw materials and energy is also increasing. Certainly, though per capita consumption of energy and raw materials has commonly reached a plateau in the industrial countries in recent decades, the developing countries remain much lower than developed countries (Global Economic Outlook, 2011). These historic gaps will continue over the next decades, closing only gradually with economic growth in non-industrialized environmental

degradation, particularly in developing countries, even though increasing efficiency in the use of minerals and energy could partly counteract these trends (Future Agenda, 2011). Through the fast growth of the emerging markets, the global economy is going through a seismic shift (HSBC, 2011). The questions asked are, why is this change occurring, will it continue and how will the world look if it does? The answers to these questions are imperative for decision-makers/researchers' decisions today. Below, HSBC (2011) provides a framework for thoughts about the above questions. Based on their analysis of the top 30 economies ranked by size of GDP in 2050, their conclusions were as follows:

- World production will treble, as growth speeds up on the back of the emerging economies. On average, annual world growth is suggested to be increasing towards 3% compared with growth of just over 2% in the 2000s (Figure 4.2). Emerging-world growth will provide twice as much as the developed world to global growth over this period.

- The emerging economy will by 2025 have amplified five-fold and will be larger than the developed world (Figure 4.3).
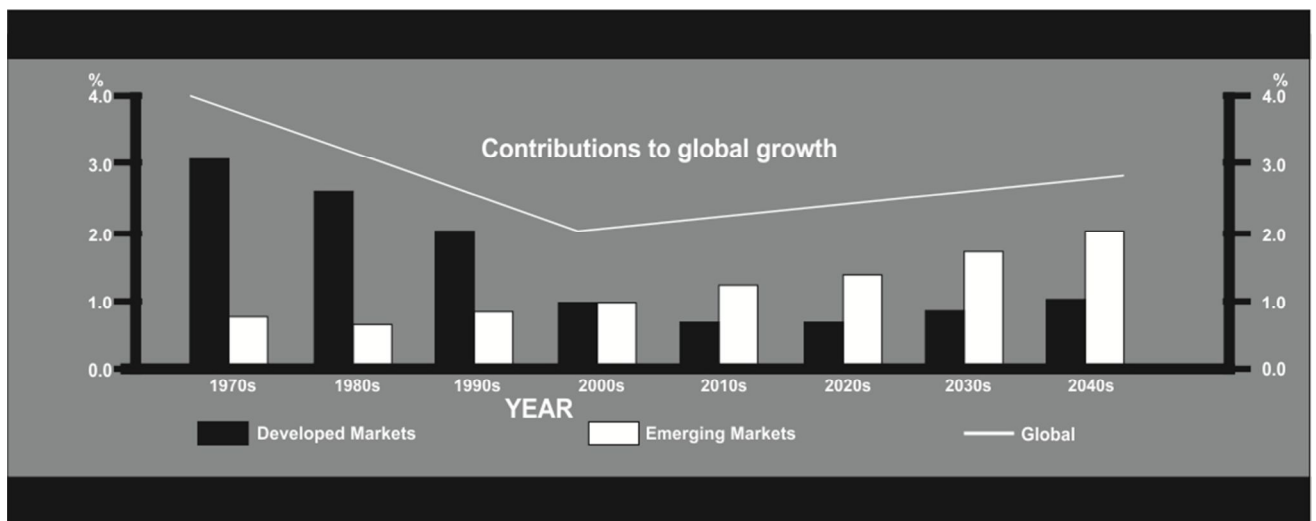
Figure 4.2: Growth in emerging markets will boost global growth
Source: HSBC, 2011
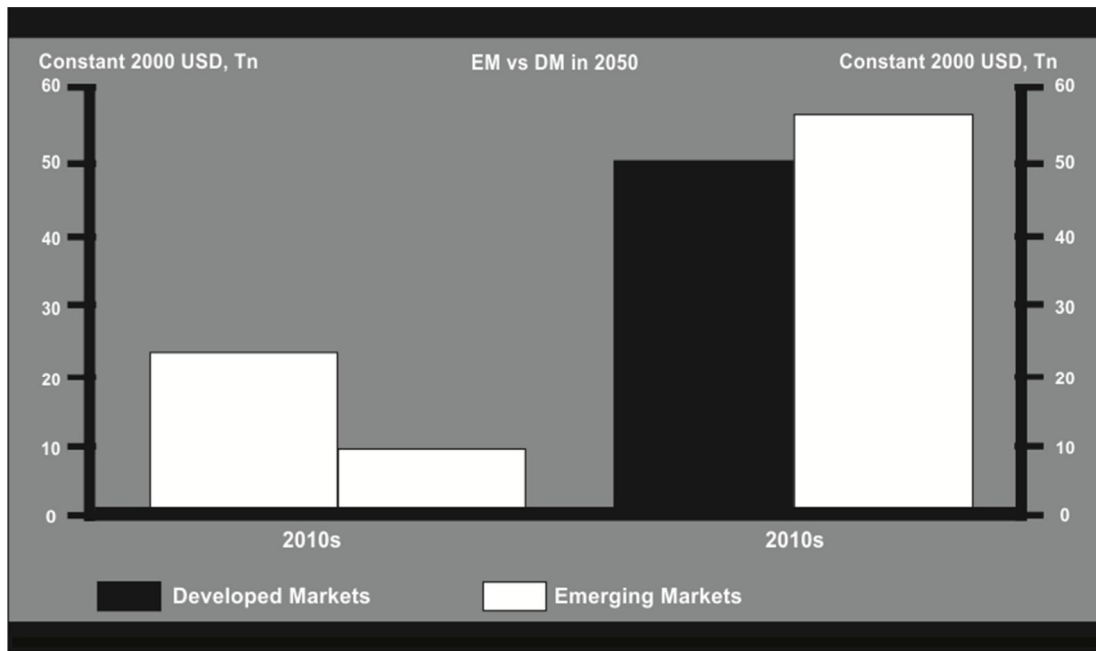
Figure 4.3: Emerging markets will be bigger than the developed market by 2050

Source: HSBC, 2011

- China and India will be the largest and third-largest economies in the world, respectively.

- Nineteen of the top 30 economies by GDP will be countries that researchers at present describe as 'emerging' (Table 4.3).

Table 4.3: The Top 30 economies in 2050

Order in 2050 by size		Size of economy in 2050 (Bn, Constant 2000 USD)	Rank change between now and 2050	Income per capita (Constant 2000 USD)		Population (Mn)
				2050	2010	
1	China	24617	2	17372	2396	1417
2	US	22270	-1	55134	36354	404
3	India	8165	5	5060	790	1614
4	Japan	6429	-2	63244	39435	102
5	Germany	3714	-1	52683	25083	71
6	UK	3576	-1	49412	27646	72
7	Brazil	2960	2	13547	4711	219
8	Mexico	2810	5	21793	6217	129
9	France	2750	-3	40643	23881	68
10	Canada	2287	0	51485	26335	44
11	Italy	2194	-4	38445	18703	57
12	Turkey	2149	6	22063	5088	97
13	S.Korea	2056	-2	46657	16463	44
14	Spain	1954	-2	38111	15699	51
15	Russia	1878	2	16174	2934	116
16	Indonesia	1502	5	5215	1178	288
17	Australia	1480	-3	51523	26244	29
18	Argentina	1477	-2	29001	10517	51
19	Egypt	1165	16	8996	3002	130
20	Malaysia	1160	17	29247	5224	40
21	Saudi Arabia	1128	2	25845	9833	44
22	Thailand	856	7	11674	2744	73
23	Netherlands	798	-8	45839	26376	17
24	Poland	786	0	24547	6563	32
25	Iran	732	9	7547	2138	97
26	Colombia	725	13	11530	3052	63
27	Switzerland	711	-7	83559	38739	9
28	Hong Kong	657	-3	76153	35203	9
29	Venezuela	558	7	13268	5438	42
30	South Africa	529	-2	9308	3710	57

Source: Adopted from HSBC, 2011

- A host of other emerging economies – most notably, Mexico, Indonesia, Turkey, Egypt, South Africa, Malaysia, Colombia, Thailand and Venezuela, will make substantial progress up the global league table.

- Above forecasts unite prospects for per capita GDP and the demographic viewpoint. Income per capita should develop in all the countries that researchers consider. Nevertheless, demographic patterns differ extensively across the world and have a main influence on growth prospects.

- The US and UK, with superior demographic outlooks, are relatively victorious at preserving their positions.

- However, the small-population, rich, ageing economies in Europe are the big losers. The Netherlands and Switzerland slip down the grid considerably and Sweden, Austria, Belgium, Norway and Denmark drop out of Top 30 altogether.

- This may have repercussions for the capabilities of these economies to manipulate the global policy agenda. Previously Europe has been required to concede two seats on the IMF's executive board in order to make way for some emerging economies. This adds a completely new dimension to the current Euro zone crisis, and offers an important incentive to euro-area countries to work through their current problems and remain a union.

- Demographic change is regarded as even more drastic outside of Europe. The working population will rise by 73% in Saudi Arabia and fall by 37% in Japan. That is echoed in these countries' varying fortunes in the HSBC (2011) top 20 table (Figure 4.4).
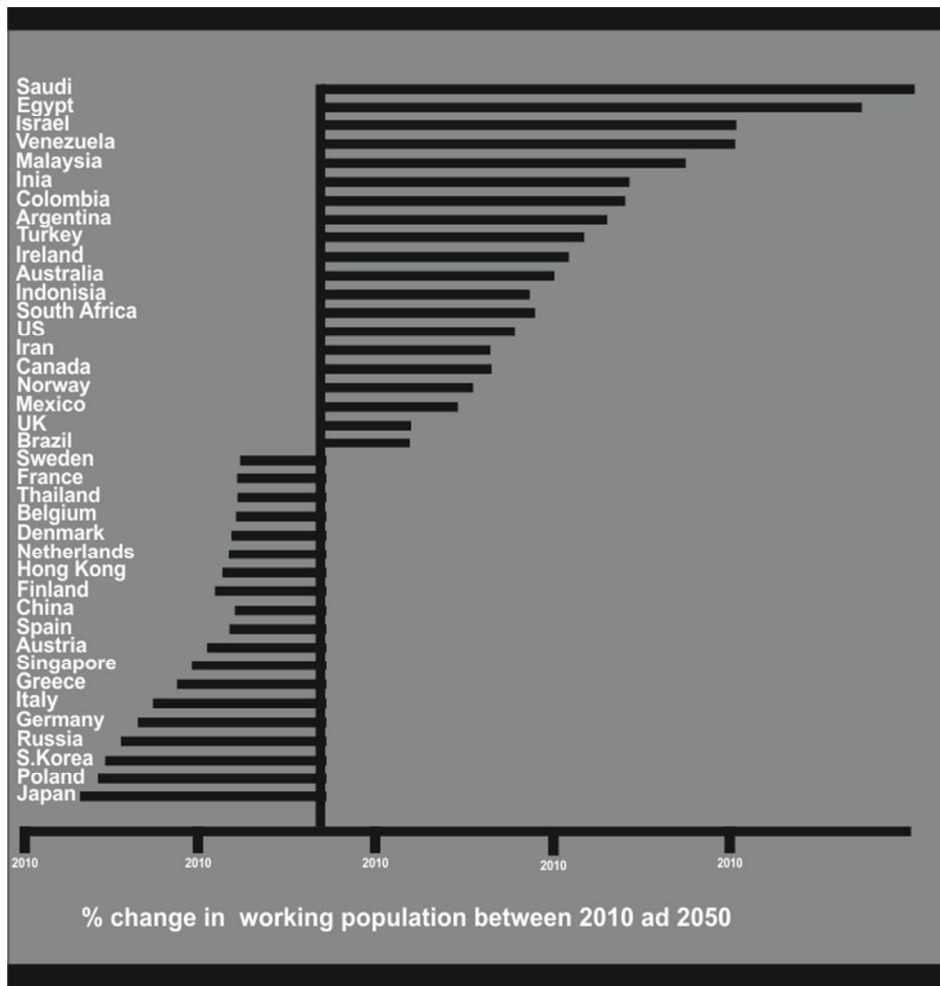
Figure 4.4: The outlook for working population is vastly different across economies

Sources: UN, 2011; HSBC, 2011

- By 2050, the seismic change in the global economy will have only just started. Despite a seven-fold increase (Figure 4.5), income per capita in China will still be only 32% of that in the US and scope for added growth in the emerging world with that of the developed world.
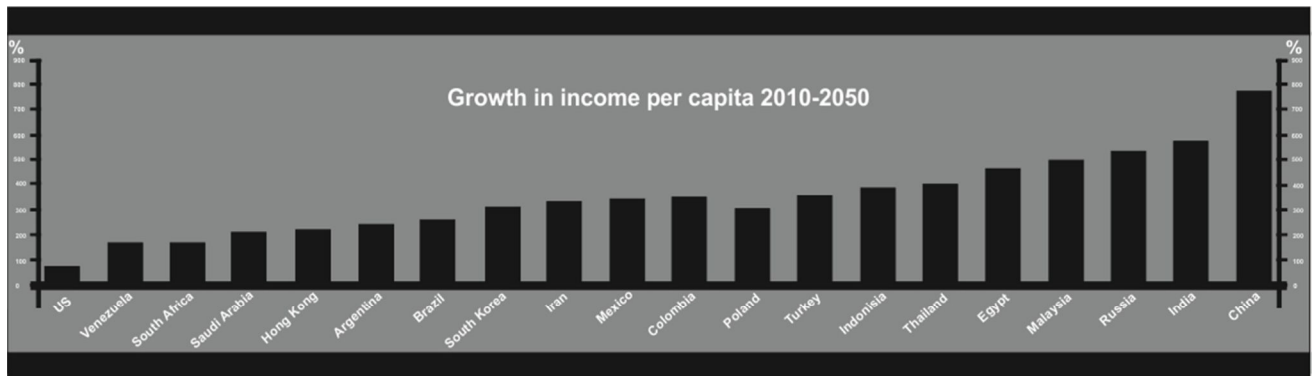
Figure: 4.5: The rise in Income per capita in the emerging world will dwarf of the US in the coming years

Source: HSBC, 2011

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- Energy accessibility need not deter this path of global development so long as there is major investment in efficiency and low-carbon alternatives. Meeting food demand may be more of a challenge, but progress in diet and yield could close the gap. In the final section, we discuss our preliminary thoughts on this subject (HSBC, 2011). Africa's allocation in world trade remains diminutive as it is being met with severe competition from the other regions of the world that have rapid and more constant growth (Hartmann, 2009).

4.4.1 Emerging market economies

A country is classified as an "emerging market economy" when it appears to be "emerging" from being classified as a less developed economy to becoming a developed market economy (Bekaert & Harvey, 2002: 429). The World Bank (2010) has defined an emerging market economy as a developing country with a gross national income (GNI) of $11.456 per capita or less. An emerging market economy typically has a per capita income level that ranges between the low and middle income levels. Emerging market economies are generally classified according to their gross domestic product (GDP) per capita, since this measure provides a good indication of the level of an individual's income as well as the general level of a country's economic development (Alon, 2006:10). While 20% of the world's combined economy is already covered by the combined economies of the emerging markets, it is expected that the combined gross domestic product (GDP) of all the emerging market economies in the world may be higher by 2015 than that of the top 20 developed market economies combined (Essel, 2012). These emerging market economies also represent a large proportion of the world's total population, a proportion that previous studies have indicated as approximately 75 to 80% of the world's total population (Chung, Day, Ishman & Mckay, 2004: 798; Heakal, 2010; Vital Wave Consulting, 2009).

Emerging market economies are counted amongst the countries showing the fastest economic growth in the world. These countries typically experience rapid growth and they generally improve living standards for a large proportion of the world population (Nakata & Sivakumar, 1997: 464). A country's economic growth rate therefore reflects the increased added value produced by operating enterprises and

individuals in that country (The World Bank, 2009: 390; Essel, 2012). Increased international business and globalisation usually enhance a country's economic growth rate (Lier & Tanner, 2007: 3), but two particular sources that have enabled emerging market economies to produce these extraordinary economic growth rates have been identified. Firstly, they have typically had less capital per worker than developed market economies. As a result, capital returns have generally been high. This would have increased investment returns and consequently could attract foreign investors. Secondly, emerging market economies have had the benefit of implementing the advanced technologies that have often been developed by market economies (Essel, 2012). This enabled the emerging market economies to "catch up" with the developed market economies in terms of technological gains (Purushothaman & Wilson, 2003: 6).

The economic development of the emerging market economies of the world has traditionally been highly dependent on access to long-term funding (Garvey, Mullins & Murphy, 2008: 46). In the past, bilateral and multilateral loans were the primary source of funding for capital flows into emerging market economies. Nowadays, however, private sources mostly are utilised for funding in emerging market economies (Westholm-Schröder, 2005: 174). It therefore seems that these countries have constantly improved their global economic position to acquire financing (Essel, 2012). This has been achieved by increasing investment opportunities, by improving macro-economic aspects, by being more open to foreign investment, and by advancing their business environment (Multilateral Investment Guarantee Agency, 2010: 16; Essel, 2012). An increase in domestic and foreign investment thus has been a key characteristic of emerging market economies. Domestic investment generally indicates confidence in the local economy, while foreign investment generally indicates that other countries are showing interest in the emerging market economy (Heakal, 2010; Essel, 2012). The governments of emerging market economies have traditionally adjusted the country's policies in order to promote foreign direct investment. Additionally, economic restructuring and market liberalisation have encouraged foreign direct investments in the emerging market economies (Kouznetsov, 2009: 375; Essel, 2012).

As emerging market economies also tend to have strong economic fundamentals, such as high volumes of foreign reserves and advanced institutional businesses (Hess, Karl & Wong, 2009: 24), foreign investors have often shown interest in emerging market economies (Multilateral Investment Guarantee Agency, 2010: 45). It is also important to note, however, that emerging market economies have generally been extremely volatile. While their economic growth might have been rapid, increased political and economic risks have not been uncommon (Baack & Boggs, 2008: 134). Unlike in the past, though, emerging market economies have in recent years been able to simultaneously experience impressive economic growth and be politically more stable in general (Boone, 2007). However, global terrorism, the nationalisation of resources, global warming, the recent (2008/2009) economic crisis, and the volatility of the political and economic power of the formerly known BRICS countries, provide evidence that economic and political instability and turmoil have not vanished entirely (Berry, 2009: 3; Essel, 2012). A number of the discussed factors that may attract foreign investors, for instance openness to foreign investment, could thus also hamper a country's economic development (Chambers & Jacobs, 2007: 60). Also, a lack of essential human, financial and other resources has often been observed; while unskilled labour is usually plentiful and cheap, skilled labour is usually limited. There often has also been a lack of sufficient capital in emerging market economies (Baack & Boggs, 2008: 129; Essel, 2012).

Some of the main risks facing investments in emerging market economies have included sluggish economic growth, stagflation, liquidity risk, foreign currency risk, political risk, and economic policy risk (Bekaert & Harvey, 2002: 431; Harvey & Lundblad, 2007: 1784; Creighton, 2008). Emerging market economies have traditionally been perceived as less integrated than developed market economies. Being less integrated generally indicates certain obstacles (Essel, 2012). These obstacles could be macro-economic, such as foreign exchange controls or economic policy, or specific to the market, such as the market size. These obstacles could also contribute to political risk factors (Bilson *et al.,* 2002:3). However, as regional integration advances, risk-related costs can be reduced. In general, emerging market economies have seemed to be improving in terms of overall risk factors through continued improvement concerning legal and regulatory regimes, in order to encourage foreign investments (Tobin 2005: 136; Essel, 2012). An important issue

with regard to emerging market economies has been the inability to anticipate future political and economic situations in these countries, mainly due to their changing nature and lack of reliable data (Alon, 2006: 19). Although foreign investors have found emerging market economies attractive, they have remained cautious on account of political risk, since political risk factors are mostly beyond their control. These political risk factors have included corruption, restrictive labour markets, foreign currency instability, unstructured financial systems, unreliable legal and regulatory regimes, and weak government institutions (Boone, 2007; Essel, 2012). This has been supported by research that has shown that when multinational enterprises invest in emerging market economies, they are mainly concerned about political risk, followed by macro-economic instability, access to finance, corruption, access to qualified staff, infrastructure capacity, limited market opportunities, and increased government intervention (Essel, 2012).

The political risk factors that have been of most concern to foreign investors in emerging market economies have included breach of contract, transfer and currency convertibility restrictions, war and civil disturbances, non-honouring of government guarantees, adverse regulatory changes, expropriation, and terrorism (Essel, 2012; Multilateral Investment Guarantee Agency, 2010: 29-30). Macro political risk factors are particularly to be related to political, ethnic and religious conflict in emerging market economies (Ye, 2007; Zaayman, 2003: 15) and when taking a close look at political risk factors it is also clear that governments could intervene in an attempt to achieve desired outcomes (Faber, 1998: 109). In emerging market economies, political risk factors could play a role that is just as important as the economic factors that are decisive in the performance of markets (Bremmer, 2009; Bremmer & Keat, 2009: 68; Essel, 2012). Politics usually plays a more prominent role in emerging market economies than in developed market economies (Bekaert & Harvey, 2002: 443; Essel, 2012). Additionally, socio-political and macro-economic stability are often more worrying in emerging market economies than in developed market economies. As a result, foreign trade and globalisation related to emerging market economies could easily result in increased exposure to political risk factors (Lier & Tanner, 2007: 3; Lindeberg & Mörndal, 2002: 1, Essel, 2012). It is thus understandable that politics has usually been closely related to financial instability in these countries (Garvey *et al.,* 2008: 49).

A closer look at the emerging market economies in terms of capital flows reveals that it is also in these countries that political risk factors seem to have increased (Boone, 2007). Exposure to political risk factors usually does not concern investors in developed market economies (Clark & Tunaru, 2001: 155). In the past, emerging market economies have generally been perceived as politically more risky than developed market economies (Diamonte *et al.,* 1996: 72). A previous study indicated that 57% of emerging market economies had a political risk rating of medium or higher (Control Risks, 2007). In the past, for example, expropriation was a political risk factor typically associated with emerging market economies (Errunza & Losq, 1987: 64; Essel, 2012). However, although emerging market economies have some characteristics in common, they could differ in numerous ways, such as size, growth, economic development, government styles, and political, economic and legal regimes (Kouznetsov, 2009: 376). Emerging market economies are generally also scattered all over the world, which underlines the fact that some political risk factors faced by foreign investors could be bound to specific countries or political systems only (Boone, 2007). Political instability also has generally been associated more with emerging market economies than with developed market economies (Kouznetsov, 2009:378; Nakata & Sivakumar, 1997: 469). Compared to developed market economies, emerging market economies have typically been associated with weak, undeveloped and unstable political, social, and economic environments (Markwick, 1998: 45). The infrastructures of these countries have often been inadequate and deteriorating (Nakata & Sivakumar, 1997: 466). Corruption, political interference and unreliable legal systems have usually been common (Womack, 2009). Emerging market economies are expected to have large, isolated, young, and poor populations. These populations often turn to rebellious activities in order to show dissatisfaction. This could explain why terrorism has often been a political risk factor associated in particular with emerging market economies (Berry, 2008: 23). Various authors have also emphasised that corruption has been a major issue in emerging market economies (Chung *et al.,* 2004: 800; Stepek, 2007; Essel, 2012). Corruption has adverse effects on a country's income and macro-economic stability: stable economic growth is suppressed; business enterprises are hampered; and the poor are finding it harder to prosper due to their inability to afford unusual payments or bribes (Essel, 2012). Most importantly, corruption reduces a country's integrity

and its global status (Zaayman, 2003: 22). Corruption should thus be an agonising concern for the host governments of emerging market economies.

Table 4.4: List of emerging market economies

1.	Brazil	12.	Mexico
2.	Chile	13.	Morocco
3.	China	14.	Peru
4.	Columbia	15.	Philippines
5.	Czech Republic	16.	Poland
6.	Egypt	17.	Russia
7.	Hungary	18.	South Africa
8.	India	19.	South Korea
9.	Indonesia	20.	Taiwan
10.	Israel	21.	Thailand
11.	Malaysia	22.	Turkey

Source: Morgan Stanley Capital Investment, 2010

4.4.1.1 Economic growth of emerging markets

In terms of size, speed, and directional flow, the transfer of global wealth and economic power now under way roughly from West to East is without precedent in modern history (Mosser, 2009). This shift derives from two sources. First, increases in oil and commodity prices have generated windfall profits for the Gulf States and Russia. Second, lower costs combined with government policies have shifted the locus of manufacturing and some service industries to Asia (NIC, 2008). Growth projections for Brazil, Russia, India, China and South Africa (BRICS) indicate they will collectively match the original G-7's share of global GDP by 2040-2050 (O'Conner, 2008). China is poised to have more impact on the world over the next 20 years than any other country. If current trends persist, by 2025 China will have the world's second largest economy and will be a leading military power. It also could be the largest importer of natural resources and the biggest polluter (NIC, 2010). India probably will continue to enjoy relatively rapid economic growth and will strive for a multipolar world in which New Delhi is one of the poles. China and India however must decide the extent to which they are willing and capable of playing

increasing global roles and how each will relate to the other (Fingar, 2009). Russia on the other hand has the potential to be richer, more powerful, and more self-assured in 2025 if it invests in human capital, expands and diversifies its economy, and integrates with global markets. No other countries are projected to rise to the level of China, India, or Russia, and none is likely to match their individual global clout. Researchers expect, however, to see the political and economic power of other countries such as Indonesia, Iran, and Turkey increase significantly (NIC, 2010; Say, 2011).

For the most part, China, India, and Russia are not following the Western liberal model for self-development, but instead are using a different model. "State capitalism" is a loose term used to describe a system of economic management that gives a prominent role to the state (Fingar, 2009). Other rising powers such as South Korea, Taiwan, and Singapore also used state capitalism to develop their economies. However, the impact of Russia, and particularly China, following this path is potentially much greater owing to their size and approach to "democratization". HSBC (2010) remain optimistic about the long-term prospects for greater democratization, even though advances are likely to be slow and globalization is subjecting many recently democratized countries to increasing social and economic pressures with the potential to undermine liberal institutions.

Sub-Saharan Africa will remain the region most vulnerable to economic disruption, population stresses, civil conflict, and political instability (NIC, 2010; Fingar, 2009). Despite increased global demand for commodities for which Sub-Saharan Africa will be a major supplier, local populations are unlikely to experience significant economic gain (World Economic Forum, 2012). Windfall profits arising from sustained increases in commodity prices might further entrench corrupt or otherwise ill-equipped governments in several regions, diminishing the prospects for democratic and market-based reforms (Borton, 2009; Fold, 2008; Fingar, 2009). Although many of Latin America's major countries will have become middle income powers by 2025, others, particularly those such as Venezuela and Bolivia that have embraced populist policies for a protracted period, will lag behind and some, such as Haiti, will have become even poorer and less governable. Overall, Latin America will continue

to lag behind Asia and other fast-growing areas in terms of economic competitiveness (NIC, 2008; Fingar, 2009; WEO, 2011).

Asia, Africa, and Latin America will account for virtually all population growth over the next 20 years as less than 3% of the growth will occur in the West (NIC, 2008). Europe and Japan will continue to far outdistance the emerging powers of China and India per capita wealth, but these countries will struggle to maintain robust growth rates because the size of their working-age populations will decrease. The US will also be a partial exception to the ageing of populations in the developed world because it will experience higher birth rates and more immigration. The number of migrants seeking to move from disadvantaged to relatively privileged countries is also likely to increase. The number of countries with youthful age structures in the current "arc of instability" is projected to decline by as much as 40%. Three of every four youth-bulge countries that remain will be located in Sub-Saharan Africa; nearly all of the remainder will be located in the core of the Middle East, scattered through southern and central Asia, and in the Pacific Islands (USAID, 2009; Fingar, 2009). New Transnational Agenda Resource issues will gain prominence on the international agenda. Unprecedented global economic growth positive in so many other regards will continue to put pressure on a number of highly strategic resources, including energy, food, and water, and demand is projected to outstrip easily available supplies towards 2050. For example, non-OPEC liquid hydrocarbon production crude oil, natural gas liquids, and unconventional sources such as tar sands will not grow commensurate with demand. Oil and gas production of many traditional energy producers already is declining and in China, India, and Mexico production has flattened. Countries capable of significantly expanding production will dwindle; oil and gas production will be concentrated in unstable areas. As a result of this and other factors, the world will be in the midst of a fundamental energy transition away from oil toward natural gas, coal and other alternatives (NIC, 2010). The World Bank (2010) estimates that demand for food will rise by 50% by 2030, as a result of growing world population, rising affluence, and the shift to Western dietary preferences by a larger middle class. Lack of access to stable supplies of water is reaching critical proportions, particularly for agricultural purposes, and the problem will worsen because of rapid urbanization worldwide and the roughly 1.2 billion persons to be added over the next 20 years. Today, experts consider 21 countries,

with a combined population of about 600 million, to be either cropland or freshwater scarce. Owing to continuing population growth, 36 countries, with about 1.4 billion people, are projected to fall into this category by 2025. Climate change is also expected to exacerbate resource scarcities. Although the impact of climate change will vary by region, a number of regions will begin to suffer harmful effects, particularly water scarcity and loss of agricultural production. Regional differences in agricultural production are likely to become more pronounced over time with declines disproportionately concentrated in developing countries, particularly those in Sub-Saharan Africa (Schmidhuber & Shetty, 2005).

Many research efforts indicate that the African economy is beginning to take off. Strong growth in working-age populations and the movement of those peoples to cities are helping to fuel a drive to diversify economies away from subsistence agriculture and eventually towards the manufacturing and service sectors (Cilliers *et al.*, 2011). These thriving, churning urban areas will be the source of the emergence of African economic might. While there is great potential in the African landscape, growth is not uniform across regions or within countries (Cilliers *et al.,* 2011; Adepoju, 2006). Many countries are landlocked and, due to inadequate infrastructure, effectively isolated from both regional and global potential trade and investment partners (UNDP, 2007). Great uncertainties also exist around Africa's economic future. The massive expanse of underused arable land, though less nutrient-rich than in countries such as Brazil, holds the potential to unleash an African green revolution. Water resources will remain abundant in certain regions (especially in the middle of the continent), but will become increasingly strained in the north and south due, in part, to climate change. Energy and other resources have been underexplored and if there are new large oil and gas discoveries, as appears likely, this could help greatly to alter the future development of the continent (Fleischman, 2007). There remain very critical investment needs for Africa to ensure a future of strong and sustained growth. Beyond the obvious requirement for investment in education and health, Africa's inadequate infrastructure demands massive investment across almost all sectors: transport, energy, water and sanitation, information and communications technology (ICT) and innovation systems. In part by taking advantage of growing south-south trade, the continent needs to export for growth, both regionally and globally (UNDP, 2007; Davies, 2010).

Between 1960 and 2010, GDP per capita for the African continent grew from just under $500 per capita to about $900 (based on constant $ in the year 2000). Growth was reasonably strong in the 1960s and 1970s. Then the continent lost nearly $150 per capita through the mid-1990s, before growth resumed. Recent years have given reason for hope that African growth has accelerated and may continue at the historically high rates even during more recent years (Global Risks, 2012). In its 2010 annual report, UNECA noted that Africa was recovering from the global crisis faster than expected. UNECA (2010) argued that African economies did rebound in 2010 and grew overall by 4.3%, up from 1.6% in 2009. The projected regional growth rates were 4.2% for North Africa, 5.1% for oil-exporting Sub-Saharan Africa and 4.9% for oil-importing Sub-Saharan Africa. These projected economic growth rates still fall short of the 7% pace required for achieving the MDGs (UNECA, 2010).

In Africa in the New World (Cilliers, 2010), it was concluded that African development would, in fact, look much like that of India, and that it is towards Delhi that Africans should be looking if they wish to picture their most likely path(s) to development. Acknowledging the complex confluence of domestic and global factors that underpin Indian growth, Freemantle and Stevens (2010) identified three core elements, each with particular developmental relevance for Africa. The first is India's green revolution (followed several years later by that in Latin America), driven largely by genetically advanced grains and various reforms that have allowed the country to become broadly food secure rather than using agriculture as a means of generating foreign exchange. That India was able to achieve this while its population doubled since 1960 is particularly remarkable and a challenge very similar to that which Africa now faces. Staple foods must be elevated over cash crops. Investment must be channelled into greater use of irrigation and fertilisers, and government subsidies for local producers must support domestic production and output (Freemantle & Stevens, 2010). That external demand is determining African economics is particularly evident in the agricultural sector. According to Freemantle and Stevens (2010), since independence, African governments and policymakers have largely viewed agriculture as a key generator of foreign exchange, rather than as a conduit for domestic food security. As a result, while agricultural exports are a major contributor to GDP in many countries in Africa, the continent remains a net importer of food. The importance of agriculture should be evident if researchers consider that

it is generally accepted that agriculture constitutes approximately 37% of Africa's GDP and contributes about 40% of the total export value with 65% of the continent's population dependent on the sector for their livelihood, although figures differ slightly between sources. Important continental initiatives such as the Alliance for a Green Revolution in Africa (AGRA) and the African Union's Comprehensive Africa Agriculture Development Programme (CAADP) are both making impressive strides in reforming African agriculture. The second factor was India's 1991 economic reform programme, which reversed the anaemic 'Hindu rate of growth' by laying the foundation for rapid increases in productivity, most evident in the rise of India's services sector. India's developmental model has thus been unique in the manner in which it has shifted from agriculture to services without major industrial expansion (Cilliers *et al.,* 2011). India's inward looking economic model has thus relied on domestic markets more than exports, on consumption more than investment, on services more than industry, and on high tech more than low skilled manufacturing (Freemantle & Stevens, 2010). Africa needs to build economies of scale to provide the local supply side dynamics to support the emergence of a strong and globally competitive private sector. For this to happen, markets must integrate on a regional basis. These developments will allow regional markets to aggregate demand and unlock demographic dividends, thereby attracting higher levels of foreign direct investment (Cilliers *et al.,* 2011).

The final factor is that India unleashed the potential of its demographics through the private sector protecting the home market from global competition where necessary, and relying on large and small domestic firms to create an entrepreneurial culture of hope and 'can do' using the forces of globalisation to galvanise domestic consumer consumption. It has been 20 years since Harvard Business School Professor Michael Porter provided scholarly support for the common-sense notion that well-crafted regulation actually promotes rather than hampers economic growth and competitiveness, and the need to provide limited protection and state support to Africa's own industries is equally self-evident.

Beyond aspects of a shared history between some European countries and their former colonies, Africa will remain important for Europe for three reasons: physical proximity, as a source of commodities, and because of Africa's importance in the

development of norms for global governance (Rodrik, 2001). Similarly, Europe will remain important for Africa despite all the hype about China, around 40% of foreign direct investment into Africa originates from the EU. Both regions will find that they need one another, and that they are better off with sustained interaction. Economically, North Africa and Europe will continue to rely especially heavily on one another, though the rest of Africa will additionally extend its economic interests to the East (Cilliers *et al.,* 2011; WEO, 2011).

4.4.2 The economies of the BRICS countries

In 2003 two economists at Goldman Sachs delivered a paper on emerging market economies in which the authors predicted that the Federal Republic of Brazil, the Russian Federation, the Republic of India, and the People's Republic of China could have economies larger than any other country in the world by 2050. Only the United States of America and Japan were expected to feature alongside these four countries by 2050. These predictions were based on the high economic growth potential and demographic accumulation of these four countries. The Federative Republic of Brazil, the Russian Federation, the Republic of India, and the People's Republic of China were collectively labelled as the BRIC countries. It is important, however, to understand that predictions concerning the BRIC countries' achievements by the year 2050 could easily be altered in the event of major economic shocks, by a sudden pause in economic development, or by political unrest (Bird & Cahoy, 2007: 401; Bremmer & Keat, 2009: 67; Standard & Poor's, 2009: 13).

In early 2011 the Republic of South Africa joined this group of the large emerging market economies, so that the group is now known as the BRICS countries (Battersby & Lu, 2011; Essel, 2012). The addition of the Republic of South Africa to the group was expected to improve the co-operation between emerging market economies and to boost the development of the five BRICS countries (The South African Press Association, 2010; Essel, 2012). The Federative Republic of Brazil and the Russian Federation are expected to become the leading suppliers of raw materials while the Republic of India and the People's Republic of China are expected to flourish as suppliers of manufactured products and services (Hult, 2009:

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1). Global foreign direct investment in all the emerging market economies however has not been spread equally amongst them (Brown, 2004: 16).   Over the past decade, most foreign direct investment in the emerging market economies has gone to the former BRIC countries (Multilateral Investment Guarantee Agency, 2010: 16), with Asia being a top attraction for foreign investors, led by the People's Republic of China (Palmer, 2008: 216). Africa, however, has shown indications of becoming a top investment destination in recent years (Battersby & Lu, 2011; Essel, 2012). As already mentioned, the former BRIC countries were considered the four largest emerging market economies in the world. These countries cover 25% of the world's total land and are home to 40% of the world's population (Hult, 2009: 1; Reuters, 2010: Essel, 2012); at the end of 2008 statistics indicated that the Federative Republic of Brazil, the Russian Federation, the Republic of India, and the people's Republic of China had total populations of 192 million, 142 million, 1.140 billion, and 1.326 billion respectively (The World Bank, 2009: 378-379).

According to an estimate by Goldman Sachs, the four original BRIC countries are expected to represent 47% of global GDP by 2050, which would dramatically change the list of the world's 10 largest economies. An important change that researchers may expect over the medium to long term is that the top 10 countries in terms of GDP may be different from the top 10 countries in terms of per capita GDP. The inherent strength of the BRICS emanates from strong domestic demand-based economies in the case of India and Brazil and the significant outward linkages of China and Russia. South Africa benefits from its large resource base and proximity to untapped growth potential of the African continent. Among the BRICS, China, followed by India, are the fastest growing economies in the current decade. Between 1978 and 2009, the Chinese economy grew at an average annual rate of 9.9%, which is much higher than the world average for the period. The growth performance of Russia and Brazil also improved significantly after the financial crises of the 2008/2009s (Essel, 2012).

About 43% of the global population currently lives in BRIC nations. With the inclusion of South Africa in 2011, this club of nations has expanded its reach to the rapidly developing African continent. By 2030, if not earlier, China will become the world's largest but not richest economy in GDP terms; the United States will drop to

second place and India will be a strong third. It is entirely possible that by 2050, Brazil could overtake Japan as the fourth largest economy on the planet, especially following the Japanese earthquake and tsunami of 2011 that may delay the anticipated kick-starting of that economy (Essel, 2012). By 2032 or even earlier the BRICS countries could rival the G7 in the size of their economies. China's advance over Japan in 2010 and Brazil's leap over the United Kingdom and France have happened more quickly than initially forecast. BRICS growth may see these economies leapfrog over the United States as early as 2018 and Brazil's economy will be larger than Italy's by 2020. India and Russia will individually be larger than Spain, Canada or Italy in the same year (Sachs, 2010). Within ten years, BRICS will account for a third of the global economy (in PPP terms) and contribute just under half of global GDP growth (Sachs, 2010). HSBC (2011) predicts that by 2050 global output will have trebled, with emerging markets contributing twice as much to the expansion as the developed world (Bloomberg, 2010).

The next decade will see a remarkable increase in BRICS middle classes and rising incomes throughout the developing world. Until 2050, poverty rates are expected to decline significantly in Indonesia, Brazil, Mexico and Turkey, but growth in China and India – nations that were home to 48% of the world's population living on $1.25 a day in 2005 – will be the driving force behind this shift (HSBC, 2011). Over the past 25 years, more than 600 million people emerged from poverty in China. From 2005 – 2050, China and India will be responsible for lifting a further 600 million from the most extreme forms of poverty (Carnegie, 1994). Suffice to say here that the need to feed these vast numbers of people and the movement of millions into the middle classes will mean that intensified competition for resources is likely to be a defining and potentially destabilising feature of the world in the decades to come (Carnegie, 1994; FAO, 2011). A quest for natural resources and food security has seen many emerging markets extend their footprint into resource-rich countries and continents like Africa. Chinese President Hu Jintao was adamant when he told the 17th National Congress of the Communist Party in 2007 that he would like to quadruple China's per capita GDP from its 2000 level by the year 2020. This implies that the standard of living in China is scheduled to maintain its current growth path at just over 7% per year (conservatively) in the decade to come (Atkinson, 2008). With quality of growth now the key driver behind Chinese economic planning, Hu's call for a moderately

prosperous society in all respects will change the face of the planet. Urbanisation will be the growth engine of the Chinese economy and the Indian for that matter. City dwellers in China have incomes that are more than three times as large as rural inhabitants and likely to swell substantially as millions come to the cities (Phillips, 2010). With an intention to increase domestic-led consumer growth, the Chinese will be drivers of the global economy for some time to come towards 2050.

If sourcing materials for a rising middle class brings challenges, it also brings outstanding commercial opportunities (McKinsey, 2010). The demand for vehicles, office equipment and technology is likely to soar in these emerging societies. Already in 2009, China passed the United States as the world's single largest car market and India could well equal this in the next few decades especially if $3 000 Tata Nano vehicles replace bicycles or rickshaws. BRICS economies will likely account for more than 70% of global car sales growth in the next decade, with China expected to account for almost 42% of this increase (Carnegie, 2010). In Brazil, poverty levels virtually halved in only eight years under the much praised leadership of Lula da Silva. It currently boasts 20 million new consumers who are ready to buy. The coming World Cup in 2014 and Olympic Games two years later will boost infrastructure spend to a projected $50 billion in the next few years (GRDI, 2011). Ironically, chances are that this spurt in demand coming from emerging markets like BRICS will in turn boost developed markets. Chinese imports now amount to a rising annual $400 billion, which is almost the equivalent of South Africa's entire economy in 2010. The scale of the coming market in China is so vast that projections show a level of aggregate consumption that will be twice the size of Germany's entire economy by 2025 (Phillips, 2010; Dadush, 2010). Long-term projections suggest that the BRICS countries could account for almost 50% of global market capitalisation by 2050 (Hawksworth & Cookson, 2006).

While there is a move to the middle income levels in China and India, at the top end of the scale, the ultra-rich are expanding at record levels. China had the world's fastest-growing group of millionaires in 2009, an elite club that rose 31% from 2008 to 477 000 people (Buckley, 2004). The robust growth helped China overtake Britain as the world's fourth-largest home to the super-rich. It also led Asia to exceed Europe in the rich population's total wealth. Although the point has been made that

in China the West faces a formidable competitor with differing values, it also faces increased opportunities, the scale of which is perhaps similar only to that of the economic potential of the European empires in the first part of the 20th century (Go, 2009) The size of the emerging markets (led by BRICS), together with the globalised nature of business, will result in the BRICS needing to import finance and technology skills and systems from the West and will keep US and EU growth at potentially higher levels over the next two decades. A shift in the centre of gravity in the world economy away from the West might give Western companies added business traction, but it does much the same and even more so for companies within the BRIC block. Developing nations are not only decoupling from their reliance on the West, but are also undergoing a transformation that will make them the future locomotives for the world economy (World Economic and Social Survey, 2011).

Apart from high economic growth potential and large populations, the former BRICS countries had other factors in common, including economic risk factors. By looking at these countries economic risk ratings, it was possible to get a general idea of the degree of economic risk that could be present in these emerging market economies. For 2010, all the former BRICS countries obtained a medium political risk rating from Control Risks (2009). This rating implied that foreign enterprises could encounter interference from the government or other political actors present in these countries. Additionally, important factors that could be of concern included corruption, capricious policymaking, import and export restrictions, weak political organisations, a lack of sufficient legal guarantees, and strong or hostile lobby groups. A medium economic risk rating also suggests that military or other illegal interference could occur (Control Risks, 2009). While taking a closer look at multinational enterprises in the former BRIC countries, is was found that these enterprises generally seemed to be more concerned about economic risk factors than multinational enterprises in any other country. The economic risk factors of most concern to them have typically been breach of contract and transfer and currency convertibility restrictions (Satyanand, 2010; Essel, 2012). Multinational enterprises in the former BRIC countries have generally been confident about their ability to manage known and existing economic risk factors in their own capacities. However, when having to anticipate and manage economic risk factors that have not been of concern previously, they have generally been less confident of their ability to manage them

(Satyanand, 2010; Essel, 2012; Global Risks 2012). Together the BRICS account for more than 40% of the global population, nearly 30% of the land mass, and a share in world GDP (in PPP terms) that increased from 16% in 2000 to nearly 25% in 2010 and is expected to rise significantly in the near future (World Bank, 2010).

As indicated above, the Republic of South Africa recently joined the former BRIC countries. South Africa is also regarded as an emerging market economy (World Bank, 2009: 379). With an abundance of natural resources, the country has enjoyed almost all essential commodities. South Africa has a well-developed mining industry and is the largest producer of chromium, gold and platinum in the world. Agricultural products include, amongst others, wheat, vegetables, fruit, dairy products and meat. South Africa also has a well-developed financial and legal system and has the 18th largest stock exchange market in the world (Bureau of African Affairs, 2010; Central Intelligence Agency, 2010; South African Info, 2009; Essel, 2012).

South Africa is governed as a parliamentary (Bureau of African Affairs, 2010). This democratic country has numerous identifiable political pressure groups, but labour unions (also known as trade unions) in particular have been strong political pressure groups (Essel, 2012). These groups have instigated strikes in the past during which the entire country has come to an economic standstill, which makes it obvious that these labour unions are crucial political pressure groups in South Africa (Pekeur, 2003: 83; Essel, 2012). Amongst the identified political pressure groups in South Africa are the Congress of South African Trade Unions (COSATU), the South African Communist Party (SACP) and the South African National Civics Organisation (SANCO) (Central Intelligence Agency, 2010). South Africa however has been identified as one of the most stable economies on the African continent (HSBC, 2010). South Africa has been the economic giant of Africa and has not only been the leading producer of minerals, but also is the country with the highest industrial output on the African continent.

Above all, it has been responsible for the generation of a very large proportion of the continent's electricity (South African Info, 2009; Essel, 2012). Being situated on the African continent, however, has had some very unfortunate consequences for South Africa. The continent has been perceived as very risky due to uncertainty over the

potential of policy reversals, prolonged reorganisation, and political and civil unrest (Pekeur, 2003: 94; Essel, 2012). Political risk factors in African countries particularly have traditionally been exaggerated (Control Risks, 2007). However foreign investors also generally associate business in Africa with corruption (Zaayman, 2003: 24), but this is not an issue related to African countries only (Essel, 2012).

As indicated in the earlier discussions on the former BRIC countries, corruption is an issue and South Africa could thus be expected to also have issues concerning corruption (Venter, 2005: 44). South Africa has also constantly faced threats of expropriation in the recent past. Issues surrounding land reform and the nationalisation of mines have been sensitive subjects in the country (Zaayman, 2003: 25; Essel, 2012). Unlike the former BRIC countries that received a medium economic risk rating from Control Risks (2009), South Africa received a low rating for 2010 with regard to political and economic risk. A low political and economic risk rating implies that businesses are able to operate without any inconvenience. Political organisations are expected to be stable, although the possibility remains that adverse policy changes may occur. The possibility that regulatory or judicial insecurity can become an issue is unlikely, but non-government actors could obstruct business activities from time to time (Control Risks, 2009; Essel, 2012). South Africa has been fortunate in the sense that there has not been any significant terrorist activity in the country recently. One explanation for this could be South Africa's low global presence. South Africa has not had enough major global authority or involvement that could turn the country into a potential target for terrorist organisations (Essel, 2012).

South Africa has also been highly represented by its diverse cultures, which may be extremely valuable since terrorism has often been linked strongly to religious and cultural issues (Silke, 2010). The country's diverse cultures, however, have sometimes given rise to ethnic conflict (Venter, 2005: 39; Essel, 2012). Issues around Black Economic Empowerment (BEE) have often presented economic risk factors (Acemoglu, 2007). This has usually come in the form of potential government intervention. Employment in most instances has been hampered by affirmative action quotas whereby management sometimes is prevented from selecting the most suitable persons for particular positions and therefore the

country's development has consequently been restrained (Venter, 2005: 40; Zaayman, 2003: 38; Essel, 2012).

The South African economy presents two sides. On the one hand it competes with developed countries through its well-developed mining, agricultural, manufacturing, and services sectors. On the other hand, however, it has struggled with its infrastructure and has shown the characteristics of a developing country. Out-dated infrastructure has greatly constrained the country's economic growth (Bureau of African Affairs, 2010; Essel, 2012; Central Intelligence Agency, 2010). South Africa is also a middle-income country facing a number of serious economic problems (Economy Watch, 2012). Economic inequality has been a big concern, as the economic difference between the rich and the poor is amongst the biggest in the world (British Broadcasting Corporation, 2010). South Africa has had a high unemployment rate which, being the primary source of poverty, could fuel social instability and violent strife against the government (Essel, 2012). Economic inequality and unemployment, combined with dissatisfaction concerning low wages and poor government performance, probably account for most of the strikes and riots as witnessed in the country. Other socio-economic problems include a high crime rate and HIV infection rate (Bureau of African Affairs, 2010; Venter, 2005: 41; Zaayman, 2003: 58; Haldenwang, 2011). As long as the aforementioned factors are not under control, South Africa's economic growth will continue to be constrained (Essel, 2012).

In order for South Africa to achieve its national goals of eradicating poverty, lowering inequality, creating jobs and making the transition to a resilient low carbon economy, foreign relations must be driven by the country's domestic economic, political and social demands, as well as our regional, continental and global obligations (National Development Plan, 2011). Meeting these expectations and obligations can be achieved through a clear understanding of global shifts in power and influence from West to East, regional formations in Africa, and the emergence of powers like Mexico, Turkey, Indonesia and Columbia, some of which are vying for a voice in early 21st century international relations (NDP, 2011). South Africa should set the following five goals:

- Define national priorities.

- Aggressively expand trade and investment.

- Harmonise border policies and controls.

- Integrate national institutions responsible for foreign policy, international negotiations and monitoring.

- Improve human security through effective transnational natural resource management and knowledge sharing.

South Africa's relative decline in global standing has led to material losses in regional and continental bargaining, and in trade and investment opportunities (Alden, 2005). Despite playing a key role in peace settlements on the continent, South Africa has gained little by way of expanded trade and investment opportunities. South African diplomats have great skill in drafting memoranda of understanding, policy statements and agreements, but lose momentum when it comes to implementing agreement terms or following up on promises of benefits (FAO, 2009). There is also a marked dislocation between the efforts of South Africa's business leaders and its government leaders and officials (Gordhan, 2012). Governments may negotiate trade deals, but it is private companies that actually trade across borders. South African foreign policy needs to draw on the leadership and capabilities of its business community if it is to strengthen collaboration and co-operation on the continent as a reliable partner in Africa (NDP, 2011).

However Bobby Godsell, chairman of Business Leadership South Africa and a member of the high-powered government sponsored National Planning Commission, argues that South Africa could become to Africa what Japan was to Asia in the 1950s and 1960s. Godsell (2010) makes the telling point that South Africa is leading the modernisation of a continent of a billion with huge unmet needs. The world is set to change; the decades to 2050 are likely to be the most dramatic and potentially testing for all humanity (NIC, 2008). Population and demographic shifts, technological innovation, skills mismatches, food and commodity scarcity, and environmental challenges will test many economies as never before. Will South Africa cope and perform within such a competitive and demanding international climate? As with most countries, South Africa will move into an even more

competitive environment where competing regions, cities and nation-states seek to alleviate the pressures of all these key question marks impeding economic growth (UNEP, 2012). Given that a second industrial revolution from the developed to developing world is now upon the world and is likely to shape the future to 2050 and beyond, South Africa will be analysed closely by external players, investment houses and rating agencies. The use of key criteria to establish the propensity for a nation's success is a transparent process that can elevate smaller countries to fashionable investment destinations or relegate bigger names to a declining status (Anderson, 1993; Hill, 2008). This will be South Africa's most testing time as it pits domestic policy constraints against the relentless tide of global change (Ukwandu, 2009). And all the while South Africa has to provide for its people in one of the most competitive eras the world has ever experienced.

4.5   SOCIAL CULTURAL DRIVERS

During June 2012 world leaders gathered in Rio de Janeiro to seek a new consensus on global actions to safeguard the future of the planet and the right of future generations everywhere to live healthy and fulfilling lives (Simire, 2012; HDR, 2011). This is the great development challenge of the 21st century. The Human Development Report (2011) offers important new contributions to the global dialogue on this challenge, showing how sustainability is inextricably linked to basic questions of equity, that is, of fairness and social justice and of greater access to a better quality of life (Mohan, Behar, Khan & Abhiyan, 2011). Sustainability is not exclusively or even primarily an environmental issue, as this thesis so persuasively argues. It is fundamentally about how we choose to live our lives, with an awareness that everything we do has consequences for the 7 billion of us here today, as well as for the billions more who will follow, for centuries to come (UNDP, 2011). Understanding the links between environmental sustainability and equity is critical if we are to expand human freedoms for current and future generations (UNESCO, 2010). The remarkable progress in human development over recent decades, which the global Human Development Reports have documented, cannot continue without bold global steps to reduce both environmental risk and inequality. This thesis identifies pathways for people, local communities, countries and the

international community to promote environmental sustainability and equity in mutually reinforcing ways.

In the 176 countries and territories where the United Nations Development Programme is working every day, many disadvantaged people carry a double burden of deprivation (UNDP, 2011; HDR, 2011). They are more vulnerable to the wider effects of environmental degradation, because of more severe stresses and fewer coping tools. They must also deal with threats to their immediate environment from indoor air pollution, dirty water and unimproved sanitation (Kashyap, 2012). Forecasts suggest that continuing failure to reduce the grave environmental risk and deepening social inequalities threatens to slow decades of sustained progress by the world's poor majority and even to reverse the global convergence in human development (Smith & Won Soon, 2012). Major disparities in power shape these patterns. New analysis indicates how power imbalances and gender inequalities at the national level are linked to reduced access to clean water and improved sanitation, land degradation and deaths due to indoor and outdoor air pollution, amplifying the effects associated with income disparities (Wilkinson, 2007; GGG Report, 2011). Gender inequalities also interact with environmental outcomes and make them worse. At the global level governance arrangements often weaken the voices of developing countries and exclude marginalized groups (UNDP, 2012). Yet there are alternatives to inequality and unsustainability. Growth driven by fossil fuel consumption is not a prerequisite for a better life in broader human development terms (Clark & Schmidt, 2011). Investments that improve equity in access to renewable energy, water and sanitation, and reproductive healthcare could advance both sustainability and human development (Morrison, 2011). Stronger accountability and democratic processes, in part through support for an active civil society and media, can also improve outcomes. Successful approaches rely on community management, inclusive institutions that pay particular attention to disadvantaged groups, and cross-cutting approaches that coordinate budgets and mechanisms across government agencies and development partners (Horowitz, 2009).

Beyond the Millennium Development Goals, the world needs a post-2050 development framework that reflects equity and sustainability; Rio+20 stands out as a key opportunity to reach a shared understanding of how to move forward

(UNCTAD, 2012). This thesis indicates that approaches that integrate equity into policies and programmes and that empower people to bring about change in the legal and political arenas hold enormous promise (HDR, 2011). Growing country experiences around the world have demonstrated the potential of these approaches to generate and capture positive synergies (WHO, 2008; Woolcock, 1999). The financing needed for development including for environmental and social protection will have to be many times greater than current official development assistance. Today's spending on low carbon energy sources, for example, is only 1.6% of even the lowest estimate of need, while spending on climate change adaptation and mitigation is around 11% of estimated need (UNFCCC, 2007). While market mechanisms and private funding will be vital, they must be supported and leveraged by proactive public investment (Brown, 2011). Beyond raising new sources of funds to address pressing environmental threats equitably, the thesis advocates reforms that promote equity and voice. Financing flows need to be channelled towards the critical challenges of unsustainability and inequity and not exacerbate existing disparities. Providing opportunities and choices for all is the central goal of human development (UNTT, 2012). Mankind has a collective responsibility towards the least privileged among humans today in the future around the world and a moral imperative to ensure that the present is not the enemy of the future (Reagan, 2004; HDR, 2011).

An individual's perception of the world is influenced by culture conditions, such as what they would think is important and what course of action is appropriate and inappropriate (Knoerr, 2002). Culture is not only a characteristic of national or ethnic groups, but an acknowledgement of the emergence of cultures within professions and organisations (Isaacs, 2005). Socio-cultural change occurs typically on a slow time scale of decades. The variety of opportunities obtainable by people and the kind of decisions they are able to make are affected by the levels of human well-being. Education and health can directly influence capabilities and in turn, impact the environment. African nations on average rank lower than any continent on the Human Development Index (Hartmann, 2009).

Social participation and social support are strongly connected to good health and well-being throughout life. Participating in leisure, social, cultural and spiritual

activities in the community, as well as with the family, allows people to continue to exercise their competence, to enjoy respect and esteem, and to maintain or establish supportive and caring relationships. It fosters social integration and is the key to staying informed (WHO, 2007). Yet the people consulted by WHO surveys indicate clearly that the capacity to participate in formal and informal social life depends not only on the offer of activities, but also on having adequate access to transportation and facilities and on getting information about services (WHO, 2007; UNDP, 2012).

Societal drivers address trends and uncertainties in population dynamics as well as social stability and human survival (Global Risks, 2012). Global risks in such drivers put into question the stability of modern civilization and the continued well-being of populations (Najam, Runnals & Halle, 2007). The water supply crisis has the highest impact and highest likelihood, with the food shortage crisis following closely behind (Global Risks, 2012).

Sub-populations within societies differ significantly in their poverty levels. Both case studies (Agarwal, Humphries & Robeyns, 2005; Nussbaum & Glover, 1995) and empirical analyses (UN ELAC, 2005) indicate that being female makes one more vulnerable to poverty. One of the distressing manifestations of poverty and gender inequality is the phenomenon of excess mortality and artificially lower survival rates of women in many parts of the world. This phenomenon is known as "missing women" (Sen, 1992; UNDP, 2011; UN, 2010). In the United States and Europe, there tend to be more women than men in the total population, with a female-male ratio of 1.05. One reason is that women are biologically "hardier" than men and, given equal care, survive better. The situations in the developed West and in less developed nations reveal a sharp contrast. The contrast is especially grim in parts of Asia and North Africa, where the female-male ratio can be as low as 0.95. Using the Western ratio as the benchmark, approximately 100 million women worldwide appear to be "missing". Even adjusted measures with other benchmarks suggest that the number is roughly 60 million.

The effects of income poverty and various dimensions of social exclusion upon the lives of individuals and sub-populations overlap and interact. A further element of vulnerability comes from being in the wrong segment of a status hierarchical society.

One example of this is the caste system in India. Particularly in rural areas, the intersection of gender and caste can make a woman very vulnerable. Like gender, age often shapes poverty rates, with the young and old suffering disproportionately. Ethnic differences within countries also commonly coincide with considerable differences in poverty levels. For instance, indigenous populations typically have rates of poverty that are multiples of the rates in European settler populations, as do the descendants of imported slaves. An extreme example is Paraguay, where the rate is nearly 8 to 1 (UN ECLAC, 2005). This research will not be able to forecast poverty specifically for social subgroups, and its differentiation of poverty will be overwhelmingly structured by the borders of countries. Moreover, it will focus heavily upon the income bases of poverty. It is important, nonetheless, to recognize the complex social character of poverty around the world.

4.5.1 Developing countries social situation

Researchers argue that economic growth is necessary for increased life expectancy, but, in fact, social development, especially education, together with public health and social support for the very poor also plays important roles (Amis, 1999; McKee, 2005; UNDP, 2010). Cuba, Costa Rica and the Indian State of Kerala are examples of countries that have achieved high life expectancy despite low incomes. Different social development factors can play different roles in increasing life expectancy at different times and in different countries (Riley, 2001). The drivers of the initial declines in mortality rates in the More Developed Countries starting around 1750 were improvements in nutrition and public health services, including basic sanitation and management of solid waste and provision of clean drinking water (Royal Society, 2012). In the developing countries, the decline in mortality was prompted by improvements in medicine and public health – the introduction of antibiotics such as penicillin, treatments for diseases such as tuberculosis and diarrhoea, and the use of DDT, which helps control malaria. These advancements have contained or eradicated diseases that once killed millions of people, and were accompanied by improved sanitation, better nutrition and the wider practice of healthier behaviours (Bloom, Canning & Sevilla, 2003), and better immunisation programmes. The drivers of declines in maternal mortality on the other hand have been sexual and reproductive health care and nutrition (Fried, 2012; UN, 2005; Berer, 2002).

Poor sexual and reproductive health care accounts for an estimated one-third of the global burden of illness and early death among women of reproductive age (Bernstein & Hansen, 2006). It was estimated that in 2008 that there were around 355 000 maternal deaths, with 50% of those deaths taking place in sub-Saharan Africa and 45% in Asia (WHO, 2010). It is estimated that around 13% of annual maternal deaths are due to unsafe abortion, with around 97% of unsafe abortions occurring in developing countries (Hill, Thomas, AbouZahr, Walker, Say, Inoue & Suzuki, 2007). The most common cause of maternal mortality in all parts of the world is obstetric haemorrhage. For woman aged 15-19, complications during pregnancy and birth count as the most frequent cause of death worldwide and it is twice as high compared to women between the ages of 20 and 24. The dramatic declines in maternal mortality that were seen in the USA, UK and Sweden between 1900 and 2000 were due to improvements in obstetric care, changes in the abortion law and changes in patterns of childbearing (Smith & Potts, 2010). Globally, the four major killers of children under 5 are pneumonia (18%), diarrhoeal diseases (15%), preterm birth complications (12%), and birth asphyxia (9%). Under-nutrition is an underlying cause in more than a third of under-five deaths. Malaria is still a major killer in sub-Saharan Africa, causing about 16% of under-five deaths (WHO, 2008).

Education investment is important in order to reduce disadvantages such as child labour, gender equality and to protect the rights of girls. The skills given by basic education such as reading and writing are fundamental for national development. Education is also linked with better nutrition, health, population control, productivity and paves the way to self-employment (Hymel, 2011). Education is needed to reconstruct and sustain people's livelihood so they can participate in nation building (Kargbo, 2004).

Over the next 15 years, illiteracy rates of people 15 years and older will fall, according to UNESCO (2012), but they will still be 17 times higher in poorer and developing countries than those in OECD countries. Moreover, illiteracy rates among women will be almost twice as high as those among men. Between 1950 and 1980 life expectancy between the more- and less-developed nations began to converge markedly; this will probably continue to be the case for many developing countries, including the most populous (Brown, 2006; Cohen, 2006). However, by

US Census Bureau projections, over 40 countries including many African countries, Central Asian states, and Russia are projected to have a lower life expectancy in 2020 than they did in 1990. Even if effective HIV/AIDS prevention measures are adopted in various countries, the social and economic impact of the millions already infected with the disease will play out over the next 15 years (Mercurio, 2007). The rapid rise in adult deaths caused by AIDS has left an unprecedented number of orphans in Africa (UNDP, 2012). Today in some African countries, one in ten children is an orphan, and the situation is certain to worsen. The debilitation and death of millions of people resulting from the AIDS pandemic will have a growing impact on the economies of the hardest-hit countries, particularly those in Sub-Saharan Africa, where more than 20 million are believed to have died from HIV/AIDS since the early 1980s (UN, 2012). Studies indicate that household incomes drop by 50 to 80% when key earners become infected. In "second wave" HIV/AIDS countries – Nigeria, Ethiopia, Russia, India, China, Brazil, Ukraine, and the Central Asian states – the disease will continue to spread beyond traditional high-risk groups into the general population. As HIV/AIDS spreads, it has the potential to derail the economic prospects of many up-and-coming economic powers (Brown, 2006; Garrett, 2005; AEO, 2011).

HIV/AIDS and other sexually transmitted diseases were on the increase in developing countries as recorded in 2003. According to an initial report of the Sero-Prevalence Survey, about 4.9% of the developing countries population was HIV infected (WHO, 2003). According to the MICS II Report, 46% of women in child-bearing age were ignorant of HIV/AIDS and very little of them knew where to go to be tested for the disease, resulting in a higher potential for it to spread (Strategies for National Transformation, 2003). Voluntary confidential counselling and testing (VCCT) services as well as antiretroviral therapy and mother-to-child transmission (PMTCT) were then made available (UNDP, 2010). In addition 81 ART centres have been established (World Health Organisation, 2008). Every day, 6 000 people are infected with HIV, and in some countries, HIV prevalence is still high. In Swaziland, for example, one in three adults now lives with HIV (Anderson, 2008). In 2010 about 1.8 million people died from AIDS, of whom 1.2 million were in sub-Saharan Africa. However, in many African countries, rates of infection have declined and important improvements in the treatment of AIDS sufferers have been made, with an increase

from 50 000 on treatment 8 years ago to 6.6 million in 2010. Recent studies have indicated that oral antiretroviral drugs (ARVs) can prevent heterosexual HIV transmission. Transmission rates were substantially reduced if the ARVs were taken by the HIV-negative partner and were virtually eliminated for at least two years if taken by the HIV-positive partner, although it is uncertain if this strategy can be brought to scale (Shelton, 2011).

Sanitation is the process of promoting good health by separating waste, such as urine and faeces, from human contact (WHO, 2012). Poor sanitation, coupled with unclean water supply, dramatically increases the risk of water-borne disease and accounts for an estimated 4.0% of all deaths globally (Prüss, 2002). More Developed Countries suffer virtually no mortality from disease due to poor sanitation, whereas in Less Developed Countries, 21 deaths per 100 000 people are caused by poor sanitation and water; in the Least Developed Countries this figure rises to 112 deaths per 100 000 (derived from WHO Data). In Uganda, where 98 deaths per 100 000 people are attributable to poor sanitation, nine in ten households use shared or basic latrines. These are a major source of solid waste runoff, which contaminates waterways and facilitates disease outbreaks. WHO projections (WHO, 2008) indicate that improved sanitation will continue to lower mortality rates. A baseline scenario for global diarrhoeal disease is that 88% are attributable to poor sanitation (WHO, 2004), and 1.7 million deaths in 2008 will drop to 1.3 million in 2015 and 0.7 million by 2030. Yet it is expected that 2.7 billion will still lack adequate sanitation facilities in 2015 (UN, 2011; Uchtmann, 2011; Royal Society, 2012).

Another contributor to the dismal health situation in developing countries was the appalling and insufficient sanitation facilities. The 2000 Baseline Service Delivery Survey (BSDS) reported that about 65, 60 and 80% of the Sub-Saharan population lacked access to safe drinking water, health services and sanitation. The MICS II also reported that the sewerage and refuse disposal facilities were not adequate and contributed to the risks of spreading water-borne diseases and malaria. It was common practice for households to dispose of refuse by dumping it on roadsides, in drainages or in backyards (WHO, 2003). The problem was further compounded by the rate of urbanisation, coupled with the poor infrastructure and services for waste disposal (Strategies for National Transformation, 2003). UNDP (2012), WHO (2012)

and Health and Sanitation Officers have tried to improve drinking water supplies, however diarrhoeal diseases are still a key cause of childhood mortality and cholera outbreaks arise yearly in most developing countries. The supervision of waste, including clinical waste, solid waste, domestic and industrial wastewater is vital and needs to be addressed (World Health Organisation, 2008).

By 2020, women will also have gained more rights and freedoms in terms of education, political participation, and work force equality in most parts of the world, but UN (2012) and World Health Organisation (2012) data suggest that the gender gap will not have been closed even in the developed countries and will still be wide in developing regions. Although women's share in the global work force will continue to rise, wage gaps and regional disparities will also persist. Although the difference between women and men's earnings narrowed during the past 10 years, women continue to receive less pay than men. For example, a UN study in 2010 indicated that in 27 of 39 countries surveyed in both OECD and developing countries women's wages were 20 to 50% less than the men's for work in manufacturing. Certain factors will tend to work against gender equality while others will have a positive impact (Chen, 2004; US, 2009; Wiskow, 2010).

In regions where high youth bulges intersect with historical patterns of patriarchal bias, the added pressure on infrastructure will mean intensified competition for limited public resources and an increased probability those females will not receive equal treatment. For instance, if schools cannot educate all, boys are likely to be given first priority. Yet views are changing among the younger generation. In the Middle East, for example, many younger Muslims recognize the importance of educated wives as potential contributors to family income (Salehi-Isfahani, 2010; Fuller, 2003; Hamdan, 2005). In countries such as China and India, where there is a pervasive "son preference" reinforced by government population control policies, women face increased risk not only of female infanticide but also of kidnapping and smuggling from surrounding regions for the disproportionately greater number of unattached males. During 2012, the preference for male children in China has led to an estimated shortfall of 30 million women. Such statistics suggest that the global female trafficking industry, which already earns an estimated $4 billion every year, is

likely to expand, making it the second most profitable criminal activity behind global drug trafficking (Brown, 2006; UNODC, 2012).

4.5.2 The BRICS social cultural outlook

The demographic dividend that BRICS economies enjoy, in comparison with rapidly ageing societies and longer life expectancies in advanced countries, is likely to benefit the group in the future (Sachs, 2001). The share of the urban population is rising and the child dependency ratio is falling, pointing to a rising share of the working age population (Bloom, 2011). The increasing labour force indicates the huge demand and supply potential in the BRICS economies. Though these economies are better placed demographically than advanced countries, a decline in the working age population is expected to take place at a faster pace in some of the BRICS countries. At present, the population in the age group of 0 to 14 years is the highest in India (32.1%), followed by Brazil (27.9%), China (21.4%), and Russia (15.3%). It is expected that the average age of the population in India will decline, before it begins to rise after 25 years. According to projections by the United Nations, the median age in India will cross 30 only by 2025 and will remain at around 35 until 2040. In 2020, the average Indian will be only 29 years old, compared with the average age of 37 years in China and the US, 45 years in Western Europe and 48 years in Japan. As projected, China's population would peak at around 1.5 billion in the beginning of the 2030s and decline slowly afterwards. According to government estimates, the population of India is expected to increase from 1.029 million to 1,400 million during the period 2001 – 26, which is an increase of 36% in 25 years at the rate of 1.2% annually (UNAIDS, 2010; Larsson, 2007; Cesar, 2012).

According to 2010 data, India has an urbanization rate of less than 30%, and China's is a little more than 40%, while Russia's and Brazil's rates are 73 and 85%, respectively. In the case of South Africa, about 61.7% of the population lives in urban areas. Judging from these data, it is evident that China and India still have much room for urbanization, which will become an engine for their future growth (Cohen, 1999). South Africa's fertility rate has declined over the past decade due to rapid urbanization and the high prevalence of HIV/AIDS. The BRICS economies have to work together to improve living conditions for their populations and the

quality of social services. Various social sector indicators suggest that there is a large scope for improvement in all the BRICS economies (Stand, 2011). Among the BRICS, the Russian Federation ranks highest (71st out of 169 countries) in terms of the Human Development Index (HDI, 2010), while South Africa (129th) and India (134th) are ranked the lowest. South Africa has fairly high adult literacy rates (percent of population 15 years and older) for both males (88.9%) and females (87.2%) (HDI, 2010). Better quality healthcare provision has reduced infant mortality in Brazil (from 47 per 1 000 live births in 1990 to 22.5 in 2009), contributing to an improvement in the well-being of the Brazilian population, which is somewhat present in Russia as well (WHO, 2000; UNDP, 2009; New Delhi Report, 2012).

4.5.3 South Africa's social drivers

Similar to the scarcity of reliable population-based information about disease, disability and health risks in the older population, there are limited data about geriatric service provision and utilisation. A recent South African government report to the United Nations Second World Assembly on Ageing states that older persons have free access to primary health care at over 3 500 primary health-care clinics, that recipients of social grants receive secondary health-care services free of charge at public hospitals, that three geriatric departments exist in the country, and that a range of health promoting guidelines, some specific to older persons, others inclusive of older persons, as well as relevant information communications have been produced by the Department of Health (Department of Social Development, 2012). Age in Action, the country's main non-governmental organisation, with an exclusive interest in older persons, has offered valuable programmes and services to the older population over the past years. With financial support from the Department of Social Development and a number of private organisations, these services include a toll-free national help-line (HEAL) for reporting elder abuse and neglect, and training programmes for community care to frail and disabled older persons, older caregivers of HIV/AIDS relatives, and recreational activities and physical exercise in older persons (Age-in-Action, 2011).

The value of these services to the older population is acknowledged, but evidence exists that transforming health care in South Africa has not been entirely positive for

poor and older citizens, and, in particular, has resulted in the marginalisation of geriatric services. Examples include the trimming of some well-established services for the poor and uninsured; budgetary reductions at Groote Schuur hospital have resulted in limiting joint replacements from 350 per year in 1993 to 60 per year in 2003; numerous community nurses have been redeployed from geriatric services to assist, for example, in child immunisation programmes; the integration of preventive, curative and rehabilitative needs of older clients into general sessions at community clinics; and the re-direction of funds for dietary supplementations for older persons to programmes concerned with children and pregnant and lactating women (Joubert, 2005; Department of Health, 2010).

The UN (2010) indicates that between 2010 and 2020, five million people will die from AIDS related diseases. The cost of AIDS orphans weighs heavily on South Africa at a social, economic and psychological level. The state's ARV roll-out has long fizzled out with many of the medicines from state clinics and hospitals becoming available on the black market. Few benefit from the programme. Most groups in the private sector have flatly refused to provide ARVs as part of workplace strategies to manage HIV on the grounds that they could not be saddled with a problem they did not create (Ojienda, 2010). The full impact of the HIV pandemic had not been anticipated and the infrastructure simply does not exist to meet the levels of infection. Consequently, this has had far reaching psychological and cultural results (Fourie & Schöntech, 2001).

Apathy, cynicism and pessimism have become pervasive, further fuelling the spread of the pandemic (Magill, 2006). Exacerbating urban decay and moral degradation has provided a further stimulus for the burgeoning infection rates. Education too suffers ominously in South Africa as the number of qualified teachers declines rapidly and business suffers with an unproductive workforce (Cordeiro, 1993). Aids orphans struggle to form stable relationships and are constantly at conflict with society as they feel that society owes them a better life (Spires, 2011).

Although global populations are set to increase and countries with a younger population will derive a demographic dividend from this growth, South Africa seems set to skip this global advantage. Global population figures in emerging market

countries are expected to grow dramatically towards 2050, after which they will taper off (Silke, 2011). In South Africa's case, though, this is likely to happen as early as 2030. By 2030 South Africa's population will be 53.8 million. It will decrease to 53.7 million by 2035 and to 53.3 million by 2040 (Silke, 2011). This is partially as a result of HIV/AIDS. In 1985, deaths equated 25% of births in the country; this will increase to 87% of births by 2021. As the anti-retroviral rollout improves, life expectancy levels will improve. Still, the ravages of the lost Thabo Mbeki years in failing to treat Aids, and falling fertility rates as a result of increasing urbanisation and access to education, will inhibit population growth (Meintjes, 2011). South Africa is therefore not going to benefit from an increasing pool of young people. A younger, educated population will be a key draw-card for investment and a foundation for the new consumers of the future (UN, 2011). If fewer people are going to contribute to the economy, this poses the global conundrum of where skills will come from. More flexible immigration policies will be needed to cope with skills shortages in the South Africa of the future (Rasool, 2010; Daniels, 2010). If domestic education standards are not lifted, such immigration policies will be needed much sooner to cope with demands for specialised skills (Steingold, 1994). By stalling work permits for in-bound skilled migrants, South Africa is missing an important key skills opportunity.

Agriculture in South Africa will be a critical component of a thriving economy but commercial farmers, who should be deriving a real benefit from government in the wake of universally accepted predictions about food shortages and price increases, are increasingly under threat. Poorer sectors of the domestic population will therefore feel increasingly insecure as food prices soar (Silke, 2011). Price increase has the potential to cause political disruption and disaffection with the broader body politic. Already the Development Bank of South Africa confirms that 64% of households in South Africa are food insecure and this is a stark reminder of the pressures felt on the ground (Van der Westhuizen, 2009). Assuming higher prices, rising demand and the ravages of climate change, prudent and pragmatic policies will be needed to ensure a high level of domestic food production (Kartha, 2006). Commercial farmers have been under tremendous pressure of late and land tenure (ownership) and the resulting political debate about future legislation have severely affected the morale of this critical economic sector. The threat of expropriation, unless amicably resolved, will result in a decrease in inward investment into the

sector (Silke, 2011; Mercurio, 2007; WTO, 2009). Farmers will look to secure their future through diversification into other areas of economic activity, leaving the commercial sector dangerously exposed. The inability or unavailability of an emerging and experienced black farming core to take up the slack left behind by largely white commercial farmers suggests this aspect of South Africa's development could potentially derail many crucial aspects of human development (Phirinyane, 2010). High input costs like electricity and water, land taxes and more onerous labour laws have already taken their toll on hiring practices (McDonald & Pape, 2002; New Delhi Report, 2012). Jobs on commercial farms have shrunk by 27% in the past 14 years (Silke, 2011). This is largely a result of a dramatic reduction in commercial farmers from a total of 120 000 in 1994 to only 37 000 currently (Aliber, Baiethi & Jacobs 2007; FAO, 1997; Williams, 2008). Any attempts to implement a new and unworkable land reform policy that has the potential to destroy even more jobs would be foolish (Aliber *et al.*, 2007).

Add to this the threat of crime and the unacceptably high murder rate of white farmers and thus South Africans have a vital sector in a deep state of anxiety (Bowling, 2003). South Africa's neighbours, on the other hand, are sitting with millions of hectares of unutilised land, bigger and cheaper water resources, a higher degree of personal safety and less onerous labour restrictions (Ukwandu, 2009). Local commercial farmers may well find that African states like Malawi or Mozambique become more inviting to their skills. It is reported that 40 farmers visited the Democratic Republic of the Congo in March 2011 and signed agreements to lease 80 000 hectares of land to farm maize, beans and vegetables, among other crops. An agricultural brain drain would have serious implications for South Africa's ability to feed itself or benefit commercially from the rising demand from newly developing emerging markets (Yumkella, Kormawa, Hawkins & Roepstorff, 2011). Agricultural experts are warning that the country is now starting to import grains such as wheat that used to be domestically grown. Even beef and poultry will come in the form of imports in future (UN, 2011). Using domestic expertise to enable the country to be a bread-basket to the emerging world should be a key leveraging factor for commercial farmers in South Africa and a priority for the SA government. Expanding the incentives for commercial farmers, allowing job expansion and making them feel secure in leveraging their experience to a world demanding greater production of

agri-products should be government policy into the future (Silke, 2011; Schoneveld, German & Nutakor, 2011; Harder, 2012).

4.6   POLITICAL DRIVERS

The study of world politics now comprises a broad range of disciplinary and theoretical perspectives (Brasset & Bulley, 2007).   Such breadth holds important implications for understanding ethics and "the ethical" in world politics (Sander-Staudt, 2011).   Where once International Relations (IR) claimed a monopoly over the study of world affairs, there is now a plurality of capable observers from disciplines like Geography, International Political Economy, Futurology and Sociology.   Where once the dominant paradigms of IR succeeded in the effective exclusion of 'the ethical' from world politics either by asserting a difference between domestic order and international anarchy, thus deferring questions of ethics until an international community is achieved (Ashley, 1987; Karagiannis, 2004; Essel, 2012), or by treating ethics as a potential 'doctor' for IR, a body of principles that can be imported from outside, once they are finally agreed (Walker, 1993; Essel, 2012), there is now a growing reflection on the limits of such thinking by critical, feminist and post-structural scholars.

For such theorists ethics is always already political (Cloud, 2006; Darling, 2009). Rather than a simple set of principles, which can be applied to this or that case, questions of 'the ethical' are intertwined with the doubt and contestability of politics. Countries have politics because mankind has no grounds, no reliable standpoint in other words, responsibility and rights, the answers and the claims researchers make as foundations disintegrate, are constitutive of politics (Keenan, 1997; Grint, 2000; ON, 2010).   Importantly, there can be no easy resolution in ethics, merely uneasiness in people's own position and a responsibility to consider and converse (Brassett & Merke, 2005).   In the academic and policy communities, increased attention is given to cosmopolitanism as a normative framework for addressing world politics (Brasset & Brulley, 2007; Essel, 2012).   Against the backdrop of globalization, cosmopolitanism has become a key reform agenda that seeks to humanise aspects of what might be loosely termed global public policy (Sklair, 1999; Held, 1995; Oakes, 2010).   At the same time post-structural and critical perspectives

challenge traditional cosmopolitan assumptions (Patomaki, 2003; Walker, 2003). For such theorists, the cosmopolitan belief that the vagaries of world politics can be confronted and overcome through correct deployment of reason and international law contains 'effective silences' that enact a violence towards alternative possible futures. However, such differences notwithstanding, certain common questions may be addressed. By inviting critical theorists to engage in these debates, researchers are able to articulate the implications of their arguments to a different audience and put into practice an oft-stated belief in methodological pluralism (Der Derian, 1997; Edkins, 2005; Tobin, 2007).

Governance (local, national and regional) relies on values and principles that the public holds (Hartmann, 2009; Kennedy, 2003). The political relations between the state, civil society and the private sector are heavily relied upon by governance, even though the purposes of these sectors vary depending on the priorities and principles of a set social system (Herbst & Mills, 2009). Governance is found within the political, economic and administrative sectors, and it can affect expansion, which includes the potential for sustainable environmental management, market efficiency and the understanding of basic rights. First-rate governance is able to develop economic development as well as the potential to produce fresh opportunities for improving human well-being as well as general development (Hartmann, 2009).

Good governance also pertains to government agencies' conveyance in applying original policies and programmes to boost the quality of public service with the eventual aim of increasing economic growth (Grindle, 2004; Hellman, Jones, Kaufmann & Shankermann, 2000; Rivera-Batiz, 2002). Such groundbreaking programmes and policies tackle governance facets such as transparency, participation, accountability and professionalism (Liddle & Mujani, 2005; OECD, 1995). Standard corporate governance criteria are the attentiveness to the analysis of good governance, the level of understanding and implementation at the regional government level and the degree of alignment with international standards (Mardiasmo, 2007; Santiago, Donaldson, Herman & Shewbridge, 2011). Many standards, literature and codes of conduct are accessible on governance; several precipitated by recent institutional crises in commerce and exposure to unsuitable government practices around the world (Armijo, 2004; Beck, Clarke, Groff, Keefer &

Walsh, 2000; Brinkerhoff & Goldsmith, 2005; Court, Gyden & Mease, 2002; Governance, 1998; Hellman *et al.,* 2000; Huther & Shah, 1998; Shunglu, 1998; Kaufmann, Kraay & Zoido-Lobaton, 2000; Adendorff, 2004; Adendorff, 2011).

The geopolitical category addresses risks that are of greatest concern in the areas of politics, diplomacy, conflict, crime and governance on a global scale. From diffusion of weapons of mass destruction to pervasive entrenched corruption, geopolitical risks are global risks of humanity's own making (Global Risks, 2012). The threats of geopolitical risks range from undermining socio-economic progress to annihilating society and earth's resources. Global governance failure was ranked second in the highest impact along with diffusion of weapons of mass destruction, but the former is regarded as relatively more likely to prevail towards 2050 (Hettne & Odén, 2002; Global Risks, 2012). Pervasive entrenched corruption, critical fragile states, terrorism, entrenched organized crime, failure of diplomatic conflict resolution and widespread illicit trade were all rated a higher likelihood than global governance failure, however, their perceived impacts are lower (Global Risks, 2012). Militarization of space, similar to other space and frontier science related risks in the technological category, appears to be a relatively low concern of survey respondents looking ahead towards 2020.

The number of existing political risk factors is large, ranging from an expropriation law, an act of terror, and the announcement of war to unexpected changes in tax regulations and sanctions arising from trade regulations (Bremmer & Keat, 2009; Stein, 1983). Literature sources also differ when defining political risk. Some refer to political risk as a business impact or as losses; some refer to unpredictability and uncertainty; some focus on environmental factors or the actual involvement thereof (Allers & De Mortanges, 1996; Nel, 2009; Essel, 2012).

Generally, the most common definitions of political risk refer to unforeseen government actions which adversely impact on the business environment (Luther & Prakash Sethi, 1986). A particular political event thus has the potential to alter economic results (Bremmer & Keat, 2009). For this thesis, political risk is defined as "the probability that business will either earn less money, or suffer losses in profit as a result of stakeholders within a political system (in) actions or reactions to events,

decisions and policies" (Brink, 2004). Although most definitions of political risk refer to the consequences of unforeseen government actions or interference, the government is not the sole player in the political environment that can produce political risk factors. Lewis (1979) explained that political actions can be undertaken by two groups. First, "executive political groups" are those groups situated at the top levels of the government. Political risk factors could originate from these groups through actions or inactions taken by the government and involved political parties. Secondly there are the "political pressure groups". These are local or international non-governmental organisations or individuals that have the ability to engage in political action, and as a result can produce political risk factors. These parties include important social groups, local and foreign competitors, and community groups (Andrews, 1995; Clark & Marois, 1996; Control Risks, 2009; Lewis, 1979; EU, 2012). Although these groups cannot change legislation directly, they have the ability to take action that could disrupt the business environment either directly or indirectly (Lewis, 1979; Lindeberg & Mörndal, 2002). It is important to understand the political environment often operates interdependently of others, which means that the actions taken by one role player may come as a result of actions taken by another (Global Risks, 2012).

However, role players can also operate independently of each other (Howard, 1993). Ultimately, the government remains the most important role player in a country's political environment since it implements policies, and these policies shape the business environment. Political risk has a number of characteristics and the classic characteristic of any risk is that it is often interdependent with another risk. This implies that one form of risk could easily give rise to another (Bremmer & Keat, 2009). An example of this is seen in how corruption will change the setup of the business and investment environment. In this instance, a political risk factor will produce, amongst others, economic risks. This characteristic of interdependency holds true for political risk factors as well and it is often interdependent with other political risk factors. For example, riots could result from constant xenophobic attacks.

Political risk factors also evolve over time as various events occur in the international, national, domestic and personal arena (Clark, 1997). Political risk

factors are often uncontrollable and unpredictable (Groth & Roberts, 2001). However, particular political events could occur regularly, be evolutionary, and be predictable from past trends (Essel, 2012). A typical example of such an event is national elections as political risk factors would be more probable during such times. Political risk factors also differ from economic, environmental and financial risks in the sense that they normally originate from individuals as this indicate that a political risk factor could arise due to a particular individual with a specific motivation or agenda for his or her actions, which could have drawbacks (Bremmer & Keat, 2009). Politics is also highly influenced by human behaviour and the convergence of sudden and often unexpected events (Bremmer, 2009; O'Dell, 2012). The nature of political risk factors can also be either intentional or unintentional, with an intentional political risk factor referring to a political factor that intends to harm a specific individual or enterprise, and an unintentional political risk factor referring to those political risk factors that harm individuals or enterprises without specifically targeting them (Howard, 1993; Essel, 2012).

Robock (1971) explained that government actions are always driven by politics. Significant economic decisions are, however, often made by political leaders in order to achieve their own political desires (Bremmer & Keat, 2009). With hindsight, politics could thus easily make economic decisions seem weak (Bremmer & DiPiazza, 2006) and this clearly indicates a direct relationship between the economic and political environment. Where politics is involved, the economic environment will be influenced (Brink, 2004; Kobrin, 1979) and this relationship between politics and business has always existed (Brink, 2004). Economic and social environments are also related, since economic problems are often reflected in the society (Nel, 2007). Previous studies have also concluded that when the socio-cultural environments of countries are vastly different, political risk factors concerning foreign investments between those countries should be important (Howard, 1993). Since government legislation is a product of the legal environment, political risk factors in the form of adverse regimes are not uncommon (Essel, 2012).

Ultimately, the fact that political factors can adversely influence all the aforementioned environments makes this field of study a crucial part of an enterprise's future success (Andrews, 1995; Essel, 2012). The political environment

has undergone numerous changes in the 21st century and in the previous century the political environment was marked by ideological power struggles, territorial objectives, power balancing clashes, and countries wanting to be self-sufficient (Essel, 2012). Conversely, the political environment in the 21st century has until now revolved around economic growth, market expansion and integration, globalisation, and countries' attempts to encourage foreign investment and trade (Essel, 2012; Nel, 2007). One major explanation for the changes in the global political environment has been geographical political power shifts as the countries that have been controlling the energy and oil supplies of the world have been a growing force in the global political environment since they have had power over these important and scarce resources. It explains why the countries of the western world have been losing their dominant global grip in the recent past, while it has been increasingly obvious that political power has begun to shift to the eastern world and especially the Middle East (Essel, 2012). The traditional political pressure groups are numerous, ranging from non-governmental organisations to multinational and country agencies (Silke, 2010). The business environment has also changed over time. Over time, governments have tended to become more actively involved in business environments. This has complicated the global business environment as governments could interfere with operations and investments within their national borders. Political risk factors also impact on the ownership of the business environment (Nel, 2007). Classic political risk factors such as nationalisation and confiscation were common in the previous century. Although these still exist, modern political risk factors that attract more attention include terrorism and corruption (Lewis, 1979; Nel, 2007). This is one of the main reasons why political risk factors have been applicable to all stakeholders in globalisation (Control Risks, 2009; Kobrin, 1982). Globalisation has been one of the most important developments during recent years (Nel, 2007). Bremmer and Keat (2009) have argued that "the dramatic increases in global economic integration, trade, and capital mobility in recent decades, combined with growing political instability and government intervention in markets, have created a climate in which political risk is more relevant than ever".

The world is interconnected and borders no longer exist between domestic and international complexities and consequently there are numerous role players in the political environment (Bremmer & Keat, 2009). No matter what size an enterprise is,

global politics could ultimately decide its success (Bremmer & DiPiazza, 2006). As a result of globalisation, it is easier for investors to seek for opportunities in new, foreign markets and regions. The longer that an enterprise operates in foreign countries, the more likely it is to face political risk factors (Essel, 2012). Once an enterprise moves abroad, it leaves a familiar domestic political, economic, legal and socio-cultural environment and enters a country with which it is unfamiliar in terms of these environments (Chambers & Jacobs, 2007; Lewis, 1979). Consequently, when investors move to foreign markets, more opportunities could arise, but exposure to more risks (economic, socio-cultural and, in particular, political risk) is inevitable (Control Risks, 2009; Friedman & Kim, 1988). A foreign political and social system may be rife with instability as foreign governments may want more control over international activities, and international relationships may change (Simon, 1984). These are examples of conditions which contribute to political risk factors. Pretty much all investments are faced with political risk factors (Lindeberg & Mörndal, 2002). As long as global business is pursued, political risk factors will always require close attention (Silke, 2011).

Research suggested that the occurrence of discontinuities in the business environment; the difficulties concerning the anticipation of these discontinuities; and the political changes that produce these discontinuities are three of the main situations that expose international business to political risk (Essel, 2012).

4.6.1 The political analysis of the developing countries

Despite the current bleak predictions, most developing countries are doing well even though some country cases are still experiencing difficult times in terms of political stability, economic development and challenges posed by poverty (UN, 2012). However, the political instability in developing countries, which also underpins the economic development often, has strong links to internal and external special interests time and again (Ong'ayo, 2008; Muzando & Mpanju, 2012).   Africa's resources in this case have never been its blessing, but a curse (McKay, 2012). There is no explanation for the under-development of the continent while it sits on massive natural resources (Okafor, 2011).   For decades, western companies involved in extraction in developing countries have never declined in numbers nor

have their profits plummeted (Kennedy, 1989; Ong'ayo, 2008). Rodney (1981) asserts that previous African development was blunted, halved and turned back by colonialism without offering anything of compensatory value. Moreover these profits have never trickled down to the very basic level in developing countries where they could have been used to improve the living conditions of populations whose resources were being exploited.

The existing global economic conditions based on western policy prescriptions also play a significant role in the deprivation of African populations, of the essential services, which are a key factor in development. While it can be argued that it is not the responsibility of the investors to improve the living conditions of the people in the regions where they make profits, notwithstanding the calls for or cosmetic expression of corporate responsibility policies of multinational companies, the integrated nature of current global economy and security concerns, dictates that such factors cannot be ignored. The economic policies in the form of Structural Adjustment Programmes (Mkandawire and Soludo, 2003) packages entailed sweeping economic, political and social changes designed to siphon the indebted country's resources and productive capacity into debt payments and to enhance international competition (Hong, 2000; Egharevba, 2008; Evans, 2011). Examples include massive deregulation, privatisation, currency devaluation, social spending cuts, lower corporate taxes, export driven strategies and removal of foreign investment restrictions (Clarke, 1995; Abdelazim, 2002; Bond, 2003). The consequence of these economic conditions in developing countries has obviously had serious political ramifications for essential services such as health, education and infrastructure. Cuts in public expenditure under SAPs led to a drastic decline in control and prevention measures against diseases such as cholera, yellow fever and malaria that were once under control in many developing countries while new diseases remain a big challenge (Ong'ayo, 2008). The absence of these fundamental services implies that generations and generations go through deprivation which impacts upon their potential to be productive members of their own societies. In this regard, the problem might look African, but the cause is western-based financial institutions whose interference through conditionality, politics and economic policy prescriptions, contribute to the instability in developing countries (Sindzingre, 2003; Teunissen, 2005; Thoma, 2012).

During the onset of multi-party democracy in the so-called third wave of democratisation (Huntington, 1991), most regimes in developing countries did not fully embrace the changes that accompanied the transition. Many autocratic regimes, for instance, accepted multi-party democracy out of western donor pressure and agitation for change by local civil society groups in most cases funded by the international community (Fayemi, 2009). As a consequence, the constitutional frameworks and state institutions have been tampered with, in order to create an uneven playing field against the opposition (McElwain, 2006). Some of these processes have seen sporadic violence during electioneering periods, leading to political instability (Omotola, 2011). However, the degree of violence and the manner in which they are perpetrated vary from country to country as the most recent elections in Uganda, Nigeria, Kenya and Zimbabwe can indicate. The reluctance of some incumbent regimes in developing countries has been due to the fear of being accountable for past misdeeds (Huyse, 2009). In the context, a combination of external and internal factors, namely the impact of the global economy driven by the logic of the market, sectarian and particularistic tendencies, ethnic, religious, linguistics or cultural differences, or political and economic insecurities (Mohamoud, 2006), continue to play a significant role in shaping the political processes in developing countries and how the incumbent regimes respond to demands for change (Manecke, 2007; Dahre, 2010; Erden, 2010).

With many countries holding their third or fourth multi-party elections, internal power struggles have taken on a violent dimension, thereby threatening the very existence of many countries (Salhi, 2009). Since the onset of multi-party democracy in most developing countries electoral processes have been accompanied by political violence (Lupo, 2004; Gurr, 1980; Mustafa, 2005; Barkan, 2011), as part of the democratisation process (Lupo, 2004; Huntington, 1991; Barkan, 2011). Most violence in such cases is often state sponsored, to the advantage of the incumbent, while various groups that struggle for state power also deploy hired violence, in the form of informal groups, militias and gangs (Berman, 2010; Murunga, 2011). In the context of all the violence, the ordinary people lose out in terms of lives and property. The tragedy is that the political conflict is not about alternative political programmes that could address the major problems such as poverty, disease and illiteracy, but

merely a fight over who has access to the state resources (Panic, 2005; Dessy, 2007; Ong'ayo, 2008).

The developing countries' elites, who are bent on hanging on to power at any cost and for the purpose of primitive accumulation, have perfected the art of political expediency even when these acts threaten the stability of their countries. But in all these cases, there is always a hidden hand of external interests, who would like to retain the status quo or where interests support political change, and then their choice of preference is always contradictory to the wish to the people (Gorton, 2010; Long, 2012). For instance while many countries took a tough stand on the Moi regime in 1980s and early 1990s, Britain did not take a strong stand against Moi's regime, due to its interests in Kenya as Britain had an investment worth $1 billion in Kenya (Murunga, 2004). In this case the safety of their investments and profits was enough justification to accept the Moi regime after flawed elections in 1992 and 1997 (Rok, 1997; Murunga, 2004; Oyugi *et al.,* 2004). Similar cases can be found elsewhere on the African continent. In this regard, questions that still need answers in relation to the political instability in Africa are to what extent is the international community willing to see a stable Africa (Franke, 2007; Lewis, 2012).

The issue of political instability in developing countries is also related directly to the migration and development question (Adepoyu, 2007). The life-threatening political and economic conditions in developing countries contribute enormously to the massive exodus of both highly qualified and lowly educated populations in developing countries. These include such factors as civil conflicts, bad governance and poor economic conditions (Mohamoud, 2005). Many people are on the move as asylum seekers or refugees in a number of countries. People are escaping from civil wars and oppressive regimes working in conjunction with external special interests, especially in countries endowed with natural resources. The end result is migration, both forced and wilful and the final destination is the north. However, response at policy level seems to address the more superficial aspects of migration. Instead of addressing the root cause of less beneficial forms of migration for instance, forced migration and so on, countries in the north develop responses to manage migration (Adepoju, 2008) in ways that are counterproductive. For this reason migration is

seen as a problem to the recipient countries, due to insensitive understanding, which leads to inappropriate responses (Schetzer, 2002; Vaughn, 2009; Thoma, 2012).

4.6.2 BRICS political risks

Recent research indicates that the political risk factors of most concern to investors differ somewhat from those in the other BRICS countries (Global Risks, 2012; Essel, 2012). Research also indicated that the political risk factor of most concern to investors has been war and civil disturbances. Other major political risk factors are identified as terrorism and restrictions on transfer and currency convertibility (MIGA, 2010; Satyanand, 2010). As multinational enterprises have become more aware of the presence and impact of these political risk factors, they have realised the importance of implementing appropriate risk mitigation strategies. The most common political risk mitigation strategies followed by these multinational enterprises have been to conduct political and economic risk analysis, to form joint ventures or alliances with local enterprises, or to engage with the host government (MIGA, 2010; Satyanand, 2010). Some researchers argue that the main reason why China has been an emerging market economy is the political advantages gained by the political leaders through their attempt to liberalise the country's economy (Bremmer & Keat, 2009). High foreign investment and industrial competitiveness have enhanced the Chinese economy. At the same time, however, economic, environmental and social issues have been constraining China's economy (Hult, 2009). The biggest social issue in China has probably been the huge economic inequality of citizens in the metropolitan regions and in the countryside (Lanhove, 2004). China is rated as one of the countries in the world with the most uneven income distribution (Gwertzman, 2004).

Politically, the BRICS members may not ever be very united, given their different political systems and social situations. However, the Delhi BRICS thesis did indicate that a difference of opinion is not always a result of differences in perception. For example, on Iran, India's stance may be different from that of China and Russia, but by taking a common stand they can have a lasting effect on global politics (Amin, 2010; Panda, 2012). A strong, unified BRICS position should cause the U.S. to think twice before acting unilaterally, and encourage Washington rather to focus on

diplomatic procedures. The BRICS united understanding on Iran and Syria indicates that it is possible for the members to converge on foreign policy issues, even if their foreign policy objectives and interests may not entirely be in harmony (Mathurine, 2012). The decision made in Delhi to address political issues indicates that BRICS is not just an economic entity, and it has a certain political clout that is central to the future of global politics (Panda, 2012; Baker, 2012).

BRICS is indeed emerging as a credible multilateral grouping that will be vital for global politics towards 2050 (European Parliament, 2011). Yet, the current limitation of BRICS is that it neither represents a political coalition nor is showing much interest in taking a lead on greater global geopolitical and strategic issues (NIC, 2008). The opportunities for BRICS are many, equally the challenges are big. The immediate thrust should be on the promotion of intra-BRICS trade and setting up a formal BRICS platform through a secretariat, where economic and political sensitivities could be discussed (Baker, 2012; Panda, 2012). As the recent BRICS research indicated, the developmental banks of BRICS countries could take up a first call to formalize and establish understanding in extending credit facilities in local currencies, and in the multilateral letter of credit confirmation facility agreement (Stiftung, 2012). The proposal to extend credit facilities in local currency is a momentous step, as it intends to reduce the demand for fully convertible currencies for transactions among BRICS and will reduce transaction costs (Panda, 2012).

Politically, the BRICS members' understanding and perspective on the issue of Iran and Syria are a positive indicator of how the emerging economies are forging a united political stand on key global issues (ONS summit, 2012). Economically, the BRICS call on the IMF, World Bank, and on the global markets also shows the move toward a more unified, powerful front. The calls for reforming the IMF quota, considering a World Bank president from the developing world and for developed economies to adopt responsible macro-economic and financial policies to avoid creating excessive global liquidity, are all huge statements targeting American and European supremacy in the global financial architecture (Sayin, 2011). Though it is not going to be easy to curb the Western dominance in the global financial institutions, the research indicates that the process has already begun (Panda, 2012; Davies, 2010).

4.6.3 Political risk, analysis and investment: South Africa

During 1994, South Africa made significant progress in building the structures of a democratic state. The fragmented governance structures of apartheid have been consolidated into a system designed to serve developmental objectives (Layman, 2003; Rembe, 2006; Department of Basic Education, 2010). The composition of the public service and local South African government has been transformed to better represent the entire population (NDP, 2011). The introduction of democracy provides a basis for greater accountability of South Africa to its citizens. South Africa has successfully restructured public finances, created an effective tax system, and built an independent and credible reserve bank (Folscher, 2006; Siswana, 2007). Some argue South Africa has made significant progress in the provision of basic services such as housing, water and electricity (UNDP, 2010). The foundations for a capable state have been laid, but there are major concerns about the weakness in how these structures function, which constrain South Africa's ability to pursue key development objectives (Edigheji, 2007; Adendorff, 2011; Silke, 2011). The uneven performance of the public service results from the interplay between a complex set of factors, including tension in the political administrative interface, instability of the administrative leadership, skills deficits, the erosion of accountability and authority, poor organisational design, inappropriate staffing and low staff morale (Grafton, 2010; NDP, 2011; Davis, 2012; Silke, 2011).

The temptation of quick fixes has diverted attention from more fundamental priorities, particularly the deficit in skills and professionalism affecting all elements of the public service (Governance, 2000). At senior levels, reporting and recruitment structures allow far too much political interference in selecting and managing senior staff (NDP, 2011; Silke, 2011). The result has been unnecessary turbulence in senior posts in the public service and reduced confidence in the leadership, which undermines the morale of public servants and citizens' confidence in South Africa (Hughes, 2003). Therefore, South Africa has struggled to achieve constructive relations between the three spheres of government. A lack of clarity about the division and coordination of powers and responsibilities together with the lack of coherent and predictable mechanisms for delegating or assigning functions has created tensions and instability across the three spheres (Heyns & Stefiszyn, 2006; Silke, 2011). There is

no consensus on how this is going to be resolved and there is a lack of leadership in finding appropriate solutions (Silke, 2011). These coordination problems are not unique to South Africa (Mercurio, 2007). These are made more difficult by gradual "mission creep" as each government agency is expected to fulfil multiple objectives but the key issue is how they are dealt with. At present, there is no clarity on who has responsibility for mediating disputes and overcoming coordination problems (Kennedy, 2003; Lang, 2007; NDP, 2011; Silke, 2011).

South Africa has yet to balance the need for public servants to be responsive to the priorities of the South African government of the day with the need for the public service to treat citizens equally and not discriminate on grounds of political allegiance (Hadley, 2002; Kalombo, 2005; NDP, 2011). There also has yet to be a clear demarcation between the roles and responsibilities of public servants and their political principles (Mafunisa, 2003; Greene, 2006; Essel, 2012). Where the public service is too insulated from political pressures, this is likely to lead to concerns that it is failing to serve the interests of the government and is therefore not fulfilling its democratic mandate. However, where the public service is insufficiently insulated, standards can be undermined in South Africa as public servants are recruited on the basis of political connections rather than skills and expertise, or access to state resources and services become defined by political affiliation rather than citizenship (Gounev, 2010; NDP, 2011; Sherwood, 2012; Silke, 2012).

It is argued that South Africa has made remarkable progress in the transition from apartheid to democracy. This transition has been peaceful despite the country's history of violent conflict and dispossession (Athiemoolam, 2003; Nzomo, 2002; Nel, 2012). In nearly every facet of life, advances are being made in building an inclusive society, rolling back the shadow of history and broadening opportunities for black South Africans. South Africa has been able to build the institutions necessary for a democratic and transformative state (Edigheji, 2007). The constitution enshrines a rights-based approach and envisions a prosperous, non-racial, non-sexist democracy that belongs to all its people. Access to service has also been broadened, and some argue that the economy has been stabilised and a non-racial society has begun to emerge (Nel, 2012). Eighteen years into democracy, South Africa remains a highly unequal society where too many people live in poverty and

too few work (World Bank, 2008). The quality of school education for most black learners is poor (Lowstedt, 2010). These immense challenges can only be addressed through a step change in the country's performance (NPC, 2011; Andrews, 2008; Du Plessis, 2011).

Prior to 1994, the South African economy and polity were dominated by the white minority, and even though the apartheid regime had begun to unravel in the 1980s, the majority of blacks remained deprived of basic political and economic freedoms (Rodrik, 2006; Rakometsi, 2008). Researching the depth of the racial and income divides that prevailed, it would not have been unreasonable to predict a cycle of redistribution and macroeconomic populism following democratization that would wreak havoc with the economy and turn South Africa into a sham democracy (Scorse, 2012). Instead, the democratically elected governments led by the African National Congress (ANC) have managed to create a stable, peaceful, and racially balanced political regime with an exemplary record of civil liberties and political freedoms (Heyns & Stefiszyn, 2006). Economic policy has been conducted in an equally exemplary manner, with South Africa turning itself into one of the emerging markets with lowest risk spreads. While South Africa has instituted some innovative (and expensive) social transfer programs to address long-standing disparities, it has done so in the context of cautious fiscal and monetary policies, which have kept inflation and public debt at low levels (Rodrik, 2006; Faulkner, 2008). There were no nationalizations or large-scale asset redistributions and moreover, the economy was opened to international trade and capital flows (Fedderke, 2002; Hartzenberg & Stuart, 2002; Hirsch, 2005; du Plessis & Smit, 2006).

Although South Africa is governed as a parliamentary democracy (Bureau of African Affairs, 2010; Essel, 2012), this democratic country has numerous identifiable political pressure groups such as labour. These groups have instigated strikes in the past during which the entire country has come to an economic standstill, which makes it obvious that these labour unions are crucial political pressure groups in South Africa (Pekeur, 2003; Essel, 2012). Amongst the identified political pressure groups in South Africa are the Congress of South African Trade Unions (COSATU), the South African Communist Party (SACP) and the South African National Civics Organisation (SANCO), (Central Intelligence Agency, 2010). South Africa has been

identified as one of the most stable economies on the African continent and it has been argued that South Africa has been the economic giant of Africa and has not only been the leading producer of minerals, but is also the country with the highest industrial output on the African continent (McKinsey, 2010; Essel, 2012).

Above all, it has been responsible for the generation of a very large proportion of the continent's electricity (South African Info, 2009; Economy Watch, 2009). Political risk factors in South Africa particularly have traditionally been exaggerated (Control Risks, 2007). Foreign investors also generally associate business in South Africa with corruption (Zaayman, 2003; Silke, 2011). South Africa has also constantly faced threats of expropriation in the recent past, as issues surrounding land reform and the nationalisation of mines have been sensitive subjects in South Africa (Zaayman, 2003). South Africa received a low rating for 2010 with regard to political risk and a low political risk rating implies that businesses are able to operate without any inconvenience (Shaw, 2010; Essel, 2012). Political organisations are expected to be stable, although the possibility remains that adverse policy changes may occur (Essel, 2012). However, the possibility that regulatory or judicial insecurity can become an issue is unlikely, but non-government actors could obstruct business activities from time to time (Control Risks, 2009). South Africa thus far has been fortunate in the sense that there has not been any significant terrorist activity in the country recently. One explanation for this could be South Africa's low global presence (Austin, 2008; Botha, 2010). South Africa has not had enough major global authority or involvement that could turn the country into a potential target for terrorist organisations. Issues around Black Economic Empowerment have often presented political risk factors (Acemoglu, 2007; Duffet, 2012) and this has usually come in the form of potential government intervention (Labonte, 2010; Essel, 2012).

4.7   ENVIRONMENTAL DRIVERS

The environmental drivers address environmental global risks of high concern, from natural disasters such as extreme weather and geomagnetic storms, to man-made disasters such as irremediable pollution and species overexploitation (Shelton, 2004). If realised, these risks have the potential to destabilize both economies and societies, trigger geopolitical conflict and devastate the Earth's vital resources and its

inhabitants (AIF, 2012). The two key pillars of climate change, namely continued rising greenhouse gas emissions and the failure of climate change adaptation, top this category with the highest impact (UN, 2012; Global Risks, 2012). Researchers collectively rated man-made risks, such as mismanaged urbanization, land and waterway use mismanagement and species overexploitation, as more likely to occur in the next 40 years than natural disasters such as earthquakes and volcanic eruptions (unprecedented geophysical destruction), persistent weather and geomagnetic storms (Bachler, 2009).

Human population growth on the one hand influences long-term patterns of land use, which is a major force behind environmental changes (Liu *et al.*, 2005). By the year 2000 most of the terrestrial biomes were at least partially transformed for human use, and more than half of the terrestrial biosphere was transformed into intensively used areas dominated by people (Royal Society, 2012; Ellis, 2011). Globally there is an accelerating transformation of land for human use (World Bank, 2011). At least 25% of the global land area is now devoted to some form of cultivation (as croplands, shifting cultivation, confined livestock production or freshwater aquaculture) (Coxhead, 2002; World Bank, 2011). Areas that have been long-settled including grasslands, croplands, rangelands and some woodlands are now largely transformed by people, and their original ecological communities altered or sometimes shifted outside their natural range (Royal Society, 2012). Other areas such as rangelands in savannahs, shrub lands, and grass lands are also significantly transformed, but at lower levels of intensity (Ellis, 2011). One measure of the impact that people have on the world's ecosystems is through an estimate of the proportion of the total productivity of the Earth now used by people (Lovins, 2012). Vitousek, Mooney, Lubchenko and Melillo (1997) first suggested that about 40% of the then present net primary production in terrestrial ecosystems was being co-opted by people each year. More detailed work since then has supported this basic conclusion, while emphasising significant regional variation (UN, 2011; Charron, 2012). Scarcely populated but intensively cropped areas such as the North American Corn Belt, as well as densely populated regions such as large parts of Europe, India, China and South-East Asia, have much higher proportions of net primary productivity devoted entirely to human consumption (Royal Society, 2012). This human appropriation of natural primary productivity inevitably affects other land

uses and the status of natural habitats and wild species, but also raises concerns about how sustainable such high intensities of land use can be over longer time scales (Haberl *et al.*, 2007; World Bank, 2011; UNDP, 2011).

Reflecting the environment's ubiquitous nature, Smith and Ezzati (2005) referred to the environment as a super-distal risk factor in that it "affects essentially every disease, even if the pathways are not always well understood". In a similar vein, Huynen (2008) identified the many roles that the environment can play as a driver of human health outcomes at the contextual distal and proximate levels. The effects include direct impacts from exposure to physical (e.g. temperature and radiation), biotic (e.g. disease pathogens), and chemical (e.g. pollution) factors, as well as indirect impacts related to effects of the environment and environmental change on other drivers of human health (Pautasso, 2012). An example of the latter would be the potential impact of climate change on food production and, consequently, its effects on childhood underweight and associated diseases (Kandala, 2011). The environment plays a role in the evolutionary mechanisms of mutation and natural selection; a complete consideration of the environment would ideally include not only the environment to which individuals are exposed but also the environment to which their ancestors were exposed (Smith, Corvalan & Kjellström, 1999). Such a broad exploration of the role of the environment would take researchers well beyond the scope of the present analysis. It would also bring mankind up against the boundaries of society's present understanding of the linkages between the environment and human health, especially in terms of our ability to quantify such linkages. This is frustrating, particularly as it limits researchers' capacity to address many of the most significant and growing concerns about the environmental drivers of human health in the future. These include the effects of the growing chemical body burden associated with modern economies (Thornton, McCally & Houlihan, 2002); the growth of antibiotic resistance (Martinez, 2009) and the re-emergence of old and new infectious diseases (Jones, 2008; UNHD, 2012).

The WHO's work on the environmental burden of disease provides some of the only, and certainly the most comprehensive and consistent, quantitative information on the importance of the environment to human health (Üstün, 2003). In preventing disease through healthy environments: towards an estimate of the environmental

burden of disease, Üstün and Corvalán (2006) presented, for the year 2002, the first comprehensive estimates of the impact of the environment on 85 disease and injury categories. The researchers derived these results using a combination of methods developed in the CRA project, other estimates from the literature, and a survey of 100 experts. The researchers argued that these should be considered as conservative estimates of the total burden of disease from the environment for the following reasons. First, they included only the major environmental risk factors. Second, the disease burden attributable to environmental factors is not always quantifiable, even where health impacts are readily apparent and fairly well understood. Third, as the researchers themselves noted, their definition of the environment is not comprehensive, because it only includes those aspects of the natural environment that are modifiable with solutions that are already available (Üstün & Corvalán, 2006). Unsafe water, sanitation and hygiene (WSH) and indoor air pollution constitute the most significant environmental risk factors, each accounting for nearly 2 million annual deaths and more than 40 million infections (World Bank, 2009). Üstün and Corvalán (2006) indicated further that urban outdoor air pollution accounts for more than a million deaths, but approximately the same number of infections as lead exposure. Although lead exposure and global climate change currently represent much smaller risks in terms of mortality, there is much greater concern about the potential of the latter to become increasingly important in future years, both directly and through its influence on other risk factors (UN, 2011; Global Risks, 2012; Harris, 2009).

For some diseases, such as intestinal nematode infections, trachoma, schistosomiasis, dengue, and Japanese encephalitis, more than 95% of the disease burden can be attributed to environmental risk factors, but the total incidence of these diseases is so small that they contribute only a small amount to the total burden of disease attributable to environmental risk factors (Fewtrell, 2007; WHO, 2005; UNICEF, 2005). Alternatively, even though only 14% of the total incidence of cardiovascular diseases is attributable to environmental factors, they rank first among all diseases in terms of total global deaths attributable to the environment because cardiovascular diseases are much more common (Üstün & Corvalán, 2006). There are significant differences in the distribution of the burden of disease from environmental risk factors across regions and age groups. The risks most

affect children and the elderly in poorer regions and this differs to some degree based on the specific risk factor and disease (Global Risks, 2009).

Identifying, much less quantifying, the current and future effects of the environment on human health can be a daunting task (McKinsey, 2011). This research's effort general approach to quantification is to start with the World Health Organisation's work on the current environmental burden of disease and to extend this dynamically so as to forecast how selected environmental risk factors might affect the future burden of disease towards 2050. Following the categorization laid out by Smith (1990), researchers do start with household risk factors (unsafe water, sanitation, and hygiene and indoor air pollution), then move to a community risk factor (outdoor air pollution), and then explore a global risk factor (climate change). Researchers have not included lead exposure, due to both its relatively small and decreasing role compared to the other risk factors and the difficulty in adapting the methods used by WHO to indicate the burden of disease associated with this risk factor (Lopez, 2006). More generally, researchers recognise that mankind is addressing an incomplete set of environmental risk factors and diseases (researchers focus mostly on traditional risks affecting developing countries). Certainly, there is a much larger set of risk factors and pathways through which the environment has and will play a role in determining human health towards 2050. Water is fundamental to human health and it is used to clean ourselves, our food, our clothes, and our general surroundings, we ingest it directly, and we are largely made of it (Leonard, 2007). At the same time, it provides a breeding ground and source of transmission for a number of disease vectors (WHO, 2012). Thus, it is not surprising that access to clean water, or more commonly the lack of it, has been a focus of attention in the discussion of health and the environment. The Millennium Development Goals indicate this – target 3 of MDG 7 is to halve, between 1990 and 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation (UN, 2009).

Environmental factors also include the significance of the escalating concerns over contamination from industrial expulsions, soil and water deprivation, climate fluctuations, deforestation and visual/aesthetic pollution (Ewing, 2010). The progress in the agricultural sector, together with developments in population settlement can also directly influence forestry (UN, 2011). Another link to forestry is

the energy sector, which includes wood fuels and farm residues that are significant essentials in national energy budgets (OECD, 2008). The transport infrastructure, such as roads, can have large repercussions on forestry (Twarog, 2000; Ward, 2007). Roads offer better chances of settlement infringement and deforestation by improving access to forests. However, roads do also open up opportunities for feasible commercialisation and of forest resources (Kusters, 2001).

Addressing a specific environmental problem can in some instances offer co-benefits in terms of reduction in other environmental pressures, and solutions to global problems can also assist to address local environmental problems and vice versa (Forsyth & Leach, 1998; Gunningham, 1999; Mercer, 1995). Measures to reduce vehicle emissions can both reduce greenhouse gas emissions and improve local air quality, while better insulation for homes and offices can cut energy bills for households and reduce pollution from energy production (OECD, 2008). The climate policy simulation of a 450ppm CO_2 eq stabilisation pathway also found that, in addition to reducing greenhouse gas emissions, the ambitious climate change policies would also lead to reductions in sulphur oxides of 20-30% and in nitrogen oxides of 30-40% by 2030 (Dornburg, 2008; IEA, 2008; OECD, 2008). Similarly, regulations to limit agricultural water pollution from nitrogen fertilisers can also reduce atmospheric emission of nitrous oxide, a potent greenhouse gas (Fields, 2004).

Governments have the responsibility to create appropriate incentives for business and consumers to make choices that can assist and prevent future environmental problems (Laughland & Bansal, 2011). The investment choices being made today will determine future environmental outcomes as the types of energy infrastructure put in place today will lock-in emissions of greenhouse gases for decades to come (Dunn, 2002; IEA, 2011). Investments in transport infrastructure today will also affect future mobility options and their environmental impacts. The energy efficiency of our building stock towards 2050 or even centuries from now is determined by the construction and building efficiency regulations in place today (UNECE, 2009; Initiative, 2009). Fast growing economies offer enormous opportunities for investments in new energy efficiency technologies. China is building new coal-

power plants at a rapid pace, and its urban residential building stock is expected to more than double in the next 20 years (OECD, 2008; EIA, 2012).

In order to address some key environmental challenges could cost as little as a loss of 0.03 percentage points in annual average GDP growth globally to 2030 (Harris, 2009). For many of these actions, there will be long delays before their benefits are realised, and in turn, many short-sighted policy decisions taken today may lead to long-term environmental challenges (Knoll, 2010). This makes timing an important issue for the design and implementation of environmental policies over the coming decades towards 2050. The costs of delaying action, however, could be critical, especially where policy decisions have long-term or irreversible environmental implications or where it is impossible to predict with precision the full extent and character of damage (Martuzzi, 2004; OECD, 2008). Biodiversity loss and species extinction are one such example. For climate change, deciding when to act involves balancing the economic costs of more rapid emission reductions now against the future climate risks of delay. OECD (2008) argued the need for forward looking policies today to avoid the high costs of inaction or delayed action over the longer term (Bosetti, 2012).

4.7.1 Environmental factors in developing countries

The growing urban areas in developing countries are subjecting larger populations to urban pollution risks, from lack of both sanitation and clean drinking water to toxic materials and exposure to air pollution (Munnik, 2007). In spite of important progress, the number of people who lack access to clean drinking water is still growing (WHO, 2012). Most mega cities in developing countries are also unable to meet World Health Organisation standards for air quality. Together both trends are considerable threats to human health (Stockholm Environment Institute, 2011). Globally, worldwide emissions of carbon dioxide (a major greenhouse gas) are growing rapidly, a result of the growing use of oil, coal and natural gas (Munnik, 2007). Forecasts of future energy requirements suggest that energy use will double by the year 2020 and that carbon dioxide emissions will increase by almost the same amount, reflecting regular high levels of energy use in developed countries and growing industrialisation in many developing countries (Stockholm Environmental

Institute, 2011). The allegation regarding this trend is that, far from alleviating atmospheric levels of carbon dioxide, the world is increasing the threat of global climate change (Borenstein, 2012). Other environmental and social trends may also prove noteworthy over the long term – quick shifts in labour markets in both developed countries (from manual to 'knowledge-work' jobs with substantial structural unemployment and labour displacement) and developing countries (from agricultural labour to service jobs and urban manufacturing), the rising trend to violence in all societies, the possible danger to human fertility and cognitive abilities from chronic exposures to toxic materials (Royal Society, 2012; Swart, 1996; UNDP, 2012).

While globalisation has a range of potential impacts both good and bad on the environment, the state of the environment and natural resources also affects economic development and globalisation (Bardhan, 2005). Competition for scarce natural resources, harvesting of some renewable resources such as fish stocks and tropical timber, the impact of changing climate on agriculture production, energy prices, the search for alternative energy sources, and others, may heavily influence trade and investment patterns towards 2050 (UNEP, 2008; OECD, 2008). Economic globalisation, as well as the global nature of many environmental problems, requires countries to work together to address the most pressing global environmental challenges and promote sustainable development:

- Developing countries have opportunities to learn from the experience of other countries and "leapfrog" to more energy efficient, resource efficient and greener development paths, taking advantage of new know-how and technologies. Countries need to work together to spread knowledge, best practices and technologies to mutually benefit from more sustainable production and consumption patterns worldwide.
- Some of the poorest countries in the world have been left behind by globalisation by failing to integrate into the world economy due to their lack of capacity to capture the benefits of globalisation and also due to trade barriers in countries. Further efforts are needed to integrate environmental concerns into development co-operation programmes.

- The BRICS, in particular, need to be part of international solutions to global environmental challenges, given their increasing role in the world economy and rapidly growing environmental impacts. Also, further environmental co-operation between countries and BRICs can achieve global environmental goals at lower costs for all.

- For climate change, the more countries that participate in mitigation action, and the more sectors and greenhouse gases that are covered, the cheaper it will be to curb global emissions. The outlook indicates that if OECD countries alone implement a carbon tax starting at USD 25/tonne of CO_2 in 2008, this would lead to a 43% reduction in OECD greenhouse gas emissions (IEA, 2011).

The OECD Environmental Outlook demonstrates that meeting the environmental challenges is both economically rational and technologically feasible. Seen from a long-term perspective, the costs of early action are far less than the costs of delaying, the earlier mankind acts, the easier and less expensive the task will be (EU, 2012). Policy-makers, businesses and consumers all need to play their part to implement the ambitious policy reforms, which will deliver the most cost-effective environmental improvements. In that way, options are left open for future generations to make their own choices about how to enhance their wellbeing (Drexhage & Murphy, 2010).

4.7.2 Environmental factors in the BRICS countries

Given the pressure to cut emissions in the field of environmental governance and climate change, there are high expectations of BRICS countries, and pressure on them to reduce greenhouse gas emissions is also high (Global Risks, 2012). Emerging economies will play an important role in making global environmental rules and setting climate policy in the 21st century (UNEP, 2012). The five BRICS countries share similar positions on the climate issue and hope their domestic economies continue to grow fast. However, in the process of economic development, while increasing production and improving infrastructure, these countries must exploit their resources excessively, which results in harmful impacts

on the environment (Sun, 2002). Developed and emerging economies have very different opinions on historical responsibility, the priority of emission reduction over development, funding and technical assistance (Heggelund, 2007; Ackerman, 2009; SEI, 2010). In responding to the global financial crisis, climate change and the rising cost of traditional energy, developed countries and transnational corporations have made strategic arrangements, increased investment in science and technology, and sought ways to take advantage of new energy technologies, including those for energy efficiency, emission reduction and supporting a low-carbon economy (UNCTAD, 2008).

Developed countries want the BRICS countries and emerging economies to control emissions according to western standards (The Global Climate Regime, 2012). However, emerging economies do recognise a responsibility to reduce emissions and protect the environment, but emerging economies such as the BRICS countries maintain that developing countries should adopt different standards from developed ones (Ahuja, 2009; New Delhi Report, 2012). The BRICS countries and other emerging economies advocate common but differentiated responsibilities in global climate governance. BRICS insist that western countries should be responsible for their past environmental destruction and provide financial support and technology transfer to developing countries (Dimitrov, 2010).

As the world's second large economy and one of the largest emitters of greenhouse gases, China matters a great deal in international efforts to mitigate climate change (Ayalew & Mulugetta, 2012). China shares a similar stance with its BRICS partners on climate, but has unique characteristics owing to its huge population, vast territory and energy infrastructure and energy efficiency, especially in the sectors of chemicals, iron and steel, and power generation, as well as decreasing energy intensity. However, China is also very vulnerable to climate change. Adaptation thus has great significance, as China is still in a phase of rapid industrialisation and urbanisation (Liu, 2003; Kendall, 2007). However, because of this stage of development and technical constraints, the country depends heavily on the traditional energy resources of coal and oil. This dependence puts increasing pressure on environmental costs, rising energy prices and western public opinion (New Delhi Report, 2012). China has overtaken the US as the world's largest

emitter of greenhouse gases, so it faces increasing pressure to improve mitigation efforts, make them more transparent and consider submitting its domestic efforts to an international regime. Growing demand for oil in China continues to increase even though Asia is the world's fifth largest oil producer (EIA, 2012; Finley, 2012). China also relies on imports to meet more than half its needs, a figure that is projected to rise to 80% by the late 2020s. Growing concern over energy security and developed countries' increasing investment in low carbon technology are pushing China to take more ambitious action on climate matters.

There is also mounting concern about the impacts of climate change on China's social stability and development prospects. The effects of climate change are evident across the country, and extreme weather is becoming more common, droughts in the North have led to acute water shortages and failing harvests (UN, 2011). For a country where farmers account for the majority of the population, disasters caused by climate change threaten the livelihood and stability of millions of Chinese people. However, climate change remains predominantly viewed as a development issue domestically in China with a per capita GDP of $ 3700; ranking 100th in the world, China remains a developing country (New Delhi Report, 2012).

The BRICS countries are participating in international action against climate change while fighting for the development rights and interest (Evans, 2009). Climate change has been an important issue at the Rio+20 summit held in Rio de Janeiro during 2012. The leaders should promote the development of the green economy by linking it with climate change control and carbon finance, and promote the major economies' efforts in moving ahead on the climate issue (UNDP, 2012).

4.7.3 South Africa's environmental outlook

South Africa has a rich endowment of natural resources and some of the world's most substantial mineral deposits, including coal and natural gas (Davis, 2009; SIMS, 2012; NDP, 2011). However, the exploitation of minerals is an energy intensive activity. While South Africa's coal deposits currently represent a relatively cheap and reliable source of energy, coal is carbon intensive and in the medium to long term, its use could prejudice South Africa's interests as global restrictions on

carbon emissions to mitigate climate change are introduced (Wakeford, 2005). South Africa is the 42nd largest emitter per capita and is among a number of developing countries that are likely to face globally imposed emissions constraints in the near future (Soltau, 2008; Change, 2008; NDP, 2012).

By 2030, South Africa's transition to an environmentally sustainable, climate change resilient, low-carbon economy and just society will be well under way. Coordinated planning and investment in infrastructure and services that take account of climate change and other environmental pressures, provide South Africans with access to secure housing, clean water and decent sanitation, and affordable and safe energy, making communities more resilient to the impacts of climate change and less socio-economically vulnerable. Adaptation strategies in conjunction with national development strategies are implemented, including disaster preparedness, investment in more sustainable technologies and programmes to conserve and rehabilitate ecosystems and biodiversity assets (National Development Plan, 2012).

Investment in consumer awareness, green product design, recycling infrastructure and waste to energy projects results in significant strides towards becoming a zero waste society (USEPA, 2012). Growth in the renewable energy sector by 2030, as envisaged in the Integrated Resource Plan (IRP, 2010), takes off in response to falling technology costs, government's bold support for the sector, and the introduction of targeted carbon pricing mechanisms to facilitate further private investment in renewable energy. The development and marketing of niche products and services, coupled with mutually beneficial partnerships with neighbouring countries, create jobs in domestic manufacturing of renewable energy technologies (UNDP, 2007; NDP, 2012). South Africa reduces its carbon emissions, in line with its international commitments. While maintaining its competitiveness in the global economy by carefully managing investments in local and regional renewable energy resources and aggressively promoting just and equitable trading arrangements. Public investment in new agricultural technologies and the development of new agricultural technologies and resilient and environmentally sustainable strategies and support services for small scale and rural farmers ensures the protection of rural livelihoods and the concurrent expansion of commercial agriculture, so South Africa remains a net exporter of agricultural produce (DST, 2007). Inevitably, in the

transition to a greener and more environmentally sustainable economy, trade-offs must be made (Haberl *et al.*, 2007). However, the careful design and sequencing of decisions ensures that the decline of legacy sectors, such as coal-fired electricity generation, is balanced by concurrent growth in green economy sectors. The emergence of small, medium and micro enterprises in areas such as waste management also contributes to reducing unemployment, poverty and income inequality (Agyapong, 2010).

The maintenance of ecosystem services such as those providing food and clean water, regulating climate and disease, supporting crop pollination and nutrient cycles, and delivering cultural benefits such as recreational opportunities, is fundamental to achieving South Africa's social and economic development objectives (EFTEC, 2005). The biodiversity and ecosystems in conservation areas are national assets. Long-term planning to promote biodiversity and the conservation and rehabilitation of natural assets is critical, and should be complemented by a strategy for assessing the environmental impact of new developments as an important component of overall development and spatial planning (MEA, 2005). Where damage cannot be avoided or mitigated, and where the social and economic benefits justify the development, a commensurate investment in community development and the rehabilitation and conservation of biodiversity assets and ecosystem service is required (Bekessy, 2010; NDP, 2012).

A planning imperative for the efficient management of ecosystem services and natural resources, in which the water sector has already made some progress, is to strengthen the regional approach (Gumbo, 2006). Cooperation with neighbouring countries has the potential to deliver competitive advantages not available to individual countries, and can boost renewable energy production and bolster regional food security in response to the effects of climate change (National Development Plan, 2012). South Africa's natural resources endowment also includes precious metals, diamonds, coal and an as yet undetermined amount of shale gas. The mining sector is a significant component of the economy, providing jobs and a vital source of foreign exchange (Solomon, 2000; NDP, 2012). Abundant coal reserves have led to a historical dependence on coal as a source of electricity, resulting in a highly carbon intensive economy, with the electricity sector alone accounting for

almost half of greenhouse gas (GHG) emissions. The mining sector is a relatively minor contributor to carbon emissions; projections by the Department of Environmental Affairs suggest that the mining sector is responsible for 13.5% of carbon emissions. Emissions directly incurred by the industry account for 3.6% of the national total, with the remaining 9.9% consisting of scope 2 emissions, mainly embedded in the purchase of electricity (Data, 2005; Pratt, 2010).

4.8   TECHNOLOGICAL DRIVERS

Technology is arguably one of the more important as a driver for change because of its potentially transformative role both in a positive and negative way in addressing a wide range of development challenges, from climate change, health care, and agriculture to housing, transportation, and education (UNEP, 2012). Yet while there is little doubt that technology will continue to be a driver of change across the developing world in the future, the precise trajectory along which technological innovation will travel is highly uncertain (Bostrom, 2007; Rodin, 2010; Carroll, 2012). For example, will critical technological advances come from the developed world, or will innovators and their innovations be more geographically dispersed? Or, how might the global economic and political environment affect the pace of technology development? It is important to indicate that in focusing on technology, it is beyond the scope of this thesis to identify a set of exact, yet to be invented technologies that will help shape and change the future (GBN, 2010) Rather, the goal was to gain a broader and richer understanding of different paths along which technology could develop paths that will be strongly influenced by the overall global environment in which the countries, organisations and adopters of those technologies will find themselves working and dwelling towards 2050. Technology, as a category, cannot be divorced from the context in which it develops (Williams, 2000).

In this thesis, the term "technology" is used to refer to a broad spectrum of tools and methods of organisation. Technologies can range from tools for basic survival, such as a treadle pump and basic filtration technologies, to more advanced innovations, such as methods of collecting and utilizing data in health informatics and novel building materials with real-time environmental sensing capabilities (USAID, 2010). In other words, what new or existing technologies could be leveraged to improve the

capacity of individuals, communities, and systems to respond to major changes, or what technologies could improve the lives of vulnerable populations around the world? A 15-20 year timeframe was chosen on the assumption that it is both sufficiently long enough that significant technological change is plausible and sufficiently short enough to imagine some possibilities for the kinds of technologies that could be developed and applied. Focusing on how to overcome a set of obstacles associated with the application of technology to the challenges of development helped to both bound the inquiry and promote a problem-solving approach that seeks to identify potential, systematic intervention opportunities (GBN, 2010).

Mankind exists in a period of fast, possibly exceptional technological advancement (Qureshi & Vogel, 2007). One way to achieve perspective on such changes is to evaluate them in a former period of equally fundamental technological change (Raskin, 2000; Stockholm Environment Institute, 2011). The industrial revolution was made apparent by approximately a thousand-fold increase in the capacity to harness energy for industrial intentions – a change from one horsepower to a 1000-horsepower steam engine (Kim & Jones, 2008). The last third of the 20th century was marked by substantial changes in the skill to influence and convey information, including major increases in computing power (an increase by a factor of about 100 000 in the number of transistors along a single optical fibre) (Unwin, 2008). This double upheaval in information technology is far from complete and its social effects – which could possibly include a considerable global ramification on industrial organisation and the organisation of economic activity, lifestyles and employment opportunities – are only starting to be widely practised (Raskin, 2000). Nevertheless, it is already clear that they may be insightful, displacing some structures of human mental activity (in basically the same way that the industrial revolution displaced some forms of human physical activity) whilst enabling others, perhaps including far more multifaceted forms of social organisation (Unwin, 2008). Additionally, the biotechnology revolution (the ability to control genetic information), the biochemical mechanisms of living organisms and the materials revolution (the ability to construct new materials at the molecular level) are all gathering pace, though their complete technological force is not known and lies some decades in the future (Stockholm Environment Institute, 2011). Extreme competition in the global market place offers

incentives for the swift introduction and worldwide dispersion of new technologies. The technological essentials are likely to transform considerably over the next forty years with the potential for huge impacts through life-style change, employment displacement and the globalization of culture (Unwin, 2008).

McKinsey (2012) argues that in a few short years, social technologies have given social interactions the speed and scale of the Internet. Whether discussing consumer products or organizing political movements, people around the world constantly use social-media platforms to seek and share information (Chui, Manyika, Bughin, Dobbs, Roxburgh, Sarrazin, Sands & Westergren, 2012). Companies use them to reach consumers in new ways too; by tapping into these conversations, organisations can generate richer insights and create precisely targeted messages and offers. While 72% of companies globally use social technologies in some way, very few are anywhere near to achieving the full potential benefit (McKinsey, 2012). In fact, the most powerful applications of social technologies in the global economy are largely untapped (Conneally, 2012; MGI, 2012). Companies will go on developing ways to reach consumers through social technologies and gathering insights for product development, marketing, and customer service (Mosadegh, 2012). Yet the McKinsey Global Institute (MGI) finds that twice as much potential value lies in using social tools to enhance communications, knowledge sharing, and collaboration within and across enterprises. MGI's estimates also suggest that by fully implementing social technologies, countries, organisations and companies have an opportunity to raise the productivity of interaction workers, high-skill knowledge workers, including managers and professionals by 20 to 25% (McKinsey, 2012).

MGI's (2012) report, on the social economy: *Unlocking value and productivity through social technologies*, explores their potential economic impact by examining their current usage and evolving applications in four commercial sectors: consumer packaged goods, retail financial services, advanced manufacturing, and professional services.

These technologies, which create value by improving productivity across the value chain, could potentially contribute $900 billion to $1.3 trillion in annual value across the four sectors. Two-thirds of this potential value lies in improving collaboration and

communication within and across enterprises (McKinsey, 2012). The average interaction worker spends an estimated 28% of the workweek managing e-mail and nearly 20% looking for internal information or tracking down colleagues who can help with specific tasks (Sinha, 2012; McKinsey, 2012). But when companies use social media internally, messages become content; a searchable record of knowledge can reduce, by as much as 35%, the time employees spend searching for company information (Bloomberg, 2012; Burrus, 2010; Zlotnick, 2012). Additional value can be realized through faster, more efficient, more effective collaboration, both within and between enterprises. The amount of value individual states, organisations and companies can capture from technologies varies widely by industry, as do the sources of value (McKinsey, 2012).

Companies that have a high proportion of interaction workers can realize tremendous productivity improvements through faster internal communication and smoother collaboration. To reap the full benefit of technologies, governments and organisations must transform their structures, processes, and cultures: they will need to become more open and non-hierarchical and to create a culture of trust (Nguyen, 2012). Ultimately, the power of technologies hinges on the full and enthusiastic participation of antigens that are not afraid to share their thoughts and trust that their contributions will be respected. Creating these conditions will be far more challenging than implementing the technologies themselves (McKinsey, 2012).

It is clear that technology, distinct from Weapons of Mass Destruction, will proliferate (Abraham & Cooper, 1993). As anyone who has purchased a home computer knows, technological advances drive down the overall cost of ever greater capability. It is also argued that the weapons market is no different (Bolton, 2012). More advanced weaponry will be available to more groups, conventional and unconventional, for a cheaper price and this will allow relatively moderately funded states and militias to acquire long-range precision munitions, projecting power farther out and with greater accuracy than ever before (Papalitsas, 2010). At the high end, it has already been argued that this reach extends into space with the public demonstration of anti-satellite weapons (Gallagher & Steinbruner, 1996). Whether a small oil-rich or a drug cartel is concerned, cash will be able to purchase lethal capabilities and if manpower is a limiting factor, the advances in robotics provide a

solution for those who can afford the price. This has the sobering potential to amplify further the power of the "super-empowered" guerrilla (JOE, 2010). In the globalized, connected world of science and technology, there is less chance that major technological advances could catch scientists by surprise. In the past, the real issue with technology has not been simply that a particular nation has developed weapons far superior to those of its opponents. Rather, in nearly every case the major factor has been how governments, organisations and the military have integrated technological advances into their doctrinal and tactical system. Arguably this has been the success or failure in that regard that has resulted in battlefield surprise and success (JOE, 2010).

The fact that the speed of technological change and invention proceeds exponentially will make the ability to adapt new technologies into the larger framework of military capability even more critical in coming decades (JOE, 2010). A current example of the kind of technological surprise that could prove deadly would be an adversary's deployment and use of disruptive technology, such as electro-magnetic pulse (EMP) weapons against a force without properly hardened equipment. The potential effects of an electromagnetic pulse resulting from a nuclear detonation have been known for decades (National Protection and Programs Directorate, 2012). The appearance of non-nuclear EMP weapons could also change operational and technological equations towards 2050. They are being developed, but are governments being adequately prepared to handle such a threat? The impact of such weapons would also carry with it the most serious potential consequences for the communications, reconnaissance, and computer systems on which the governments depend at every level (JOE, 2010).

Other forms of technologies will also serve to reduce the value of some military technologies. For example, directed energy systems may begin making an appearance in the global defence against ballistic missiles, artillery, mortars, and rocket systems, and in tactical ground attack roles. Laser systems will provide a potent combination of important capabilities that are not currently available, enhanced by the fact that they are ultra-precise; can place focused high energy on a target at great distances; and are stealthy (i.e. largely silent and cannot be seen by the human eye) (US, 2010).

Additionally, robotic systems are swiftly becoming part of the standard military toolkit and will be present on the battlefields of 2030 (Gelderblom, 2008; US Department of Defense, 2011; JOE, 2010). Robotics first found wide application in space (satellites are, in effect, rudimentary robotic systems), in the air, and at sea. Industrial robots are beginning to transition from fixed, single-purpose systems to mobile, multipurpose applications. Automobiles have begun to include robotic elements, now in parking applications, later perhaps in "assisted driving" modes in which the car will slow to avoid accidents when drivers are either inattentive or too slow to react (Aramis, 1996; JOE, 2010). Towards 2050, multipurpose mobile robotic systems may be common in a wide range of civilian applications and environments, and as such, will be readily adaptable for mankind's purposes by resourceful adversaries around the world. The process of integrating robots into global military operations will occur over time as they become ever more capable of having some level of autonomy, adjustable autonomy, or supervised autonomy, or full autonomy within mission bounds (Singer, 2009). On a microscopic scale (smaller than 100 nanometres) matter has chemical, physical, and electrical properties dramatically different from those of the materials with which we are generally familiar. The next four decades will see the maturation of nanotechnology and engineering on molecular scales will result in explosive growth in the ability to precisely and inexpensively control matter, opening a world of new capabilities that can be exploited (Imwalle, 2007; Dodson, 2010). The eventual applications of these special purpose manufacturing systems include the ability to build almost any mechanical device cheaply and in large quantity, which could result in entirely new classes of sensors, armour, explosives, computing means, and energy generation and storage (Jacobstein, 2008; Singer, 2009; JOE, 2010).

Nano energetics (NE), for example, has the potential to increase the power and efficiency of explosives and propellants in a number of military and space related areas. Nanomaterials have allowed scientists in the lab to improve the yield of explosives and propellants by a factor of between two and ten-fold (JOE, 2010). The advance of NE-related technologies is constrained by a number of hurdles that, for now, prevent the wide proliferation of NE explosives and propellants. Difficulties remain in the ability to mass-produce the materials and they can often be difficult to control and store accurately: however, these technical hurdles are probably

surmountable (Kemp, 2012). As such, it is very likely that a number of countries will deploy NE technologies over the next two decades. Moreover, the spread of NE-related knowledge to non-state actors may allow the fabrication of crude yet powerful weapons that could be used in more powerful IEDs, missiles, mortars and car bombs to further complicate U.S. operations. The introduction of NE-related technologies implies that the U.S. Joint Forces may face familiar difficulties, only amplified by the new technology (Nelson, 2006; UNESCO, 2007). Foreign state actors may use NE-related technology to strike at U.S. conventional military advantages. For example, naval mines and torpedoes may be dramatically shrunk, making them harder to detect and forcing ships to stay farther out to sea. More powerful and less costly propellants may allow more nations to access space through the use of NE propellants, possibly increasing the proliferation of anti-satellite capabilities to threaten orbiting assets upon which the Joint Force relies. The compounds required to manufacture NE materials are relatively uncontrolled, creating possible holes in our counter-terrorist efforts both at home and abroad. NE capabilities create opportunities for the Joint Force as well. For example, faster and more precise rockets may improve U.S. ability to negate foreign air defence systems through the use of very small bombs or cruise missiles (JOE, 2010).

A special class of nanotechnology, biotechnology, is focused on the manipulation and engineering of the substance of life, including such elements as the genetic code, protein engineering, and artificial life (Dyson, 2007; JOE, 2010). Biotechnology as a field is now bigger than physics in terms of money spent, scientists employed, and discoveries made (Singh, 2012; JOE, 2010). The massive research and development effort will likely bear significant fruit over the next four decades as future bio-technological advances will allow human beings to manipulate the structure and function of our own bodies, as well as bend other living processes to do work for human needs. By the 2030s, biologists leveraging the nano-technology field may be able to integrate the incredible biochemistry of life with the physics of non-living systems like semiconductors and fibre optics (JOE, 2010).

Nations also will face serious challenges in oversight, control, and prohibition of sensitive technologies (Davies, 2009; FSOC, 2011). With the same technology, such as sensors, computing, communication, and materials, increasingly being

developed for a range of applications in both everyday commercial settings and in critical military applications, the monitoring and control of the export of technological components will become more difficult. Moreover, joint ventures, globalized markets and the growing proportion of private sector capital in basic R and D will undermine nation state efforts to keep tabs on sensitive technologies. Questions concerning a country's ethical practices in the technology realm such as with genetically modified foods, data privacy, biological material research, concealable sensors, and biometric devices may become an increasingly important factor in international trade policy and foreign relations (NIC, 2004).

Managing technological revolutions however poses challenges. Certain innovations and discoveries will raise fraught bio-ethical issues, as the genetic modification of food crops and cloning of human embryos have already done. There is a risk that their cost, particularly in the early stages of development, will worsen the present inequality by limiting access to wealthy individuals (UN, 2011). This already happens in health care in certain G7 countries, where the demand for very high cost diagnostic equipment and surgical interventions enabling longevity and better quality of life for older wealthy people overstretches public health care budgets, and lowers service quality in poor neighbourhoods. Finally, resource intensive technologies, focused on satisfying high consumption demand, like holidays abroad in coastal resorts, wilderness areas, or iconic cities, increase carbon emissions and environmental damage (NDP, 2011).

4.8.1 Technology in developing countries

African countries have been users of technologies produced in the West, as well as acted as a discarding ground for outdated technologies discarded by the West, and therefore remained on the technological border. Africa in general has a major dependence on imported technology and will need to add to investment in this area and concentrate on the improvement of suitable technologies (Hartmann, 2009; Ventura, 1985). The introduction of the Global System for Mobile communication (GSM) in numerous developing countries and the deregulation of the telecommunications segment have motivated private companies to participate in forceful telecommunications development programmes throughout the area.

Improvements in information access have seen growth expand. Modern ICT will aid the materialization of micro power technologies to transform energy sources (Hartmann, 2009). The impact of industrialisation and technological improvement on the environment has been decreased to the smallest amount with the introduction of cleaner fuels, to renewable resources and a greater concern for the environment (Hartmann, 2009; Power, 2010).

Spreading technology will bolster world economic growth (Dadush, 2010). Developing countries will continue to absorb well-established technologies, such as electricity and sanitation. While the largest urban agglomerations and elite firms and individuals in developing countries typically have access to such technologies, rural and less favoured segments of society often do not (Dadush & Stancil, 2010). However, newer technologies such as mobile phones and the Internet are spreading rapidly through developing countries, partly because they are relatively inexpensive and require little government expenditure on infrastructure. Though advanced countries will remain the dominant source of cutting-edge technological innovation, a few developing countries with rich pools of highly educated individuals (Russia is a good example) may also innovate at the frontier, and many more developing countries will innovate by modifying technologies to suit local conditions. As described in a comprehensive World Bank report (World Bank, 2008 on technology and development): "Part of the strong projected performance for developing countries derives from stronger labour force growth, but much can be attributed to technological progress". The potential for technological catch-up is greater when productivity and per capita income are low (Kumar & Russel, 2002). Thus, convergence of the poorest countries will potentially be the most rapid. However, actual rates of catch-up will depend on each country's ability to adopt and adapt technology, a function of openness, educational attainment, communication and transportation infrastructure, governance, and business and investment environment (Johnson, 2009; Dadush & Stansil, 2010). Thus, two countries at the same level of income may catch-up at different rates depending on these conditions. An examination of the relevant indicators suggest that among developing countries, Russia, China, and Mexico are well prepared for more rapid adoption of foreign technologies, largely because of relatively high levels of educational attainment and supportive infrastructure (UNESCO, 2007; Dadush, 2010; Thoma, 2012). Contrary

to India's high-tech image, the speed of convergence (adjusting for initial income) is assumed to be among the lowest in the G20 (Dadush, 2010). India also exhibits the lowest education indicators and worst business climate in the G20. Indonesia is another country where convergence is slower than income indicates. Education, infrastructure, and governance must be improved before broad-based and rapid technological advancement can occur in India and Indonesia at the same pace as in the best-prepared developing countries (Aspray, 2006; Dahlman, 2007; Dadush, 2010).

If the demands of change are to be met, Africa also has to advance and expand the choice of technological options accessible (Hartmann, 2009; Yormah, 2006). These fresh technological options are frequently associated with more and higher expenditure, including the huge needs for fuel, amplified pollution and more risks such as doubt about the environmental and human health impacts of genetically adapted crops and chemicals (Hartmann, 2009).

The gulf between "haves" and "have-nots" may widen as the greatest benefits of globalization accrue to countries and groups that can access and adopt new technologies. Indeed, a nation's level of technological achievement generally will be defined in terms of its investment in integrating and applying the new, globally available technologies whether the technologies are acquired through a country's own basic research or from technology leaders (NIC, 2004). Nations that remain behind in adopting technologies are likely to be those that have failed to pursue policies that support application of new technologies such as good governance, universal education, and market reforms and not solely because they are poor (Brown, 2006). Those that employ such policies can leapfrog stages of development, skipping over phases that other high-tech leaders such as the United States and Europe had to traverse in order to advance. China and India are well positioned to achieve such breakthroughs. Yet even the poorest countries will be able to leverage prolific, cheap technologies to fuel although at a slower rate their own development (NIC, 2004).

As nations like China and India surge forward in funding critical science and engineering education, research, and other infrastructure investments, they will

make considerable strides in manufacturing and marketing a full range of technology applications from software and pharmaceuticals to wireless sensors and smart materials products (GBN, 2010; NIC, 2005; Brown, 2006).   Rapid technological advances outside the United States could enable other countries to set the rules of design, standards, and implementation, and for moulding privacy, information security, and intellectual property rights (IPR).   Indeed, international IPR enforcement is on course for dramatic change (Sell, 2008; Hargreaves, 2011; US, 2012).   Countries like China and India will, because of the purchasing power of their huge markets, be able to shape the implementation of some technologies and step on the intellectual property rights of others (Birdsall, 2005; Brown, 2006).   The attractiveness of these large markets will tempt multinational firms to overlook IPR indiscretions that only minimally affect their bottom lines.   Additionally, as many of the expected advancements in technology are anticipated to be in medicine, there will be increasing pressure from a humanitarian and moral perspective to "release" the property rights for the good of mankind (NIC, 2004).

The biotechnological revolution is at a relatively early stage, and major advances in the biological sciences coupled with information technology will continue to punctuate the 21st century (Braman, 2005).   Research will continue to foster important discoveries in innovative medical and public health technologies, environmental remediation, agriculture, bio-defence, and related fields (Da Silva, 1999).   On the positive side, biotechnology could be a "levelling" agent between developed and developing nations, spreading dramatic economic and healthcare enhancements to the neediest areas of the world (NIC, 2004).   Possible breakthroughs in bio-medicine such as an antiviral barrier will reduce the spread of HIV/AIDS, helping to resolve the on-going humanitarian crisis in sub-Saharan Africa and diminishing the potentially serious drag on economic growth in developing countries like India and China (NIC, 2004).   More developing countries probably will invest in indigenous biotechnology developments, while competitive market pressures increasingly will induce firms and research institutions to seek technically capable partners in developing countries (CIA, 2005; NIC, 2004; Brown, 2006).

However, even as the dispersion of biotechnology promises a means of improving the quality of life, it also poses a major security concern.   As biotechnology

information becomes more widely available, the number of people who can potentially misuse such information and wreak widespread loss of life will increase (Hinrichsen, 2000). An attacker would appear to have an easier job because of the large array of possibilities available than the defender, who must prepare against them all (Brown, 2006). Over the next 10 to 40 years there is a risk that advances in biotechnology will augment not only defensive measures but also offensive biological warfare (BW) agent development and allow the creation of advanced biological agents designed to target specific systems, including human, animal, or crop (NIC, 2004). Some biotechnology techniques that may facilitate major improvements in health also will spur serious ethical and privacy concerns over such matters as comprehensive genetic profiling; stem cell research; and the possibility of discovering DNA signatures that indicate predisposition for disease, certain cognitive abilities, or anti-social behaviour (NIC, 2004). At the same time, technology will be a source of tension towards 2050: from competition over creating and attracting the most critical component of technological advancement people to resistance among some cultural or political groups to the perceived privacy robbing or homogenizing effects of pervasive technology (NIC, 2004; USCO, 2010; Glassco, 2012).

Developments in science and technology are fundamentally altering the way people live, connect, communicate and transact, with profound effects on economic development especially in the developing countries. Science and technology are key to development, because technological and scientific revolutions underpin economic advances, improvements in health systems, education and infrastructure (NDP, 2011). The technology revolutions of the 21st century are emerging from entirely new sectors, based on microprocessors, telecommunications, biotechnology and nanotechnology (Castells, 2005; Vergragt, 2006). Products are transforming business practices across the economy, and the lives of all who have access to their effects (Hall & Soskice, 2001). Through breakthroughs in health services and education, these technologies have the power to better the lives of poor people in most developing countries. Eradicating malaria, a scourge of Africa for centuries, is now possible (UNDP, 2011). Cures for other diseases endemic in developing countries are also now possible, allowing people with debilitating conditions to live healthy and productive lives.

Access and application are therefore critical (Suriyachai, 2012). Science and technology are the differentiators between countries that are able to tackle poverty effectively by growing and developing their economies, and those that are not (Leke, Lund, Roxburgh & Wamelen, 2010). The extent to which developing economies emerge as economic powerhouses depends on their ability to grasp and apply insights from science and technology and use them creatively (NDP, 2012). Innovation is the primary driver of technological growth and drives higher living standards (Rodrik, 2009). As an engine of growth, the potential of technology is huge, and still largely untapped in Africa. Less developed countries not only lack skilled labour and capital, but also use these less efficiently. Inputs account for less than half of the differences in per capita income across nations and the rest is due to the inability to adopt and adapt technologies to raise productivity (Canuto & Giugale, 2010). Computing, for example, through unlocking infrastructure backlogs and managing integrated supply chains, can transform economic performance by enabling affordable and accessible services in education and health. The combination of computers and the Internet, and mobile devices and the "cloud", has transformed human experience, empowering individuals through access to knowledge and markets, changing the relationship between citizens and those in authority, and allowing new communities to emerge in virtual worlds that span the globe (NDP, 2011; The Global Information Technology Report, 2012).

According to the International Telecommunications Union, by the end of 2010 there were an estimated 5.3 billion mobile cellular subscriptions worldwide, including 940 million subscriptions to 3G services. About 90% of the world's population can access mobile networks, with three-quarters of mobile subscribers living in developing economies (Aker, 2010; NDP, 2011; GBS, 2012). Cellular technology has allowed Africa to leapfrog the age of fixed line telephony, bringing affordable access to millions of people (NDP, 2011). However, the continued and equitable expansion of information and communication technology (ICT) depends on electricity (Kramer, 2007). The real divide over the next 40 years will be between those who have access to reliable electricity to power these devices and those who do not (Diamandis, 2012; McKinsey, 2010).

Other technologies under development towards 2050 are interventions for cognitive enhancement, proton cancer therapy and genetic engineering. Revolutionary inventions include small underground nuclear power units called nuclear batteries that will be ultra-safe and maintenance free, new types of photovoltaics that will make electricity from sunlight cheaper than that from coal, and myriad nanotechnologies, some of which lower the cost and increase the reliability of many products even in the poorest areas of the developing world (Lewis, 2009; World Bank, 2010; NDP, 2011).

4.8.2 South Africa's technological factors

During July 2010, the Minister of Science and Technology, Minister GNM Pandor, MP, commissioned a Ministerial Review Committee to review the South African science, technology and innovation landscape with respect to its readiness to meet the needs of the country, the extent to which the country was making optimal use of its existing strengths, and the degree to which the country was well positioned to respond rapidly to a changing global context and to meet the needs of the country towards 2050 (DST, 2012). The committee was also required to identify what would be required from the state, as well as from other key stakeholders, in order to ensure an adequate and growing investment in innovation that would deliver a sustained and durable knowledge based economy geared to advancing the national objectives of economic growth, job creation, better health, quality education and responsiveness to the needs of the most marginalised (Dobson, 2010). In particular, the committee was required to make recommendations on the future structure and governance of the system, including the roles and responsibilities of the Department of Science and Technology including the relationship with other government departments, human resource and other capabilities, and the recapitalisation and funding requirements (Gordhan, 2012).

The focus of the committee's work was the relevant policy framework established since the adoption of the White Paper on Science and Technology in 1996, while the point of departure was the last systematic review of the South African National System of Innovation conducted by the Organisation for Economic Cooperation and Development (OECD) (2008). In order to fulfil its task the committee submitted draft

reports in two phases: firstly to provide an appraisal of the existing NSI landscape and secondly to provide recommendations for the future system (Mokhele, 2010). Innovation is the capacity to generate, acquire and apply knowledge to advance economic and social purposes. It includes both the research for frontier technologies driven by research and development, as well as the forms of learning and adaptation that might be market led or socially driven (Meek, 2009; Hargreaves, 2001; Mansell, 2010).

The technological environment therefore plays a major role in the service delivery in South Africa (Zubane, 2011). The term "technology" is often confused to imply some or other technological gadget or only the information and communication side of technology in South Africa. According to Robbins (1980), technology can be defined as information, equipment, techniques and process, required to transform inputs such as finances, human effort into outputs like the removal of waste, provision of water and electricity. This view was supported by Sitwell (in Bush, 2005) who wrote: "Technology is the systematic application of knowledge to resources to produce goods or services. Here resources are physical resources such as raw materials and land, and human resources such as management and labour".

When the new South African government took over in 1994, they realised the important role played by technology and this was coupled by the need to improve the service delivery and also to deliver on its mandate of a better life for all (UNDP, 2005). There was a need for the South African government to reposition itself properly to take advantage of the benefits of technology. The following were notable steps:

- The former department of arts, culture, science and technology was split into two giving birth to the Department of Science and Technology (DST). This Department would then focus only on science and technology matters from 2002 onwards.
- A separate ministry of science and technology was also established. From 2004 this was a separate entity from the ministry of arts, culture, science and technology.

- The formation of a national science and technology forum during 1995.

- The tabling of the White Paper on Science and Technology, preparing for the 21st Century in 1996.

- The establishment of the National Advisory Council on Innovation (NACI) in 1997.

- The establishment of the Innovation Fund, which promotes research and development in certain key areas.

- The establishment of the Research Foundation in 1999 which provides services and grants to support research and postgraduate research training. A National Research and Technology Foresight programme was completed in 2002 (Korsten, 2001).

Central to the definition of technology is the question of skill or human resources, and the South African government realised that at the core of poor service delivery lies the lack of expertise in the field of science and technology. This was acknowledged by the Accelerated and Shared Growth Initiative of South Africa (AgiSA). For the public infrastructure and the private investment programmes, the single greatest impediment is shortage of skills, including professional skills such as those possessed by engineers and scientists, managers such as financial, personnel and project managers and skilled technical employees such as artisans and IT technicians. In an effort to deal with this challenge the government initiated the following programmes:

- The Dinaledi School Project which is aimed at improving the Grade 12 mathematics and science pass rate.

- The creation of scarce skills data bases and monitoring the scarce skills, which would include scientists and engineers and the joint initiative for Priority Skills Acquisition.

The technological advances that permeate the connected world will certainly not be lost on South Africa (Silke, 2011). With an impressive mobile phone penetration of 92 out of every 100 people, the population increasingly has access to the Internet and in particular social media and twitter. Researchers argue that governments

should not underestimate the role of this aspect of social interaction in determining new demands from its population (Lemire, 2011). Just as social media have played a critical role in organising protests and venting frustrations across the world, particularly in North Africa, so they are now in the hands of Sowetans or Khayelitshans. Although historically high access costs to broadband Internet still prevent many South Africans from being fully globalised on the Web, costs are set to drop dramatically (Puddephatt, 2011). The above mentioned factors will give a hungry, computer-savvy generation their first chance of exploring the global linkages the Net has to offer. Speed and connectivity are also features of the urbanisation that is gripping South Africa, just as it is the rest of the developing world (Haferkamp, 1992). Technology therefore brings a demand for speed, not just in connectivity but in addressing service delivery issues coupled with these factors, power becomes diffused away from the government to the people, who increasingly demand speedy response times to problems (UN, 2011; Commins, 2007; Berhout, 2001).

Governments that fail to respond will be held to account by a much more 'logged-on' electorate. The world is in an era where organised politics flounders and established political parties find it increasingly tough to impose their action plans and strategies (UN, 2012; Hamre, 2001). Even in the waning glow of liberation the ANC faces a much more attuned electorate aware of the linkages between public service promises and delivery inefficiencies (Khan, 2010). The global trend of technology used as a conduit for political protest will be a feature of society towards 2050 (Scholte, 2009). With cell phone in hand, South Africa's populace will hold a very effective weapon as this will militate towards greater accountability through the constant threat of exposure, ability to organise and rapid recourse to a plethora of information sources (Chirambo, 2011). The power of the state to control the dissemination of information is waning and this bodes well for a much more questioning and informed populace. As the late political scientist Samuel Huntington indicated more than 40 years ago, social and economic change – urbanisation, increases in literacy and education, industrialisation, mass media expansion – extends political consciousness, multiplies political demands and broadens political participation (Rodrik, 2011). Now add social media such as Twitter and Facebook to the equation and the destabilising forces that rapid economic change set into motion can become overwhelming. Rodrik (2011) also indicates that these forces become

most potent when the gap between social mobilisation and the quality of political institutions widens. When a country's political institutions are mature they respond to demands from below through a combination of accommodation, response and representation (Thoma, 2012; Midgaard, 2012).

From the above discussion, it is evident that the technology environment is changing at a very rapid pace. For the South African public sector to be able to benefit from these changes in technology it will be necessary to embrace technology and forge strong partnerships with the private sector. Public Private Partnerships have proved to be beneficial, as the public sector will have to learn from the private sector initiatives, as most of the expertise rests with them (Nikolic, 2006; Cui, 2010; Global Risks, 2012). The demand for services by the public forces the South African government to look at the technological environment for solutions and it is understood why measures are being put in place to improve the technological environment (Najam, Runnalls & Halle, 2007). The technological environment now is also receiving priority attention because of its wealth creating capabilities (Zubane, 2011).

South Africa's average annual growth rate of four percent energised business, but globalised competition resulted in lean business organisations, despite the flexible laws (Amod, 2010). The South African government's manufacturing strategy then meant shifting public resources to invest in research and development in a selected few high-tech sectors and rapidly advancing technology was chosen as a key driver of economic activity (NDP, 2011). Audacious investments are being made in areas like nanotechnology, biotechnology and energy, and expenditure on research and development then rose to 3% of GDP (Royal Society, 2012). However, in order to maximise profits, South African business needs to look for ways in which to drive production costs down (Cass, 2009).

4.9   SUMMARY

The above PESTE analyses attempted to explain the drivers for change for South Africa, beginning with the macro trends and highlighting the micro factors responsible for its current state. This environmental scanning effort is a strategic

diagnosis of South Africa's situation as it plans to create a desirable future. The analysis is prepared from the aspects of the economy, governance, politics as well as social and other developmental concerns that are relevant for future development. It attempts to outline the results of past development efforts, the opportunities offered and challenges established by the external environment, whilst evaluating internal strengths and weaknesses. The predictions for handling the many challenges that the country will face are also presented. This chapter addressed steps 3 and 4 of the scenario planning process, as well as highlighting the strengths, weaknesses, opportunities and threats analysis for South Africa.

CHAPTER 5

TOWARDS PROPOSED SCENARIOS FOR SOUTH AFRICA

5.1   INTRODUCTION

The previous chapters discussed a number of challenges that South Africans face, including the knowledge barrier between developed and developing countries, South African development, the HIV/AIDS epidemic, the fight against poverty, the lack of resources and infrastructure, corruption, lack of social capital for development and the lack of a common agenda. This also included the drivers for change affecting South Africa by doing a Political, Economical, Social, Technological and Environmental (PESTE) analysis of the macro and micro environment affecting South Africa. This research effort discussed Africa's development in a global context such as rising food prices, falling water tables, increasing corruption and organized crime, diminishing environmental viability for life support, increasing debt and economic insecurity. This chapter will analyse and in conjuction with Causal Layered Analyses the proposed scenarios for the Republic of South Africa towards 2055.

5.2   CAUSAL LAYERED ANALYSIS IN SUPPORT OF THE SCENARIOS

If what Polak (1973) indicated is correct, viz, that the future must not only be perceived, it must also be shaped, it can be argued that it is therefore critical to explore and deconstruct the underlying assumptions, narratives, worldviews and myths being told about the future of Republic of South Africa. Tables 5.2 to 5.5 below outline the four stories for the rise of the Republic of South Africa. The process in this research effort was informed by Inayatullah (2004) and Conway (2012) as each Causal Layered Analysis level was explored through the following questions:

Table 5.1: Causal Layered Analysis: Questions posed for Scenarios

Litany
•   How would we best describe the relationship between perceived good governance and positive economic growth for South Africa more generally?

Social causes	
• What systemic factors (trends or drivers of change) are driving the relationship described by the litany?	
Worldview	
• What assumptions are driving the social causes?	
• Whose perspective are dominant?	
• Whose voices are not being heard?	
Myth/metaphor	
• What impact would the current "status quo" of South Africa in its current form have on the future management efforts of South Africa?	
• Can we create snapshots using imagery / myth or metaphors?	
• Is the relationship between perceived good governance and positive economic growth real or myth?	
• If abovementioned relationship is real, what action do we need to take to address the divide?	
• If myth, how do we dispel it, or do we ignore it?	
• What assumptions need to change and what will assist the most?	
• How and in what possible efforts, can we realign the 'divide' to ensure the preferable and plausible?	

Source: Researcher's own construction

Following in Tables 5.2 to 5.5 is the Causal Layered Analysis indicators for the scenarios posed in this chapter.

Table 5.2: Causal Layered Analysis – MANDELA'S DREAM

Litany	South Africa's expansion of a positive economy and good governance.
Systemic causes	South Africa has lower production costs, advanced technologies and more competitive economy where ownership and access to capital is encouraged.
Discourse	South Africa's human rights, transparency, budget discipline and a tough stand against corruption wins people's confidence.

Myth	Economic reforms undertaken and foreign investment is south, allowing a more competitive economy.

It is reiterated that good governance at all levels is fundamental to economic growth, political stability and security. Good public and corporate governance, rule of law and strong institutions are essential foundations for a sound economy, which can enable South Africa to reduce poverty and inequality, to increase social integration and opportunities for all, to attract investment and to enhance sustainable human development.

Table 5.3: Causal Layered Analysis – THE GOOD, THE BAD AND THE UGLY

Litany	Reasonable sound governance with a negative growth economy.
Systemic causes	The economy remains uncompetitive and investment potentials remain unfulfilled. The climate is seen as a high risk and pendulum of peace can swing either way. People faced the burdens of poverty, lack of resources and poor education.
Discourse	The inability to attract high levels of investment and the inefficiency of local funding insured that the wealth of South Africa remained with a few elites. South Africa can move forward by investing in security enforcements, good and free education and a well governed and balanced infrastructure.
Myth	Strong middle class economy is hampered by lack of diversification of domestic industry and the need for long term domestic and foreign investments.

Weak physical infrastructure was a key factor that prevented South Africa from successfully integrating into global trading systems. South Africa can therefore be argued has failed to expand services fast enough to keep up with rapid demographic growth and urbanisation due to poor economic conditions. Perhaps one of the

greatest reasons South Africa has not reached her true potential is due to the continuation of unstable global economic conditions.

Table 5.4: Causal layered Analysis – PYRAMID SYNDROME

Litany	South Africa has bad governance, but fortunate economic growth.
Systemic causes	Negligible consequences of inefficiency, corruption, poor productivity and bad governance made government fail. Education, security and infrastructure developments receive lower priority. Plans and budgets were unevenly spread across the government, due to corruption and uneducated decision making.
Discourse	Government acted poorly on getting corruption under control. Unions and political connections protected the poor performers. The South African police force was a corrupted institution and police were feared rather than respected for their heroic acts of bravery. However, global economic conditions favourable for South Africa.
Myth	South Africa splintered and eventually lost their strength and momentum. Unstable few elite sponsored BBBEE business agreements.

Source: Researcher's own construction

South Africa has been unable to provide basic services. Beside poor infrastructure, a shortage of skilled professionals and geographic and political inequalities, South Africa faced an uphill struggle in delivering adequate safety, security, education and infrastructures due to poor governance.

Table 5.5: Causal Layered Analysis– HISTORICAL AFRICAN SYNDROME

Litany	South Africa suffers from bad governance coupled with negative economic growth.
Systemic causes	Poor macroeconomic management brings inflation and lack of public resources. Investors avoid South Africa and donors withdraw. Corruption and crime escalate.

Discourse	South Africa is a nation torn apart by an involuntary need to survive. Citizens feel the burn of an unstable economy. Citizens no longer felt safe in their cities, opting to live behind electric fences and high walls. Crime a form of survival.
Myth	There was a marked lack of cooperation between corporate and communities. South Africa collapsed together with the currency and deteriorated further, leaving South Africa on the same path as Zimbabwe and historical Africa.

Source: Researchers own construction

This study provides the evidence, which supports the argument that bad governance and corruption are symptoms of leadership and institutional failure in historical African countries. The people of South Africa have been struggling under the burden of economic hardships as they have been extremely despondent with the one sided and black dominated political situation, as the country have been run by the few ruling elite who are exploiting it to serve their own needs. South Africa became the once pitied Zimbabwe - a country where the United Nations were afraid of being entangled in a complex internal conflict and have preferred a regional settlement.

5.3   SYSTEMS THINKING RECURSIVE CAUSALITY MAP

The system thinking map shows the interrelatedness of some of the drivers and indicators. Positive and negative impacts are not shown on the map. As an illustration, the battle for political stability might increase the manipulation of ethnicity, which might, in turn, increase the amount of social unrest. Additional unrest might decrease the chance to deliver infrastructure and services, which might in turn, decrease the number of opportunities for economic growth, which might decrease the amount of revenue, which might decrease the amount of service delivery and infrastructure available, which might increase the amount of social unrest, which might increase the Zero-Phobia tensions. Service delivery, the ability to budget and plan for what is required and revenue stands out clearly as drivers/indicators in large number of direct relationships. Such relationships were taken into account during the planning of the scenarios for SA towards 2055.
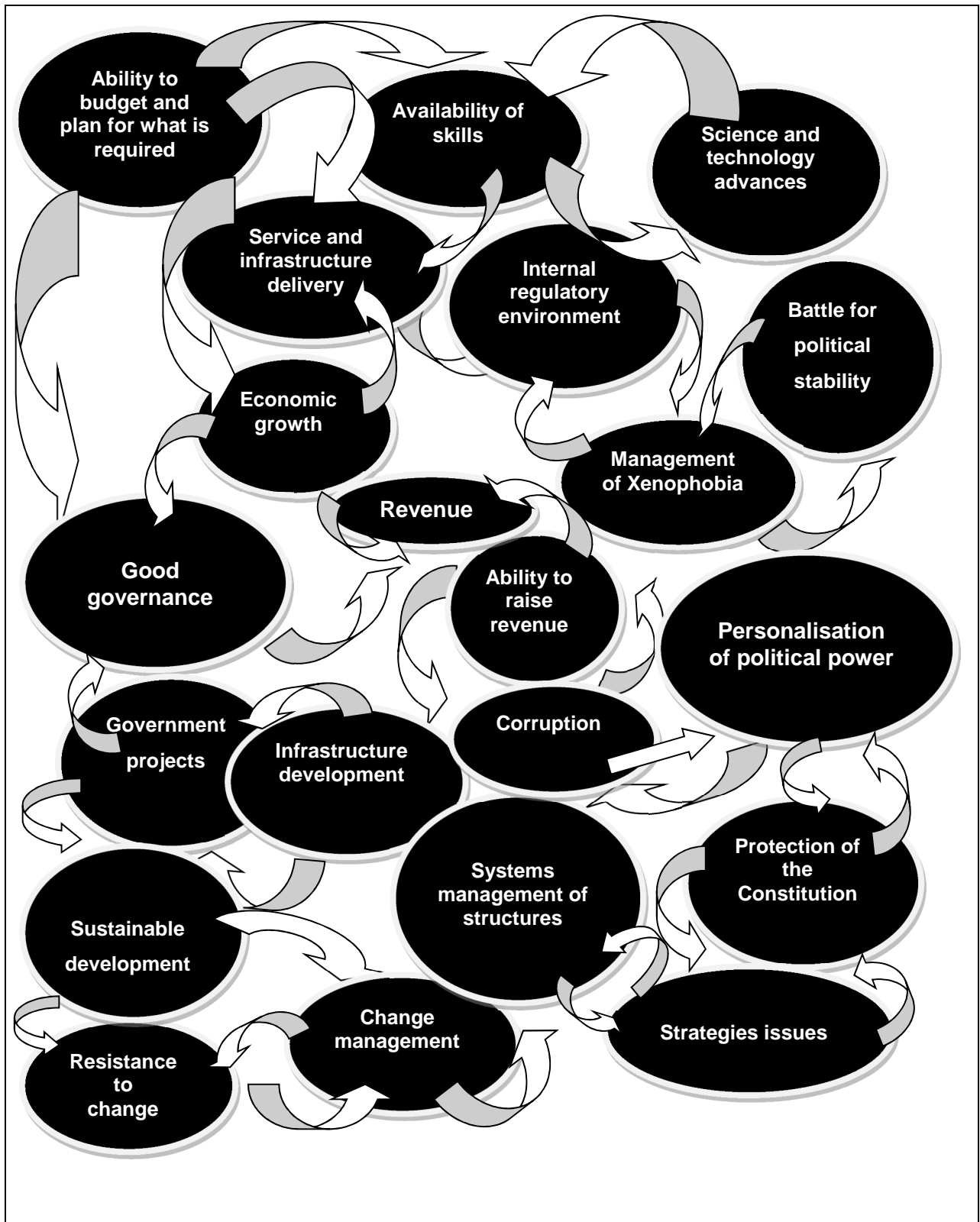
Figure 5.1: Systems thinking map showing the interrelationships of drivers and indicators

Source: Adapted from Bezuidenhout, 2012

5.4   SCENARIOS

Scenarios could be developed within and across levels to explore various dimensions of a problem. Scenarios provide a way of creatively drawing out differences across levels – not only cultural differences but behavioural, systemic and psychological differences (Hofstede and Minkov, 2010). An advantage of the above Integrals-version of Causal Layered Analysis in Section 5.2 would be the ability to judge which scenarios are preferable. Currently, the lack of an explicit developmental perspective in Causal Layered Analysis makes it therefore difficult to judge which worldviews, discourses, myths, metaphors and scenarios are detailed. In an Integral Causal Layered Analysis, these judgements can be made on the basis of the degree of development and inclusion.

Scenarios however are regarded as synoptic collages of events or on the other hand a series of actions and events. Scenario planning, also called scenario thinking or scenario analysis, is a strategic planning method that some organisations and countries use to make flexible long term plans (Ringland, 1998; Roux, 2010; Spies, 1982). The original method developed was that of a group of analysts that would generate simulation games for policy makers. The games strived to combine known facts about the future, such as demographics, geography, military, political, industrial information, and mineral reserves, with plausible alternative social, technical, economic, environmental, educational, political and aesthetic (STEEEPA) trends which are key driving forces (Schoemaker, 1995; Roux, 2010; Spies, 2010).

These combinations and permutations of fact and related social changes are called "scenarios" (Morrison, 1992). The scenarios usually include plausible, but unexpectedly important situations and problems that exist in some small form in the present day that Causal Layered Analysis cannot necessarily indicate. However, future studies analysts select scenario features so they are both possible and uncomfortable (Schwartz, 1991). Scenario planning also therefore helps policy-makers to anticipate hidden weaknesses and inflexibilities in organisations and methods (Lindgren and Bandholt 2003). When disclosed years in advance, these weaknesses can be avoided or their impacts reduced more effectively than if similar real-life problems were considered under duress of an emergency (Godet and

Roybelat 1996). For example, a company may discover that it needs to change contractual terms to protect against a new class of risks, or collect cash reserves to purchase anticipated technologies or equipment (Wack, 1985; Hofstede and Minkov, 2010).

Scenarios are also therefore a way of producing alternative futures based on various mixtures of assumptions, facts, trends and areas where extra understanding is needed for a particular scenario project (Herbst and Mills, 2006). These mixtures form the "scenarios" because they are similar to "scenes" in the theatre – a series of differing views or presentations of a similar common topic (Hughes, Grobbelaar, Herbert, Mabena, Mills, Shaw and Sidiropoulos, 2003). The aim for researchers and decision makers alike is to see several scenarios at the same time in order to comprehend better their options or possibilities. A very good set of scenarios should leave the reader questioning which option is more likely or probable, thus causing the reader to think more. That is the whole point of a scenario (Herbst and Mills, 2006). Researchers should structure and develop their scenarios to educate and not to postulate the preferred future (Carpenter *et al.*,2006). The number of scenarios should be kept at a minimum. If there are two, an "either or choice" is suggested and three suggests "good, bad, and preferred" (Caldwell, 2010).

a)   Some of the many methods that have been developed for building Scenarios have been described, discussed and analysed in Chapter 2. Slaughter (2002) argues that Scenario building is perhaps a "Reystone" metholody of future studies. Scenarios can model plausible futures that have been structed to reflect features of organisations, countries and social systems alike including a number of key uncertainties that are faced. The careful scripting and "fleshing" out of Scenarios would make Scenario's much more accessible and humanly meaningful (Slaughter 2002). A method that is unique to this research effort is proposed, based on the information provided.

b)   Schwartz (1991) described the steps of developing and "fleshing out" of scenarios more closely: A focal issue or decision describes the problem that is to be tackled. Key forces in the local or micro environment highlight differences that make a difference for the particular object of the study. Driving forces again are

the major trends and trend breaks of the macro environment, which influence the key forces in the local environment. Defining the driving forces is the most research-intensive step in the scenario planning process. The defined key forces in the local environment and driving forces are then to be ranked by degree of importance and uncertainty (Schwartz, 1991). Elements that can be identified as predetermined have not be used for crafting the scenarios, as these don't present uncertainty. The most important and most uncertain key forces in the local environment and driving forces are then used as the basis for crafting the scenarios.

c) Scenarios were fleshed out by adding information to the skeletal scenarios crafted using chosen scenario logic. Besides the key forces in the local environment and the driving forces, also less important and less uncertain forces, even predetermined forces were included to some extent in the fleshed out scenarios in a way that supports the logic of the skeletal scenarios. As scenarios are fleshed out, the simplistic skeletal scenarios gain complexity, and the risk of oversimplifying of the focal issue was reduced. Systems thinking has also been applied to deepen the scenario plots, narratives for lengthening the skeletal scenarios to stories and characters for populating the scenarios (Ogilvy and Schwartz 1998; Schwartz 1991). According to Schwartz (1991: 231) implications refer to reflecting the fleshed scenarios to the focal issue. Implications and options were crafted for each scenario to allow an improved understanding of the consequences of a scenario becoming reality and of what actions should be taken in each case (Schwartz 1991; Garvin and Levesque, 2006).

d) Some advice was taken from the former Coates and Jarret consulting firm (Glen, 2009). They suggest the compilation of a list of six to 30 variables that might shape the future, followed by filtering and reducing the variables concerned to a set of between six and 25. In the current study, a set of drivers (Table 5.6) was identified by means of environmental scanning efforts. Those drivers that were most emphasised by this research effort and other experts were given a more prominent role in the drafting of the scenarios for the study. Advice regarding not attempting to craft a 'surprise free' or 'business-as-usual' scenario was taken. The scenarios will be four stories of what may be and neither of them will be

classified as a preferred scenario. Advice was taken from the way that the Dinokeng scenarios were constructed around the future of South Africa. Two major variables were identified and placed on two axes (see Figure 5.2).
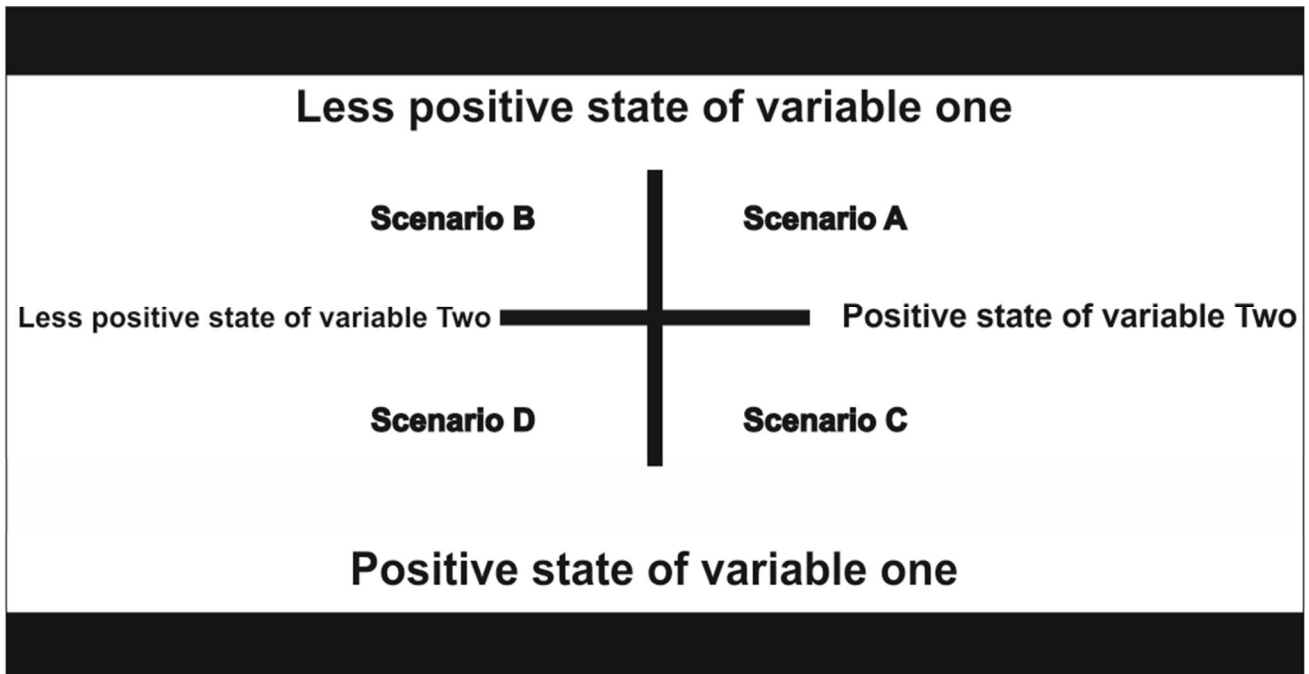
Figure 5.2: Compilation of scenarios simplified
Source: Roux, 2011

This research presents four scenarios to better understand South Africa's future for the next 40 years: The "Mandela's Dream Scenario" in which positive fundamentals come to function and are equally beneficial; "The Good, the Bad and the Ugly Scenario" in which less good governance prevails, but where a fortunate environment and firm national management allow South Africa to become competitive and benefit from satisfactory economic growth; the "Pyramid Syndrome Scenario", in which core driving forces unfold at an uneven pattern, or have a varied impact on South Africa; the "Historical African Syndrome" in which negative regional drivers of change cause the decay of positive initiatives in a method which compounds the pre-existing pressures to South Africa's development towards 2055.

The following is a list of the variables and critical uncertainties that were identified to impact South Africa towards 2055:

- Good Governance
- Economic Growth
- Post-Apartheid Rehabilitation
- Corruption and Nepotism
- Free Education
- Poverty and Alleviation
- Technological Advancement
- Denomination
- Human Development
- Crime Control
- Civil Unrest
- Ethnic and Regional Tension
- Medical Support
- Elderly and Regional Tension
- Medical Support
- Elderly Care Facilities and Support
- Legal Rights
- Environment Protection
- Fair Policies
- Globalisation
- Bold Initiatives
- Foreign Investment
- Modernisation
- Illicit Mining and illegal trading
- Agriculture Climate
- Training of work force
- Middle class Ratio

Figure 5.3: Mandela's Dream

Source: Researcher's own construction

5.4.1 First Scenario – "Mandela's Dream"

Nelson Rolihlahla Mandela had a dream for South Africa. He dreamed of a South Africa, "which is in peace with itself". As the father of South African democracy and the pioneer of peace, Mandela yearned for a rainbow nation, where all South Africans were united. Mandela's dream for the people of South Africa was to have an economically free nation, where democracy, peace and security were a way of life for all her citizens. Mandela's biggest hope for South Africa was the creation of a literate youth. He emphasised good and possibly free education for all, as he believed that, "education is a powerful weapon that we can use to change the world". He yearned for a nation that could read the constitution of her country, one which included and protected all races, religions and sexes who were blessed enough to see the dawning of a new South Africa. These are big ambitions for a country left shattered by 46 years of Apartheid oppression.

"Mandela's Dream" is therefore the idealistic hope of all nations around the world. It is a government modelled on all factors leading to a successful and self-sufficient world power. It is a nation, which relies on good governance, sound economic policies and a favourable regional environment, to produce strong economic growth. Under such conditions, South Africa can reap the benefits of a government that delivers social and judicial services everywhere, one that upgrades social and economic infrastructure and maintains security for all. It is a country which maintains high standards of democracy – a far cry from her dark and politically unstable past. With South Africa's human rights, transparency, budget discipline and a tough stance against corruption, South Africa wins her people's confidence. Carefully designed economic reforms are undertaken and foreign investment is sought, allowing for a more competitive economy, where indigenous ownership and access to capital is encouraged. In terms of her agriculture, South Africa's rehabilitated agriculture programs have proven successful in the restoring of food self-sufficiency, agricultural exports and most importantly providing productive work opportunities. By 2055 South Africa has known years of peace, where democracy has been the pride of her people. She has enjoyed a time of incorrupt governance, with a sound 5-6% year on end economic growth in GAP and a lower unemployment and poverty rates. South Africa is basking in her democratic glory, where a better quality of life is promised to all. South African no longer stand together in protest, rather as a nation joined in unity on their journey towards forgiveness, healing and most importantly evolving into a country free from oppression.

By 2055, South Africa has enjoyed four decades of a new set of governance and values. South Africa is now a country, which places great emphasis on the quality of life of all her citizens, solidarity amongst them and environmental protectionism - beliefs which are polar opposites to a country once governed by the creed of consumerism and individualism. South Africa is now a country, which enjoys pro-environment and anti- poverty policies, galvanising sustainable economic development. The enhancement of a good quality of a life for all has become the foundation for growth in South Africa. As a nation, she has witnessed a departure from the old capitalist economic system, and is now a country, which strives for the employment of moral, and value based politics. South Africa is now a beacon of light

which leads by example and sets new standards as part of BRICS in promoting greater solidarity among developing countries.

In comparison to 2013, the volume of South African trade has multiplied, with the number of participating countries being far higher. South Africa, a formally emerging country has turned into a technologically advanced nation, with global importance in trading circles. She has become a country where low cost production is now available. South Africa no longer hides in the shadows of other countries as she now enjoys a piece of the global trade pie and is respected for her contribution. Companies have become more specialized towards 2055 and supply chains have spread all over the globe. Off – shoring and near shoring have become popular options due to high energy and resource prices. South African companies are now also competitive investors in the U.S. and Europe, thus having a heavy influence on business culture. South Africa continues to become a richer nation, with average income increasing considerably, however, much more in the dynamic growth markets in South Africa and less so in those countries formerly called "developed". As a result of this the South African income gap has almost closed and the South African economic power has greatly surpassed that of the traditional OECD countries. Merely millions of people have meanwhile joined the "global middle class".

Towards 2055 South Africa has seen many benefits and growth, since her integration into global economics and part of the BRICS group of countries. In the past four decades, leading up to 2055, there was strong integration of the South African economy, a relatively benign political context and worldwide progress on tackling environmental risks. It is because of her involvement in global economics that strong institutions have emerged out of Southern Africa. This institutional strength has been welcomed by an ever growing and strengthening South African economy. The emergences of these institutions have also enhanced international trade, allowing South Africa to join the ranks of other international trade powerhouses and helped establish the global agreements on the mobility workers. This ever evolving and strengthening globalisation of South African corporations has helped increase the competition for both skilled and unskilled labour.

It is not only the economy that is reaching phenomenal heights in South Africa but also the constitution and the upholding of all she deems democratic. Important steps have been put into place to maintain the South Africa prayed and fought for by millions of South Africans for decades. Perhaps one of the most significant steps taken is the modification of the South African constitution to generate national identity and inclusive systems of government. Due to her evolving and strengthening economics, South Africa now enjoys a setting of superior international economic architecture, which allows for better trade access, receipt of foreign aid and debt relief. International debt cancellation has been amplified and donor funding continues to stream into the country. Towards 2055 the New South African Defence Force is also in place and equipped to support the consolidated government to sustain security and to provide social and judicial services within South Africa's borders. Most importantly the Anti-corruption Commission has also been given prosecuting powers in order to intensify its fight against corruption, a crime which once eroded and debilitated South African politics.

We currently find ourselves in 2055 and citizens of the Rainbow nation are proud to be South African. It is inspiring to all nations to see how far South Africa has come in the first five decades of the century. An improved South Africa has provided the context for further growth and prosperity. The expansion of the world economy has created a strong demand for South African resources. The restructure of the South African nation to reflect the new realities have given it added credibility. Institutions were put in place to monitor South African governance, economics and trade are therefore more effective. The 2013 Constitutional changes in South Africa were nowhere near as devastating as many predicted they would be. Alterations to the system were widely debated and systematically introduced as the South African government were working at all levels against a backdrop of a longer-term vision. The government were generally smaller, more concerned with governance, setting guidelines, boundaries, standards and policy rather than with running businesses or enterprises. The South African government therefore became more citizens orientated, as all government reforms were put in place for the benefit of South African citizens. Problems of accountability and responsibility within government were also addressed by placing the knowledgeable of all the culture groups in authority, as they had the ability to implement laws, deemed fitting and constructive

to the nation. The ruling party also became more of an administrative support structure than an ideological platform, as politicians were more likely to consult and listen to the public rather than talk and tell. Thus making a big difference to politics as leaders now possessed an important quality for understanding the issues and concerns of citizens.

South Africa become a much safer place to live in towards 2055, in comparison to most other countries worldwide, as government has taken precautions to strengthen our security, law and policing systems. South Africa is now a place free from the shackles of crime; corruption; illegal trade and trafficking. As a democratic country, South Africa's governance has drastically improved allowing all her citizens to walk in South Africa's diverse and vibrant streets, free from the worry of crime. As is fitting of a democratic country, South Africa's law regulations have also been adjusted accordingly to protect and defend all South African citizens. 2055 marks the year where the South African police force is more representative of woman and different racial groups. South Africa has made provision for security and justice and her people are hopeful of political leaders, as they strive to maintain their countries law and order.

In 2055 whilst absolute material consumption was rising in line with economic growth, relative material consumption was decreasing. Relative to population and income growth, material consumption was declining in South Africa. This was due to more efficient production processes and consumer preferences for experiential services as opposed to physical products. As people became wealthier, they spent more money on holidays, tertiary education and entertainment. They were in a position to spend more money on these luxuries because their physical needs were satisfied and additional consumption provided diminishing marginal benefit. Data from South Africa showed that material consumption was on the decrease on a per-captia and per GDP basis over the past few decades.

The new democratic South Africa was eager to learn from the best international policies and practise in developing solutions that it faced. More importantly, South Africa drew on the strengths and wisdom of all her citizens. By drawing on her history, South Africa realised that her most active strength was her diverse people of

all culture groups. An active citizenship was the key. By organising communities, associations, sectored organisations or even political movements, South Africa realised her individual citizens could and did make a difference. During the first few years towards 2020, much emphasis was placed on strengthening developmental local government and local participation. Communities, civil society and local government joined forces in bettering and relieving themselves from the downwards cycle of a previously unjust South Africa. Such a lifestyle was characterised by low levels of economic activity which were felt the hardest by those living in the squatter of township life, informal settlements and rural areas. The once marginalised members of society now had the ability to better their plight through the crusade for a better life for all.

Towards 2055 in South Africa, a sustainable livelihood was built which increased the productivity of the increasing 56 million people living in South Africa. Many efforts were placed on the support and building of education, health, information and knowledge, as well as access to finance, and other means of living towards 2055. Citizen's food supply, assets and income became during the 2010's a concern of the then government which aimed to improve the life of all culture groups living in South Africa. It was because of this that specific lead programs became prioritised. Amongst these programmes was the building of effective and qualified developmental local governments representing all culture groups, which has been discussed and argued to be the most important change needing to take place in order to reach the South Africa dreamt of by Mandela. Another program of importance brought in by the ruling party was the redeployment of experienced senior public servants of all culture groups from provincial and national levels, as well as secondments from the NGO and private sectors. These experienced and qualified public servants were redeployed into this new developmental local government, set on the creation of a true new rainbow nation, capable of having her own footing on an international level. This developmental role of local government then succeeded in its aim to improve, plan, ensure integrated service delivery and insure participation by communities in identifying their own priorities in the planning process towards 2055.

Local government successfully also played a key role in mobilising social capital, ensuring community participation and using resources and knowledge within communities to identify needs, agree on priorities and to ensure programmes reached the target groups. The programmes coordinated and implemented at this level ranged from the expanded publics work programme, the registering of all people eligible for social assistance and free basic services and the provision of common land for food gardens in urban areas. Other programmes also coordinated that were important to the economy and trade of South Africa, training of previous disadvantaged black farmers were the negotiations with experienced farmers around land availability for possible redistribution, and the provision of agricultural support and training services.

Education and training became a South African priority towards 2050 and the government and private sector committed themselves to eliminating the backlogs in all schools, which lacked basic amenities, such as toilets, running water and classrooms. Such amenities were necessities for ensuring an educated youth, which ultimately became the working class of South Africa. By investing in her future, South Africa was strengthening her ability to succeed. Programmes that had already started in the first decade in Gauteng and the Western Cape, which ensured that all schools had computers and were linked to the Internet, were extended to other provinces. Developmental government supported education and on-going learning of people on site and in neighbouring communities. Primary school facilities were located within 3 000 m of most family dwellings along a safe walking route. Secondary schools facilities were located within 4 000 m of all family dwellings along a safe walking route. Safety and free education was the concern of the South African government. This better education system in South Africa led to morally sound societies who were able to differentiate between right and wrong. Equity became more than access into higher education and it incorporated equity of opportunity, environments in which learners - through academic support, excellent teaching and mentoring genuinely had every chance of succeeding. Equity, to be meaningful, was also ensuring that learners had access to a quality education, allowing them to graduate with the relevant knowledge, skills, competencies and attributes required for any occupation and profession.

Given the circumstances that forced these new heights of South African cooperation and responsibility, it was inevitable that much of the growth in South Africa was achieved more cleanly and more "greenly", with South Africa joining the environmental bandwagon. In South Africa there was a big push for solar energy, as the physical geography and low population density of much of the country enabled the proliferation of solar farms and South Africa was well on her way in becoming a "Green conscious" nation. The Deserted initiative, founded in 2009 in Germany, would prove to be a huge success in South Africa as its aim was to create massive thermal electricity plants, which would supply both South Africa and Africa, via undersea cable lines. South Africa can be proud of her efforts in becoming a country striving towards self-sustainable energy, as by 2055 the majority of the country's electricity was coming from solar power. Not only did the switch to solar create new "sun" jobs and cut CO_2 emissions, it earned South Africa billions in valuable foreign currency, through the exportation of solar power annually. Through her strong environmental initiative programmes, South Africa was able to reduce her energy dependencies, allowing her as a country to better control and manage her recourses. In the evolution of government and environmental awareness, South Africa was then able to take enormous strides in becoming a country, which was less wasteful, more efficient and more inclusive, with remarkable innovation for her environment, ecology and her people.

It was through the South African government's strong cooperation on a range of issues, which allowed for technological breakthroughs that would combat disease, infrastructure collapse and transport maintenance. Trade and foreign direct investment spread technologies in all directions and made products cheaper for people, thereby widening access to a range of technologies. The atmosphere of cooperation and transparency then allowed South Africa to glean insights from massive datasets, which will vastly improve the management and allocation of financial and environmental resources. The new technology that came to the fore in South Africa was used for aspects, which were vitally important for the running of a first world country. It was through this rise in new technological applications that the cost of capturing data through nanosensors and smart networks fell precipitously. Through useful services like the "sousveillance" mechanisms, governance in South Africa improved and it enables more efficient use of government recourses.

Intelligent electricity, water distribution and transportation systems remarkably developed in South African urban areas. In these newly developed "smart cities", internet access was seen as a basic right for all.

Solar power was made vastly more efficient through advances in materials, including polymers and nanoparticles. An effective combination of government subsidies and microfinance meant solar was used for everything from desalination for agriculture to Wi-Fi networks. Flexible and rapid mobile payment systems drove dynamic economic growth in South Africa, while the developed world was hampered by entrenched banking interests and regulations.

Medical technology was also evolving, as malaria vaccine was developed and deployed broadly, saving millions of lives each year. Not only was the fight against Malaria combated, but advances in low-cost mind-controlled prosthetics aided the 80% of amputees who live in South Africa, an invention which not only helped them medically, but also psychologically. The South African government has worked strongly with the international community on motivated programmes of international investments in upgrading South Africa's economic and social infrastructure, through the refurbishment of health facilities, schools, providing clean water, roads and housing. The increase in health facilities, region wide HIV/AIDS programmes and accessibility of affordable anti-retroviral and anti-malaria drugs has led to the effective treatments of the approximately 5.6 million people affected in South Africa with HIV/AIDS, as well as the treatments of Malaria and tuberculosis. The effective treatment of these diseases has also stabilised the rates of infections, thereby reducing the socio-economic and political impact of these diseases toward 2055.

The encouragement of global private investment in resourceful and current telecommunications, transport infrastructure and energy supply enabled the upgrade of the economic infrastructure together with the social infrastructure. South Africa is now enjoying a lifestyle never dreamed of prior to 2013. She is now a country, which supplied 80% of her people with clean drinking water, as well as the upgrade of clinics, schools, classrooms, roads, police stations and other transport infrastructure. South Africa has become a place where her truly democratic, well-trained, productive and effective leadership is an example to the rest of the world.

The past forty years in South Africa has also been the golden age for qualified doctors of all races. Their job description has remained the same; that is examining patients, diagnosing their ailments and trying to make them better, however, thanks to the new technology, government investment in the medical and healthcare profession, the rise of doctors' associations and medical schools has helped separate doctors from quacks. Patients, who seeked healthcare in the new South Africa towards 2055, were greeted by professionals who, with the evolution and understanding of technology, were able to be diagnosed more consistently and treated more effectively. Doctors were more able to advise on public-health interventions; such as hygiene and vaccination – that actually worked. It was through the licensing and prescribing laws that doctors statuses were enshrined, making for a profession of dedicated and educated doctors. The acceptance ratio of medical doctorate students for each race group has also abolished before 2015, allowing for free and fair opportunities for all.

At the same time as South Africa was growing, their share in residents over the age of 60 years was increasing. Older people were a resource for their families, communities and economies in supportive and enabling living environments. South Africa regarded active aging as a life-long process shaped by several factors, which favoured health, participation and security in older adult life. South Africa therefore became a more age-friendly country, which tapped the potential that older people represented humanity. South Africa also encouraged active ageing by optimizing opportunities for health, participation and security in order to enhance quality of life as people aged. Towards 2055, South Africa also adapted its structures and services to be accessible to and inclusive of older people with varying needs and capacities.

In summary and towards 2055, South Africa will no longer have poverty traps in rural areas and urban townships, workers isolated on the periphery of cities, inner cities controlled by slumlords and crime, sterile suburbs with homes surrounded by high walls and electric fences, households spending 30% or more of their time, energy and money on daily commuting, decaying infrastructure with power blackouts, undrinkable water, potholes and blocked sewers, violent protests, gridlocked roads and unreliable public transport, new public housing in barren urban landscapes, new private investment creating exclusive enclaves for the rich, fearful immigrant

communities living in confined spaces, or rural communities dying as local production collapses. Instead, South Africa will have: productive farms; well governed villages, towns and cities; tolerance; democracy; fairness and respect for the environment; citizen centred services; secure water and food supplies; diverse and cleaner energy supplies; more walking and cycling; security barriers coming down in suburbs as people reclaim their streets; a mix of housing types and tenures to meet different needs; energy efficient homes; fewer private cars on the roads and decent public transport; public spaces where people from different social groups mix; well-maintained infrastructure supporting dynamic businesses and vibrant economies; recycled waste generating renewable energy; young people actively engaged in local decision-making; immigrant communities making a contribution; rural areas fully integrated into the local economy and new technologies used in buildings for infrastructure and government. Finally South Africa is a place that our best leader Mr Mandela can be proud of, her people can rejoice in and her future citizens can look forward to.

5.4.2 Second Scenario – The good, the bad and the ugly.

Figure 5.4: The good, the bad and the ugly.

Source: Researcher's own construction

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The second scenario which will be mapped out is titled the "The good the bad and the ugly". In this scenario the South African government benefits from reasonably sound governance, however, is less fortunate in regional environment and less resolute in economic growth. Recovery efforts are hampered by external forces, although the South Africa government adopts sound governance and economic policies. There is large room for improvement, y*et* all hope is not lost. A large portion of the government budget goes towards eradicating poverty; however, a cloud of civil unrest simmers above the head of the nation. Illicit mining and trade continue, and South Africa is hampered further by ethnic and cultural tensions and economic disparities. There is much work to be done in this South Africa, a place where the investment climate is seen as a high risk, and where the pendulum of peace can swing either way. The economy remains uncompetitive and investment potentials remain unfulfilled. The rejuvenation of a country once plagued by Apartheid is slow, yet continues to move forward by investing in security enforcement, good and free education and well governed and balanced infrastructure development. There is a glimmer of hope for the nation, as she moves precariously and slowly upward towards 2055 in her path towards true democracy. However, it is believed in this scenario that the South African economy did recover a sufficient growth potential early, when people strengthened their expectations about their future through good governance. Implementing all structural reforms that aimed towards a competitive society that thrived on global trends and putting the bubble economy completely behind South Africa were instrumental to enhance this movement. Considering labour input capital stock, and technological progress (total factor productivity), South Africa economy were still be able to grow by around 2% per year.

The South African government also continued to unblock constraints, boost education, reduce crime and attract both local and foreign investment, a feat second to none. South Africa however worked hard at becoming a regional hub and reaped the benefits in early successes by providing access, capital and knowledge for those wishing to invest in South Africa. South Africa also became environmentally conscious and a new set of laws were enforced to limit the impact of economic development on the environment. These exciting new laws made South Africa a key player in the international Green Initiative. Of course, there was never any question

that the worst poverty had to be ameliorated and South Africa had to be developmental in order to pave the path of true national development.

Poverty reduction remained high on South Africa's agenda, as well as the expansion of public works programmes. The nature of the developmental country remained contested, even though there was direct government intervention in the economy through Eskom, Transnet and investments such as Coega. There was large focus on state leadership in the supplier industries for major infrastructure programmes but beyond that, developmental became more of a political catchphrase, rather than a descriptor of an effective activist country, something characteristic of South Africa and her past involvement in activism. Towards 2055, soil degradation, water pollution and energy negligence impacted severely on the country's economic growth. Adding to the "perfect storm" of impending environmental meltdown, the South African economy was itself trapped in stagnant waters. The South African economy remained flat despite governance interference.

Towards 2055, South Africa also had a working and liberal economic system; however it failed to develop a differentiated production and service economy. The raw material dominated industrial complex still constituted a substantial part of the economy. The development of a strong middle class, something important in every economy, was hampered by a lack of diversification of domestic industry. Regular economic downturns depressed the globalization, growth and social development throughout South Africa and for that matter in Africa. Whilst this was happening within the economy, the demographic drivers in South Africa meant there was still a demand for in-migration in key sectors such as elderly care. The pressure for migration increased; driven by lower growth, scarcity of critical resources, declining living standards and lower productivity. These pressures existed in a policy environment hostile to international cooperation that lead to tighter boarder policies and more control over migration related matters.

Towards 2055, long term domestic and foreign investments were important for South Africa, and therefore clearer strategies for obtaining both were needed. However, the difficult economic environment poised on the national and provincial investment agencies, from developmental funding to youth funding, made capital hard to come

by. The inability to attract high levels of investment and the inefficiency of local funding insured that the wealth of South Africa remained with a few elites. The reason for this was that diversity in management had not been achieved anywhere in the economy, something South Africa had battled to achieve since 1994.   The government and senior management had been predominately black, whereas the private sector remained in the hands of white South Africans, throwing much needed diversity off balance. The South African government became more comfortable with outsourcing aspects of high priority services, from social grant payments, hospital provision, running prisons, housing, schools and universities to the private sector.

Towards 2055 higher levels of security and trust were enjoyed by the citizens of South Africa, due to burgeoning technology. Smart bar codes, global tracking, databases and many other techniques were called upon to minimise interferences and delays. Similarly, legal techniques were based on mutual recognition, which ensured operations could occur across different jurisdictions. South Africans were able to enjoy self-fulfilment as well employability through horizontal links with peers and professional communities who shared the same values and interests, relevant to the work place. A notion which allowed for the building of a community of alike minded people with a similar set of values. The nightmarish images of 2012 sent around the world of police brutality were ingrained in our minds and are hard to forget. Especially after news broadcasts of police killings, beatings and inhuman attacks of citizens by police dogs. Authorities then strived to eliminate this brutality and its history in South Africa. The decision was to demilitarise the police force, a decision which have been questioned by many. By 2055, private security guards outnumbered the police and private contractors were running most prisons in the country. South Africa adopted an integrated approach to achieving a safe society by tackling criminality, which required a wide range of experts and United Nations resources.

Despite the efforts of the South African government, the majority of her people battled each day to live their lives, continually faced with the burdens of poverty, lack of resources and poor education. The battle against poverty was far from over, as only the elite continued to thrive. The gap between the haves and have not's was growing bigger every year and the government was forced to acknowledge ethnic

disadvantages. Like every government, discontent was aggravated by the provision of chief appointments, contracts and employments that were issued by the South African government.

South Africa has become a non-state, non-governmental country which enjoys multinational businesses, academic institutions and wealthy individuals. Mega-cities flourished and took the lead in confronting global challenges. New technologies favoured the empowerment of individuals and small groups, increasing their power within the economy. These key players gained power and support through their beliefs on combating severe issues, such as poverty, the fight against government corruption and their mission to provide a peaceful environment for all. This provided great opportunities for many but the question remained, what about the majority of South Africans whose plight was unchanged, as they continued to live in squatters.

The problem experienced during this scenario was that education and health were highly privatised and therefore only the rich elite could afford education and health services. The majority of the citizens living in rural areas were left uneducated, unhealthy with fearsome diseases, issues which remain unacceptable. Due to the high levels of illiteracy towards 2055, the majority of the population lacked basic skills. The consequence of such neglect resulted in rural communities lacking access to basic needs such as water, food, education, health care, sanitation and security. The things which many South Africans take for granted were foreign concepts to the bulk of the country, living mere kilometres away. It was due to these horrific circumstances that South Africa suffered from low life expectancy levels and high infant mortality rates, towards 2055.

These conditions, rightly considered unacceptable by the majority of rural dwellers were contested, resulting in higher crime rates, conflict and cultural differences. Despite a commitment to better government, and to the more effective redistribution of wealth, the reality of a slowing economy made it difficult for South Africa to keep up with the expectations it had itself created. It is a common thing for governments worldwide to promise things they are unable to deliver. In the case of South Africa, job and poverty targets failed miserably. Outside of the comfortable lives being lived by the middle class, the majority of South Africans continued to feel the inequality

bequeathed by the economy. The free market led developmental strategy was too gradual for the majority of the poor to feel any progress, particularly in terms of access to well- paying jobs, even by 2055. South Africa for the most part remained the broken nation she was, with the rate of development not being able to catch up to the demands of the people. Once more South Africa remained a broken nation in many respects, as the marginalised members of society were the ones left to bear the burden yet again.

With regards to mobility, rising resource prices started to influence people's behaviour even more directly towards 2055. As petrol and gas prices increased, some of the poorest households ended up sacrificing huge amounts of their income for their personal mobility, leading to urbanisation. Only the wealthy had the possibility of travelling in aeroplanes, as this and many other forms of travel were out of reach to many due to exorbitant fuel prices. Mobility in general has decreased dramatically in South Africa towards 2055, with aeroplane travel being an immense luxury.

During 2055 the privatisation of water and improvements in technology also lead to increased water use efficiency in South Africa, but the emphasis was primarily on the augmentation of supply. At the same time, the decline in subsidies affected those less able to pay, be they agriculture, industrial or domestic users. Due to climate change and reduced precipitation, the number of people that lived in poverty with severe water stress grew significantly. Weak physical infrastructure was also a key factor that prevented South Africa from successfully integrating into global trading systems. Poor infrastructure accounted for 40% of transport costs for coastal provinces and 60% for landlocked provinces. South Africa can therefore be argued has failed to expand services fast enough to keep up with rapid demographic growth and urbanisation due to poor economic conditions. Perhaps one of the greatest reasons South Africa has not reached her true potential is due to the continuation of a few elite –sponsored BBBEE business agreements.

Eventually, uncertainty shocks force the people of South Africa to decrease their consumption level – this is done by the imposition of strict but much needed government measures. The downside of this was that these economic shocks

inflated inequality in an already tense and conflict prone South Africa. Towards 2055, trade barriers were becoming the normality as countries fought to protect their large tracts of land which they bought to secure resources and food production. During this time and within this political landscape, armed conflicts have become more numerous and international cooperation is limited to securing resources rather than promoting sustainability.

Towards 2055, in most capitalist driven nations the gap between the haves and have not is constantly expanding, a notion not foreign in South Africa. The social gap between the very few who could still afford affluent lifestyles and the masses that have been forced to reduce their levels of material consumption has ever widening. The impact of increasing prices for materials, products and services meant that people have not seen significant increases in real wages. To compensate the increased cost of living, people joined the "human rat race" by increasing their work hours and many were unable to take holidays. The average age of retirement increased, as to afford a relatively comfortable lifestyle and security in one's old age, came at a cost. Aside from infrastructure, sectors such as education, financial service, media, marketing, restaurants, hotels and caring professions were major employers. A shift in taxation form labour to resources favoured employment in the infrastructure and services, although some manufacturing remained, especially for high quality goods.

There were still a few people in South Africa who were able to consume at a high level of intensity. However, excessive resource consumption and energy use was increasingly no longer seen as socially acceptable to the majority of South Africans. Consumption for these people was characterised by a preference for goods and services with low resource intensities, which were highly recyclable due to their affordability. Quality was thus actively in demand and marketing placed importance on durability, service and green/sustainable credentials, which became the latest fad in South Africa. Super resource efficient high technology goods became status symbols, as did the consumption of knowledge and education due to the South African government's inability to provide for free and fair education.

In summary, governance efforts towards 2055 developed efforts of a common platform of fairrers, accountability, responsibility and transparency has been established with the view to effectively utilising public resources. However low openness and weak economic conditions has prevented South Africans from striking partnerships with the rest of the world that would make a meaningful contribution to regional human capital development. In this scenario, there are few foreign and local joint ventures, which has the effect that local people are not exposed to best international practices. Low openness became a result of South Africa's failure in negotiating for market access to more developed and higher income communities. As a result of this, South Africa have not opened up enough quality of labour obtaining in the country. The export and import efforts of South Africa as a percentage of real GDP eventually went into decline towards 2055.

5.4.3 Third Scenario – Pyramid Syndrome

Figure 5.5: Pyramid Syndrome

Source: Researcher's own construction

In the "Pyramid Syndrome", a less significant government than in that of "The Good, the Bad and the Ugly" prevails, especially in the early years of a selected few corrupt government autocrats filling up their personal coffers, but a fortunate economic environment and firm national management allow the Republic of South Africa to become competitive and benefit from satisfactory economic growth. Initially, dissatisfaction crept in due to the ruling party's inability to deliver social rehabilitation and employment, or to eliminate corruption and nepotism. Towards 2055, the citizens of South Africa, refused to live under such governmental rule and the weaknesses of this rule, led to widespread protest, backed by western interests. A new political arena fought for more disciplined regime; whereby draconian measures could eventually be brought into stamp out corruption and illicit operations, bringing back the rule of law and government authority, although civil rights, transparency and the social sectors backing security, education and infrastructure development received lower priority. However, seeing that economic growth of around 5-6% year on end could address poverty, the government were forced to work with multinationals and international agencies to modernise infrastructure, to utilise natural resources, and successfully stimulate much needed growth.

Towards 2055, South Africa's economy did reach prosperity without any political reform or a well governed government. Despite favourable conditions and excellent economic growth, accumulated debt weighed heavily on South Africa's shoulders. Poor planning and coordination, and bureaucratic inertia overlaid with startling levels of animosity among politicians, started to filter through to the still strong performing economy. This was largely because the divisive events of the black dominated ANC and complex court cases due to poor governance resulted in continuing hostility and suspicion in the ruling party. Cracks within the government itself were beginning to emerge, which came with worrying effects for the South African economy and all its citizens. For a while, South Africa enjoyed the benefits of sound economic growth, driven by a more stable global economy. With the South African government not succeeding, it was clear that the reason for failure was due to negligible consequences of inefficiency, corruption, poor productivity and bad governance. Unions and political connections protected the poor performers. Cleverer but less productive staff took advantage of the uncertainties at senior management. The key performance agreement was honoured mostly in the breach and eventually

collapsed towards 2055. South Africa was in desperate need of a new government and educated people to take over the reins of a nation in desperate need of guidance.

The South African government acted poorly on getting corruption under control, as government at all levels worked corruption into their favour by letting tenders go to companies with overt connections to well position individual and culture groups within the ruling party. The government celebrated vulgar displays of wealth and privilege while the majority of the country lived without electricity, clean running water and inadequate sanitation. The actual lifestyle and conduct of many high-profile so-called "African National Criminals" leaders sometimes manifested rank corruption. The power hungry ruled a nation plaque by poverty and heart-breaking issues such as HIV AND AIDS, all the while taking tax money away from those who needed it to survive. Thus being the Pyramid Syndrome. At first the private sector was appalled, but eventually many were driven to adapt to the new environment as a cloud of apathy hung over South Africans. Towards 2055, South Africa was mostly marked by a sense of what could have been, rather than celebrating what had been achieved. Heavy workloads and the private sectors temptation soon reduced the ruling party's capacity in critical areas. Plans and budgets were unevenly spread across the government due to corruption and uneducated decision making. New scandals arouse, and now more energy was spent on excluding each other than on governing effectively. Grudges got recycled into waves of passivity or aggression amongst citizens crying out for honest and democratic leadership. In those conflict situations, South Africa had to continue to send back billions of unspent funding. As the situation deteriorated, there were many outbreaks of mass anger from many turning into marches, strikes, riots and xenophobia.

South Africa towards 2055 was still not a safe place to live in, as the corruption of police officers was a problem which spanned cultures and generations, because it was based on human weakness and motivations. Even the lowest ranking officer could exercise wide power and because there were people who wanted to take advantage of that power, the threat of corruption was inevitable. This was not meant to be a cynical view of the problem, but a practical one. Gun licenses were taken from honest people with no threat to society. Bribing, wrongful arrests and letting

dangerous prisoners go free was spreading immensely towards 2055. Crime was aided by the weaknesses in the very systems meant to protect the citizens. The South African police force was a corrupted institution and police were feared rather than respected for their heroic acts of bravery. There was no way South Africans could keep their streets safe when the shadow of corruption stalked the highest levels of the government. In addition to corruption, the South African police, the justice system and the government officials lacked experienced management at all levels of their service. As much as citizens yearned for it, there was no hope of an effective government that complements an open and free democracy while the South African police remained militarised, in name and in their actions to protect corrupt government officials.

Towards 2055 the South African government no longer played a significant role in managing the country's legislature. Law enforcement has been decentralized and was in many cases carried out by private crime fighters who were hired by individuals and corporations alike. The concept of the social welfare state was also a distant memory, individualism and materialistic gains were the main driving forces in the economy. South Africa was involved in "African" guerrilla war type governance, where each citizen was forced to defend their best interests, as all faith in the South African government and the civil services or lack thereof was lost. The demise of social and political justice has increased the polarization of wealth which resulted in strong divides in society. Far behind from technological development, social and political mechanisms have definitely failed to cope with technological change. Politics, Government, Law and Justice Systems were harder to update because they were highly based in strong cultural paradigms. Paradoxically, the globalization has contributed by making national legal systems irrelevant and global legal systems impractical because it was impossible to reach agreements due to the same cultural diversity.

The South African learners in the institutions were not able to fully utilise technology because the instructors did not have the necessary capabilities or education. There was also a reduction in quality, because educators were scarce; too few instructors shuffled around the system trying to fill the gaps in the existing institutions in the country. The educational system was in chaos as educators would take off work

regularly. Given their scarcity, and the likelihood of poor monitoring due to personnel strains in the system, the administrators also became grossly inefficient, negligent and more corrupt. The infrastructure, the computer labs, the scientific equipment, sophisticated systems and connectivity, was there, but were grossly underutilised and therefore of little use in enabling the development of the South African country. The technology was therefore a sadly wasted investment unable to expand the minds of those it was designed to.

During this time further pyramid schemes streamed in and were eventually defined as fraudulent money making schemes that was based on non-sustainable and poorly governed business models that involved exchange of money primarily for enrolling other people into the scheme to filtrate South Africa's precious metals. Eventually the number of new recruits failed to sustain the payment structures and the schemes collapsed due to its top heavy structures, leaving most people losing the money they paid in. In many instances, pensioners lost their pensions and many an education fund no longer exists toward 2055.

South Africa has also seen the life expectancy of its populations stunted by communicable and parasitical diseases that have mostly been stamped out in the developed world. During 2055 the country also faced increasingly high rates of the non-communicable lifestyle diseases that became the biggest killers in industrialised provinces. South Africa, however, was still unable to provide basic sanitation, clean water and adequate nutrition to all of their citizens, one deal with the onset of these latest killers. The country, beset by poor infrastructure, a shortage of skilled professionals and geographic and political inequalities, faced an uphill struggle in delivering adequate healthcare due to poor governance. With outlays on treatment for the major communicable diseases which was likely to occupy a significant chunk of South Africa's health budget, better preventive care was not crucial to keep spending in check - and to improve health outcomes.

Security and military concerns also siphoned resources away from the building and maintenance of water infrastructure (dams, pipelines, distribution networks), resulting in their gradual degradation. Water stress increased, mostly due to the polluting of water, water scarcity and the deterioration of the water infrastructure. South Africa

eventually became a severely "water-stressed" country: not only did it have a limited amount of available water resources, but there was also insufficient capacity and quality of the infrastructure required to capture and distribute water to households and industry towards 2055. With South Africa having insufficient governance management, most South Africans died due to water scarcity, polluted water that carried airborne disease and due to water scarcity the agriculture of South Africa also took an immense downturn, which led to not enough food leaving the South African nation in hunger and eventually death. Such causes of death could easily be avoided by better governance and eventually South Africans grew tired with the demands of the people not being met.

The South African literature of the 21st century, protested against both, the political oppression and the cultural domination. Identity eventually became a very central theme. This indicated that South Africa's problems were not only seen as political, but also as cultural. Modern South African literature has grown largely from tensions existing between South African cultures due to no political and government support. Novels such as K.Sello Duiker's, *Thirteen cents,* protested the grim culture of those in conflict with their identity, as well as those marginalised by poverty, without Government protection. This clearly argued that money alone could not have saved South Africa, not as long as there were issues such as prolonged violent conflict, bad governance, excessive external interference, and lack of an autonomous policy space. South Africa's development challenges were multifaceted towards 2055. Forty years after independence South Africans were still grappling with building the nation-state. No amount of money could rebuild the trust between the government and its citizens as the only way these issues would be resolved was through good governance, something seemingly simple, y*et,* most impossible to come by.

Towards 2055, South Africa became wealthier as global GDP grew but less happy as the differences between the haves and have-nots became starker and increasingly immutable. South Africa was increasingly denned by two self-reinforcing cycles, one virtuous leading to greater prosperity, the other vicious, leading to poverty and instability with political and social tensions increasing. Among South Africans, there were clear-cut winners and losers. South Africa splintered and eventually faltered. The US and China remained the preeminent power, achieving

an economic turnaround fuelled by its new energy revolution, technological innovation, prudent scale policies, and the relative weakness of many potential competitors.

5.4.4 Fourth Scenario – The historical African syndrome

Figure 5.6: The historical African syndrome
Source: Researcher's own construction

South Africa fares less well in the fourth scenario, "The African Historical Syndrome". The country continues suffering from a one sided bad government, continued personal greed and internal and external conflict, drifting from crisis to crisis, mostly of its own making. Unfortunately, South Africa is on the same path of destruction as some of the poorest countries in the world. Initial attempts at rehabilitation and

stability do not work, made worse by an influx of more refugees from countries with the same or worsened plight from all over Africa. The South African government cannot deliver non-corrupt, well-managed services; poor education; humanitarian aid declines; food production does not recover; governance is inequitable; and civil unrest grows. Young men of all culture groups return to fighting; brain drain thrives. Poor macroeconomic management brings inflation and lack of public resources; investors avoid South Africa and donors withdraw. In the lawless environment HIV/AIDS and disease escalate. There are coups *d'état* and war, religious fundamentalism and cultural terrorism and continued links to international crime. The main losers are the desperately poor people, helplessly caught in a maelstrom of conflict and the ambitions of local and selfish leaders. They are the ones who are once again burdened by an ill qualified and corrupt government. By 2055, with yet another civil war, the cycle of violence and despair repeats itself over, and over.

Towards 2055, several South African economic depressed cycles were is in full swing and economic activity reached an all-time low. This is the worst-case scenario with high inflation and unemployment figures, which is referred to as "stagflation" (a stagnant economy with high inflation). This was last observed in the 1980's in South Africa and this worst case result indicated that the government went on the wrong policy course. This lead to double-digit interest rates for several years until inflation went down to most reasonable levels. While stocks suffered greatly, lands did even worse. Citizens feel the burn of an unstable economy. South Africa in 2055 has been predominantly shaped by long periods of economic instability, as economic growth stalled in South Africa. Instead of collaboration and mutual understanding between cultures, many South Africans were facing a breakdown within their own structures. It was a chaotic period for the South African country, as gated cities emerged. Citizens no longer felt safe in their cities, opting to live behind electric fences and high walls. By 2055, although many corporations were present in South Africa they seemed to behave like predators. Resources were used with no respect for the natural environment, as the land and her animals were abused, killed and squandered. There was a marked lack of cooperation between corporate and communities. Instead, there was a clash of interests and a general lack of understanding, or respect, on both sides.

The people of South Africa have been struggling under the burden of economic hardships as they have been extremely despondent with the one sided and black dominated political situation, as the country have been run by the few ruling elite who are exploiting it to serve their own needs. Government officials live in lavish homesteads while their people suffered. This picture of pathos will break many a heart internationally. Well-remunerated government appointments and top positions also seem to go to people, well placed with the government, regardless of merit, qualification and experience. The Anti-Corruption Courts did not bring to court anyone of note within government circles and the Truth and Reconciliation Commission failed to purify the nation, instead it raised the people's rage. Government failed to deliver on its promises of family support, refurbishment of schools, health facilities, and housing and clean drinking water because of inefficiency, corrupt practices, arrogance and an influx of refugees.

Towards 2055, South Africa became a lawless country where anger and violence is rife. South Africa was now caught in a downward spiral, fanning the flames of ethnic animosity and witnessed the formation of ethnic militias. Widespread corruption continued unabated. The youth of South Africa had no jobs – those who survived the AIDS scourge that is. The youth who stay at home all day become depressed and apathetic, turning to crime as the only alternative. Armed gangs emerged throughout the South African country, the constitutional crisis deteriorated immensely and regional conflicts escalated and threatened to spread. Enormous pressure was brought to bear on the South African country. The populace was no longer confident in the ability of the one sided state's government to enforce the law and many South Africans were taking no account of it in the running of their affairs. Instead, they relied more and more on informal establishments, based largely on ethic allegiances. To aggravate matters further, the South African government lost its capacity to enforce the law – it could no longer hold together different groups in the delicate balance of power and rewards.

People understandably struggled under the heavy burden of economic hardship and were unhappy with the dictatorship focussed political situation. South Africa deepened in despair as it was in the hands of a few ruling elite who exploited it to serve their own ends. The blood of many due to crime, poverty and HIV/AIDS was

on corrupt officials hands, as high tension and discontentment were rife. All that was needed was a spark to ignite the bomb. The potential sparks were numerous ranging from a collapse of constitutional reform talks, messy successions, to the escalation of conflict over food, water, land and other resources. Whichever spark finally ignited the bomb, the explosion was resound throughout South Africa. The results became devastating, and a shattered nation was left in its wake. The South African government tried to intervene with false promises, but it failed. It failed because it was instrumental in creating the problem in the first place and, therefore, had no moral right to offer a solution. The South African government interventions further failed because the ever on-going violence was already too widespread for an ill equipped and disliked government to attempt and contain.

In the wake of this failure to resolve the on-going conflict and the rebellion within the security forces, the ruling elite tumbled. As the elite ignored the bigger picture, anarchy took over in South Africa. Towards 2055 vicious wars ensued, pitting ethnic groups further against each other in a desperate battle for survival and to lay claim to valuable resources such as land, food and water. As the conflict escalated, you could hear the shuffling of hurried feet as the South Africans repositioned themselves amongst their ethnic lines. Some professionals and political leaders fled, some tried to start new lives abroad, others continued to provide spiritual leadership and financial support for their people from their new vantage points. Towards 2055, South Africa fractured into homelands based on the present geographic ethnic boundaries. South Africa was a nation torn apart by an involuntary need to survive. The majority of South Africans retreated and focussed on their ethnic groups and ancestral homes. These now became the segmented political units. The former ethnic militias matured into fully fledged armies and they got involved in the economy and other sectors at whim. The homelands then became at odds with each other. They fought over land; they invaded each other to acquire property; and occasionally, they would reach temporary peace agreements. In a time when national unity was needed the most, people set their sights on what they might gain as the selfishness of human nature repeating itself once more.

The war between the black majority, the coloureds, Indians, whites and other culture groups was financed through illegal trade in drugs and arms as well as the

plundering of natural resources.   Meanwhile, the economy was increasingly criminalized as illicit trade, especially in drugs and weapons, became the backbone of the economy.   Nearing 2055, South Africa eventually became the once pitied Zimbabwe; a country where the United Nations were afraid of being entangled in a complex internal conflict and have preferred a regional settlement. The years leading up to 2055, South Africa was known not to be a safe place to live in. After a smooth start in the early post-apartheid period, South Africa's ruling party, the African National Congress (ANC), was increasingly afflicted by contradictions between its idealistic principles and the baser behaviours of many of its officeholders. These behaviours included threats to institute tighter controls over the judiciary and the ANC's civil society critics, especially the independent media. The South African country continued to grapple with corruption, growing social and economic inequalities, and the weakening of state institutions by partisan appointments and by black dominated one-party dominance.   Unfortunately, nearly fourty years after the end of apartheid, South Africans' racial differences continued to define their politics. South Africa was in a no better position to where they were fourty years prior, having learnt nothing from her many years of hardships.

In terms of high political philosophy and statements directed to foreign audiences, the ANC represented itself as multiracial and committed to the "Rainbow Nation". However, one sided party leaders demanded unwavering support from black South Africans, routinely reminding such voters who liberated them from the so-called white domination. Meanwhile, national development and the delivery of services to citizens have lagged despite ANC leader's earnest campaign promises.   Health and education systems have especially suffered from government neglect, and widespread dysfunction in local governments has prompted public demonstrations, which in most places have been countered with police violence. Peaceful protests is a thing of the past as citizens opt for a more violent approach in getting their pleas across. These problems have been compounded by the ANC's policy of "deployment", whereby the selection of candidates for government jobs at all levels is inordinately influenced by the candidates' perceived loyalty to the ANC rather than by the possession of requisite professional qualifications. South Africa is not only being led by corrupt government officials, but by uneducated ones at that.

In this sad and worst case scenario the issue of education is one, which continues to plague South Africa, as learners, who are motivated to learn, constantly face educational inequality. Frustration amongst learners, whose teachers fail to attend class, is at an all-time high. Students are forced to take matters into their own hands by staging riots outside schools and education departments, a regular occurrence on South African news. In retaliation to the riots police are forced to fire tear gas at the frustrated learners, feeling alienated in their fight for good education. The feel hopeless as their country is severely constrained in their ability to fully support them. South Africa's facilities, infrastructure and equipment were out-dated and are unable to provide learners with the basic information and technological access they needed to for their education to thrive. Learners are taught by unmotivated teachers who were feeling frustrated by the same issues the learners were. It was and remains a constant battle to educate children with minimal resources, and many teachers feel like there is no point in them even attending class regularly. The education system in South Africa has become a vicious circle of apathy due to hardships. There have been a few highly publicised cases of disciplinary actions against learners for plagiarism and product piracy, and there was a view that this has been a course of last resort for learners, who were desperate to access the latest software and material, which the university was unable to provide at affordable cost.

By 2055, South Africans continued to have poor access to education and training, which lead to unimproved learning outcomes. Education was no longer compulsory up to Grade 12 or equivalent levels in vocational education and training. The education, training and innovation system through the years did not cater for different needs to provide highly skilled individuals. There was no allowance for learners to take different paths in education. Schools, FET colleges, universities of technology, universities and other providers of education had no more linkages. Nutrition programmes for mothers and infants was non-existent, leading the infant to an unhealthy, bad functioning adult. Infrastructure in schools did not meet the optimum international standards.

Multiple crises befell the education system of South Africa as the Education Departments were faced with financial mismanagement and corruption, bad school infrastructure, teaching contracts that were not renewed and the lack of funds for

nutritional feeding schemes and transport programs. These issues further negatively affected the quality of education and life for learners and teachers. This situation caused a delay in the educational proceedings in South Africa, as learners were stranded and teachers were left without jobs for weeks on end. The department of education in South Africa failed to renew working contracts for temporary teachers. This according to the Department of Education was due to lack of finance, to further pay their salaries. This affected the day to day running of the schools particularly in the rural areas because of the poor quality of education that already existed. More and more South Africans eventually became illiterate due to non-working libraries, unavailable text books and untrained teachers.

Towards 2055 there was also the underlying situation of The Whites in South Africa. The white population felt that they built South Africa into the country that the world came to know in the late 1970s and early 1980s. The country they have originally built was taken from them and then given to the black people, by FW de Klerk (the last white president). Now, more than 40 years after the first changes, the white culture was still felt that they are still being oppressed by the black majority. Many black South Africans still were cautious of white people, as the wounds of Apartheid have not fully healed. At the same time there remains a handful of white people that wanted South Africa back in the hands of white people for governance purposes. Due to these long on-going beliefs, the rumour known as the night of the long knifes (Uhuru), which was long before believed to happen the day Nelson Mandela died, worried many white South Africans.

Although South Africa since 1994 celebrated the diversity of their cultures, there is no real substance to their traditional practices; as they towards 2055 have become perfunctory. The vital connection between the individual and insular race-based traditional cultures was forever lost when South African society retreated into structured hierarchical racial lines. Towards 2055 as part of a bad governance and poor economic conditions, the health system was struggling to cope with the collision of four excessive health burdens: communicable disease (especially HIV/AIDS), non-communicable disease, maternal, neonatal and child deaths, and deaths from injury and violence. These health problems were rooted in distinctive features of South African poor governed strategic planning to cater for the poor. The migrant labour

system resulted in dispossession and impoverishment of the majority black population and contributed too many of the major health problems through social changes which led to destruction of family life, alcohol abuse, and violence, particularly gender- based violence. Vast income inequalities also resulted from the cumulative effects of wide ranging discrimination and an array of racially-based BBBEE legislation.

South Africans were focusing on apportioning blame for the unabated effects of the HIV and AIDS epidemic on South Africa. Stigma, denials and conspiracy theories were the order of the day in the absence of a strong integrated response to HIV and AIDS. The response to AIDS has become desperate under a weak and self-serving leadership. Few partnerships were formed and the National AIDS Plan eventually became ineffective. General business response was limited under this low growth scenario and labour was regarded as alarmingly dispensable and this lead to a weak civil society, which became disappointed by the ineffective state welfare system.

Towards 2055 the South African country's infrastructure also took a catastrophic turn as more than 80% of the country's citizens had no clean drinking water and sanitation was at its worst. The consumption of municipal potable water and the disposal of sewage into municipal systems were not minimised and increased storm water runoff and water pollution were not avoided towards 2055, causing greater risk of waterborne diseases. Water scarcity was an issue exacerbated by demographic pressures, climate change and pollution. South Africa's water scarcity was also one of the biggest problems leading to political conflicts and potentially explosive situations. The government neglected to improve the infrastructure of the roads and railways, leading to a high number of road deaths due to potholes and torn roads. The disastrous states of South Africa's roads was further caused by poor management and unavailable funds to reconstruct and maintain them, the story of a country fuelled by governmental greed.

Towards 2055, most infrastructure was lying derelict, pointing to a serious problem that was crying out for solutions. Roads were littered with South Africa's" national flower", the plastic bag and also the occasional dead donkey or cow killed by the heavy transport. The absence of road signs made it difficult for road users to

negotiate road curves or observe people and animal crossing points. The poor state of the country's roads was forcing freight companies to look for alternative routes. Maintenance work on the country's road network was either stopped due to a biting economic crisis or poor governance of local municipalities. Although, some projects such as the dualisation of major highways did resume, the work was continuing at a very slow pace. Poor road conditions, which have rendered some areas inaccessible, were hampering the efficient distribution of food and other supplies for businesses to survive.

Medical services were also deteriorating rapidly and some South Africans had to leave the country to seek medical treatment. Signs of the healthcare crisis were obvious for some time to the few doctors still available in the country's hospitals. The international community that normally intervened in situations like those were unwelcome now in South Africa, unless the underlying political problems could be solved. Hospitals became seriously understaffed as nurses and doctors left for more stable jobs abroad. Surgeons and anaesthesiologists stopped doing any state sponsored operations to protest about the poor working conditions and inadequate supplies. The surgeons said they were afraid of ruining their reputations by continuing to lose patients by going into theatre without adequate government supplies and equipment. While doctors and even members of parliament blamed the government for the crisis, the government lacked political commitment training and will.

Black economic empowerment (BEE) in South Africa provided a significant contribution to the development of the black population of the country, but irregularities such as tender fraud and corruption created severe challenges to the correct implementation of the initiative. Challenges such as businesses being awarded tenders by misrepresentation of their BBBEE status were one of the problems faced by the industry. These problems prevented tenders from being awarded to deserving parties, thus defeating the objective of the system. BBBEE became a struggle in South Africa because of various factors that affect the initiative, casting a negative view on the process and implementation. There were hopes that tenders would be awarded to businesses that were BBBEE compliant, which would have had spin-off effects on areas such as socio- economic development, enterprise

development, preferential procurement, skills development, employment equity, and management and ownership of businesses. However, BBBEE became a psychological force only to promote a selected few for money laundering and depriving the poor.

Towards 2055, the value of the South African Rand also suffered its worst crash in memory. The official exchange rate dropped severely and various shops had to close their doors or shorten shopping hours to re-price all their goods. Over a short period of time the price of meat increased 4 times, a bottle of cooking oil had tripled and transport fares had gone up between three and fivefold. Dissolutioned store managers indicated the range of goods on sale had diminished drastically as imported products became expensive and local factories were too crippled by inflation to produce goods. Meanwhile, the few workers who could afford the fuel to get to work were demanding higher wages to cope with the higher price of goods. South Africans like its predecessor Zimbabwe started to use various currencies of which the US dollars became the most popular ones. The economy of South Africa collapsed all together with the currency. The country deteriorated further from the lack of fuel and food.

In summary, it turned out that the majority of the dominated government had absolutely no knowledge of economy and perceived good governance. They were totally incapable of satisfying even their own personal needs. As a result, the majority of enterprises were closed and abandoned and South Africa became like the rest of historical Africa.

5.5   COMPARING THE SCENARIOS FOR SOUTH AFRICA

Table 5.7: Overview of the Scenarios for South Africa Towards 2055

	MANDELA'S DREAM SCENARIO	THE GOOD THE BAD AND THE UGLY	PYRAMID SYNDROME	HISTORICAL AFRICAN SYNDROME
Good Governance	Very Positive	Positive	Negative	Very
Economic Growth	Very Positive	Negative	Positive	Negative
Post-Apartheid	Very Positive	Neutral	Negative	Very

rehabilitation	Very Positive	Positive	Negative	Negative
Corruption & Nepotism	Very Positive	Positive	Negative	Very
Free Education	Very Positive	Neutral	Negative	Negative
Poverty Alleviation	Very Positive	Positive	Neutral	Very
Technological advancement	Very Positive	Neutral	Negative	Negative
Denomination	Very Positive	Neutral	Negative	Very
Human Development	Very Positive	Positive	Negative	Negative
Crime Control	Very Positive	Neutral	Very Negative	Very
Civil Unrest	Very Positive	Neutral	Negative	Negative
Ethic & Regional Tension	Very Positive	Positive	Negative	Very
Medical Support	Very Positive	Positive	Negative	Negative
Elderly Care facilities and	Very Positive	Positive	Negative	Very
support	Very Positive	Positive	Negative	Negative
Legal Rights	Very Positive	Positive	Negative	Very
Environment protection	Very Positive	Positive	Positive	Negative
Fair Policies	Very Positive	Positive	Negative	Very
Globalisation	Very Positive	Negative	Neutral	Negative
Bold Initiatives	Very Positive	Positive	Neutral	Very
Foreign Investment	Very Positive	Positive	Negative	Negative
Modernisation	Very Positive	Neutral	Negative	Very
Illicit mining and illegal	Very Positive	Positive	Negative	Negative
trading	Very Positive	Neutral	Negative	Very
Agriculture climate				Negative
Training of workforce				Very
Middleclass ratio				Negative

Source: Researcher's Own Construction

Table 5.7 have been addressed the crosschecking for internal consistency and the attempt to identify the significant differences. The first scenario, the 'Mandela's Dream' scenario, is the only scenario whereby the government is perceived to deliver equitably on people's post-election expectations. In 'The Good, the Bad and the Ugly', emphasis is placed on economic development and moral issues, leading to improvement in social conditions, but these are achieved at the expense of democratic principles of governance. Whereas in the 'Pyramid' and 'Historical

African Syndrome' scenarios, altering degrees of dissatisfaction sets in, with unpleasant consequences, such as the incapability to create employment for a young and restless population or the inability to deliver the social services needed all over the country. There is also rising discontent with nepotism and corruption, both by the population and the international community. Cultural and ethnic tensions are also results of these developments.

Dissatisfaction is only kept under control in scenario 2, the 'The Good, the Bad and the Ugly', but the resulting tension and perceived government let-down scare off high quality investors and donors, who are vital for economic growth. In the 'Historical African Syndrome' scenario, it can lead to coups, and South Africa slips down the gloomy path of incessant civil unrest and major poverty, combined with pockets of wealth, mainly gained illegally. In the 'Mandela's Dream' scenario, donor funding for the rebuilding process as well as good international relations and the assurance in the government's promise to reform is achieved. This is partly achieved in the second scenario, the 'The Good, the Bad and the Ugly' scenario. However, in the 'Historical African Syndrome' scenario, the community gives up on South Africa.

In the 'Mandela's Dream' scenario, the strong links between political, social, economic and moral (cultural) forces are evidently demonstrated. However in the 'Historical African Syndrome' scenario, bad practices in all four links, lead to tragedy. In the 'The Good, the Bad and the Ugly' scenario, importance is put on correct political and social processes, but tepid efforts at the economic development and lack of will to undertake moral and cultural issues, lead to only moderate success. In the 'Mandela's Dream' scenario, bold proposals are undertaken to tackle the country's problems, which acquires local and international support and ultimately, economic and social success. The South African government is observed as serving the needs of the people and not feeding their personal desires for enrichment. In the 'The Good, the Bad and the Ugly' scenario, commitment to improving the lot of the people is seen to be less fulfilling, whilst in the 'Historical African Syndrome', it is everybody for him or herself.

5.6 SUMMARY

The proposed four scenarios above are multifaceted, and many more comparisons and messages can be elaborated. The proposed scenarios are not predictions, but merely four possible stories of how South Africa could develop, based on important variables and uncertainties. The significance of these scenarios is to learn from them in setting the strategic agenda for the future. The next chapter will discuss the recommendations and conclusions for this research effort.

CHAPTER 6

RECOMMENDATIONS AND CONCLUSIONS FOR SOUTH AFRICA TOWARDS 2055

6.1   INTRODUCTION

Humankind's understanding of what drives national prosperity has evolved over time. Natural resources, population growth, industrialisation, globalisation, geography, economics and productivity might have all played a role in the past. Researchers also know that the relative importance of these drivers has shifted over time, and that in recent decades, more importance has been given to the coherence and quality of policies and the development of supporting institutions (López-Claros & Mata, 2010; Pavlidis & Noble, 2001). A relative newcomer to this debate identified as perhaps one of the most important modern engines of productivity and growth has been the innovation excellence of a country; that is, its industries, researchers, developers, creative thinkers, enlightened politicians, managers, and clusters (Ferguson, 2008; UN, 2012a; World Bank, 2013). This chapter will also incorporate the role of innovation in promoting economic and social development. In particular, this research effort will consult the Innovation Capacity Index (ICI), a tool for assessing the extent to which nations have succeeded in developing a climate that will nourish the potential for innovation. The Innovation Capacity Index also allows policymakers and entrepreneurs around the world to examine the broad range of country-specific factors which underlie innovation capacity, creating a quantised framework for formulating and implementing better policies for the creation of a country specific environment supportive of innovation (ICI, 2013).

The previous chapter discussed four proposed scenarios for South Africa towards 2055.   This chapter will address stages 4 and 5, mainly to recommend new strategies as well as setting up an Umbrella Vision for South Africa towards 2055. This chapter will also conclude with proposals for change navigation and establishing a set of practical recommendations applicable to a developing world context for South Africa towards 2055.

6.2   VISION AND STRATEGIES

What should the Republic of South Africa look like in the year 2055? This research effort initiative intends to assess this important question by developing a long-term Umbrella Vision towards 2055 for South Africa to better achieve South Africa's long-term goals.

As part of **stage 4** (use and assess), **step 7** of the South African scenario-based planning process is to review existing strategies and to develop new strategies as well as the setting of a vision for South Africa. A national vision needs to represent the objectives of the people and should provide pride, hope and a sense of purpose for the nation (Brinkerhoff & Goldsmith, 2005). The proposed national Umbrella Vision that is offered in this recommendation depicts an achievable, realistic and sought-after future that could become the foundation for South Africa's national development. This is essential in order for the Umbrella Vision to rejuvenate South Africa towards the realisation of a desired future. In the earlier chapters, two main issues were focused on: the developmental framework facing South Africa and that of the possibilities for the future was highlighted in the four scenarios. The most positive scenario, the "Mandela's Dream" scenario, presents a surprise-free prognosis and illustration of the future that all South Africans would like the country to recognise, i.e. the national proposed Umbrella Vision toward 2055. Additionally, it supplies ideas on the fundamental steps that should be utilised for national transformation.   This chapter further describes the elements of the proposed Umbrella Vision towards 2055, as well as indicating actions that should be taken for this realisation.

6.2.1 UMBRELLA VISION

This proposed Umbrella Vision is a statement or affirmation that captures the community's ideas and aspirations for the future. It emphasises the unique strengths of South Africa as a whole and the core outcomes that will result from a successful South Africa 2055 partnership. Two thousand one hundred and ninety-two (2 192) South African individuals provided the researcher with their ideas for an umbrella vision of South Africa towards 2055. The researcher posed an open-ended question

to respondents (that have a personal interest in South Africa) about how they as respondents would like to see South Africa's future towards 2055. Each respondent provided short-ended statements (such as the need for a non-racial South Africa, abolishment of BBBEE, a technology driven nation, crime free living and a well-governed society, recognition of all cultural groups, economic growth etc.) From all the proposed statements, the researcher formulated the proposed umbrella vision for South Africa towards 2055. This was done through social media efforts (i.e. LinkedIn, Twitter, SMSs) personal interviews and email correspondence during the course of 2012 and 2013. One thousand one hundred and twenty-one (1 121) blacks, five hundred and thirty-four (534) whites, two hundred and eighty-four (284) coloureds, ninety-seven (97) Indians and fifty-six (56) other foreign nationals provided the researcher with fundamentals as a direction for the following proposed Umbrella Vision: One thousand and sixty five (1065) respondents are representative of geographical South Africa and fifty six (56) foreign nationals are South African respondents currently living abroad in countries such as England, Ireland, Wales, Australia, Holland, United States of America and New Zealand.

In 2055, the Republic of South Africa is a vibrant, resilient and complete community. People of all ages, ethnicities, religions and backgrounds want to live in our country, because it is a great place to live in and many sustainable business opportunities are available. We value and nurture our unique blend of major cities, small towns and rural ways of life, our safe, well-educated and healthy communities, our beautiful landscape, our agreeable climate and our neighbourly and generous Ubuntu spirit. There are no more social identification divides, especially in our economic and governance efforts. We are all given fair opportunities to work, to provide for our families and through productivity, contribute towards the tax effort of this country. Through Science, Technology and Innovation, we have built strong working partnerships over the past 40 years. Together we are driven to sustain a healthy balance between our rural, urban and Westernised ways of life. Our communities reap the benefits of our robust farms and agricultural services, our multifaceted economy, our proximity as the economic powerhouse of Africa, our knowledge-based institutions, our world-renowned cultural environment and scenic landscape. Our productive local governments and communities work alongside an active, concerned and engaged public ensuring good governance. We have established a

regional land-use framework, used by everyone to guide and direct decision-making. Our well-governed local governments collaborate, accept joint responsibility for decisions and act to achieve our common sustainable future. Together, we steward our natural and human resources carefully, wisely, seeking opportunities to be more efficient, while celebrating our strong history of being the breadbasket for Africa. Collectively the citizens of South Africa in doing this strove responsibly to end extreme poverty in all its forms and in the context of sustainable development to have in place the building blocks of sustained prosperity for all in South Africa. The gains in poverty eradication became irreversible.

Spies (1982) argued that a country's success is determined by its ability to adapt to changing dynamics and utilise them to realise national goals. Successful governments are therefore those that specialise in their unique assets, develop rapidly and then benefit from the wealth and prosperity of the development; whereas underdeveloped states without a clear direction are becoming increasingly marginalized. Therefore, it is very important for South Africa on a country level to focus on policies in line with the rapidly changing conditions of the world and to then determine the principles required to apply these policies successfully (Eriksson, 2012).

In the absence of the political struggle between socialism and capitalism, countries, and increasingly cities and regions in need of development, have taken to development visions (Eriksson, 2012a; Schwartz & Schulman, 2012). The emergence of visions are based on the assumption that when a government takes the lead in preparing and implementing its own strategy, development efforts are more likely to succeed (Eriksson, 2012b; Brown, 2006). An early experience was the 'New Deal' of the United States of America in the 1930s. The 'New Deal' was a series of economic programs enacted in the United States between 1933 and 1936. The 'New Deal' also involved presidential executive orders or laws passed by the USA Congress during the first term of President Franklin D. Roosevelt. The programs were in response to the Great Depression, and were focused on what historians called "the 3 Rs": Relief, Recovery, and Reform. That is, Relief for the unemployed and poor; Recovery of the economy to normal levels; and Reform of the financial system to prevent a repeat depression (Eriksson, 2012c). In the past 20

years, a number of developing countries have defined and implemented a country vision, many with good success and a few with reduced good outcomes.

Table 6.1: Examples of country visions

Country		Vision	Central theme of the vision
	Malaysia 1991	Vision 2020	Malaysia to be a fully developed country by 2020
	Nigeria 1996	Vision 2010	To build and sustain a democratic society and to become Africa's leading economy
	Singapore 1997	Singapore 2010	To turn Singapore into a "globapolis", a global city
	India 1998	Vision 2020	India to be counted as a developed nation by 2020
	Rwanda 1999	Vision 2020	Reconstruction of the nation and its social capital anchored on good governance
	Abu Dhabi 2009	Vision 2030	Establishing a common framework for aligning all policies and plans that contribute to the on-going development of the Emirate's economy

Source: Eriksson, 2012

Important success factors in developing a country's vision are to start with an assessment of the country's unique assets, then to mobilise of all the proposed

actors in Figure 6.1 below and then to plan processes involving frequent feedback loops, in order to mobilise and energise all stakeholders.
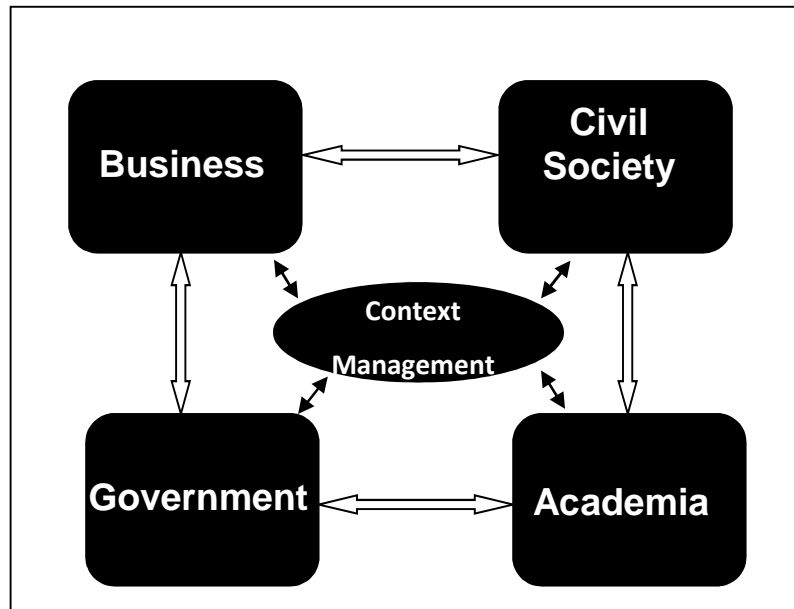
Figure 6.1: Quad development model
Source: Eriksson, 2012

It is therefore important to work with communication and international networking, to promote the interest of the particular country. In general, the building of international networks presupposes at least three aspects; namely a strong, high energy and focused drive; a vision with inbuilt milestones and precisely defined attractions, and language of intercultural competence (Eriksson, 2012d). Such efforts take time and energy to achieve and must be pursued beyond 'lip service' or letters of intent or memorandums of understanding. Such memorandums sometimes represent the sole milestone for consumption by the local audience. After a year or two, such memorandums are forgotten and the ambitious efforts could rather be defined as "sloganeering" – a too common approach in the world of place management (Eriksson, 2012e). Therefore, to overcome the hurdles an energetic management effort is a must. A meaningful vision also presupposes a strategy with an action plan, including milestones and containing answers to the following questions:

- Who is responsible at each level and for each item?
- What exactly should be done for successful implementation?

- Which basic financial resources are necessary and what stands on the income side?

- What is the timeline for the main attraction projects, including the expected completion dates?

- What are the most important milestones and what are they dependent on?

The strategy for accomplishing the proposed vision is not an optional extra as the strategy formulation is an integral part of the vision itself. There are four basic questions which the strategy formulation must answer:

- How do we break down our proposed unique selling points into strategies to reach our priority target groups and subgroups?

- Which overall resources and tools do we have to support our proposed unique selling points?

- How do we secure operational platforms to implement the vision?

- Who will be responsible for what and with what competence?

On the region and national level, researchers often complain of having developed vision statements that are not clear or not effectively communicated and used as a guide to shaping policies and priorities, re-thinking investment programs or inducing various stakeholders to act (Eriksson, 2012f; Williams, 2000). Often visionary plans are written elegantly, using the latest 'buzzwords' and printed in full colour for the citizens to read. Quite often one then meet hordes of frustrated citizens complaining about the complete lack of realised results which could give the necessary feedback stimulation in the place development process (Eriksson, 2012g; Haile, 2012). A compensatory approach by the politicians is then to overbook the calendar with pointless meetings and events with no or little strategy behind them or to look occupied is one popular solution to tackling the frustration (Eriksson, 2012h; Hallé, 2007).

Some organisations are masters in developing new visions in the form of strategic documents. These are often prepared in close cooperation with a strategy consultancy company living in a world of abstract concepts, stereotypes or even

slogans, or worse, authored in cooperation with a marketing firm (Eriksson, 2012i; Kärreman & Rylander, 2008). An interesting observation is that many "visions" do not highlight any attraction points of relevance for the business community. Visions do not engage in detailed business facts and figures because some consultants have very seldom done this before or they have limited local knowledge. Instead, some consultants "import" various stereotypes and concepts to the place with only a very superficial character beyond relevance (Eriksson, 2012j; Barber, 1995). When observing the resulting strategy documents citizens are often left with a sense of déjà vu: this text has been written before. Often, a standardised SWOT analysis is introduced somewhere along the process and the latest 'buzzwords' are normally inserted and reshuffled in a slightly changed order from place to place (Eriksson, 2012k; Cohen, 2010).

Figure 6.2: The capital dilemma – with or without direction?
Source: Adapted from Eriksson, 2012

Figure 6.2 indicate two different "Capital" approaches and eight examples of each. In the first category there is a business direction incorporated. In the second category, there is no direction – only a geographical approach leaving the target audience in uncertainty about the real content.

A second problem is that some visions emerge without any details or concrete projects because there might be vested interests somewhere in the system. "Keep all doors open" might be the internal and informal unspoken thinking. On top of that,

a diplomat might not appreciate being measured too easily or concretely afterwards. Therefore, the strategy to "keep all doors open" might be a tempting solution. The problem is then that citizens are left with too many options and loose ends. This in turn often leads to requests for yet another planning team, another rethinking round or even a new vision (Eriksson, 2012l; Buchanan, 2012). A third problem, closely related to the second, is that visions have been worked out during a long process where delicate and internal negotiations have taken place all ending up in full harmony. Striving towards consensus has arguably eliminated most surprises and innovations. The uniqueness and the brave outside-the-box thinking have thus disappeared in a diplomatic melting pot (Eriksson, 2012m; Smith & Thomas, 2001). This might be seen as an appropriate compromise since being a diplomat is normally understood as a positive personal characteristic and a positive strategic position (Eriksson, 2012n; Evans, 2006). What is called for is the attitude to be the 'devil's advocate' and ask the unpleasant questions and challenge participants. A fourth problem is that a living understanding of business climate and business development tends to be weak among diplomats with one foot in the public sector. Especially in South Africa, there has been a long established pattern of first and foremost relying on the public sector actors themselves in most place strategy missions (Eriksson, 2012o; Williams, 2008). Thus, a mission might be interpreted as a well-elaborated strategy, with a logical and "balanced" structure, but in fact have little or no business relevance or chance of long-term survival in the real world (Eriksson, 2012p; Rumelt, 1979).

The proposed Umbrella Vision towards 2055 is based on three pillars of development: the economic, the social and governance. These are supported by a foundation of enablers, such as initiatives for macro-economic stability, development of an innovation strategy, an inward investment strategy, governance reform, development of infrastructure and energy production, and so on.
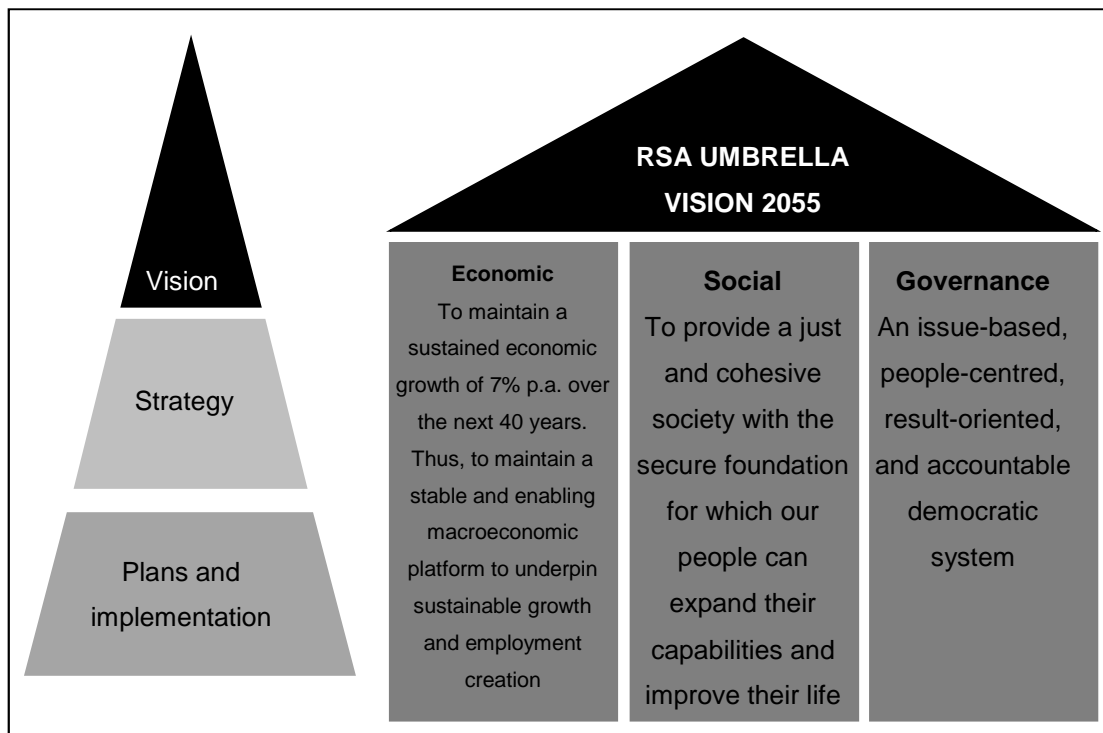
Figure 6.3: Three pillars of development for RSA's proposed umbrella vision towards 2055

Source: Researcher's own construction

The proposed Umbrella Vision towards 2055 is anchored on three key pillars: Economic; Social; and Governance. The economic pillar aims for an economic growth rate of 7% per annum and sustaining the same till 2055 in order to generate more resources to also address the Millennium Development Goals (MGD) as proposed by the United Nations. The proposed Umbrella Vision towards 2055 identified a number of aspects in every sector to be implemented over the Umbrella Vision period to facilitate the desired growth that can support the implementation as well as that of the MDGs on a sustainable basis. In addition, the proposed Umbrella Vision has flagged out aspects addressing the MDGs directly in key sectors such as agriculture, education, health, water and the environment. The social pillar seeks to create just, cohesive and equitable social development in a clean and secure environment. The governance pillar aims to realise an issue-based, people-centred, result-oriented and accountable democratic system for South Africa towards 2055.

The justifications of the abovementioned segments of the proposed Umbrella Vision towards 2055 statement outlined above, are briefly explained as follows:

6.2.1.1 Foundations for the proposed Umbrella Vision towards 2055

The economic, social and governance sectors of South Africa's Umbrella Vision towards 2055 should be anchored on the following foundations, namely macro-economic stability, continuity in governance reforms, enhanced equity and wealth creation opportunities, infrastructure, energy, science, technology and innovation, business reform, human development, education, safety and security and public sector reforms.

6.2.1.1.1 Macro-economic stability for long-term development

South Africans appreciate the key role that macro-economic stability has played in the economic recovery and growth experienced by the country since 2004. This has resulted in low levels of inflation, limited public sector deficits, a reasonably stable exchange rate, and low interest rates. For this reason, South Africa's Umbrella Vision towards 2055 places the highest premium on the stable macro-economic environment and expects it to continue in the future as a matter of policy. This is the only scenario in which confidence amongst investors can be created and sustained. A stable economic environment also works in favour of the poor who stand to lose the most in periods of high inflation. South Africa should therefore enforce enhanced equity and wealth creation opportunities for the poor as no society can gain the social cohesion forecasted by the Umbrella Vision towards 2055, if significant sections of South Africans live in abject poverty. To that extent the proposed Umbrella Vision towards 2055 also includes equity as a recurrent principle in all its economic, social and political programmes.

Special attention however has been given to investment in the rural districts, communities with high incidences of poverty, unemployed youth, the uneducated and all vulnerable groups. Energy development recommended under the Umbrella Vision towards 2055 and overall economic growth will increase the demand on South Africa's energy supply. South Africa must, therefore, generate more energy and increase efficiency in energy consumption. The South African Government should be more committed to continued institutional reforms in the energy sector, including a strong regulatory framework, encouraging private generators of power, and

separating generation from distribution. New sources of energy will need to be found through exploitation of geothermal power, coal, renewable energy sources, and ensuring that South Africa becomes the energy-surplus country in the Sub-Saharan region. By 2055, it will become impossible to refer to any South African region as "remote". To ensure that the main objectives under the economic pillar are implemented, investment in South Africa's infrastructure needs to be given the highest priority.

6.2.1.1.2 Continuity in governance reforms

South Africa should strive to be fully committed to continuing governance reforms. These will need to be deepened and accelerated in order to create a better environment for doing business, and for the full enjoyment of individual rights that South Africans are entitled to under the Constitution. Toward that end, the South African government will need to intensify anti-corruption programmes through better investigation and prosecution; eliminating discretionary decision-making in a public service that is prone to bribery; public education and judicial and legal reform. The South African government should also recognise that in an open, democratic society such as South Africa, the people themselves, Parliament, civil society, and a vigilant press are the ultimate defence against abuse of office. Land is also a critical resource for the socio-economic and political developments spelt out in the Umbrella Vision towards 2055. Respect for property rights to land, whether owned by communities, individuals or companies, is an important driver of rapid economic transformation everywhere. The transformation expected under the Umbrella Vision towards 2055 is dependent on a national land use policy, which, therefore, must be completed and finalised as a matter of urgency. The policy should facilitate the process of land administration, land registries as part of the establishment of a National Spatial Data Infrastructure in order to track land-use patterns, and the introduction of an enhanced legal framework for faster resolution of land disputes.

As part of civil service, an efficient, motivated and well-trained public service will be one of the major foundations of the Umbrella Vision. South Africa will need to build a public service that is citizen-focused and results-oriented, a process whose achievements should receive international recognition and commendation towards

2055. The South African government will need to intensify efforts to bring about an attitudinal change in public service that values transparency and accountability to all the citizens of South Africa. Results based management, productivity and performance contracting will be fundamental to the implementation of the Umbrella Vision's goals, making it easier to reward public servants on merit, productivity and performance. Reforms in the public service will also further enhance strategic planning in government, continuous improvement, and stakeholder engagement. The overall ambition for the security sector under the Umbrella Vision is "a society free from danger and fear". The South African Government should be determined to improve security in order to attract investment, lower the cost of doing business and to provide South Africans with a more secure living and working environment. Specific strategies will need to involve: improving the practice of community policing; reducing the police to population ratio to recommended UN standards; adopting information and communication technology (ICT) in crime detection and prevention; enhancing police training and use of modern equipment in law enforcement. All these measures must be supported by accelerated reforms in the judiciary.

6.2.1.1.3 Social development

By 2055 the majority of the working age South Africans should be employed and everyone should enjoy a high standard of living. Those of the citizens in need of the basic standards of living will have to be assisted by well-governed social service projects. Problems such as hunger, malnutrition and micronutrient deficiencies that affect physical growth and cognitive development, especially amongst children should by then have all been addressed. Vulnerable people groups such as poor women and people with disabilities should enjoy the full protection provided under the Constitution. The proposed Umbrella Vision towards 2055 aspires for South Africa to be firmly interconnected through a network of roads, railways, ports, airports, and waterways coupled with telecommunications. It should also provide for water and modern sanitation facilities for all her people.

The Umbrella Vision towards 2055 proposes intensified application of science, technology and innovation to raise productivity and efficiency levels across South Africa. It recognises the critical role played by research and development (R and D)

in accelerating economic development across the board. The South African Government will need to create a Science, Technology and Innovation policy framework to support the Umbrella Vision towards 2055. More resources will need to be devoted to scientific research, technical capabilities of the workforce, and in raising the quality of teaching mathematics, science and technology in schools, colleges and universities. South Africa should also intend to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrialising economy. This should be done through life-long training and education. As a priority, a human resource data base will need to be established to facilitate better planning of human resources requirements in the country. Furthermore, steps will need to be taken to raise labour productivity to international levels. Other steps will need to include the establishment of new technically focused training institutions, as well as the enhancement of closer collaboration between industry and training institutions.

6.3   TOWARDS A SUSTAINABLE SOUTH AFRICAN SOCIETY

A 'sustainable society' is commonly used to describe a society that is economically viable, environmentally sound and socially responsible (Haris, 2004). Developing a gauge of economic, environmental and social progress has been on the international agenda for at least two decades (first publication of the Human Development Report in 1990). Additionally, the banking crisis of 2008, which led the world to the brink of financial disaster and shook the dominant economic model to its foundation, had a paradoxical effect on GDP: it increased its pertinence as a universal and easy mode of measurement of the progress and setbacks of states in preserving a level of economic activity, but it has also stressed the need to revitalize another conception of growth, that goes beyond pure economic parameters (Burger-Helmchen, 2012). At the time of writing this report, a Google search on sustainability gave 124 million hits, whilst a search on Gross Domestic Product (GDP) resulted in merely 22 million hits. Certainly, this simple anecdote does not prove that sustainability is more important than GDP. Nevertheless, it may indicate that the concept of sustainability is already well rooted as a concern in people's daily lives. In a world with over seven billion people, there is urgent and constant need of new analytical approaches to guide how to balance multiple competing and potentially conflicting public goals and connect

human development with the earth's capacity to sustain progress (Roussel, 2007). Without a framework to define and guide the measurement of sustainable societies, policy management will need to resort to assessments that are less transparent, more subjective and that lack standardisation across locations and through time (Warhurst, 2002).

A sustainable society is a society that (a) meets the needs of the present generation; (b) does not compromise the ability of future generations to meet their own needs, and (c) in which each human being has the opportunity to develop itself in freedom within a well-balanced society and in harmony with its surroundings (WCED, 1987). In South Africa, there is an urgent and constant need for analytical approaches to guide how to balance multiple competing and potentially conflicting public goals and connect human development with South Africa's capacity to sustain progress. Without a framework to define and guide the measurement of a sustainable society, policy management will resort to assessments that are less transparent, more subjective and that lack standardisation across locations and through time (Saisana & Philippas, 2012).

The present real-world challenges require dealing with poverty, inequality, food insecurity, exponential population growth; pandemic health problems such as avian and swine flues, HIV/AIDS; conflict and violence; human-induced climate change and its effects, resource scarcities, environmental destruction through habitat destruction, loss of biodiversity, chemical poisons, pollution and wastes, as well as crises in economic and financial institutions and in states (Muller, 2009). These challenges are interlinked, complex and 'wicked', requiring some form of integrated solutions (or at least looking at the relationships and interactions between these challenges). The main challenges that need to be addressed are the search for the new ways of human progress and well-being, shared by all on the planet, without further personal destruction of environments as the basis of human survival. In the developing world, as well as South Africa, the present focus on material progress to the exclusion of almost anything else, seems to be based on a misguided belief that problems can wait to be resolved until after the poverty problem has been eliminated (Feeley, Finkel & Phelps, 1995; Callinicos, 1996). However, South Africans

unfortunately do not have that luxury and sustainable development requires that South Africans address these challenges simultaneously.

The diversity of meanings and opinions regarding sustainability sometimes ignores that there are some inherent, non-negotiable elements of the concept, namely the importance of the environment, a longer term view of problems; some element of equity (intergenerational, not also intra-generational and even inter-species equity) and the linkages between social, economic, environmental, as well as institutional and built environment (including technological) challenges (Allen & You, 2002: 16). Sustainable development has been described as linking green, brown and red agenda issues (Cock, 2004; Muller, 2006), but essentially sustainability is about making connections between ideas and people (Muller, 2006). Some of the most important interpretations of sustainable development are the need for radical behavioural, institutional and policy changes and to re-create the way South Africans think and behave, requiring making a mental and paradigm shift, unlearning, continual innovation, creativity and co-learning (Kahane, 2012; Barnum, 2010; Muller, 2009). This also draws attention to the role of adaptation, change and transition management (Shove & Walker, 2007; Rotmans & Kemp, 2008; Demers, Forrer, Leibowitz & Cahill, 1996; Muller, 2009) and of learning organisations (Senge, 1990; Lonsdale, Gawith, Johnstone, Street, West & Brown, 2010; Muller, 2009).

The present time of change in the world and in South Africa is the ideal opportunity to reflect on development, the developmental state and the role of planning and the state in promoting a more sustainable future (Gough & Sharpley, 2005; Muller, 2009). Globally the recent financial crises and their effect on economic development have made many question the neo-liberal ideology, which led to the rolling back of the state. There also seems to be some fresh energy within the present South African government era, with the opening up of policy debates, the new focus on the developmental state and the soon to be established national planning commission (Republic of South Africa, 2009). Hopefully this is the start of an era of more transparency, openness and participation in policy processes.

Jayasuriya (2006: 383) also reminds us that even "the state is not an 'entity', but a complex and constituted set of relationships between frameworks of political

authority and the international political economy, domestic social forces, and the broader ideational notions of authority or stateness". This focus on relationships brings to the fore the tension between the role of the state and building out the freedom of civil society, communities and the business sector (Chambers, 2003; Muller, 2009). It has already become clear that rolling back the state can be blamed for some of the present problems experienced in South Africa, but too centralised a state can also be blamed on not recognising and supporting the creativity of and need for participation by communities (Stiglitz, 2013). The recent and earlier waves of strikes and service delivery protests, as well as the "very high levels of anomie (people like me cannot influence developments in my community) and alienation (no-one cares about people like me)" found in the study by Meth (2007: 95) are examples.

One of the main elements of the developmental state is that of development planning, which can also potentially have many different meanings (Evans, 1995). In the South African context it is seen as a form of technical or rational planning (Republic of South Africa, 2009: 40), following in the footsteps of most of the developmental states. The July 2009 Medium Term Strategic Framework (Republic of South Africa, 2009) argues about improving the capacity of state, the need for medium and long-time planning, and also makes liberal use of the popular concepts of 'accountability', 'transparency' and 'effectiveness', but provides no details on how this will be achieved (Jung & Paremoer, 2007; Muller, 2009; De & Saha, 2012).

Pro-active planning, as the opposite of ad hoc and crisis management (muddling through), is indeed an important element of promoting sustainable development (Buxton, Greene & Salonius-Pasternak, 2006). A longer term view of problems is therefore necessary, as solutions to earlier problems end up becoming the problems of the future, as we unknowingly shift problems from one part of the system to another (Senge, 1990: 58). Muller (2009) argues that South Africans should also start addressing the structural causes of unsustainability instead of dealing with the symptoms. Brewer (2007: 165) points to the critical need to increase lead (or response) times through planning, "the time between the present and when in the future the system can still be forecast" (Brewer, 2007: 165).

Sustainable development is therefore about change and transformation at various levels, from the need for changes in technology, urban form, having to adapt to climate change and the need to change our behaviour in relation to consumption, waste and land development (Jessop, 2002). Planning and policy-making processes are therefore important arenas for this change in South Africa, but must take note of complexity thinking. In the business world, an extensive literature exists about transformation. Kotter (1995, 2007) is well-respected for the 8-step transformation process, which requires the creation of a sense of urgency; building a powerful guiding coalition or team; getting the vision right; communicating the vision for buy-in and teaching new behaviour by example of the guiding coalition; empowering others to act on the vision; planning for and creating short-term wins; consolidating and creating more improvements and institutionalising these new approaches as part of a company's culture. These elements are just as important for public transformation processes, but the vision and guiding coalition should be shared by communities, civil society organisations, and the business sector, as well as the various elements of the state and state-owned enterprises (Muller, 2009).

The human wellbeing dimension is also populated with ten indicators that measure: the number of undernourished people and the number of people with sustainable access to an improved water source (both expressing conditions for the development of an individual), number of people with sustainable access to improved sanitation (a condition for the prevention and spreading of diseases that would severely hamper a person's development), life expectancy at birth in number of healthy life years (condition for development of each individual in a healthy way), air pollution in its effects on humans and surface water quality (both expressing conditions for human health), enrolment for primary, secondary and tertiary education (condition for a full and balanced development of children), gender gap index (condition for a full and balanced development of all individuals and societies at large), ratio of income of the richest 10% to the poorest 10% of the people (fair distribution of prosperity is a condition for sustainability), average of the six Governance indicators of the World Bank (condition for development of all people in freedom and harmony, within the framework of international rules and laws) (Heynen & Robins, 2005).

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On the other hand, the environmental wellbeing dimension is populated with six indicators that describe: emissions of SO2, a proxy for air pollution in its effects on nature (condition for ecological health), size of protected areas (condition for perpetuating the function of nature in all its aspects), annual water withdrawal as percentage of renewable water sources (measure of sustainable use of renewable water resources in order to prevent depletion of resources), ecological footprint minus carbon footprint, a proxy for consumption (as a measure of the use and depletion of material resources), renewable energy (as a measure of sustainable use of renewable energy resources in order to prevent depletion of fossil resources and to reduce GHG emissions), CO_2 emissions per capita, a proxy for greenhouse gases (a measure of main contribution to climate change, causing irreversible effects) (Bampton, 1999; Michon, 2008).

Finally, the economic wellbeing is also described by five indicators: organic farming (a measure for progress of transition to sustainability), genuine savings (a measure for the true rate of savings, essential for sustainability), gross domestic product (a partial measure for the growth of the economy), unemployment in the labour force (with the rationale that access to the labour market is a condition for wellbeing for all people), and public debt (a measure of a country's ability to make independent decisions with respect to budget location).
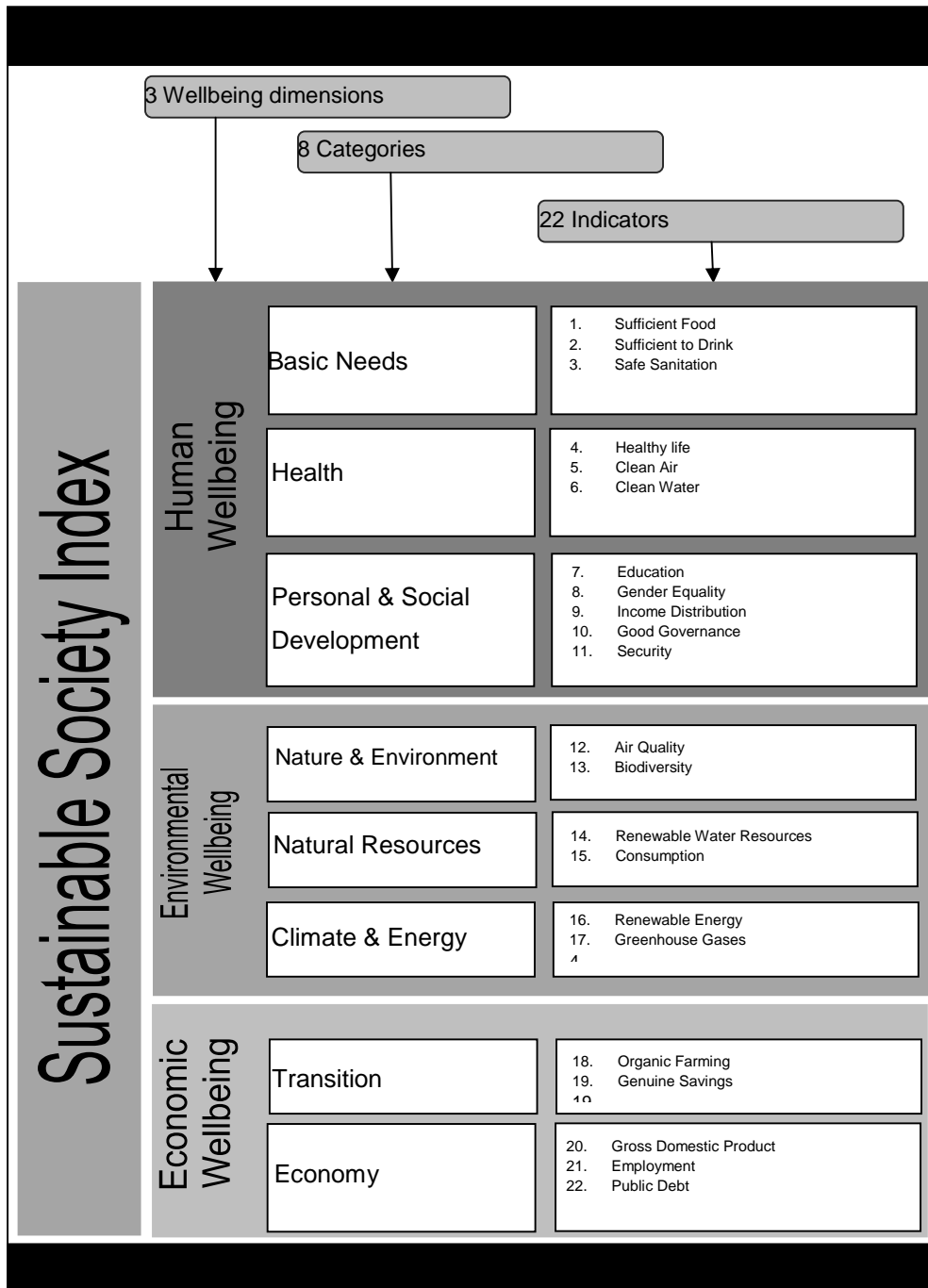
Figure 6.4: Framework for the Sustainable Society Index
Source: Sustainable Society Index SSI-2012

6.4   STRATEGIC ISSUES

The South African government's strategy to date has been to provide a range of social services, including social security (NDP, 2011). Because of the uneven capability of the state, South Africa has excelled at doing the things that are easier, such as paying grants and providing water and electricity, and faltered at doing the difficult things such as improving education, promoting employment and building

houses close to jobs (NDP, 2011). By default, South Africa has had a distorted development effort. A more capable state, in partnership with communities, must build on the platform of social services and social security and contribute towards a more balanced approach by developing the capabilities of people (NDP, 2011). Developing and upgrading capabilities to enable sustainable and inclusive development therefore requires a new approach and a new mind-set. This should include creating jobs and livelihoods, expanding infrastructure, transitioning to a low-carbon economy, transforming urban and rural spaces and improving education and training. Quality healthcare should be provided as well as building a capable state, fighting corruption and enhancing accountability and transforming society and uniting the nation (NPC, 2011).

Leadership, unity and cohesion are difficult in South Africa's society. Yet these are the very aspects that help to anchor successful nations and development strategies (Andrews, 2009). Leadership is required to win broad agreement for the strategy, to implement it and to make sacrifices for a better future. A capable, efficient and fair state is also needed to support it. Partnerships, based on mutual trust are therefore also vital. Unless South Africans work together, sacrificing short-term gain for longer-term prosperity, no single part of the South African society can achieve its objectives (NDP, 2011). Similarly, most aspects of the proposed Umbrella Vision towards 2055 are aimed directly at improving the life chances of today's children and youth. A country with a future orientation is a country that develops the capabilities of its youth. Whether still in school or not, South Africa's strategy must improve the life chances of young people (UNESCO, 2012).

The vital stage in the development of strategies is for South Africa to identify strategic issues (Scribner, 2008; Strategies for National Transformation, 2003). Together these strategic issues create the opportunities between today and the preferred future, and become the foundation for forming appropriate strategies, programmes, action plans and projects for South Africa towards 2055. When the issues are recognised, the next procedures are to expose why the strategic issues are significant, what the planning objective for each issue will be and what actions should be carried out in order to address each strategic issue. The strategic issues, consequently, offer the areas that must be addressed in order to guarantee that the

proposed Umbrella Vision is understood. The key strategic issues are highlighted in Table 6.2.

Addressing these issues will then provide the guidelines that could be confronted in order to achieve the national vision. Table 6.2 summarises strategic actions for addressing the issues identified. The details of these strategic actions are outlined further on in this chapter. The following step is to identify the strategic frameworks that create the stepping stones for the realisation of the vision. These consist of Economy, Employment, Infrastructure, Education, Training and Innovation, Health, Social Protection, Corruption and Society (Strategies for National Transformation, 2003). These issues need to be contemplated and addressed in order to clear the obstacles for accomplishment of the proposed Umbrella Vision towards 2055.

Table 6.2: Key Strategic Issues for Attainment of the Proposed Umbrella Vision Towards 2055

-How to attain a competitive private sector-led economy with effective participation.
-How to ensure good governance and broad based growth to build a prosperous nation.
-How to provide for and create a high quality of life for all South Africans.
-How to create a tolerant, stable, secure and well-managed society based on democratic values.
-How to ensure law and order restored to build safer communities in South Africa.
-How to build a well-educated and enlightened society.

Source: Researcher's own construction

6.5   PRACTICAL GUIDELINES FOR SOUTH AFRICA

This report will now outline a set of practical guidelines in order to identify proposed actions needed in each area. The actions are summarised as follows:

6.5.1 Achieving a competitive private sector-led economy with successful indigenous involvement

- Develop socio-economic infrastructure (energy, water and sanitation, roads and network)

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- Promote private sector involvement in the generation and sale of electricity nationwide

- Improve economic environment

- Create more export opportunities

- Provide tariff protection for new businesses

- Strengthen trade ties with neighbouring countries (i.e. SADEL and BRICKS)

- Reform financial sector

- Encourage indigenous ownership of business

- Improve internal and external trade

- Provide assistance to local companies that compete in the international markets

- Add value to raw materials before export

- Increase investment in market infrastructures

- Improve management of petty trading system

- Improve transport and communications services

- Co-ordinate and effectively utilise foreign aid

- Develop a strong industrial base and strengthen production linkages

- Stimulate regional integration

- Establish industrial complexes to serve the BRICS Countries

6.5.2 How to ensure good governance and broad based growth to build a prosperous nation

- Strengthen the capacity of all government institutions responsible for the formulation and implementation of policies and programmes for effective town and country planning

- Reform and enforce town and country planning regulations providing for appropriate land use planning nationwide

- Promote land use patterns that improve urban and highway traffic flows and provide pedestrian and cyclist areas especially in the city centres and new settlements

- Establish well-developed regionally balanced socio-economic infrastructure and public services nationwide

- Liberalize the provision of information and telecommunications services nationwide

- Increase the use of modern management and communication techniques to further good governance at all levels of society

- Promote governance and private sector partnership in the provision of new information and communication technologies nationwide

- Ensure legal and accountability requirements are fulfilled

- Encompass and promote the organisational culture and values

- Provide leadership, direction and internal control of the organisation's internal functions

- Ensure the organisation's responsiveness to members and stakeholders and exercise collective authority on their behalf

- Commitment to quality and to integrity and ethical behaviour and practice

- Protect human rights. Custodial deaths, torture, degrading treatment of victims by law enforcing agencies, illegal detention and engaging somebody in any unethical profession or in any profession against his/her will are examples of the violation of human rights

- Accountability is the hallmark of good governance and lack of it breeds corruption and encourages highhandedness and excesses on the part of the executive organ of the state

- Encourage transparency, efficiency

- Proper functioning of legislature and judiciary

- Reduction of corruption: There cannot be co-existence between corruption and good governance. The Anti-Corruption Commission must be manned by honest and courageous people so as to daunt the corrupt elements.

6.5.3 Producing a good quality life for all South Africans

- Promote a healthy society

- Promote and encourage reproductive healthcare, child survival and responsible parenthood

- Develop comprehensive, integrated and balanced healthcare delivery services nationwide.

- Promote a decentralized healthcare management system

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- Encourage and train communities to participate and sustain their personal health and well-being, through personal hygiene, life-saving skills, safe water management, health infrastructure maintenance and environmental health

- Reduce incidence and prevalence of preventable diseases such as malaria, dysentery and communicable diseases including sexually transmitted diseases, tuberculosis and HIV/AIDS, and build capacity for research, care and counselling

- Attain food security and adequate nutrition

- Review and improve all government policies that impact on agriculture, including land development policy, input and product pricing policy, crop and livestock production policies, fisheries policy and forestry policies

- Set up a land commission to investigate the potentials of communal land tenure laws for accommodating the demands of commercial agriculture

- Pursue a trade liberalisation policy allowing all domestic production and marketing of commodities to be of high quality and to fetch competitive advantages

- Increase domestic cultivation of various crops including the staple food rice in those ecologies which are best suited to their production in order to realise the full economic benefits that accrue from specialisation

- Promote and intensify commercial farming in areas with comparative advantages.

- Provision of decent and affordable housing

- Encourage exciting labour intensive construction technologies and promote the standardisation of building components and plants

- Intensify training of local tradesmen nationwide in housing construction, maintenance and estate management

- Strengthen the institutional capacity of the Housing Unit within the appropriate Ministry to ensure that it can play a lead role for housing policy formulation, implementation, and monitoring

- Create new instruments to mobilize and sustain public and private sector financial resources for housing finance and encourage housing estate development

- Encourage financial institutions to develop a national housing mortgage scheme run by the SA government

- Promote gender equality and mainstreaming

- Promote the training and recruitment of females in the administrative and technical cadre in order to create role models for females

- Develop and enforce regulations that give women equal access to ownership of land and housing

- Encourage women's participation in politics at all levels; political parties should be encouraged to enforce quotas for women's representation in parliament and cabinet

- Provide support and equal opportunities to the disabled and other vulnerable groups

- Provide effective medical care, rehabilitation, support services and devices to the disabled and other vulnerable groups

- Empower the disabled and other vulnerable persons to exercise their rights to employment and provide them with social security

- Create employment opportunities

- Implement macro-economic and sectoral policies that promote the creation of employment

- Improve conditions of service for all categories of workers to enhance labour productivity

- Provide a comprehensive social security and pension scheme

- Promote equal opportunities in the job market and enhance tripartite consultations between government, employers and workers

- Rehabilitation and maintenance of the National Power Authority's (NPA) infrastructure and systems; establish procedures and divestiture instruments to privatize its operations

- Strengthen the government department responsible for water and sanitation (WAT/SAN) to perform a lead agency role and develop capacity to formulate, monitor and supervise projects and programmes

- Promote active user participation in rehabilitation/construction, maintenance and care of WAT/SAN facilities

- Increase community awareness of good hygiene practices relating to collection and storage of drinking water, use and maintenance of sanitary facilities and other environmental sanitation issues

6.5.4 Producing a stable, tolerant, secure and well-managed society based on democratic values

- Promote good governance and national reconciliation
- Complete the reintegration of ex-combatants and returnees into their communities of origin
- Establish institutional mechanism to promote cordial civilian/military relations and enhance Community Policing
- Strengthen and support the national security apparatus
- Strengthen the judicial and legal services
- Reform and strengthen the capacities of national institutions
- Strengthen the anti-corruption commission to effectively combat wide spread corruption
- Support decentralisation and local government administration

6.5.5 How to ensure law and order restored to build safer communities in South Africa

- Strengthen the criminal justice system – A safe South Africa will not be achieved without a strong criminal justice system. This requires cooperation between all departments in the justice crime prevention and security cluster. We all believe the correct implementation of the recommendations in the Review of the South African Criminal Justice System will go far in dealing with the system's current weaknesses
- Make the police service professional – A professional police service is essential for a strong criminal justice system. We propose linking the police code of conduct and a code of professionalism to promotion and disciplinary regulations. Recruitment should attract competent, skilled professionals through a two-track system
- Demilitarise the police service – The decision to demilitarise the police force, moving away from its history of brutality, was a key goal of transformation after 1994. The remilitarisation of the police in recent years has not garnered greater respect for the police officers and higher conviction rates. If anything, it has

boosted violence in the service and seen an increase in murders of police. The commission believes that the police should be demilitarised to turn the force into a civilian, professional service

- Build safety using an integrated approach – Achieving long-term, sustainable safety requires an integrated approach focused on tackling the fundamental causes of criminality. This requires mobilising a wider range of state and non-state capacities and resources at all levels and active citizen involvement and co-responsibility

- Build community participation in community safety – Civil society organisations and civic participation are critical elements of a safe and secure society. Local government legislation provides for establishing community safety centres to enable safe healthy communities. Establishing these centres should be considered.

6.5.6 Developing a well-educated and enlightened society

- Support basic education in the formal and non-formal sub-sectors
- Enhance functional literacy and other non-formal vocational training activities
- Increase participating at all levels of the educational systems
- Create special educational facilities for gifted children, the disabled and other vulnerable groups
- Develop new curricula for teaching and learning with emphasis on science and technical training
- Encourage the setting up of kids' clubs and other peer support groups in schools
- Strengthen tertiary education
- Train education sector personnel
- Encourage refresher training and training programmes for categories of teachers with emphasis on primary school teachers
- Promote training opportunities for tertiary education personnel at all levels and especially in science and vocational programmes
- Improve conditions of services for workers in the education sector
- Strengthen administration and management of the educational system
- Decentralize the administration and management of the educational system

- Improve data collection, information systems, libraries, and monitoring and evaluation systems for the education sector nationwide

- Promote the student loan scheme for tertiary education

- Construction and rehabilitation of schools

- Construct new primary and secondary schools in each chiefdom and rehabilitate existing ones

- Encourage the private sector to participate in school reconstruction

- Encourage and improve the teaching technology and science at all levels of education. Facilitate the dissemination of scientific and technological information

- Build and nurture scientific networks and promote collaboration with researchers in other countries

- Join and strengthen participation in regional and global research centres

- Strengthen and modernize library services and national archives

- Support and strengthen research and regulations relating to technology use and transfers

- Allow all cultures to enter university programs. Abolish culture quota, i.e. medical studies etc.

6.5.7 Achieving a competitive private sector led economy for South Africa with successful involvement

The current NDP (2011) proposes to treble the size of the South African economy by 2030, so that 11 million more work opportunities are created. The World Bank (2012a) indicates that there are many countries that achieve an accelerated rate of growth, but very few that sustain it as only 13 countries have grown at an average of 7% a year for 20 years. South Africa can and have to do much better than the 1-2% annual growth it produces year on end. The World Bank (2012b) further argues that about a 5% growth rate is needed to lift unemployment. If South Africa strives to be a sustainable member of the BRICS group of countries, the annual growth will need to be more than 5% otherwise the gap between South Africa and the other BRIC countries will widen even further. With South Africa's mineral wealth, the 'know how' and the strategic position in Africa coupled with all the inefficient competing countries in Africa, South Africa could actually achieve probably 7-10% annual growth

(Wellner, 2013) if the society pulls on the string. However, South Africa's finance minister, Pravin Gordhan argued in 2010 that South Africa's present economic trajectories cannot meet the country's employment needs and to achieve five million more jobs towards 2020, South Africa will need to seek growth of at least 6% a year to bring about a reduction in poverty and inequality.

Many of the developing countries have looked towards the East Asian experience, where governments have played a leading role in strengthening growth and spreading prosperity (Chang, 2008; Turok, 2008; Gumede, 2009; Parsons, 2009; Turok, 2010). Current interest also reflects a broader shift in thinking about the economic functions of the state following the global 2008/2009 financial crisis. For many years, it was fashionable to argue that markets are better mechanisms of resource allocation than the state. Yet the slump has forced unprecedented state activism in advanced economies to rescue failing banks and to spur recovery through major fiscal stimuli costing some $11 000 billion (BBC, 2009). This has magnified the concerns of governments in many less developed countries about their resilience in the face of external economic shocks, including unstable demand for their commodities, volatile energy and food prices, falling foreign direct investment (FDI) and reduced remittances from migrant workers (Husain, 2009). South Africa faces particular challenges that explain its interest in the developmental state (The Presidency, 2008a, 2009; Turok, 2008; Gumede, 2009; Parsons, 2009; Turok, 2010). Only two-fifths of South Africa's working-age adults are in employment, compared with two-thirds in many other countries (OECD, 2008; International Labour Organisation [ILO], 2009; Turok, 2010). Self-employment and the small and micro-enterprise sector also appear much smaller than in most less developed countries (The Presidency, 2008b). Large income inequalities are worsened by distorted settlement patterns, which trap poor communities in peripheral urban townships and remote rural areas (Harrison, Todes & Watson, 2008; Van Donk, Swilling, Pieterse & Parnell, 2008). Such problems reflect the skewed structure of the economy, with its concentrated pattern of ownership, its narrow base dominated by mining and financial services, and the historic marginalisation of the black population from opportunities of all kinds. Recent economic performance has been sluggish by international standards and skewed towards low-value consumer services such as retail, telecoms, security and health (Aron, Kahn & Kingdon, 2009). A worsening

trade deficit caused by rising imports to supply the consumer boom has been financed by short-term capital inflows rather than long-term investment in domestic production in South Africa to create jobs and diversify exports (The Presidency, 2008a; Du Toit & Van Tonder, 2009). Increasing external demand for the country's basic commodities has also strengthened the currency and damaged industrial output and jobs. Since 1994 the state has struggled with these structural challenges that require socio-economic and institutional change (The Presidency, 2008b).

Extreme social and spatial inequalities coincide with limited economic dynamism: 'South Africa's growth has been largely pedestrian and the structure of South Africa's economy has not changed significantly in a hundred years' (The Presidency, 2009: 6; Turok, 2010). State institutions tend to operate in silos with inconsistent mandates that do not meld well together (Boraine *et al.,* 2006; Public Service Commission, 2007, 2009; Harrison *et al.,* 2008; Turok, 2010). The capacity for strategic planning is seen as very uneven across spheres and sectors of the South African government (The Presidency, 2008b). Public services such as education, health, water and sanitation are worst in places of historical neglect, causing a rising tide of community protest (Development Bank of Southern Africa DBSA, 2008; National Treasury, 2008). Bottlenecks in infrastructure, congestion and skills shortages also constrain growth in the cities (Turok & Parnell, 2009). There is little tradition of engaging civil society and the business sector in the current policy process, and progress to rectify this has unfortunately been slow (McLennan & Munslow, 2009; Turok, 2010; Public Service Commission, 2009). The post-2009 government in South Africa has expressed a new commitment to long-term planning and coordination with the creation of a National Planning Commission (The Presidency, 2009). There are further pressures to shift economic policy from the previous South African regime's cautious emphasis on inflation targeting and macro-economic stability (Chang, 2008; Parsons, 2009). The creation of decent work and sustainable livelihoods has however now become the first of five crosscutting national priorities (African National Congress ANC, 2009; The Presidency, 2009). Yet considerable uncertainty remains as to how to steer the South African economic trajectory in a more productive, durable and yet labour-absorbing direction. Centralised systems of planning and coordination are emphasised, to the neglect of provincial (regional) and local institutions (Gumede, 2009).

There is a growing literature on the developmental state (Robertson & White, 1998; Woo-Cummings, 1999; Turok, 2008; Van Donk *et al.,* 2008; Gumede, 2009; Edigheji, 2010). Drawing some of the principal ideas and evidence together, effective developmental states seem to have at least three important features. First, they are capable of planning ahead and making long-term strategic decisions beyond pragmatic responses to political pressures and problems as they emerge. They have the analytical capacity to separate the causes of problems from their symptoms and consequences, and organisational capacity to focus on the underlying issues for more durable outcomes. Lack of productive work also lies at the core of many aspects of poverty and exclusion, so employment tends to be a primary objective (Turok, 2010). Such states are also capable of early action to anticipate difficulties and to minimise the risks of problems occurring or escalating. Effective developing governments pursue the national interest over narrow sectional interests. Therefore, activities that create value and enhance the capabilities of people and firms are favoured over opportunistic, 'rent-seeking' behaviour that lobbies for special privileges, or extracts value from others without contributing to overall productivity or well-being (Sen, 1999; Gumede, 2009). A priority in countries such as South Africa should be to shift the economic development path in a more inclusive and dynamic direction. It is not enough to expand the output of the existing structure and reproduce its deficiencies, or to enrich a narrow section of the previously disadvantaged population through administrative or legal mechanisms (Golub, 2010). Sustained economic success therefore comes from linking financial rewards to productive activity and long-term performance. Second, to promote change requires boldness and concerted effort on the part of government. It seeks to act with sufficient scale and collective weight to influence established growth patterns. It considers the economic impact of all it does, and understands how state procurement, regulation and services can boost (or hold back) the creation of jobs (Porter, 2010). Different parts of the state are aligned so that its full powers as a major investor, purchaser, employer, regulator and provider of infrastructure and services are brought to bear consistently. For example, in the urban arena in South Africa it is important to connect policies for housing, transport, land use and basic services in order to contain low-density sprawl and engineer more inclusive and efficient cities (Turok & Parnell, 2009).

In South Africa's industrial field, programmes concerned with training, R and D, infrastructure and trade policy require coordination to maximise their impact (Kraak, 2009). In the employment sphere, linking together schools, colleges, job advisory services and employers can smooth South Africans' pathways into work and make the labour market function more effectively. Otherwise, the development agenda in South Africa may be undermined by contradictory government actions and speculative tendencies in the private sector looking for easy returns. Integrated actions also enable the government to initiate change, and not simply to accommodate trends and respond to events as they unfold. Other developmental states also invest to release latent economic potential, encourage enterprise and make better use of neglected resources such as labour and land (Hwedi, 2001). Successful development governments intervene to improve or develop the market by creating financial institutions to provide patient risk capital, encouraging long-term business decisions and improved management, as well as stimulating productive activity in forms or places that may not occur spontaneously (Rudd, 2009). The logic goes beyond compensating for market inefficiencies, or promoting welfare in isolation from economic opportunity. It is about building the human capabilities and culture to support a resilient and dynamic economy (Sen, 1999; Evans, 2009). Third, developmental governments are democratic in the sense that different actors and interests are brought together to define a common purpose and sense of direction (Robertson & White, 1998; Edigheji, 2010). Democratic processes channel knowledge of what public goods are most needed by citizens and firms. Partnerships with business, labour and community organisations help to share ideas and resources, and build support and mutual commitment to activities that enhance value, encourage hard work and self-improvement, and increase employment (Gandz, 2001). Cohesive institutions can instil confidence in the future and help to draw in wider investment, skills, effort and energy, thereby stretching resources further (Wilkinson & Marmot, 2003). Collaboration between different spheres and sectors of government is also important, to avoid wasteful competition and duplication of effort. For example, the sequence and location of government investments in transport, energy, digital, low carbon and community infrastructure need careful alignment to ensure compatibility and to maximise local jobs (Turok, 2010). There may be significant productivity gains and spinoffs for local suppliers from this kind of joint endeavour, compared with the various state organs going it

alone. Special initiatives and *ad hoc* projects are likely to be less effective than sustained efforts to reconfigure and integrate mainstream policies.

Three priorities should be the heart of South Africa 2055 economic policies, namely:

- Smart growth - developing South Africa's economy based on knowledge and innovation.
- Sustainable growth - promoting a more resource efficient, greener and more competitive economy for South Africa.
- Inclusive growth - fostering a high-employment economy delivering economic, social and territorial cohesion within South Africa.

These three priorities are mutually reinforcing as they offer a vision of South Africa's social market economy for the 21st century. To guide South Africa's efforts and steer progress, there is a large consensus that South Africa should commonly agree on a limited number of 'headline' targets for 2055. These targets should be representative of the theme of smart, sustainable and inclusive growth. Growth has to be measurable, capable of reflecting the diversity of developing situations and based on sufficiently reliable data for purposes of comparison (Mkapa, 1999). The following proposed strategic considerations have been selected on this basis and meeting them should be critical to South Africa's success towards 2055:

- The employment rate of the population aged 20-64 should increase from the current 75% to at least 90%, including through the greater involvement of women, older workers and the better integration of migrants in the work force.
- South Africa currently has a target of investing 3% of GDP in R and D. The target has succeeded in focusing attention on the need for both the public and private sectors to invest in R and D but it focuses on input rather than impact. There is a clear need to improve the conditions for private R and D in South Africa and many of the measures proposed in this strategy will do this. It is also clear that by looking at R and D and innovation together South Africa would get a broader range of expenditure, which would be more relevant for business operations and

for productivity drivers. This research effort proposes to keep the 3% target while developing an indicator, which would reflect R and D and innovation intensity.

- A target on educational attainment which addresses the problem of early school leavers by reducing the dropout rate to 10% from the current 38%, whilst increasing the share of the population aged 30-34 having completed tertiary education from 20% to at least 40% in 2055.

- The number of South Africans living below the national poverty lines should be reduced by 15%, lifting over 12 million people out of poverty (EU, 2010).

    South Africa has prospered in the past through trade, exporting round the world and importing inputs as well as finished goods. Faced with intense pressure on export markets and for a growing range of inputs South Africa must improve competitiveness vis-à-vis the main trading partners through higher productivity. South Africa will need to address relative competitiveness inside Africa and in the wider globe. South Africa was largely a first mover in green solutions in Africa, but its advantage is being challenged by key competitors, notably China, Europe and North America. South Africa should strive to lead in the market for green technologies as a means of ensuring resource efficiency throughout the economy, while removing bottlenecks in key network infrastructures, thereby boosting South Africa's industrial competitiveness.

- Industry and especially SMEs have been hit hard by the 2008/2009 economic crisis. South Africa and all sectors are now facing the challenges of globalisation and adjusting their production processes and products to a low-carbon economy. The impact of these challenges will differ from sector to sector, as some sectors might have to "reinvent" themselves, but for others these challenges will present new business opportunities. The South African government should work closely with stakeholders in different sectors (business, trade unions, academics, NGOs, consumer organisations) and should draw up a framework for a modern industrial policy, to support entrepreneurship, to guide and help industry to become fit to meet these challenges, to promote the competitiveness of South Africa's primary, manufacturing and service industries and help them seize the opportunities of globalisation and of the green economy. The framework should also address all elements of the increasingly international value chain from access to raw materials to after-sales service.

- Due to demographic change towards 2055, South Africa's workforce is about to stagnate. Less than two-thirds of South Africa's working age population is currently employed, compared to over 75% in the developed countries. The employment rate of women and older workers in South Africa is also particularly low. Young people have been severely hit by the economic crisis, with an unemployment rate over 25%. There is a strong risk that qualified, taxpaying citizens may move away or the poorly attached to the world of work, lose ground from the labour market.

- In South Africa, about 30 million people have low or basic skills, but lifelong learning benefits mostly the more educated. By 2055, 16 million more jobs will require high qualifications, while the demand for low skills will drop by 12 million jobs. Achieving longer working lives will also require the possibility to acquire and develop new skills throughout the lifetime of the ordinary South African.

- Action under the poverty priority will require modernising, strengthening our employment education and training policies and social protection systems by increasing labour participation and reducing structural unemployment, as well as raising corporate social responsibility among the South African business community. Access to childcare facilities and care for other dependants will be important in this respect. Implementing flexicurity principles and enabling people to acquire new skills to adapt to new conditions and potential career shifts will also be key towards 2055. A major effort will be needed to combat poverty and social exclusion and reduce health inequalities to ensure that everybody can benefit from growth. Equally important will be South Africa's ability to meet the challenges of promoting a healthy and active ageing population to allow for social cohesion and higher productivity.

- South Africa should aim to create conditions for modernising labour markets with a view to raising employment levels and ensuring the sustainability of South Africa's social models. This point to empowering people through the acquisition of new skills and enabling South Africa's current and future workforce to adapt to new conditions and potential career shifts, reduce unemployment and raise labour productivity.

- South Africa should define and implement a phase of flexicurity in its agenda, together with other African social partners, to identify ways to better manage

economic transitions and to fight unemployment and thereby to raise activity rates.

- South Africa should adapt the legislative framework, in line with 'smart' regulation principles, to evolving work patterns (e.g. working time, posting of workers) and new risks for health and safety at work.

- To review and regularly monitor the efficiency of tax and benefit systems so as to make work pay with a particular focus on the low skilled, whilst removing measures that discourage self-employment.

- South Africa's aim should be to ensure economic, social and territorial cohesion, building on the current combating of poverty and social exclusion so as to raise awareness and recognise the fundamental rights of all citizens.

- South Africa needs to gear the market to serve the MDG goals and that requires well-functioning and well-connected markets where competition and consumer access stimulate growth and innovation. A single market for services must be created on the basis of the services directive, whilst at the same time ensuring the quality of services provided to consumers. The full implementation of the Services Directive could increase trade in commercial services by 45% and Foreign Direct investment by 25%, bringing an increase of between 0.5% and 1.5% in South Africa's GDP.

- Access for SMEs to the single market must however be improved. Entrepreneurship must be developed by concrete policy initiatives, including the simplification of company law (bankruptcy procedures, private company statute, etc.), and initiatives allowing entrepreneurs to restart after failed businesses. South African citizens must be empowered to play a full part in the single market. This requires strengthening South Africans' ability and confidence to buy goods and services cross-border, in particular on-line.

- Economic, social and territorial cohesion will remain at the heart of the South Africa 2055 strategy to ensure that all energies and capacities are mobilised and focused on the pursuit of the strategy's priorities. Cohesion policy and its structural funds, while important in their own right, are key delivery mechanisms to achieve the priorities of smart, sustainable and inclusive growth for South Africa and other African States and regions.

- The 2008/2009 financial crisis has had a major impact on the capacity of South African businesses and the government to finance investment and innovation projects. To accomplish the economic objectives for South Africa 2055, a regulatory environment that renders financial markets both effective and secure is therefore key. South Africa must also do all it can to leverage its financial means, pursue new avenues in using a combination of private and public finance, and in creating innovative instruments to finance the needed investments, including public-private partnerships (PPPs). The African Development Bank, the United Nations Investment Funds and other financial institutions can contribute to backing a "virtuous circle" where innovation and entrepreneurship can be funded profitably from early stage investments to listing on stock markets, in partnership with the many public initiatives and schemes already operating at national level.

- Global growth towards 2055 will open up new opportunities for South Africa's exporters and competitive access to vital imports. All instruments of external economic policy need to be deployed to foster South African growth through the participation in open and fair markets worldwide. This applies to the external aspects of South Africa's various internal policies (e.g.energy, transport, agriculture, R and D) but holds in particular for trade and international macro-economic policy coordination. An open market South Africa, operating within a rules based international framework, is the best route to exploit the benefits of globalisation that will boost growth and employment. At the same time, South Africa must assert itself more effectively on the world stage, playing a role in shaping the future global economic order through the G20, and pursuing South African interests through the active deployment of all the tools at our disposal.

- Acting within the WTO and bilaterally in order to secure better market access for South African business, including SMEs, and a level playing field vis-à-vis our external competitors should be a key goal for South Africa towards 2055. Moreover, South Africa should focus and streamline further regulatory dialogues, particularly in new areas such as green growth, where possible expanding South Africa's global reach by promoting equivalence, mutual recognition and convergence on key regulatory issues, as well as the adoption of international rules and standards. In addition, one of the critical objectives towards 2055 will be to build strategic relationships with other emerging economies to discuss issues

- of common concern, promote regulatory and other co-operation and resolve bilateral issues.

- South Africa should put an emphasis on concluding on-going multilateral and bilateral trade negotiations, in particular those with the strongest economic potential, as well as on better enforcement of existing agreements, focusing on non-tariff barriers to trade.

- South Africa should also provide for proposals for high-level strategic dialogues with key partners, to discuss strategic issues ranging from market access, regulatory framework, global imbalances, energy and climate change, access to raw materials, to global poverty, education and development. South Africa should therefore also work to enhance the Economic Dialogue with other BRIC countries in particular.

- South Africa is arguably a global player and should take its international responsibilities seriously. South Africa has been developing a real partnership with developing countries to eradicate poverty, to promote growth and strive to fulfil the Millennium Development Goals (MDGs). South Africa has a particularly close relationship with the rest of Africa and will need to invest further in the future in developing that close partnership. This should take place in the broader on-going efforts to increase development aid, improve the efficiency of South African aid programmes notably through the efficient division of labour with other Member States and by better reflecting development aims in other policies of the African Union.

- Sound public finances in South Africa are critical in restoring the conditions for sustainable growth and jobs so South Africa needs a comprehensive strategy. This will involve the progressive withdrawal of short-term crisis support and the introduction of medium- to longer-term reforms that promote the sustainability of public finances and enhance potential growth.

- To support South Africa's economic growth potential and the sustainability of economic models, the consolidation of public finances in the context of the Stability and Growth plan involves setting priorities and making hard choices. In addition, the composition and quality of government expenditure matters: budgetary consolidation programmes should prioritise growth-enhancing items such as education and skills,   R and D and innovation and investment in

networks, e.g. high-speed internet, energy and transport interconnections – i.e. the key thematic areas of the South Africa 2055 strategy.

- Fiscal consolidation and long-term financial sustainability will however need to go hand in hand with important structural reforms, in particular of pension, health care, social protection and education systems.

6.5.8 Ensuring good governance and fighting corruption to build a prosperous nation for South Africa

The 1990s witnessed the emergence of poverty reduction and governance as key priorities in international development (Ahmad, 2008; April, 2009). Notwithstanding the empirical challenges, strong evidence of links between country governance systems and development performance has been noted (April, 2009; Swaroop & Rajumar, 2006). Studies have, for instance, indicated that the benefits of public health spending on child and infant mortality rates are greater in countries with better governance. Similarity, public investments in primary education are more likely to lead to higher education attainment if governance improvements are effected (April 2009; Swaroop & Rajumar 2006). Cross-country comparisons and 'unbundling' of governance components such as rule of law, voice and accountability, corruption control and state capture have indicated that a greater focus on external accountability can lead to improved governance (Ahmad, 2008; April 2009).

During the past 50 years, the continent of Africa's history has been blighted by a lack of good governance (April, 2009; World Bank, 2002), which has hindered economic growth and political stability and sustained a system that has marginalised it from the global economy (April, 2009; Wohlmuth, 1998). Consequently, lack of good governance has hindered economic and political growth, making South Africa home to the greatest number of least-developed continents. Bryan and Hofmann (2007) argue that if South African resources are to be used effectively and harnessed for development, more governance measures such as accountability and transparent mechanisms must be developed and supported by the South African government, multinational corporations, legislative bodies, political parties, civic organisations and the media.

The Universal Declaration of Human Rights, signed over 60 years ago, set out the fundamental freedoms and human rights that form the foundations of human development. It reiterated a simple and powerful truth – that every person is born free and equal in dignity and rights. This truth is at the very heart of a people-centred agenda, and reminds us how high we can reach, if we reaffirm the value of every person on this planet. It is through people that we can transform our societies and our economies and form a global partnership. People the world over are calling for better governance. From their local authorities to parliamentarians to national governments to the multilateral system, people want ethical leadership. They want their universal human rights guaranteed and to be recognised in the eyes of the law. They want their voices to be heard and they want institutions that are transparent, responsive, capable and accountable. People everywhere want more of a say in how they are governed. Every person can actively participate in realising the vision for 2030 to bring about transformational change. Civil society should play a central, meaningful role but this requires space for people to participate in policy and decision-making. This means ensuring people's right to freedom of speech, association, peaceful protest and access to independent media and information. Strengthening the capacity of parliaments and all elected representatives, and promoting a vibrant, diverse and independent media can further support governments to translate commitments into action. The word "institutions" covers rules, laws and government entities, but also the informal rules of social interactions. Institutions enable people to work together, effectively and peacefully. Fair institutions ensure that all people have equal rights and a fair chance at improving their lives, that they have access to justice when they are wronged. Government is responsible for maintaining many of society's central institutions. One of the most basic institutional responsibilities is providing legal identity. Every year, about 50 million births are not registered anywhere, so these children do not have a legal identity. That condemns them to anonymity, and often to being marginalised, because simple activities – from opening a bank account to attending a good school – often require a legal identity. Openness and accountability help institutions work properly – and ensure that those who hold power cannot use their position to favour themselves or their friends. Good governance and the fight against corruption are universal issues. Everywhere, institutions could be more fair and accountable. The key is transparency. Transparency helps ensure that resources are not wasted, but

are well managed and put to the best use. Many central institutions are public. But not everyone. The need for transparency extends to all institutions, government entities as well as businesses and civil society organisations. To fulfil the aims of the post-2015 agenda requires transparency from all of them. When institutions openly share how much they spend, and what results they are achieving, we can measure progress towards each goal. Openness will make success much more likely. Publishing accounts – including sustainability accounts – brings ownership and accountability to the entire post-2015 agenda. Sustainability encourages societies to measure more than money – and to account for the value of all of the other natural and societal resources that bring prolonged prosperity and well-being. Accountability works best in an environment of participatory governance. The Millennium Declaration declared freedom one of six fundamental values, and stated that it is best ensured through participatory governance. One target that would be useful is to decrease the extent of bribery and corruption in society. There are concerns with how reliably this is measured – but many indicators are imprecise and this should just lead to re-doubled efforts to improve the understanding of how pervasive this may be. When evidence is found of bribery or corruption, involving public officials or private individuals, they should be held to account. Zero tolerance.

Corruption is likely to appear on every observer's list of factors that threaten to obstruct South Africa's path towards sustainable development. However, rather than diminishing, corruption has proliferated in all segments of the South African National Public Services (SANPS), making it the "common cold" of South African social ills (Skinner, Saunders & Duckett, 2000). South Africa is slowly learning that corruption is one of the major impediments to effective development. The greater openness that democracy has bought since 1994 offers new opportunities to deal with the problem of corruption in the context of South Africa's new constitutional values. However, it also brings a sharper focus on the constraints that corruption imposes on development and the quality of governance. Corruption fundamentally runs contrary to accountability and the rule of law because it undermines governance, diminishes public trust in the credibility of the state, and threatens the ethics of governance and society (Heymans & Lipietz, 1999, Pillay, 2004). The more systemic corruption is, the more difficult it becomes to identify it, deal with it, and penalise it. Frisch (1994: 60-61; Pillay, 2004) captured this succinctly: "… corruption kills the development

spirit – nothing is as destructive to a society as the rush to quick and easy money which makes fools of those who can work honestly and constructively". Because of the recent upsurge in the number of reports of corruption, South Africa offers an interesting case study of the link between corruption and governance.   Such corruption violates the contract between citizens and public officials, and this has serious ramifications for effective government (Pillay, 2004; Myint, 2000; Drury, Krieckhaus & Lusztig, 2006).   For this reason, alone, corruption in South Africa merits serious attention.

Corruption not only undermines the investment climate, but it discourages private-sector development and innovation, and encourages various forms of inefficiency; the more widespread, the more damaging its effects. Budding entrepreneurs with bright plans and ideas will be intimidated by the bureaucratic obstacles, financial costs, and psychological burdens of starting new business ventures including dealing with corrupt officials to obtain permits and licences and will either opt to take their ideas to some other less corrupt country, if they can afford to do so, or, more likely, may opt for early departure from the market, quickly shutting down newly created companies. So, corruption is either a barrier to entry into the market or a factor in precipitating early departure; in either case, economic growth is adversely affected (López-Claros, 2010; Adams & Jeanrenaud, 2008).

The high incidence of corruption will simply be an additional financial burden on South African businesses, imposing heavy costs on them, thereby undermining their international competitiveness. Unlike a tax, which is known and predictable and can be built into the cost structure of the enterprise in an orderly fashion, bribes are necessarily unpredictable and random, and will undermine cost control, reduce profits and undermine the efficiency of those who must pay them to stay in business. Mauro (1995) used some indices of corruption and institutional efficiency to show that corruption lowers investment and, hence, economic growth. Mauro (1995) offers the following example: "If Bangladesh were to improve the integrity and efficiency of its bureaucracy to the level of that of Uruguay (corresponding to a one-standard deviation increase in the bureaucratic efficiency index), its investment rate would rise by almost five percentage points, and its yearly GDP growth rate would rise by over half a percentage point". Corruption is therefore particularly devastating for small

and medium-sized enterprises, often the engines of economic growth and job creation in the developing world, which may not have the clout of big companies to protect themselves from a proliferation of requests for bribes (López-Claros, 2010). Corruption also contributes to a misallocation of human resources. To sustain a system of corruption, officials and those who pay them will have to invest time and effort in the development of certain skills, nurture certain relationships, and build up a range of supporting institutions and opaque systems, such as off-the-books transactions, secret bank accounts, and the like. But these "assets" will not be easily transferable to the non-corrupt part of the economy later on, since, by its very nature, corruption is not about boosting productivity and the country's potential wealth; it is fundamentally about the redistribution of rents which, of course, do not add to economic growth (North, Wallis, Webb & Weingast, 2007). Surveys have shown that the greater the incidence of corruption in a country, the greater the share of time that management has to allocate to dealing with ensuring compliance with regulations, avoiding penalties, and dealing with the bribery system that underpins them, activities that draw attention and resources away from production, and strategic planning.

Corruption also undermines government revenue and, therefore, limits the ability of the government to invest in productivity-enhancing areas, such as education, infrastructure and health. Not surprisingly, where corruption is endemic, individuals and citizens will view paying taxes as a questionable business proposition, often a way to indulge the government in some of its worst excesses. There is always a delicate tension between the government in its role as tax collector and the business community and individuals in their roles as taxpayers. The South African system works reasonably well and the budget becomes an important mechanism of distribution when those who pay taxes feel that there is a good chance that they will see a future payoff, in terms of improvements in the country's infrastructure, enhanced services, better schools, and a better-trained and healthier workforce, and so on. However, corruption sabotages this implicit contract. When government officials allow corruption to flourish they contribute to the creation of an environment in which those who pay taxes are either morally outraged at having to do so or, more likely, feel entirely justified in finding creative ways to avoid paying them or, worse, become bribers themselves (Knabb, 1997; Frederick & Worden, 2011). In some

cases, lobbying and influence peddling become relatively attractive alternatives to paying all taxes due, a natural response to the signal sent to the private sector by government bureaucrats or legislators that "we are for sale". To the extent that corruption undermines revenue, it adversely affects government efforts to reduce poverty (Lawal, 2007).

Monies that leak out of the budget because of corruption are monies that will not be available to lighten the burden of the poor; bribery thus interferes with the fulfilment of basic human needs. Corruption also further undermines the case of those who argue that foreign aid can be an important element in the fight against poverty; for why should taxpayers in the rich developed countries be asked to support the lavish lifestyles of the kleptocrats in failing states? Corruption, therefore, distorts public investment and boosts overall spending, leading, other things being equal, to a larger government deficit than would otherwise be the case. Therefore, by undermining revenue, increasing the effective tax burden, and boosting expenditure, corruption is highly damaging to the public finances.

Johnson, Kaufmann, and Zoido-Lobatón (1998) used cross-country data to establish that the higher the level of corruption in a country, the larger the share of its economic activity that will go underground, and, hence, will be beyond the reach of the tax authorities. Not surprisingly, studies have shown that corruption also undermines foreign direct investment since it acts in ways that are indistinguishable from a tax; other things being equal, investors will always prefer to establish themselves in less corrupt countries. The following criteria and strategic considerations have been selected to ensure perceived good governance towards 2055:

- The South African Constitution encourages citizen participation in issues of governance. Active citizen participation is an essential ingredient in any democratic dispensation because it ensures that the government of the country remains "on track" and that public officials serve the general welfare of society rather than pursuing their own interests. To this end, the South African Constitution contains several mechanisms to ensure that government will be part of the solution, rather than being part of the problem. Public awareness and

participation in maintaining efficiency in government are also vital to making a reality of democracy in South Africa (Mandela, 1996). The challenge now facing South Africans towards 2055 is to translate this mandate into concrete programs of action.

The South African government has developed programs to ensure delivery of quality services to the people and to grow the economy through the creation of wealth, while combating crime and corruption (King I, II and III; Zuma, 1999). The Constitution thus provides a rich store of ethical substance to inform and guide. It does this by stating the democratic ideal, by indicating the core values underlying that ideal, by ensuring the rights of people, and by setting certain key requirements for the conduct of public administration (King I, II and III). This is imperative because public events are at the 'coalface' of service delivery (PSC, 2009; Chabane, 2011).

Building a resilient anti-corruption system – The focus of anti-corruption efforts should be on creating a resilient anti-corruption system that can operate free from political interference and is supported by both public officials and citizens. A resilient system is one where the designated agencies have the capability and resources to investigate cases of corruption, leaders take action when problems are bought to their attention, citizens resist the temptation to pay bribes because they recognise that their individual actions contribute to a bigger problem, the private sector does not engage in corrupt practices, citizens are empowered to speak out against corruption and the media fulfils its investigative and reporting function to expose corruption in the public and private sector (Van Vuuren, 2006; Camerer, 1999).

In South Africa, the Constitution of 1996 (Act 108 of 1996) has provided an indispensable mechanism for South African national public servants to address the scourge of corruption. This is reflective of an overall commitment to greater openness and transparency for the South African government, as opposed to the secretive and unresponsive culture that characterised public administration (Giorgi, 1999; Tsatsire, 2008). South African experiences over the years have made society acutely aware of the dangers of a government that is neither transparent nor accountable.

- Section 195 (1) of chapter 10 of the South African Constitution sets out the basic values and principles governing public administration. These include accountable public administration and the promotion of a high standard of professional ethics. The relevance of this section of the Constitution is underpinned by the fact that the fight against corruption has become of such a magnitude that it requires a different approach.

- South Africa should strengthen accountability and responsibility of public servants and the South African public servants should be made legally accountable as individuals for their actions, particularly in matters involving public resources.

- South Africa should strive to create an open, responsive and accountable public service and State information, including details of procurement, should be made openly available to citizens. Furthermore, an information regulator should be established to adjudicate appeals when access to information requested is denied.

- South Africa should strengthen judicial governance and the rule of law. Reform aspects of the judicial governance system have to ensure the independence and accountability of the judiciary. Consideration should be given to the extension of community service to law graduates in order to increase legal representation for the poor and speed up the administration of justice in lower courts. South Africa's rule of law is generally in good shape, although more could be done to realise the transformation promise of the institution. Challenges such as inefficiencies in the court administration that deprive people of the right to access to justice, and judicial appointments that call into question the impartiality of selection processes, must be addressed. For the South African Constitution and the law in general, to be an agent of change, rather than an obstacle to socio-economic transformation, the law must be interpreted and enforced in a progressive, transformative fashion. This requires a judiciary that is progressive in its judicial philosophy and legal inclinations. The selection and appointment of judges is also of crucial importance, not just to the rule of law and the independence of the courts, but to socio-economic transformation. As of 2013, there is little or no consensus in the Judicial Service Commission (JSC) or in the legal fraternity more generally, about the qualities and attributes needed for the bench.

- Strengthening the anti-corruption system in South Africa requires the specialist resources of anti-corruption agencies, improving coordination and cooperation between agencies and ensuring that the independence of each of the agencies is maintained towards 2055. There should be greater emphasis on preventing corruption through public education drives and this should cover how it affects the delivery of services essential to citizens' daily lives and the mechanisms through which cases of corruption can be reported in South Africa. While South Africans are highly aware of evils of corruption, the public must be encouraged to make the connection between the seemingly petty incidents of corruption its citizens participate in daily, such as the "cold drink" to a police officer to avoid a traffic fine, and the grand corruption they see reported in the daily newspaper. The aim should be to create a shift in attitude towards corruption and the greater citizen participation in anti-corruption efforts should be encouraged by amongst other aspects strengthening the protection of whistle-blowers. An independent media sector also has a distinct role to play in public awareness by investigating and reporting on cases of corruption.

- The protection for whistle-blowers towards 2055 is essential to create a culture of disclosure of wrongdoing. While the protected Disclosures Act (2000) provides some protection for whistle-blowers in South Africa, it does not do enough.

- The NPD (2011) also proposes a review and reform of procurement procedures. This would include legal reforms to simplify procurement, which ensure that accountability mechanisms remain in place and that the law retains proper safeguards for detecting corruption and maladministration. The need for swift, effective service provision and a functioning oversight mechanism must be carefully balanced. In addition, a tiered system of review for tenders, depending on their value, with differentiated safeguards and procedures should be considered. Such a system could have automatic safeguards built in, so that tenders above a certain amount are subjected to special review by the Auditor-General and the Parliamentary Standing Committee on Public Accounts, with a public hearing to exercise oversight over the tender award process (NDP, 2011).

- An accountability framework should also be developed in South Africa linking the liability of individual public servants to their roles and responsibilities and job descriptions in proportion to their functions and seniority. It should be made

illegal for civil servants to operate or benefit from certain types of business. Restraint of trade agreements should be considered for senior civil servants and politicians in all spheres of government. Exit interviews and proper record keeping would enable this practice.

- More "open data" should be made available in South Africa towards 2055. Open data is information that is made actively available without a request from an individual. This is also provided for in the Promotion of Access to Information Act in South Africa, but generally not implemented due to lack of expertise. Some departments and municipalities in South Africa however have made an effort to make some information available. Other examples of information that should be made publically available would be beneficiary lists for housing projects, often a source of deep tension in South African communities, tender information, and environmental impact assessments.

- Accountable governance requires leadership. For institutions to be transformative and capable, they must be well led at all levels (Karukstis & Hensel, 2005; Moore, 2005). Leadership in the public service is therefore essential for the national development plan and for South Africa – leadership that is devoted and dedicated, capable and committed, and self-sacrificial and not self-serving. South Africa needs a national conversation about the qualities of leadership that are required in all areas of public life to be successful towards 2055.

6.5.9 How to provide for and create a high quality of life for all South Africans

6.5.9.1 Ensure healthy lives

Health enables people to reach their potential (UN, 2012b). Healthy children learn better and therefore they become healthy adults. Healthy adults work longer and more regularly, earning higher and more regular wages and thus ploughing more effort towards the tax basket for South Africa. Though this research effort's focus on health outcomes in this goal, to achieve these outcomes requires access to basic healthcare. South Africa must start with a basic commitment to ensure equity in all the interconnected areas that contribute to health (social, economic and

environmental). But in addition, South Africa must make steady progress in ensuring health coverage and access to quality essential health services. This implies reaching more people, broadening the range of integrated, essential services available to every person, and ensuring that services are affordable for all the citizens towards 2055.

Health outcomes are often determined by social, economic and environmental factors (Harris, Holden & Chen, 2010; Wilkinson & Marmot, 2010). Discrimination can create barriers to health services for vulnerable groups in South Africa and lack of protection will leave many individuals and families exposed to sudden illness and the catastrophic financial effects this can bring. Investing more in health, especially in health promotion and disease prevention, like vaccinations, is an effective strategy to empower South African people to build a stronger society.

Internationally, almost 7 million children die before their fifth birthday, every single year (WHO, 2012a). For the most part, these deaths are easily preventable. South Africa should know that the solutions are simple and affordable: having skilled birth attendants present; keeping babies warm and getting them safe water, nutritious food, proper sanitation, and basic vaccinations (UNICEF/WHO, 2012b). Many children who die before they reach their fifth birthdays are born to mothers living in poverty, or in rural communities, or who are still in adolescence (WHO, 2012c). By ending preventable child deaths, South Africa should be aiming for an upper threshold of 20 deaths per 1 000 live births in all income quintiles of the South African population.

Women also continue to die unnecessarily in childbirth. The World Health Organisation estimates that every minute and a half, a woman dies from complications of pregnancy or childbirth. Women living in poverty, in rural areas, and adolescents are especially at risk (WHO, 2013). Timely access to well-equipped facilities and skilled birth attendants will drastically reduce this risk. Universal access to sexual and reproductive health and rights (SRHR) is also an essential component of a healthy society. There are still 222 million women in the world who want to prevent pregnancy but are not using effective, modern methods of contraception. Globally, this results in 80 million unplanned pregnancies, 30 million unplanned

births and 20 million unsafe abortions every year. About 340 million people a year are infected by sexually-transmitted disease (Glasier *et al.,* 2006). But access to SRHR, especially by adolescents, is low. The quality of such services is generally poor. For South Africans the public health case is clear in that to ensure these rights benefit not only individuals, but broader communities.

Rising health costs in South Africa are a major threat to fiscal stability and long-term economic growth. When people live longer, they face increased rates of cancer, heart disease, arthritis, diabetes and other chronic illness. On average, people lose 10 years of their lives to illness, mostly to non-communicable diseases (Salomon *et al.,* 2012). These should be addressed towards 2055, but the priorities will vary by country. For South Africans the benefits of investing in health are immediate and obvious, both for specific interventions and for strengthening health systems more broadly.

Affordable solutions are within South Africa's reach. Modern medicine and improved treatment can help, as can a range of other factors, such as cleaner air, more nutritious food and other parts of the interconnected health agenda. Ensuring healthy lives will be an on-going process in all countries and communities, not just for South Africa towards 2055.

6.5.9.2 Ensure food security and good nutrition

Food is essential to all living beings and producing it takes energy, land, technology as well as water (Hoekstra & Chapagain, 2008). Food security is not just about getting everyone enough nutritious food but it is also about access, ending waste, moving toward sustainable, efficient production and consumption (Foley, 2012; FAO, 2012). The world will need about 60% more food by 2055 and to produce enough food sustainably is a global challenge. Irrigation and other investments in agriculture and rural development can help millions of smallholder farmers earn a better living, provide enough nutritious food for growing populations, and build pathways to sustainable future growth (Randerson, 2008; Delang, 2008).

It must be noted that today, 870 million people in the world do not have enough to eat (FAO, 2012). Poverty is the main cause of hunger and most people are hungry or undernourished because they cannot afford sufficient nutritious food and this is not because of supply failures. Recent increases in food price volatility have indicated how sharp rises in the price of food can worsen poverty (Polaski, 2008). Producing more food will be essential for South Africa towards 2055, but it will not alone ensure food security and good nutrition. In most countries, adequate nutrition in childhood improves learning as well as lifelong physical, emotional and cognitive development. Adequate nutrition lifts the individual's potential as well as that of the country. Reducing malnutrition, especially among the youngest children, is regarded as one of the most cost-effective of all development interventions. Every $1 spent to reduce stunting can yield up to $44.50 through increased future earnings (Hoddinott, 2012). Moving to large-scale sustainable agriculture, while increasing the volume of food produced, is the great challenge that South Africa faces towards 2055. It can be done, but this will require a dramatic shift. Agriculture has for many years suffered from neglect. Too few policies are in place to improve rural livelihoods in South Africa.

Specific investments, interventions and policies can deliver results for South Africa towards 2055. Agricultural investments will reduce poverty more than investments in any other sector. In other developed countries, agricultural research provides returns of 20 to 80% and is regarded as a great investment in any economy (Alston, 2010). Greater yields, sustainable agricultural intensification and less post-harvest loss can assist smallholder farmers produce enough to feed their families and earn a living. At the same time, less food waste can help reduce demand for food. With these changes towards sustainable agricultural consumption and production, South Africa can continue to feed this generation and be regarded as the breadbasket for Africa towards 2055.

South Africa should also not forget the oceans. Poor management of South Africa's oceans has particularly adverse impacts for South Africa. Overfishing is a distinct problem for South Africa, reducing an important source of protein for most South Africans. Three-quarters of the world's fish stocks are being harvested faster than they can reproduce and 8-25% of the global catch is currently discarded. This

degradation and waste creates a cycle which depletes necessary fish stocks to unsustainable levels. It also harms the ocean's bio systems. South Africa therefore can and must correct this misuse; properly managing fish stocks gives fish enough time to reproduce and ensure sustainable fisheries. Currently, 30% of fish that are harvested are overfished, while 12.7% have greater capacity and could be fished more before reaching their natural limit (The State of the World Fisheries and Aquaculture, 2012).

6.5.9.3 The provision of access to water and sanitation

Access to water is a basic human right as safe drinking water is something everyone in the world needs. Globally, between 1990 and 2010, more than 2 billion disadvantaged people gained access to basic drinking water, but 780 million people still remain without (UNICEF/ WHO, 2012d). Improving access (as well as quality) is therefore becoming more urgent for South Africa as the world foresees increasing water scarcity. By 2025, 1.8 billion people will live in places classified as water scarce (UNDESA, 2013) and by 2055 this figure is projected to be 2.7 billion people. Even those who currently have access to basic drinking water do not have a guarantee of continued access. Agriculture draws 70% of all freshwater for irrigation and may need even more as the demand for intensive food production rises. Already, rising demand from farms is causing water tables to fall in some areas and, at the same time, industry and energy are demanding more water as economies grow (Gleeson, Wada, Bierkens, van Beek & Ludovicus, 2012).

Better water resource management in South Africa can ensure there will be enough water to meet competing demands. Distribution of water among industry, energy, agriculture, cities and households should be managed fairly and efficiently, with attention to protecting the quality of drinking water (Postel & Wolf, 2001). To accomplish this, South Africa must establish good management practices, responsible regulation and proper pricing towards 2055.

The MDG targets have focused on improving the sources of water collection and reducing the amount of time it takes, especially for women, to collect water for basic family needs. South Africa must now act to ensure safe access to safe drinking water

at home, and in schools, health centres and in townships. This is a minimum standard that should be applied to everyone regardless of income quintile, gender, location, age or other grouping.

Investing in safe drinking water also complements investments in sanitation and hygiene. Water, sanitation and hygiene work together to make people healthier, and to reduce the grief, and time and money spent, when family members fall ill and need to be cared for. There is some evidence that private and adequate sanitation in schools allows menstruating girls to continue to attend school and learn, and reduces the likelihood that any child will get sick and have to leave school (WCF, 2013). Agriculture and tourism should also benefit when the physical environment is cleaner and more hygienic. On average, the benefits of investing in water management, sanitation, and hygiene range from $2 to $3 per dollar invested (Whittington, 2009). The MDG target on increasing access to sanitation is the one South Africa is farthest from reaching. Building sanitation infrastructure and public services that work for everyone, including those living in poverty, and keeping human waste out of the environment, is a major challenge for South Africa towards 2055. Millions of people in cities capture and store waste, but have nowhere to dispose of it once their latrines or septic tanks fill up. Innovations in toilet design, emptying pits, treating sludge and reusing waste can help local governments in South Africa to meet the enormous challenge of providing quality public sanitation services, particularly in densely populated urban areas. While South Africa aspires to a global goal to have sanitation in the home for everyone by 2030, South Africa does not believe this would be attainable. So South Africa's target is more modest, but towards 2055 this hope is still achievable.

As South African cities grow and people consume more, solid waste management needs urgent attention. Wastewater pollutes not only the natural environment, but also the immediate living environment, and has an enormously detrimental impact on the spread of disease in South Africa. Establishing or strengthening policies at national, sub-national and local levels to recycle or treat wastewater collection, treatment and discharge can protect people from contaminants and natural ecosystems from harmful pollution (Norman, Peerless & Takkouche, 2010).

6.5.9.4 Securing sustainable energy

The stark contradictions of the modern global economy are evident in the energy sector (Ahmed, 2011). South Africa needs reliable energy to reduce poverty and sustain prosperity, but must increasingly get it from renewable sources to limit the impact on the environment. Globally, 1.3 billion people do not have access to electricity. Approximately 2.6 billion people still burn wood, dung, coal and other traditional fuels inside their homes, resulting in 1.5 million deaths per year (Rehfuess, 2006). At the same time, extensive energy use, especially in high-income countries, creates pollution, emits greenhouse gases and depletes non-renewable fossil fuels. The scarcity of energy resources is expected to grow ever greater (Krautkraemer, 2005). Between now and 2055, high-income economies will continue to consume large amounts and will be increasingly joined by countries which are growing rapidly and consuming more (Vermeulen, Campbell & Ingram, 2012). By 2055, when the planet reaches around 9.5 billion people, there will be 2.5 billion more people using more energy. All this energy use will create enormous strains on South Africa. In seeking sustainable energy for all, South Africa must ensure the use of all the tools at its disposal, to promote less carbon-intensive growth.

South Africa can reach large-scale, transformative solutions with more investment, collaboration, implementation and political will (Allen & Thomas, 2000). There is considerable momentum already. The Sustainable Energy for All initiative (SE4ALL) has signed up South Africa and more than 50 other countries, mobilising $50 billion from the private sector and investors to form new public-private partnerships in transport, energy efficiency, solar cooking and finance (United Nations, 2013). South Africa, as part of the G20, committed to phasing out inefficient fossil-fuel subsidies that encourage wasteful consumption, while providing targeted support for the poorest. This indicates that governments can have life-line energy pricing for poor consumers as they are not the ones who are wasting consumption. It also indicates that large energy consumers should pay full price including for the damage caused to health by pollution and the taxes that should be paid on energy (Brown, 2006).

South Africa therefore can build on and consolidate this momentum by explicitly drawing on SE4ALL and G20 targets and focusing on access, efficiency, renewable energy and reducing the waste of fossil-fuel subsidies. Up-front investment in new technologies, from simple solar LED lights to advanced hydropower, can save lives in South Africa, reducing expenses and fostering growth (Vaez & Sadjadpour, 2013).

In making this transition to sustainable energy, South Africa must also pay particular attention to the poor and vulnerable. Subsidies are one way that governments help people in need get affordable energy, so phasing out inefficient subsidies should not exclude targeted support for the poorest (Lipton, 2013a). Providing people with access to modern and reliable energy to cook and light their homes has enormous social, economic and environmental benefits. The use of traditional fuels indoors is toxic, causing illness and death. A lack of light also prevents children from studying and learning and it is argued that traditional women can spend too much time gathering wood for fires. Just one kilogram of 'carbon black' particles produced by kerosene lamps contribute as much warming to the atmosphere in two weeks as 700 kilograms of carbon dioxide circulating in the atmosphere for 100 years (Bond, 2008).

The solutions for South Africa towards 2055 are available and affordable; however, all South Africans need to do is to act. Rising energy use need not parallel faster growth. Between 1990 and 2006, increased energy efficiency in manufacturing by 16 member countries of the International Energy Agency resulted in 14-15% reduction of energy use per unit of output and reduced CO^2 emissions, saving at least $180 billion (Lindeburgh, 2006). However South Africa must pick up the pace. South Africa must double the rate of improvement in energy efficiency in buildings, industry and transport and double the share of renewable sources in the energy supply. This implies a 2.4% annual efficiency gain by 2030 compared to 1.2% from 1970 to 2008, according to the Global Energy Assessment (GEA) of the International Institute of Applied Systems Analysis (2010).

Although new infrastructure requires an up-front investment from South Africa, the long-term financial, not to mention environmental and social, payoffs are substantial. Adopting cost-effective standards for a wider range of technologies could, by 2055,

reduce global projected electricity consumption by buildings and industry by 14 per cent, avoiding roughly 1,300 mid-size power plants (United Nations, 2012). It is crucial for South Africa that technologies and innovations be widely shared (Kaplan, 2006). Low- and middle-income countries also have the chance to leapfrog the old model of development and choose more sustainable growth (OECD, 2012). But South Africa also faces two significant constraints: technology and finance. Cleaner and more efficient technologies are often patented by private corporations. Finance is also a problem as the benefits of more efficient technologies come from future savings, while the costs are concentrated at the beginning. If South Africa can be one of the leaders in applying these technologies, costs will fall and the technologies will become more accessible to all South Africans.

To overcome the abovementioned constraints, the South African government can use a mix of taxes, subsidies, regulations and partnerships to encourage clean-energy innovation. Partnering countries with South Africa can use open-innovation forums to accelerate the development of clean-energy technologies and rapidly bring them to scale (Benioff, 2010). These open-source forums should be linked to real public-works projects that can offer financing, and the chance for rapid adoption and broad deployment. South Africa must however also reduce waste by ensuring proper pricing. It must also be noted that about 1.9 trillion dollars, or 2.5% of the world's total GDP, is spent every year to subsidise fossil fuel industries and protect low prices as indicated by the International Monetary Fund, Energy Subsidy Reform: Lessons and Implications (IMF, 2013). If such subsidies are reduced, these revenues could be redirected to other pressing priorities. Elimination further could reduce as much as 10% of total greenhouse gas emissions by 2050 (Allaire & Brown, 2009).

6.5.9.5 Creating jobs, sustainable livelihoods, and equitable growth

Countries at different stages of development all need to undertake profound socio-economic transformations to end extreme poverty, improve livelihoods, sustain prosperity, promote social inclusion and ensure environmental sustainability (UN, 2012; World Bank, 2013). This research effort's discussions in Section 6.5.1 on "economic transformation" identified key aspects of a transformative agenda: the

necessity to pursue inclusive growth; to promote economic diversification and higher value added; and to put in place a stable, enabling environment for the private sector to flourish. Changing consumption and production patterns to protect South Africa's ecosystems and society, and putting in place good governance and effective institutions are also important for the growth agenda, but discussed under other goals.

It must be noted that there is no quick, easy way to create jobs for all and if there were, every politician in every country would already be doing it (Krugman, 2013). Every country struggles with this challenge (Lipton, 2013b). Globally, as of 2013 the number of unemployed people has risen by about 28 million since the onset of the financial crisis in 2008, with another 39 million who have likely given up in frustration (ILO, 2013). Rising unemployment generally hits young people especially hard. More and more young people are not in employment, education or training, with long-lasting effects on their ability to lead a fulfilling and productive life (Peterson, 2009). South Africa has separate targets for jobs and livelihoods, and for jobs for young people to give specific emphasis to the latter (NDP, 2011). These targets should be broken down by income quintile, gender, location and other groups. Through these targets, South Africa wants its society to focus on how well the economy is performing, through a measure that goes beyond GDP or its growth (NDP, 2011). Indicators for the jobs target could however include the share of paid employment. Between 2015 and 2030, 470 million more people will enter the global labour force, mostly in Asia and sub-Saharan Africa (Lam & Leibbrandt, 2013). This is potentially a bonus that could sustain growth that is already happening. Over the past decade, six of the 10 fastest growing economies in the world were in Africa (World Bank, 2013). As more young people enter the work force and birth rates decline, Africa is set to experience the same kind of 'demographic dividend' that boosted growth in Asia over the past three decades (UN, 2012). But young people in Africa, and around the world, will need jobs with security and fair pay, so that they can build their lives and prepare for the future (Obama, 2013).

The International Labour Organisation's concept of "decent work" recognizes and respects the rights of workers, ensures adequate social protection and social dialogue, and sets a high standard toward which every country should strive.

However, it has become clear that there can be middle ground for some developing countries, where "good jobs" (those which are secure and fairly paid) are a significant step towards inclusive and sustainable economic development.

The conditions of labour markets across countries differ considerably. There is no 'one size fits all' approach as good jobs and decent jobs will both be needed in the next development agenda (UNDP, 2012a). Sustained, broad-based, equitable growth requires more than raising GDP as this takes deliberate action (Dasgupta, 2007). Businesses need reliable, adequate infrastructure and this means roads, power, transport, irrigation and telecommunications. This argues for customs, government inspections, police and courts that function smoothly, and cross-border arrangements that facilitate the movement of goods to new markets (Sally, 2002). Business also adds the most lasting value when it embraces a responsible corporate business code with clear norms for transparency and accountability (Rosenberg, 2002). The World Bank (2013) argues that people and businesses need the security and stability of a predictable environment to make good economic decisions. The prospects for diversification and moving towards higher value added needed in some countries to go beyond reliance on commodity exports can therefore be measured by the number of new start-ups that occur each year as well as the value added from new products (Wallerstein, 2004). As countries become richer and their economies get more sophisticated, countries usually produce a larger array of goods and services.

There are some essential elements whereby South Africa needs to work across countries and regions. Jobs and opportunities expand when the market economy expands and people find their own ways to participate (Ashley, De Brine, Lehr & Wilde, 2007). Every economy needs this dynamism to grow and adapt to consumer demand. This means enabling new businesses to start up and creating the conditions for them to develop and market new products, to innovate and respond to emerging opportunities (Rohrbeck, 2010). In some economies this is about moving from primary extractive industries to value added products and more diverse manufacturing and services and in others, it might concern specialisation (Tucker, 1997). Financial services are also critical to the growth of business, but also raise the income of individuals (Silber, 2009). When people have the means to save and

invest or get insurance, people then can raise their incomes by at least 20% (Siedle, 2013). Farmers in Ghana, for example, put more money into their agricultural activities after getting access to weather insurance, leading to increased production and income (Karlan, 2012). South Africa towards 2055 needs to ensure that more people have access to financial services, to make the most of their own resources.

Policies and institutions can help ensure that governments establish promising conditions for job creation (Lerman & Skidmore, 1999). Clear and stable rules, such as uncomplicated ways of starting a business, and fair and stable rules on taxes and regulations, encourage businesses to hire and keep workers (Appia, 2012). Flexibly regulated labour markets and low-cost, efficient access to domestic and external markets assist the private sector to thrive (Bredgaard, Larsen & Madsen, 2005). Businesses and individuals alike also would benefit from distinct training and research programs that help adapt new, breakthrough technologies to local conditions and foster a culture of entrepreneurship (Kasper, 2008).

6.5.9.6 Managing the natural resources of South African assets sustainably

Protecting and preserving the earth's resources is not only the right thing to do, it is fundamental to human life and well-being (UNDP, 2011). Integrating environmental, social and economic concerns is crucial to meeting the ambition of a 2055 Umbrella Vision which is more equal, more just, more prosperous, greener and more peaceful. People living in poverty suffer first and worst from environmental disasters such as droughts, floods and harvest failures, yet every person on earth suffers without clean air, soil and water (UNDP, 2007). If South Africa does not address the environmental challenges confronting the world, it can make gains towards eradicating poverty, but those gains may not last. Today, natural resources are often used as if they have no economic value, as if they do not need to be managed for the benefit of future generations as well as the current generation (Pezzey & Toman, 2002). But natural resources are scarce, and damage to them can be irreversible as once they are gone, natural resources are gone for good (UNDP, 2011).

Because South Africans 'treasure what they measure', an important part of properly valuing the earth's natural abundance is to incorporate it into accounting systems

(NDP, 2011). However South Africa's current systems of accounting fail to integrate the enormous impact of environmental concerns; they become 'externalities', effects which matter and have real social and economic consequences, but which are not necessarily captured in calculations of profit, loss and growth (NDP, 2011). Countries' standard measure of progress is the Gross Domestic Product (GDP) or, for companies, profit (World Bank, 2012c). This leaves out the value of natural assets and it does not count the exploitation of natural resources or the creation of pollution, though they clearly affect growth and well-being (Claeys, 2002). Some research is already being done to make sure that governments and companies do begin to account for this. The UN System of Environmental-Economic Accounting, the UN Wealth Accounting and Valuation of Ecosystem Services and the UN corporate sustainability accounting have been piloted and should be rolled out long before 2055. However, in South Africa more rapid and concerted movement in this direction is encouraged. Value for money assessments in public procurement can be a powerful tool for the South African government to demonstrate its commitment to sustainable development. This can enable the South African government to use its considerable purchasing power to significantly accelerate the market for sustainable practices.

Ecosystems include forests, wetlands and oceans. Globally, over a billion people living in rural areas depend on forest resources for survival and income (Shepherd, 2012). Yet the world loses about 5.2 million hectares of forest per year to deforestation and the growing global demand for food, animal feed, fuel and fibre is driving deforestation. Many of these forests have been traditionally managed by indigenous peoples and local communities but when forests are cleared, people and communities lose a traditional source of their livelihoods while societies lose an important natural resource that could be managed for more sustainable economic development (Gaston & Spicer, 2004).

Maintaining forests with many different species and planting a wide range of food crops benefits people's livelihoods and food security (FAO, 2008). Such measures would keep forests providing essential services, such as protecting the watershed, mitigating climate change, increasing local and regional resilience to a changing climate and hosting many species. With 60% of the world's ecosystems degraded,

tens of thousands of species have already been lost (Broeker, 2006). In South Africa, new partnerships are needed to halt the loss of forests, to capture the full value of forests to people and society, and to tackle the drivers of deforestation. Reducing Emissions from Deforestation and Forest Degradation (REDD+) is an emerging global effort to give developing countries economic incentives to conserve their forests and increase reforestation in the context of improving people's livelihoods and food security, taking into account the value of natural resources, and bio-diversity (Sarkar, 2011). These major efforts in low-carbon development and carbon sequestration however will need more financial support from the government in South Africa towards 2055.

6.5.10 How to create a tolerant, stable, secure and well-managed South African society based on democratic values

Democracy, respect and tolerance for human rights and the empowerment of people are necessary fundamentals for a national transformation process (Anderson & Ackerman Anderson, 2001). Democracy is not merely regarded as an outcome, but also a main element that will lead to the achievement of any national vision (Brinkerhoff & Goldsmith, 2005). Therefore, it is crucial that South Africa initially builds a strong base for real democracy and tolerance in order to make sure that the mistakes made by South Africa's forefathers do not recur. It will be essential to transfer power to local levels with the intention that people can have control and say over the way they are governed (Caddy, 2001).

The main challenges that need to be addressed are the search for new ways of human progress and well-being, shared by all on the planet, without further destruction of the natural environment as the basis of human survival (UNDP, 2012b). In the developing world, the present focus on material progress to the exclusion of almost anything else, seems to be based on a misguided belief that environmental problems can wait to be resolved until after the poverty problem has been eliminated; but unfortunately, mankind does not have that luxury. Sustainable development requires that all these challenges are addressed simultaneously. The present mainly economic focus should be replaced with a focus on public values (Moore, 2003; UNDP, 2012c) such as improved well-being, equity, justice, freedom

and participatory democracy, which also embraces the environment, seeing humans as inexplicitly part of ecosystems in social-ecological systems (Walker, Anderies, Kinzig & Ryan, 2006; Man in Biosphere, 2008). This requires the linking of a humanist agenda with ecological thinking, which are some of the possible values underlying the concept of sustainable development (Mautner, 2009). It also calls for a balancing of modernist and enlightenment notions of progress versus post-modern critiques of the hidden power relationships, tensions and structures that thwart our dreams of the future (Volkmann, 2006).

Shove and Walker (2007) also caution us that there are no neat and simple processes of transformation, and even if such dynamic, multi-actor, multi-factor and multilevel, extremely complex transitions could be managed (which they doubt), there are many issues that make the chances of success extremely unlikely, such as the politics of who decides, who benefits and who loses, which "drivers offer the best leverage for guiding change in a desirable direction"; "how to engineer the death of undesirable systems" and technologies, as well as how to measure change. Shove and Walker (2007) also support co-evolutionary models of social and environmental change for sustainability, but they also quote Bauman (1991) that "remaking society by design may only make it worse than it was". On the other hand, Shove and Walker (2007) agree with Rip (2006) in recognising the value, productivity, and everyday necessity of '**an illusion of agency',** and of the working expectation that a difference can be made even in the face of so much evidence to the contrary (Shove & Walker, 2007).

Rotmans and Kemp (2008) argue that transition management should not be seen as a form of social engineering, top-down steering or blueprint planning. According to them it is a model of "co-evolutionary management of transformative change in societal systems", as well as a "governance concept for exploring new paths in a reflexive manner", in a continual, cyclical, complex adaptive, non-linear process of creating spaces for different activities and for entrepreneurs and front runners to contribute; building visions and joint agendas, long-term goals, bottom-up development; finding appropriate instruments and incentives, searching, exploring innovations, experimenting, learning, adjusting, adapting, making use of "darwinistic' processes of variation and selection" (Rotmans & Kemp, 2008). Rotmans and Kemp

(2008) believe that power is distributed over many public and private role-players playing "a particular role in the transition game", with different interests, belief-systems, and resources, and in various roles – strategic, political, advisory, critiquing and monitoring. There is no clear hierarchy or management structure or specific transformation manager (McGuire, Palus, Pasmore & Rhodes, 2009). According to Rotmans and Kemp (2008), transformation involves negotiated processes by a multitude of actors, each with their own interests and beliefs, but connected with each other in various ways.

The power of diversity should be used by exploring diversity and a variety of solutions and paths (Frazzoli, Dahleh & Feron, 2002). Inter-linkages between policies and possibilities of creating synergies between policies (focusing energy in the same direction towards the ultimate vision) also need attention for South Africa towards 2055. The concept of integration in relation to the economic, social and environmental spheres is important in relation to sustainability. Max-Neef (2009) lists the following human needs, namely subsistence, protection, affection, understanding, participation, idleness, creation, identity and freedom, and suggests that mankind focus on what is called synergic satisfiers, namely those satisfiers "which, by the way in which they satisfy a given [human] need, stimulate and contribute to the simultaneous satisfaction of other needs" (Cruz, Stahel & Max-Neef, 2009). The purpose is then to try and address many needs and policy goals simultaneously, for example by promoting equity, at the same time as building skills, rewarding merit, retaining staff and protecting institutional memory (Tishman, Van Looy & Bruyère, 2012). If we as South Africans focus too much energy on one component of a complex system, South Africa might create unintended problems with regard to the other elements we are ignoring (Pekala *et al.,* 2004). Ways to use the very progressive South African Bill of Rights should be promoted and explored as a bridge across the trauma of the divided past and a possible equitable, sustainable future, by building a human rights culture (from primary school level upwards). This will require that the South African population as a whole be seen as active citizens who need to be treated with dignity and be acknowledged for their true potential and creativity (Ramphele, 2008).

6.5.11 How to ensure law and order is restored to build safer communities in South Africa

Freedom from fear, conflict and violence is the most fundamental human right and the essential foundation for building peaceful and prosperous societies (Paris, 2001). At the same time, people the world over expect their governments to be honest, accountable, and responsive to their needs (Roth, 2011). This research effort is calling for a fundamental shift to recognize peace and good governance as core elements of wellbeing, not optional extras for South Africa's future towards 2055. This is a universal agenda, for all countries (UNDP, 2012d). Responsive and legitimate institutions should encourage the rule of law, property rights, freedom of speech and the media, open political choice, access to justice, and accountable government and public institutions (UN, 2013). South Africans need a transparency revolution, so citizens can see exactly where and how taxes, aid and revenues from extractive industries are spent.

This research effort also believes that conflict (a condition that has been called development in reverse) must also be addressed head-on, even within a universal agenda. The UN (2012c) also included in their list a goal on ensuring stable and peaceful societies, with targets that cover violent deaths, access to justice, stemming the external causes of conflict, such as organised crime, and enhancing the legitimacy and accountability of security forces, police and the judiciary. However these targets alone would not guarantee peace or development in countries such as South Africa emerging from conflict. Other issues, such as jobs, participation in political processes and local civic engagement, and the transparent management of public resources are also important. South Africa should also benefit from a strengthened financing framework that allows resources to be allocated to those 'hot-spots' most in need.

Without peace, there can be no development. Without development, there can be no enduring peace (UN, 2012d; World Bank, 2012d; Oxhorn, 2012). Peace and justice therefore are prerequisites for progress. South Africa must acknowledge a principal lesson of the MDGs: that peace and access to justice are not only fundamental human aspirations but cornerstones of sustainable development. Without peace,

children cannot go to school or access health clinics. Adults cannot go to their workplaces, to markets or out to cultivate their fields (Fischer, 2013). Conflict can unravel years, even decades, of social and economic progress in a brief span of time (UN, 2012). When it does, progress against poverty becomes daunting. By 2015, more than 50% of the global population in extreme poverty will reside in places affected by conflict and chronic violence (OECD, 2013). To end extreme poverty and empower families to pursue better lives requires peaceful and stable societies (OECD, 2012). Children are particularly vulnerable in situations of conflict (UN, 2012). In at least 13 African countries, militants and political activists continue to recruit children into armed forces and groups, to kill or maim children, commit rape and other forms of sexual violence against children, or engage in attacks on schools and/or hospitals (Schauer, 2009). Recognising their particular vulnerability to violence, exploitation and abuse, the UN (2012) proposes a target to eliminate all forms of violence against children. The character of violence has shifted dramatically in the past few decades (WDR, 2011). Contemporary conflict is characterised by the blurring of boundaries, the lack of clear front lines or battlefields, and the frequent targeting of civilian populations. Violence, drugs and arms spill rapidly across borders in our increasingly connected world (UN, 2012; World Bank, 2012e). Physical insecurity, economic vulnerability and injustice provoke violence, and violence propels communities further into impoverishment (Loppie & Wien, 2009). Powerful neighbours, or global forces beyond the control of any one government, can cause stresses (Shah, 2001). Stress alone, though, does not cause violence: the greatest danger arises when weak institutions are unable to absorb or mitigate such stress and social tensions (Pini, 2011). Safety and justice institutions are also regarded as especially important for poor and marginalized communities. In 2008, the International Commission on Legal Empowerment of the Poor estimated that as many as 4 billion people live outside the protection of the law (CLEP, 2008). But South Africa like every other country can work towards social justice and begin to fashion stronger institutions for conflict resolution and mediation. Many developed countries have successfully made the transition from endemic violence to successful development, and South Africa can learn important lessons from their powerful example. It is important that South Africa ensures basic safety and justice for all, regardless of a person's economic or social status or political affiliation. To achieve peace in South Africa, leaders must address the problems that matter most to people

and prosecute corruption and unlawful violence, especially against minorities and vulnerable groups. South Africa must adapt its culture to enhance accountability. South Africa must prove that the government can deliver basic services and rights, such as access to safety and justice, safe drinking water and health services, without discrimination (Miller & Tyler, 2003). Progress against violence and instability in South Africa will therefore require local, national, regional and global cooperation. The South African Government must also offer sustained and predictable support. Too often, South Africa waits until a crisis hits before providing the necessary commitments to bring safety and stability. Assistance from the international community to places in South Africa suffering from violence must plan for the longer term (Wright, 2004). This will allow enough time to make real gains and solidify those gains and during that time, by providing the basics, from safety to jobs, can improve social cohesion and stability (Hand, 2011). Good governance and effective institutions are crucial for South Africa towards 2055. Jobs and inclusive growth are linked to peace and stability and deter people from joining criminal networks or armed groups (Jeppie, 2005). Steps to mitigate the harmful effects of external stressors such as volatile commodity prices, international corruption, organized crime and the illicit trade in persons, precious minerals and arms are sorely needed in South Africa. Effectively implementing small arms control is especially important to these efforts. Because these threats cross borders, the responses must be regional and international. Some innovative cross-border and regional programs exist, and regional organisations are increasingly tackling these problems (WDR, 2011). To ensure that no one is left behind in the proposed Umbrella Vision for 2055, South Africa must work collectively and smartly to ensure the most fundamental condition for South Africa's survival, namely to see that peace is attained long before 2055.

6.5.12 How to ensure that education becomes a priority for South Africa

Education is a fundamental right. It is one of the most basic ways people can achieve wellbeing. It lifts lifetime earnings as well as how much a person can engage with and contribute to society. Quality education positively affects health, and lowers family size and fertility rates.

Across the world, investment in education clearly benefits individuals and societies. A study of 98 countries found that each additional year of education results in, on average, a 10% increase in lifetime earnings which has a huge impact on an individual's opportunities and livelihood (Fletcher, 2013). In countries emerging from conflict, giving children who have not been able to attend school a second chance is one way to rebuild individual capabilities and move into national recovery (Psacharopoulos & Patrinos, 2004). However, globally, there is an education, learning and skills crisis. Some 60 million primary school-age children and 71 million adolescents do not attend school. Even in countries where overall enrolment is high, significant numbers of students leave school early (Sharma, 2010). On average, 14% of young people in the European Union reach no further than lower secondary education (EFA, 2012). Among the world's 650 million children of primary school age, 130 million are not learning the basics of reading, writing and arithmetic (EFA, 2012). A recent study of 28 countries found that more than one out of every three students (23 million primary school children) could not read or do basic maths after multiple years of schooling (Brookings Institution, 2013).

All around the world, mankind is nearing universal primary school enrolment, although 28 million children in countries emerging from conflict are still not in school. In more than 20 countries, at least one in five children has never even been to school (UNESCO, 2011). There, the unfinished business of MDG 2, universal primary education, continues to be a priority (UN, 2012e). South Africa will need to ensure all children, regardless of circumstance, are able to enrol and complete a full course of primary and lower secondary education and, in most cases, meet minimum learning standards. Of course, education is about far more than basic literacy and numeracy. While the targets are about access to school and learning, education's aims are wider. As set out in the Convention on the Rights of the Child, education enables children to realise their talents and full potential, earn respect for human rights and prepares them for their role as adults (UN, 1989). Education should also encourage creative thinking, teamwork and problem solving. It can also lead people to learn to appreciate natural resources, become aware of the importance of sustainable consumption and production and climate change, and gain an understanding of sexual and reproductive health. Education supplies young people with skills for life, work and earning a livelihood. Teachers are often early mentors

who inspire children to advance. The quality of education in most countries depends on having a sufficient number of motivated teachers, well trained and possessing strong subject-area knowledge. Equity must be a core principle of education (ESCO, 2012; UN, 2012f). Educational disparities persist among and within countries. In many countries where average enrolment rates have risen, the gaps between, for example, rural girls from a minority community and urban boys from the majority group are vast. Some countries have made significant gains in the past decade in reducing disparities based on disability, ethnicity, language, being a religious minority and being displaced. As children move on to higher levels of education the education gap still remains enormous. Many children who finish primary school do not go on to secondary school. They should, and South Africa has included a target to reflect this. Skills learned in school must also help young people to get a job. Some are non-cognitive skills – teamwork, leadership, problem solving. Others come from technical and vocational training. Wherever it takes place, these skills are important components of inclusive and equitable growth. They are needed to build capacity and professionalism in governments and business, especially in South Africa (UNESCO, 2011; ESCO, 2012; UN, 2012; Bookings Institution, 2013).

Education is not only essential for human beings to achieve their full potential, both individually and collectively, but it is also key to dealing with the environmental, social, health, and economic challenges mentioned above, and to resolving conflicts in peaceful ways (Novicki, 2011). A good education will promote respect for diversity and for other cultures, and will promote peaceful and mutually respectful relations between peoples holding widely divergent views. The schools and universities in South Africa are turning out an unprecedented number of graduates, but it is questionable whether our wisdom or understanding as a society is growing as a result (Ross, 2013). Of all the components of the Genuine Progress Index, South Africa has therefore found the education component the most challenging in terms of indicator development, as good indicators must assess the quality of the education and its outcomes, not just the number of graduates (Torres, 1999). True education must be directed towards the full development of human capacities (Murphy, 2003). True education must encourage students to express their innate wholeness, strengthen their kindness and ability to help others, and stimulate them to participate in the evolution of a humane and decent society. Such an education will promote a

culture of resourcefulness, initiative, and cooperative effort (Cole, 2008). Because of the challenges in devising indicators capable of measuring these outcomes, South Africa has left the development of the education indicators to the very end of the Genuine Progress Index development (Giovannini & Hall, 2005). Certainly South Africa must see education as a life-long process, not just as something that happens to young people in schools.

Availability of workers with the right skills is one of the key determinants of success for any business and of capable and professional public bureaucracies and services (Cannell, 2004). Investing in education brings individuals and societies enormous benefits, socially, environmentally and economically. But to realize these benefits, children and adolescents must have access to education and learn from it (Brookings Institution, 2013). The attainment of true knowledge and wisdom for the benefit of all beings is the ultimate goal of South Africa. Education in this sense does not merely refer to a set of curricula for the classroom or for job training. It includes a deep exploration and understanding of the way the world works, including our minds, bodies, and the society and environment in which we live and it involves great respect for the wisdom of our teachers, elders and traditions (Le Grange, 2007). Education, training and innovation are central to South Africa's long-term development. Educators are core elements in eliminating poverty and reducing inequality, and provide the foundations of an equal society. Education empowers people to define their identity, take control of their lives, raise healthy families, take part confidently in developing a just society, and play an effective role in the politics and governance of their communities (NDP, 2011). Foundational skills in areas such as mathematics, science, language, the arts and ethics are essential components of a good education system. Lifelong learning and work experience improve productivity, enabling a virtuous cycle that grows the economy. Quality education encourages technology shifts and innovation that are necessary to solve present-day challenges. Education, training and innovation are not a solution to all problems, but society's ability to solve problems, develop competitively, eliminate poverty and reduce inequality is severely hampered without them (Williams, 2000). Good science and technology education should be crucial for South Africa's future innovation. The humanities are important for understanding some of the difficult challenges South Africa faces such as transformation, violence, corruption, education, service delivery,

innovation, the gap between the rich and the poor, and the issue of race (NDP, 2011). South Africa needs knowledge that equips people for a society in constant social change.

In today's knowledge society, higher education underpinned by a strong science and technology innovation system is increasingly important in opening up people's opportunities (NDP, 2011). However, universities no longer have a monopoly on knowledge production globally (Makgoba, 2011). Other organisations, such as science councils, non-governmental and privately funded research institutes, state-owned enterprises (SOEs), the private sector, and even some government departments, have to become sites of new knowledge production and application (Lewis, 2004). South Africa's framework in which the knowledge production system operates and its relationship to innovation and industry need to be reconfigured (Makgoba, 2011). Greater understanding within the South African government is required to acknowledge the importance of science and technology and higher education leading and shaping the future of most modern nations. The South African government education departments need to work together to develop a broad enabling framework and policy that encourages world-class research and innovation. In South Africa, a strong educational system spanning early childhood development, primary, secondary, tertiary and further education is crucial for addressing poverty and inequality towards 2055. Other South African policies, such as the provision of housing, basic services and social security, are therefore critical for building an education system that benefits all learners in South Africa. This research effort also builds on the NDP (2011) vision for education, training and innovation.

The NDP (2011) proposed actions based on five cross-cutting, interdependent and implementable themes, namely:

- Laying a solid foundation for a long healthy life and higher educational and scientific achievement. This relates especially to early childhood development, basic education, further education and training, and higher education.
- Building a properly qualified, professional, competent and committed, academic, research and public service core. This relates to quality early childhood learning,

schooling, further education and training, higher education, and the national system of innovation. It requires a coordinated plan to produce high-level professionals to lead the public and private sectors, and the cutting-edge knowledge capacity needed for increased innovation and socio-economic development.

- Building a strong and coherent set of institutions for delivering quality education, science and technology innovation, training and skills development. Develop world-class centres and programmes in the national system of innovation and the higher education sector over the next 20 years. The Department of Higher and Training and the Department of Science and Technology in South Africa should lead and consolidate this process.

- Expanding the production of highly skilled professionals to enhance the innovative capacity of the nation. This relates to higher education, the national system of innovation, SOEs and industry. Create a new national framework of common objectives and operations – recognising that new knowledge and innovation arise from many sites in modern society. Develop a common understanding within government in particular the Department of Higher Education and Training, Department of Science and Technology, Department of Trade and Industry, Public Enterprises, the Treasury, and Economic Development on how to promote the role of science and technology and higher education in shaping society, the future of the nation and the growth path.

- Creating an educational and national science system that serves the needs of society. Increase the participation rate in higher education to more than 30%, double the number of scientists and increase the numbers of African and woman postgraduates, especially PhDs, to improve research and innovation capacity. This will help to accelerate the transformation of South Africa's scientific and academic communities to better reflect the population. Develop African languages and incorporate indigenous   knowledge systems in education and research (NDP, 2011).

South Africa's foundations for achieving the abovementioned actions should be fully established before 2020, but realistically allow for expansion towards 2055.

6.6 THE PROPOSED CHANGE NAVIGATION PROCESS FOR SOUTH AFRICA TOWARDS 2055

This section explains and evaluates the building blocks of the change navigation process. A change navigation process should comprise the steps usually integrated in the scenario-based planning process. These steps are: laying the foundation for the scenario-based planning agenda; finding out the focal question; classifying and ranking the main local and global factors; deciding on the scenario logics; fleshing out the scenarios; analysing the influences of the scenarios for the country; developing new as well as existing strategies based on the developing scenarios; selecting the foremost signposts/indicators to supervise the change navigation process as well as the execution of scenarios and warning against unfolding scenarios and sustaining ongoing business learning (Geldenhuys, 2006; Chen, 2011; Herrington, 2007). This discussion showcases the complexity of change and raises a question: Who ensures that change context, process, and content relate effectively and that change space is engineered to ensure readiness for change and adjustment in the change process? While some disagree (Fernandez & Rainey, 2006; DiMaggio & Powell, 1983; Hannan & Freeman, 1984; Scott, 2003; World Bank, 2013), most researchers would answer, "That is the role of leadership!" (Gilley, Dixon & Gilley, 2008; Kotter, 1995; Lawrence & Lorsch, 1967; Pfeffer & Salancik, 1978; Fernandez & Pitts, 2007; Van de Ven & Poole, 1995; UN, 2012; World Bank, 2013). Many leadership scholars connect leadership to change as well, including Burns (1978) who argues that leadership manifests most in the change context, and Linsky and Heifetz (2002) who introduces leadership as facilitating adaptive change. Yukl (2002) argues that, "[Change] is the essence of leadership and everything else is secondary". The leadership literature comprises a fragmented set of perspectives balkanised into "various clusters of theories and approaches" (Fernandez, 2005; World Bank, 2013). Researchers relate steadfastly to schools of thought that seem exclusive and difficult to integrate, sporting names like "trait theory," the "leadership behaviour" school, "power and influence approach", "situational and contingency theory", "transactional and transformational leadership", "collaborative leadership," "connective leadership", and "followership" (World Bank, 2013). These schools tend to posit different arguments in regard to fundamental questions, like: Who is the change leader? Why? What does the leader do in the change process? How? How

does context influence leadership in change? This research effort believes these are vital questions to better understand how leadership makes a difference in the change process. They are also important for those parties attempting to craft interventions that stimulate leadership-led change solutions. This research effort addresses them below and raises research propositions based on the attempt at an inclusive reading of the literature, and the change space perspective already discussed.

6.6.1 Building blocks for the change navigation process

The change navigation process involves three distinct conditions, namely (Beckhard & Harris, 1987; Tushman & O'Reilly, 1997; Veldsman, 2002):

- The desired future state (i.e. where the leaders want the country to get to).
- The present state (i.e. where the country is currently).
- The transition state (i.e. the set of strategies, conditions and actions that the country must go through to shift from the present to the future).

According to Figure 6.5 at least five building blocks of change navigation can be distinguished
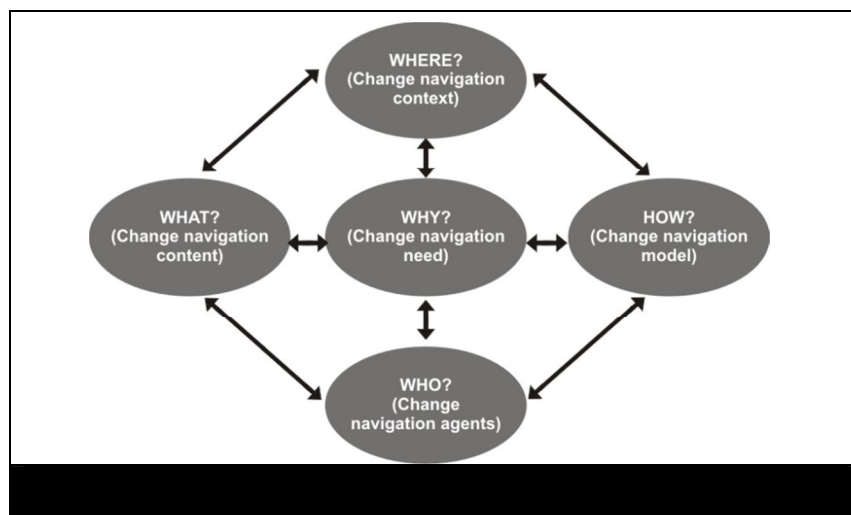

Figure 6.5: Building blocks of the change navigation process
Source: Veldsman, 2002

The five building blocks of change navigation depicted in Figure 6.5 can be summarised (Pettigrew, 1987; Veldsman, 2002) as follows:

- The 'why' of change: the capability to comprehend and own the rationale for change fully (i.e. the change navigation need).

- The 'where' of change: the capacity to draw the necessary boundaries in space and time around the country (i.e. the change navigation context).

- The 'how' of change: the ability to plan, implement and follow a sustainable and appropriate change process (i.e. the change navigation model).

- The 'who' of change: the aptitude to describe and place the change roles correctly during the course of the change (i.e. the change navigation agents).

- The 'what' of change: the ability to recognize the essential and vital organisational factors that must be altered as a result of the change need   (i.e. the change navigation content).

Table 6.4 contains a summary of the values most regularly cited to guide one in navigating the chaos of change under hyper-turbulent circumstances.

Table 6.4: Guiding values for change navigation efforts for South Africa towards 2055

BUILDING BLOCKS	VALUES
The 'why' of change	-A visible and continuous belief in the actualization of a clear vision of the change outcomes must exist. The expected benefits flowing from the vision must be consequently communicated to South Africans by sharing possible consequences and areas of uncertainty. No rash promises may be made. Change must be linked to the strategic intent, central/overall theme and the necessary importance.
The 'where' of change	-The manner in which the change is steered overall must be a mirror of the desired future state. In this way, South Africans obtain a preview of the 'should/must be' state, the latter of which is being

	strengthened on a continuous basis.
The 'how' of change	-Congruence among all aspects of the change must be maintained. -South Africans must be provided with adequate/high-impact training and emotional support to enable them to make a success of the journey. -Change requires a substantial investment of resources (i.e. funding and executive time). -Resistance to change must be dealt with in an open and fearless manner. -Frequent assessments of the change's effects (whether formally/informally or directly/indirectly) and a wide sharing of information must be the order of the day in South Africa. -The historical baggage of previous change journeys must be dealt with so as to not become a drag factor of the present change. Milestones and successes must be celebrated in order to (re)energise South Africans.
The 'who' of change	-The more intensive and extensive the change, the greater the need for visible and active transformational leadership. -Responsible and active participation/engagement of South Africans must be encouraged throughout the unfolding of the change.
The 'what' of change	-It may be helpful to develop a model as an intellectual map to aid in conceptualizing and systematizing the changes South Africa has to undergo. Piloting the change programme can be done on a trial basis.

Sources: Adapted from Geldenhuys, 2006; Van Tonder, 2004; Veldsman, 2002

6.6.2 Overview of the change navigation process

There are many procedures to aid South Africa to thrive amidst change and it is reasoned that the following steps are evident in most of the change navigation processes (Geldenhuys, 2006):

- Rallying disappointment with the status quo and creating a need for change.

- Rallying commitment and gaining support from the significant role-players.

- Designing transition management compositions, policies, procedures and plans.

- Developing a shared vision.

- Creating flexible change (or implementation) actions.

- Maintaining stability and institutionalising the change.

Change seldom happens in a void or against a clean slate where all options are on the table and possible (World Bank, 2013). There is always a set of contextual issues to consider, manifest in an entity's external and internal environment (Roux, 2011). Some researchers argue this to be the political economy context (Grindle & Thoman, 1991; Ilchman & Uphoff, 1997) while others refer to the historical and institutional setting (Mahoney, 2000; Pierson, 2004).

The World Bank (2013) advocates that regardless of the drivers for change, people within countries should be prepared to change unless they perceive that there is a crisis. That is, that change is the least damaging option for them. However, few countries lurch from one crisis to another, and it would be generally thought unwise for countries to simply wait for the next crisis to come along before introducing change (Satrusayang, 2013). Rather than to focus on a crisis, change needs to be managed as an ongoing process in which the need for change is communicated through identifying performance gaps (Kennerley & Neely, 2003). A performance gap is the difference between what mankind is doing and what mankind should be doing. Addressing the performance gaps can be a means to resolving a problem (reactive) which already exists, or can be the opportunity (proactive) to develop, elaborate or improve what for instance South Africa is currently doing. Either way the performance gap should be used as a means of demonstrating to South Africans the difference between where our country is now and where the South Africans need or would like to be. By recognising the performance gap, South African leaders are able to define what changes need to take place, whether these are changes in practice, changes in structure or changes in culture.

6.7 THE ROLE OF THE CHANGE NAVIGATION PLAYERS FOR SOUTH AFRICA

Development involves change. But many development initiatives produce unimpressive levels of change in the countries, organisations, and outcomes they target and are disappointing in the final results. This is the case in social sector initiatives, core public management reforms, and even macro-economic adjustment operations. Change is often limited even when countries adopt proposed solutions in their proposed forms, in apparently good faith and on time (or in reasonable time). We wonder why, and believe research should ask *how* to close the gap between the change intended in development (*what* is proposed) and the change we actually see in evidence.

The role of change navigation players contains a process for navigating change of any magnitude in South Africa. These roles or steps are proposed as follows:

6.7.1 Stage 1: Awareness

Step 1 is to rally disappointment with the current state and develop an acceptance for change navigation. External pressures must be deciphered into internalised disappointment with the status quo among South Africans. Additionally, a growing consciousness about the need for change must be developed among the people (Anderson & Ackerman Anderson, 2001; Beckhard Harris*.,* 1987; Tushman & O'Reilly*,* 1997; Veldsman, 2002).

6.7.2 Stage 2: Mobilisation

Step 2 is to harness commitment and to shape a guiding coalition in order to enable South Africans to respond to the environmental pressures generating the need for change navigation. Informal talks between key leaders of South Africa should be held in order to instigate a programme for change navigation. This serves to gather commitment for change navigation amongst power groups within South Africa, which augments ownership and reduces resistance to change. A guiding coalition must be

created with adequate political and power dynamics to form the change (Anderson & Ackerman Anderson*.,* 2001; Beer, Eisenstat & Spector*.,* 1990).

A trustworthy individual in South Africa's government has to be formally elected as the transition leader in order for him/her to launch a flexible plan of action and create enthusiasm within the country to aid the change effort (Burke, 1987; Tushman & O'Reilly*,* 1997). A transition management team should also seek to enhance the involvement of South Africans in the change navigation process. The team must have the required resources such as budget, time, personal support and often-external expertise (Kilmann, 1989; Tushman & O'Reilly*,* 1997).

Step 3 is to communicate a clear image of the future end-state. The transition management team must create shared and task-aligned strategies to define the desired end-states for the change. The key role-players must see "eye-to-eye" on values, which form a set of essential beliefs that guide the manner in which people must behave during the change navigation journey. Desired results towards 2055 must be indicated and clearly communicated to all the people of South Africa. Unfolding the interim future state serves to establish the achievability of desired results and to recognise who will be affected (Beckhard & Harris*.,* 1987; Beer *et al.,* 1990; Veldsman, 2002).

Step 4 is to establish the present state of South Africa and to build the change navigation framework towards 2055 in order to succeed in the change. Change navigation role-players should collect relevant information and analyse the current challenges/problems of South Africa. Focus groups, interviews or questionnaires can be used to create a comprehensive and accurate picture of South Africa's present state. Each level in the change navigation framework has to be sampled so as to obtain a representative view of South Africa. The overall capability of South Africa to succeed in change must however be recognised. Resources such as financing, personnel and training have to be supplied in order for the change to be successful. Feedback methods should be established to provide information on the efficiency of the change and further areas needing additional action (Anderson & Ackerman Anderson*.,* 2001; Kilmann, 1989; Nadler *et al.,* 1998).

6.7.3 Stage 3: Conversion

Step 5 is to construct a change navigation strategy, create and execute flexible change actions and to ensure how it fits in with South Africa. A change navigation strategy must cover the 'what', 'by when' and 'the how' stipulations. This is since current roles, procedures as well as structures may no longer be constructive, and those designed for the future may not yet be fully in place (Anderson & Ackerman Anderson, 2001; Beckhard & Harris, 1987; Tushman & O'Reilly, 1997; Veldsman, 2002).

The plan of action must be established based on extensive consultations with role-players and these plans must be realistic, achievable, flexible and measurable. The plan of action must also contain information on responsibilities, necessary resources, benchmarks, control measures and performance principles. The transition leaders must make sure that a proper 'fit' exists between the change realities facing South Africa and the navigation strategy. These realities comprise factors such as South Africa's resources, processes, structure, systems and operating environment. The tighter the fit the more successful South Africa will be in transforming its strategies into performance towards 2055 (Nadler *et al.,* 1998).

Step 6 is then to produce short-term wins, consolidate gains and generate more output. Short-term wins must be unleashed to build the reliability needed to sustain the change effort in the long term. This is attained by planning for noticeable improvements in performance and clearly recognising and rewarding the people who make the wins probable (Beer *et al.,* 1990; Nadler *et al.,* 1998; Tushman & O' Reilly 1997). Both formal and informal rewards for the required behaviour must be incorporated into the process (Nadler & Nadler, 1998).

Step 7 is to navigate and facilitate personal transition from the present towards 2055. The transitional leaders must aid South Africans with support by helping restore the past with future opportunities. The people of South Africa must be given the time to work through their feelings of being disgruntled with the past and not yet being emotionally committed to the future (Nadler & Nadler, 1998).

6.7.4 Stage 4: Stabilisation

Step 8 then is maintaining stability and formalising change. The change navigation process must be implanted relatively permanently in South Africa towards 2055. The transition leader should make it well-known when the desired outcomes are in position and those who have helped move the country in the change direction also should be acknowledged and rewarded (Burke, 1987; Veldsman, 2002).

6.8   BUSINESS IMPLICATIONS FOR SOUTH AFRICA TOWARDS 2055

The scale and complexity of the sustainable development challenges of our Planet are such that it is clear that no single group of actors or institutions can make a decisive difference (Roussel, 2007). Game-changing progress towards sustainable development demands a multi-stakeholder approach (Tembo, 2008). The international community, multi-lateral institutions, national governments, academia, civil society and business have got to work together towards a common agenda (Leisinger & Bakker, 2013). The innovations, management skills and financial resources of Business will be a major provider of solutions in most areas (World Business Council for Sustainable Development, 2013).

Within the space of sustainable development the role of business in South Africa towards 2055 will need to take the following elements into account:

- How to incentivize and support sustainable economic development.
- How to ensure that future economic growth and technological progress aim   to be socially inclusive, achieving poverty eradication, youth unemployment reductions and more equal societies.
- How to achieve environmental sustainability, aimed at developing low carbon solutions, reducing stress on all Planetary Boundaries as well as scaling up resource productivity and agricultural improvements.
- How to ensure good governance, which is essential for sustainable development. This applies to the South African government, as well as to corporate governance.

The awareness of sustainability in business has increased; an ever larger group of businesses is joining the "standard for responsible business" that is defined by the principles of the UN Global Compact; leading companies are integrating sustainability in the core of their strategies and more and more business solutions for a sustainable world are being developed (Steer, 2013). Partnerships with the UN and other elements of civil society are now considered normal and so is business representation in most of the major G 20 meetings (UN, 2011; Leisinger & Bakker, 2013). Business has traditionally focused on providing goods and services that meet customer demands, can be sold at competitive prices, in a profitable way, while adhering to law and regulation (Leisinger & Bakker, 2013). Successful entrepreneurship is the most important driver of economic growth and hence improvement of living standards. However, in a world that is resource constrained; where climate change is now clearly linked to human activity and where growth has so far been unable to include all citizens on our planet, this traditional role of business is not good enough to achieve sustainable world solutions (World Bank, 2013). Nor can it be expected that, without any additional intervention, entrepreneurship will be able to solve all our challenges (Leisinger & Bakker, 2013).

Over 10 000 business participants worldwide have joined the UN Global Compact, through which its ten principles have *de facto* become the standard for "responsible business behaviour". Progress therefore must be secured across many different domains, sectors and regions within South Africa. Business will be a key player in this endeavour, yet business by itself, or as we know it today, will not be enough (Norton, 2012). The South African Government, civil society and the public at large must be equally committed. In reaffirming the role of South Africa's businesses in a society striving towards a sustainable business environment, it needs to be stressed that there will be significant opportunities that warrant further exploration, as well as risks to manage them towards 2055. These fall into three key areas:

- New business opportunities derived from the Umbrella Vision 2055 for the decade ahead. This learning helps set the new internal agenda for business: strategic priorities, skills and capacity building, new business development and possible portfolio priorities.

- New external relations priorities, derived from a review of business opportunities and an analysis of what is required by the South African government and other stakeholders to realize these business opportunities. This will assist businesses in South Africa to define its new external agenda: stakeholder relations priorities, new topics to engage on and a new agenda for business associations.

- New business risks to monitor and address, based on the actions of other stakeholders and on critical and pertinent risks from the possible business risks and other 'wild card' analysis.

The World Business Council for Sustainable Development, a group of 200 forward thinking businesses, also developed a Vision 2050, which outlines a pathway to reach a sustainable global society by 2050, in which the earth's 9 billion people live well and within the limits of the planet. The pathway will enable mankind to live within the limits of one planet, limiting the destruction of key ecosystem services including climate, forest, fisheries and farmlands and easing human hardship through inclusive growth (Leisinger & Bakker, 2013). The World Business Council for Sustainable Development's most progressive companies have begun a full integration of sustainability in the operations and strategy of business, not as social investment or philanthropic contribution, but integrated in the strategy and operations of its core business (EU, 2008). In Vision 2050 a call for a new agenda for business is included: to work with government and society worldwide to transform markets and competition. Prices must be rationalised to include such externalities as key ecosystem services so that sustainability can become a true competitive advantage across all industries and regions (Mann, 2004). Such pricing of externalities will also allow more conscious consumer choices and support the launch and sales of more sustainable products and services (Leisinger & Bakker, 2013). The transformation that capitalism has to go through to align with a sustainable development of the economy will not be achieved through mere incremental change, but requires a radical transformation of the way markets work (Leisinger & Bakker, 2013). Like every journey, such transformation will most likely happen in a numbers of steps:

- More businesses to be inspired to not do harm and compete with integrity and sign up to the UN Global Compact standards for responsible behaviour; and

report their sustainability performance annually. Through partnerships and strategic philanthropy the positive impact on society by companies can be further enlarged.

- Businesses should be integrating sustainability in their core-business strategies so that their core business becomes the engine of solutions for the challenges in the social and environmental impact of their business and products. Solutions that are reality-based will take off first. These have viable business cases today as a result of lower costs (fuel efficiency etc) or new business (sales) opportunities. Additionally an exploration of quick bold simple remedies for the most pressing sustainability challenges that can buy us time will be in this step as well.

- Business and capital markets need to formalize the way that sustainability challenges are reflected in the long-term risk assessment of a company. It is important that these risk assessments are well-grounded in the scientific outlook on social and environmental boundaries.

- The last step is systemic change aimed at creating a better way to measure and value the true performance of business. It seems now clear that change will not be sufficient if business, or the capital markets supporting it, will continue to focus only on a (short-term) return on financial capital. Business uses not only financial capital, but also natural capital (resources, ecosystems) and social capital (humans) and must begin to optimise the "returns of business" in a balanced way across all three of these capitals, recognising that all three capitals have a cost of capital associated with them (UNSDSN, 2013).

Business has and will be the major provider of solutions for many of the world's sustainability challenges (World Bank, 2013). New technologies will bring alternative solutions forward, new business models will emerge and continued close cooperation with governments will bring regulations that will incentivise the development and deployment of new solutions and behaviour (Leisinger & Bakker, 2013). In generic terms there are five ways that (if embedded within an incentivising framework of public policies) will allow for fast scaling up of business solutions (Prahalad & Hammond, 2002):

- Get more business into sustainability: encourage more business to accept   the ten principles of the UN Global Compact ("do not harm and compete with integrity") and encourage more business to partner with the UN entities and other NGOs ("strategic philanthropy"), Communicate why sustainability makes good business sense (the business case).

- Get leading business to do more: share the best practices of the leading business to further enhance the business case for sustainability ("story telling"), inspire the leading business to push the boundaries of innovation.

- Sector based solutions: share best practices within each sector, elevate the best practices to the standard of operation for the sector.

- Cross-sector innovation: bring leading businesses from different sectors together to create innovative solutions for complex system challenges (such as cities, buildings, water nexus etc.), develop indexes for ranking these solutions to encourage speed of implementation (i.e. sustainable city index).

- Systemic changes: develop the universal accounting and valuation framework for balancing financial, social and natural capital, develop the curriculum for future business leaders' education.

Even though the scaling mechanisms above are all business-based solutions, it remains of pivotal importance to indicate that only through close collaboration aimed at aligning the objectives of all actors (governments, civil society and academia), can the full impact be achieved (EU, 2011). In this context is important that South Africa also reviews opportunities where the government can better tap into the financing, innovation and expertise of the private sector. The current (UN, 2013; UN Global Compact, 2013; WBCSD, 2010) processes are moving towards the formulation of the Sustainable Development Goals, that ought to apply to all actors in society including Business (UN, 2013). For Business to be truly engaged it is important to create a framework for the translation of the Sustainable Development Goals in a way that the required business contributions become quantified, actionable and time-bound (Fowler, 2003). Furthermore, it could be considered to create some Sustainable Development Goals that specifically target behaviour and/or contribution of Business. As is clear from the South Africa's "Role of Business" towards 2055, Business should focus on the following elements:

- Detailing of the long-term pathway to Sustainability through Business solutions.

- Creation of a framework to translate the Sustainable Development Goals into actionable, quantified and time-bound objectives for business contributions.

- Responsible lobbying that will ensure business does not lobby against positions that they express in their sustainability or general business strategies.

- Responsible tax optimization codes that will review possibilities to eliminate unfair tax avoidance.

- Business in South Africa should take a more global view as this will enhance current economic conditions and build a solid foundation for decades to come.

Enabling these abovementioned changes will also create opportunities for finance, information/communication technology and partnerships. There will be new opportunities to be realised, different external priorities and partners to be engaged and a myriad of risks to navigate and adapt to. Smarter systems, smarter people, smarter designs and smarter businesses will prevail (WBCSD, 2010).

6.9 CONCLUSIONS AND CONSIDERATIONS FOR THE FUTURE OF SOUTH AFRICA

Towards 2055 and just 40 years from now, some 30% more people will be living on this planet. As part of this research effort, South Africans need to begin by putting the year 2055 into perspective. It sounds far away. Yet, with half of the world's population today under the age of thirty, and current global life expectancy at almost seventy years, as South Africans we can expect that more than half of all people alive today will also be alive in 2055. It is not some theoretical year in a science fiction future. This is also not to say that if 2055 were not on our horizon, the responsibilities towards future generations would be less compelling.

The World Commission on Environment and Development (the Brundtland Commission) defined sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs".
This definition should also guide the work of South Africa's decision-makers. It reflects a fundamental tenet of justice: that no one should be denied the ability or

opportunity to live lives they value because of their culture, gender, ethnicity, religion, or any other factor, including, in this case, the generation in which they happen to be born. As South Africans we need to recognise that our actions today will impact on our world of tomorrow and acting accordingly is necessary for achieving the 'future we want towards 2055' – the call emerging from Rio+20.

For business, the good news is that this growth in population will deliver billions of new consumers who want homes and cars and television sets to name but a few. The bad news is however that shrinking resources and potentially changing climates will limit the ability of all 9.5 billion of mankind by 2055 to attain or maintain the consumeristic lifestyle that is commensurate with wealth in today's affluent markets. "Crisis and opportunity" is a regarded as a cliché, but there is much truth in it. The perfect storm we as South Africans face, of environment, population, resources, crime, corruption, hunger, education and economy, will bring with it many opportunities for South Africa towards 2055. This research effort identified many of the opportunities, and ways in which to leverage them as the world and South Africa address their challenges: infrastructure to build, medicine to discover, technology to develop, new strains of food to create and grow to feed a growing population.

What has driven this research effort, from its beginning, is one opportunity that trumps them all: this research efforts' proposed Umbrella Vision 2055 of 54 million people living well, within the limits of one planet and South Africa. While South Africa has the world's attention and while the global focus is on environment and economics, South Africa can act boldly to break the unsustainable model of growth-by depletion. Towards 2055, South Africa can replace it with a model of growth based on the balanced use of renewable resources and recycling those that are not. The pathway to this sustainable world contains opportunities and risks, and will radically change the ways in which companies do business. Many companies will change and adapt, while others will be challenged to make the transition.

Moving towards the Umbrella Vision 2055 will require business to engage more closely than ever before with both government and civil society. Key questions will need to be deliberated and sorted out: Who defines the incentives and mechanisms? Who finances the transition processes (especially research and development, and

enhanced technology deployment)? Who will or should be the first mover in various activities? How will success be defined? Complex systems and hope will provide the foundation for South Africa towards 2055.

This research effort's findings suggest that there is no simple, single path, but rather the need to design, build and transform complex systems (e.g., energy, finance, food, forests, transport and cities) that will in turn provide the foundation for survival and human development throughout the 21st century and beyond. History can teach us much. Revisiting the key concepts, assumptions and approaches that have underpinned past business and market success, and its role in enabling societal progress and human development over the past 50 years, will be important for the next forty odd years towards 2055. As in the past, this will require external enabling conditions. It will also require enlightened leadership and imagination, because there will be much uncharted territory where history has less to offer us.

This research effort also strongly believes that the world already supplies South Africa with the knowledge, science, technologies, skills and financial resources needed to achieve the Umbrella Vision 2055, but the foundations for much of what is required will need to be laid at speed and scale in the next decades towards 2055. At the same time, the map is far from complete. There are still many significant questions to be answered about governance, global frameworks for commerce, roles and responsibilities, as well as risks. Nevertheless, through hope, these can be answered and addressed in time for progress to be made towards 2055.

The proposed Umbrella Vision 2055 summarises the ambitions of South Africans for the kind of country its citizens should strive to build. The achievement of this vision may appear unbelievable, but if South Africans are willing to face the challenges of addressing the key strategic issues outlined above, the vision should be realised. South Africa will, however, be confronted with a number of constraints or possible external threats in achieving this vision due to being a nation that has in the past hindered development efforts, which may influence against achieving the desired future.

As presented in the scenarios of Chapter 5, the future is open to great potential depending on South Africa's actions and inactions. It is the choice of South Africans to therefore choose which path to follow in terms of future development as a nation. If good policies are implemented and all work scrupulously, the Umbrella Vision should be achieved. If, on the other hand, bad policies are implemented, South Africa will persist to fall behind with the associated consequences of poor human and social development. The main focus of the South African government must be the understanding of the proposed Umbrella Vision, by making it the main focus in the formulation of strategies, programs and policies. Sector plans will need to be created with importance placed on how each sector can aid the achievement of the national Umbrella Vision and how proposed actions and policies could handle the strategic issues. Policy documents should then be assessed based on how they contribute to moving South Africa towards the achievement of its proposed Umbrella Vision towards 2055. The government should also put into position institutional structures that will bring together the key role-players on a continuing basis to evaluate the strategies and vision as well as to monitor the implementation.

Private sector role-players should also work with the South African government to guarantee that South Africa's resources are optimally utilised and should shape a society where solidarity between people is central, and everyone participates freely. Creating work for the youth, disadvantaged and the poor is a vital challenge for the proposed Umbrella Vision; a role that can best be played by an effective and organised private sector (Geldenhuys, 2006). The challenge, therefore, is to formulate suitable structures to ensure that the private sector continues to develop and grow. The South African government would also need to place considerable importance on getting civil society organisations to contribute to the process of executing and observing implementation of the Umbrella Vision. Since the end of apartheid, South Africa's civil society is slowly being rebuilt and becoming vibrant to take its rightful place in the management of international affairs. For South Africa this is extremely vital, as civil society will have a major responsibility in promoting issues of national interest, being part of the BRICS group of countries and rebuilding trust. In aiding the completion of the proposed Umbrella Vision, South Africa's civil society organisations could also play a serious role in educating people about the

proposed Umbrella Vision, what it will take to understand it, and the assistance that will be needed from everyone involved.

The proposed Umbrella Vision aims at making South Africa less reliant on outside donor support. Nevertheless, at present, the country will require the assistance and goodwill of the international community in supporting the proposed Umbrella Vision. The South African government will also need to guarantee that development partners are fully conscious of the strategic forces of the proposed Umbrella Vision, and are kept up to date on the status of implementation. The need to stress importance in searching for innovative financing for the proposed Umbrella Vision is emphasized throughout the chapter. New mutual partnerships will need to be established for resource mobilisation. Foremost, infrastructure projects for communications, power, water, housing, transportation and sanitation will have to be financed in order to create the enabling environment for investment in South Africa. Furthermore, capability enhancing and capacity building programs will be needed, given the low levels of technical capacity in the country and the fact that many qualified and well-trained South Africans have emigrated to other countries. Encouragement and incentives will have to be given to encourage domestic savings mobilisation and investments.

South Africa's leaders, professionals, entrepreneurs and decision-makers alike, all owe its citizens aspects such as ethics, honesty, respect, trustworthiness and not doing harm to anyone or anything. Leaders should strive to implement moral obligations to improve the public welfare and to add additional moral burdens that apply specifically to carrying out one's role as a professional, as well as to serve the people of South Africa. Decision-makers therefore, have to maintain and improve the well-being of the citizens now living, and in the future as well as the life-sustaining capacities of the earth. In South Africa, one of the most efficient prevention strategies of future unrest or even rebellion is jobs (Herbst & Mills, 2006). South Africa, a country rising out of conflict has to ensure that, first, build on the basics to ensure they are in place, including human and hard infrastructure such as roads, transport, medical facilities, electricity and ports, and that the traditional drivers of economic activity are completely restored. Since South Africa has been

blessed with copious natural resources, it will have to meet the challenge of investing these proceeds and diversifying its economic base.

South Africa has many obstacles to overcome before any developmental milestones are achieved. The country is not only scarred by good governance standards, but still has elements of corruption, crime, low life expectancies, uneducated population, failed infrastructure and no access to technology. This list still needs to be addressed in order to spark development for South Africa towards 2055. Economic well-being has the apparent potential to develop the health of the population, access to sanitation and clean water as well as access to technology. If South Africa can focus on improving their governance efforts, the chances of positive development will be greater (Gopal & Tyler, 2010).

Winston Churchill once remarked that the further people look into the past, the more people can see into the future. This insight is crucial, especially at a critical juncture when South Africans face fundamental choices. In order for the country to be sustainable, its decision-makers cannot forget the past, for South Africans cannot risk repeating it. South Africa's common journey promises to be challenging and exciting, even though it will be difficult. However, it also promises to be much easier, and more likely to be successful, if all parties concerned face it optimistically with a positive understanding of the pace and character of social transformation. Its ability to recall the past mistakes, to learn from them and to foresee a better future, makes life special and worth living as well as providing a meaningful future.

It was the aim of the researcher to show that many things are indeed possible, depending on the actions of individuals, governments and organisations.

CHAPTER 7

REFLECTIONS AND CONCLUSIONS

7.1   INTRODUCTION

An analysis of the most important findings (which were made in relation to the question of 'so what?') and the recommendations (which were made in relation to the question of 'now what?') was provided in the previous chapter. The discussion provides an opportunity to put forward suggested actions to be taken by South Africa's government and its people on how the country can make the best out of its opportunities. The past is past and the present is where the power lies for influencing the future. The purpose of this chapter is to provide an overview of the research, as well as recommendations and conclusions.

7.2   REFLECTIONS

The scope and complexity of discontinuous change in South Africa have increased in the past 90 years. The core of an ever-changing macro and micro environment is described in Chapters 3 and 4. Life on earth today is a continual series of disruptive and disorienting changes with many changes occurring simultaneously.   It is becoming increasingly difficult for the average South African to anticipate future conditions with any degree of confidence.   This is because existing theories and practices often became obsolete under hyper-turbulent circumstances.   The challenge facing many South Africans is to successfully cross the void of nothing to hold onto, between where it is now and where it wants to be in future.

South Africa needs foresight with regard to what is required to operate successfully within an ever-changing future. Leadership needs to contend with environmental instability, uncertainty and turbulence through a process of navigating sustainable change. Long-term strategies need to be flexible and imaginative. South Africa's strategies must embrace "what if?" questions requiring decision-makers to think about multiple futures. Many other counties, however, simply extrapolate what they have done in the past and select their options based on past experience. Traditional

analytical planning usually takes a linear approach assuming that tomorrow will be similar to today. This approach works well in a stable environment, but fails when discontinuous events thrust vast existing planning models into disarray. Planning efforts therefore should take into account a more comprehensive range of possible future scenarios that will position South Africa better than most conventional forecast efforts (focusing only on a single strategic response). Scenario-based planning also offers greater value over any other strategic planning processes when uncertainty is high, as emerging signals of profound change can be identified much earlier. Interpreting these indicators of change can turn unexpected situations into positive opportunities. Multiple perspectives on complex events can then be woven into a coherent and plausible story of perceived good governance, coupled with inclusive economic growth for all South Africans towards 2055. South Africa operating in the midst of a changing global environment would therefore require the formal and scientific application of scenario-based planning and change navigation in some form. These two disciplines are currently practised independently of one another in South Africa as an appropriate process integrating scenario-based planning and change navigation is currently non-existent (Geldenhuys, 2006). The research effort therefore promotes a combined approach to scenario-based planning and change navigation, which needs to be used in a particular context for South Africa towards 2055.

The question of "appropriateness" is particularly relevant in the context of a Western type of leadership versus "Afrocentric" leadership. It appears that a strong contract exists between the underlying assumptions and leadership styles of developed world and developing worlds. The random borrowing of developed world planning practice such as scenario-based planning from one context to another without ensuring contextual validity is a high-risk event. Alignment between scenario-based planning and good governed leadership must exist in order for scenario-based planning to make a sustainable contribution in developing world countries. If this fit does not exist, the introduction of scenario-based planning could most probably be rejected as a foreign intruder into a developing world context (Geldenhuys, 2006).

The results of the in-depth examination of future studies theory and practice corroborated the argument presented at the beginning of this study that there is a

strong need for fundamental change in the ways of approaching and planning the future of South Africa towards 2055. Having incorporated the results of the research, it is proposed that a traditional 'predict and provide' NDP model should be superseded by a fresh, future-oriented approach, which could be described as 'explore alternative future possibilities, envision and plan'.

The proposed 'explore, envision and plan' approach should be based on the concepts and principles characterised by the Future Studies field. First and foremost, it should reinforce the view that the future will not be an extension of the past, and, therefore, it can unfold in many different ways, and can, more importantly, be shaped. It proposes an in-depth exploration of the short to long-term future possibilities in order to inform decision-makers and policy-makers about existing possibilities, and it promoted the development of a vision preferred future to encourage change in the desired direction for South Africa towards 2055. The approach is based upon the notion that futures' thinking is mainly required in three phases of the planning process: policy-making, decision-making and future research. To a lesser degree futures thinking is needed in the implementation phase.

The South Africa in 2055 futures approach should provide methods and mechanisms for the following:

a) Communities
- To envision South Africa's desired future, building upon common values and wishes.
- To actively participate in the decision-making processes.

b) Professionals and decision-makers
- To challenge the thinking of people involved in South Africa's planning processes.
- To manage the increasing complexity of South Africa and the context within which South Africa uniquely functions and to deal with the uncertainty of future change.
- To identify global trends and examine how they interact and what consequences they could pose for South Africa towards 2055.

- To anticipate and examine the short-, medium- and long-term impacts of future change for South Africa as well as the consequences of South Africa's policies and decisions.
- To channel the thinking of stakeholders into contemplating what future is desirable in the long-term perspective and the tasks that need to be   addressed in order to achieve that future for South Africa.
- To discern the needs and values of South Africa's communities, and to map the changing aspirations and ambitions of policy and decision-makers.
- To develop mechanisms that would facilitate collaboration of all stake holders and communities in shaping the future of South Africa towards 2055.

The results of the research strongly indicate that a futures approach in South Africa's planning is required not only to improve the "toolkit" available for the examination of future change and dealing with the complexity and uncertainty attached to it, but to also mobilize actors, the creation of a platform for the cooperation between stakeholders and decision-makers and the development of networks of actors sharing common intelligence for South Africa's future towards 2055. This research effort has shown that the collaboration between actors is the key to effective governance and realisation of future plans. Only through the commitment of stakeholders, is it possible to ensure the implementation of future visions and strategies. The examples provided indicate that a future approach can be very effective in encouraging such collaboration. Using the future as a 'blank canvas' encourages discussions, free of the present conflicts and bias arising from vested interests.

The results of the research also indicated that there is a strong need for a greater incorporation of societal values and wishes into strategies for the future. In order to achieve this there is a need for more effective engagement of communities in planning processes. Again, futures methods, such as visioning, can be used to discern values wishes, fears and ambitions of communities. A good example of such a project has been the abandonment of BEE in the USA.

In the course of the research, a range of different elements and factors that are required to support the transformation of the prevailing planning mindset from the

traditional 'predict and provide' model to the 'explore, envision and plan' approach was identified. These elements and factors were classified into three categories: 'enabling factors', 'encouraging factors' and 'facilitating elements'. The 'enabling factors' are necessary to bring about the required change in the way of thinking about the future dimension of planning, which could consequently trigger proposed change in South Africa. The 'enabling factors' involve the development of a widespread understanding of three fundamental issues: the importance of long-term future-oriented thinking and action; the weakness and gaps in South Africa's traditional approach towards the future; and the advantages of a futures approach for South Africa's future towards 2055.

7.3   ADDRESSING THE PROBLEM STATEMENT, RESEARCH QUESTIONS AND RESEARCH OBJECTIVES

The research endeavoured to add a new dimension to scenario-based planning by integrating the practices of Causal Layered Analysis, Systems Management and Change Navigation in formulating sustainable strategies for South Africa in a global context. Integrating scenario-based planning and change navigation for South Africa allows for a positive impact on the extent to which diverse role-players buy into the challenges resulting from scenario-based planning.

Scenario-based planning also allows for decision-makers to see the future in different plausible ways (i.e. creating a story of future realities), while the change navigation effort covers the way in which decision-makers support and commit to these different future stories (i.e. navigating, while looking from the current state to the desired future state). The scenario-based planning part appears to be a cognitive (or rational) way of doing strategic planning based on the mutual understanding between participants, whereas the change navigation part tends to be more of an emotional type of process based on mutual acceptance, buy-in and commitment by participants. Together they give a country a competitive advantage.

The primary objectives set for the research were therefore achieved. The research also allowed for the development of a process that integrated scenario-based planning change navigation for South Africa towards 2055. The secondary

objectives were addressed through the literature review, i.e. to review the drivers for change; global challenges; scenario-based planning and scenarios; setting of an umbrella vision; change navigation; developed worlds in contrast to developing worlds; and the core qualities and typical traits of development.

7.4   THE CONTRIBUTION OF THE RESEARCH

The contribution of this research effort aimed at adding theoretical, methodological and practical value:

- **Theoretical value**: The research allowed for the review of a variety of literature sources on the phases/sets included in scenario-based planning, causal layered analysis, systems management and future studies processes respectively. The research made a unique contribution to the current level of knowledge by integrating these research disciplines which are usually practised independently of one another.
- **Methodological value**: The research lead to the compilation of a contextually relevant and validated set of scenarios for South Africa towards 2055.The scenarios can be a generic guiding framework for South Africa's decision-makers who are engaged in scenario-based planning.
- **Practical value**: The proposed scenarios would also enable South African leaders to integrate various insights into different interpretations about how   the future might unfold. Robust strategies could be formulated and concretised into flexible implementation plans for South Africa towards 2055.

The scenarios could be useful when making sustainable resource allocations in planning efforts.

7.5   STRENGTHS AND WEAKNESSES OF THE RESEARCH

The development of the proposed scenarios for South Africa towards 2055 was based on an all-embracing environmental scan, as well as a thorough literature review, which was supplemented by the views of key global experts in scenario-based planning and future studies.

As indicated at the beginning of the study, human actions are likely to be the crucial determinant of the outcomes. Historically, leaders and their ideas (positive and negative) were among the biggest game-changers during the past century. Individually and collectively over the next 40 years, leaders are likely to be crucial in shaping development, particularly in terms of ensuring a more positive outcome. Current trends appear to be heading towards a potentially more fragmented and conflicted world over the next 40 years, but negative outcomes are not inevitable. International leadership and cooperation will be necessary to solve the global challenges and to understand the complexities surrounding them. This study is meant as an aid in that process; laying out some of the alternative possibilities to assist South African policy-makers in steering South Africa towards positive solutions.

It is, however, acknowledged that whilst scenarios are about conditions that one can plan for, there are those conditions that are beyond anybody's control and are high impact. These are referred to as "Wild cards". Ralston and Wilson (2006:112) define wild cards as "very unlikely but very high impact, events or trends". Fahey and Randal (1998:74) describe these as "wholly discontinuous events like natural disasters or assassinations". These can disrupt any country and have to be taken into account if plans are to be watertight. This research effort dealt with them separately as these were not part of the decision focus.

7.6   FUTURE RESEARCH OPPORTUNITIES

It is the aspiration of this research effort to assist in making and taking a small step towards the change of South Africa's planning mindset – the less and less effective 'predict and provide' approach – towards a new attitude, already used in many

countries, the proposed 'explore, envision and plan' approach. It is also hoped that the Umbrella Vision proposed in this thesis would assist communities in envisioning their desired future, and provide a structured approach for planners and decision-makers alike in exploring future possibilities, understanding the complexities and anticipating change and its consequences. And additionally, it would act as a platform for dialogue between different communities and the decision-makers and act as a mechanism for collaboration amongst the stakeholders.

In the course of this research effort a number of issues were identified that need further research. They are divided into two groups: those related to the continuation of the research and those addressing gaps in knowledge about country specific planning processes. The issues suggested as continuation of this research include the following:

- **Comparisons of different approaches applied in countries all over the world.**
  The delimitations of this research did not allow for an in-depth examination of provinces employing futures methods in other countries worldwide. It would therefore be useful to conduct comparisons between different projects and to determine whether there are any cultural links between the ways the projects are carried out, what methodologies are applied, and the cultural context.
- **Identification of the main barriers to futures thinking**.
  One of the aspects of this research effort looked at the factors impeding futures thinking. More in-depth research into the barriers to future thinking   would   be very beneficial, especially within an institutional context. Such research could also assist in determining the obstacles to the further   application   of   futures methods in a country specific and cultural context.

Among the other issues that were identified as possible topics for further research are the following:

- **Interactions between different provincial components of South Africa.**
  Understanding   of   how   different   components   of   provincial   and   urban

environments are linked and how they influence each other would be very beneficial for dealing with the complexity of provinces and cities. One of the issues, which has arisen a number of times, was the interplay of culture and economy in regions. Another topic involved exploration of the relationship between culture and market forces.

- **Formal and informal networking of actors**. Collaboration of stakeholders was identified as one of the key elements in future-oriented planning. Research into the existing and possible formal and informal networks between actors would be very beneficial in order to establish types of networks, how they are created, what are the stimulants and barriers in their establishment, and how such collaboration can be fostered. Also it would be very beneficial to examine this issue in local government in South Africa which could undertake visioning and other future-oriented exercises.

- **Creation of collective intelligence within South Africa**. Another issue, which is linked to the collaboration of stakeholders, is the creation of 'collective intelligence'. As this concept is often used in the context of futures studies and planning, it would be beneficial to explore further in order to determine what collective intelligence involves, how it is developed and in what ways it is beneficial for country specific planners and decision-makers.

The topics for further research presented above have a general character. One of them could be the development of an 'provincial futures methods toolkit' that would provide information for professionals about the available methodological approaches, such as strategic planning, territorial prospective, and regional foresight; present various futures methods and techniques with practical examples of how they can be applied; demonstrate projects in which futures methods were employed; consider mechanisms for encouraging the collaboration of stakeholders and public participation; and discuss issues related to project continuation, sustaining commitment, evaluating the progress, and common problems that can be encountered during project realisation. Another aspect is active involvement in setting up a formal or informal "prospective process" for provinces and cities of South Africa and creation of a platform for the collaboration of stakeholders.

7.7 CONCLUSIONS AND CONSIDERATIONS FOR THE FUTURE OF SOUTH AFRICA

Towards 2055, some 30% more people will be living on this planet. As part of this research effort, South Africans need to begin by putting the year 2055 into perspective. It sounds far away. Yet, with half of the world's population today under the age of 30, and current global life expectancy at almost seventy years, as South Africans we can expect that more than half of all people alive today will also be alive in 2055. It is not some theoretical year in a science fiction future. This is also not to say that if 2055 were not on our horizon, the responsibilities towards future generations would be less compelling.

The World Commission on Environment and Development (the Brundtland Commission) defined sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs". This definition should also guide the work of South Africa's decision-makers. It reflects a fundamental tenet of justice: that no one should be denied the ability or opportunity to live lives they value because of their culture, gender, ethnicity, religion, or any other factor, including, in this case, the generation into which they happen to be born. As South Africans we need to recognise that our actions today will impact on our world of tomorrow and acting accordingly is necessary for achieving the 'future we want towards 2055' – the call emerging from Rio+20.

For business, the positive news is that this growth in population will deliver billions of new consumers who will want homes and cars and television sets to name only a few items. The negative news is, however, that resources and potentially changing climates will limit the ability of all 9.5 billion of mankind by 2055 to attain or maintain the consumer lifestyle that is commensurate with wealth in today's affluent markets. Crisis being an opportunity is regarded as a cliché, but there is much truth in it. The perfect storm we as South Africans face, of environment, population, resources, crime, corruption, hunger, education and economy, will bring with it many opportunities for South Africa towards 2055. This research effort identified many of the opportunities, and ways in which to leverage them as the world and South Africa

address their challenges: infrastructure to build, medicine to discover, technology to develop, new strains of food to create and grow to feed a growing population.

What has driven this research effort, from its beginning, is one opportunity that trumps them all: this research effort's proposed Umbrella Vision 2055 of 54 million people living well, within the limits of one planet and South Africa. While South Africa has the world's attention and while the global focus is on environment and economics, South Africa can act boldly to break the unsustainable model of growth-by depletion. Towards 2055, South Africa can replace it with a model of growth based on the balanced use of renewable resources and recycling those that are not. The pathway to this sustainable world contains opportunities and risks, and will radically change the ways in which companies do business. Many companies will change and adapt, while others will be challenged to make the transition.

Moving towards the Umbrella Vision 2055 will require business to engage more closely than ever before with both government and civil society. Key questions will need to be deliberated and sorted out: Who defines the incentives and mechanisms? Who finances the transition processes (especially research and development, and enhanced technology deployment)? Who will or should be the first mover in various activities? How will success be defined? Complex systems and hope will provide the foundation for South Africa towards 2055.

These research findings suggest that there is no simple, single path, but rather the need to design, build and transform complex systems (e.g., energy, finance, food, forests, transport and cities) that will in turn provide the foundation for survival and human development throughout the 21st century and beyond. History can teach us much. Revisiting the key concepts, assumptions and approaches that have underpinned past business and market success, and its role in enabling societal progress and human development over the past 50 years, will be important for the next forty odd years towards 2055. As in the past, this will require external enabling conditions. It will also require enlightened leadership and imagination, because there will be much uncharted territory where history has less to offer us.

This research effort also strongly believes that the world already supplies South Africa with the knowledge, science, technologies, skills and financial resources needed to achieve the Umbrella Vision 2055, but the foundations for much of what is required will need to be laid at speed and in scale in the next decades towards 2055. At the same time, the map is far from complete. There are still many significant questions to be answered about governance, global frameworks for commerce, roles and responsibilities, as well as risks. Nevertheless, through hope, these can be answered and addressed in time for progress to be made towards 2055.

The proposed Umbrella Vision 2055 summarises the ambitions of South Africans for the kind of country its citizens strive to build. The achievement of this vision may appear unbelievable, but if South Africans are willing to face the challenges of addressing the key strategic issues outlined above, the vision should be realised. South Africa will however, be confronted with a number of constraints or possible external threats in achieving this vision due to being a nation that has in the past hindered development efforts, which may influence against achieving the desired future.

As presented in the scenarios of Chapter 5, the future is open to great potential depending on South Africa's actions and inactions. It is the choice of South Africans to therefore choose which path to follow in terms of future development as a nation. If good policies are implemented and all work scrupulously, the Umbrella Vision should be achieved. If, on the other hand, bad policies are implemented, South Africa will persist in falling behind with the associated consequences of poor human and social development. The main focus of the South African government must be the understanding of the proposed Umbrella Vision, by making it the main focus in the formulation of strategies, programs and policies. Sector plans will need to be created with importance placed on how each sector can aid the achievement of the national Umbrella Vision and how proposed actions and policies could handle the strategic issues. Policy documents should then be assessed based on how they contribute to moving South Africa towards the achievement of its proposed Umbrella Vision towards 2055. The government should also put into place institutional structures that will bring together the key role-players on a continuing basis to evaluate the strategies and vision as well as to monitor the implementation.

Private sector role-players should also work with the South African government to guarantee that South Africa's resources are optimally utilised and should shape a society where solidarity between people is central, and everyone participates freely. Creating work for the youth, the disadvantaged and the poor is a vital challenge for the proposed Umbrella Vision; a role that can best be played by an effective and organised private sector (Geldenhuys, 2006). The challenge, therefore, is to formulate suitable structures to ensure that the private sector continues to develop and grow. The South African government would also need to place considerable importance on getting civil society organisations to contribute to the process of executing and observing implementation of the Umbrella Vision. Since the end of apartheid, South Africa's civil society is slowly being rebuilt and becoming vibrant to take its rightful place in the management of international affairs. For South Africa this is extremely vital, as the civil society will have a major responsibility in promoting issues of national interest, being part of the BRICS group of countries and rebuilding trust. In aiding the completion of the proposed Umbrella Vision, South Africa's civil society organisations could also play a serious role in educating people about the proposed Umbrella Vision, what it will take to understand it, and the assistance that will be needed from everyone involved.

At present, South Africa will require the assistance and goodwill of the international community in supporting the proposed Umbrella Vision towards 2055. The South African government will also need to guarantee that development partners are fully conscious of the strategic forces of the proposed Umbrella Vision, and are kept up to date on the status of implementation. The need to stress importance in searching for innovative financing for the proposed Umbrella Vision is emphasised throughout the study. New mutual partnerships will need to be established for resource mobilisation. Foremost, infrastructure projects for communications, power, water, housing, transportation and sanitation will have to be financed in order to create the enabling environment for investment in South Africa. Furthermore, capability enhancing and capacity building programs will be needed, given the low levels of technical capacity in the country and the fact that many qualified and well-trained South Africans have emigrated to other countries. Encouragement and incentives will have to be given to encourage domestic savings mobilisation and investments.

South Africa's leaders, professionals, entrepreneurs and decision-makers alike, all owe its citizens aspects such as ethics, honesty, respect, trustworthiness and not doing harm to anyone or anything. Leaders should strive to implement moral obligations to improve the public welfare and to add additional moral burdens that apply specifically to carrying out one's role as a professional, as well as to serve the people of South Africa. Decision-makers therefore, have to maintain and improve the well-being of its citizens now living, and in the future as well as the life-sustaining capacities of the earth. In South Africa, one of the most efficient prevention strategies of future unrest or even rebellion is jobs (Herbst & Mills, 2006). South Africa, a country rising out from conflict has to ensure such jobs firstly, to build on the basics to ensure that they are in place, including human and hard infrastructure such as roads, transport, medical facilities, electricity and ports, and that the traditional drivers of economic activity are completely restored. Since South Africa has been blessed with some natural resources, it will have to meet the challenge of investing these proceeds and diversifying its economic base.

South Africa has many obstacles to overcome before any developmental milestones are achieved. The country is not only limited by good governance standards, but still has elements of corruption, crime, low life expectancies, uneducated population, failed infrastructure and no access to technology. This list still needs to be addressed in order to spark development for South Africa towards 2055. Economic well-being has the apparent potential to develop the health of the population, access to sanitation and clean water as well as access to technology. If South Africa can focus on improving their governance efforts, the chances of positive development will be greater (Gopal & Tyler, 2010).

Winston Churchill once remarked that the further people look into the past, the more people can see into the future. This insight is crucial, especially at a critical juncture when South Africans face fundamental choices. In order for the country to be sustainable, its decision-makers cannot forget the past, for South Africans cannot risk repeating it. South Africa's common journey promises to be challenging and exciting, even though it will be difficult. However, it also promises to be much easier, and more likely to be successful, if all parties concerned face it optimistically with a positive understanding of the pace and character of social transformation. Its ability

to recall the past mistakes, to learn from them and to foresee a better future, makes life special and worth living as well as providing a meaningful future.

It was the aim of the researcher to show that many things are possible, depending on the actions of individuals, governments and organisations.

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APPENDIX A

GLOBAL CHALLENGES

GLOBAL CHALLENGES AND REGIONAL CONSIDERATIONS

A.1 Sustainable Development and Climate Change: How can sustainable development be achieved for all while addressing global climate change?

Regional considerations:

China is the world's largest CO² emitter, but it plans to cut the amount of energy and CO² per unit of economic growth by 16–17% from 2011 to 2016. Japan pledged to cut GHG emissions by 25% from 1990 levels by 2020, but its emissions are still well above the 1990 levels, and the government has failed to establish a domestic carbon trading market. More-stringent producer responsibility policies in South Korea triggered a 14% increase in recycling rates and an economic benefit of $1.6 billion, (The Millennium Project, 2010). China and India lose as much as 12% and 10% respectively of their GDP due to environmental damage. As part of a $1 billion deal with Norway, Indonesia introduced a two-year moratorium on new permits to clear primary forest (Glenn, 2010).

Europe's emission trading scheme in 2010 accounted for 75% of the world's carbon emissions trading. Greenhouse gas emissions covered under the European Union released 3% due to the economic recovery, but the European Union is on track to meet the Kyoto target of 8% reduction. However, if carbon contents of imported goods are counted, European Union's reduction drops to 1%. Russia's greenhouse gas emissions fell 3.3% in 2009, reversing a 10-year steady increase, and Russia aims to reduce greenhouse gas emissions by 22–25% by 2020 compared with 1990 (which is still an increase in absolute terms, since Russia's emissions plunged sharply after the collapse of the Soviet Union). Nitrogen pollution from farms, vehicles, industry, and waste treatment costs the European Union up to 320 billion Euros per year. Germany tops the first Green Economy Index as a country with strongest green leadership (The Millennium Project, 2010).

South America has 40% of the planet's biodiversity and 25% of its forests. Brazil announced in December 2010 that deforestation in the Brazilian Amazon had fallen to its lowest rate for 22 years, but the latest data show a 27% jump in deforestation

from August 2010 to April 2011, mostly in soybean areas. National pressures for hydro and biofuel energy and international pressures for food may be too strong to preserve ecosystems in Brazil. Concentration of land tenure, breakup of farms into smaller parcels, and conversion of rural areas into new urban settlements are generating irreversible ecological damage in most countries. Recycling in Brazil generates $2 billion a year, while avoiding 10 million tons of greenhouse gas emissions. Bolivia introduced a new law that grants nature equal rights to humans and has proposed an international treaty with similar concepts (The Millennium Project, 2010; Glenn *et al.,* 2011).

Without a successful green tech transition, North American's greenhouse gas emissions may increase by 6% between 2005 and 2035. Air pollution and exposure to toxic chemicals cost United States children $76.6 billion in health expenses. The African regional focus will be on adaptation to climate change rather than mitigation, as Africa does not contribute much CO_2. Southern Africa however could lose more than 30% of its maize crop by 2030 due to climate change. Re-afforestation, saltwater agriculture along the coasts, and solar energy in the Sahara could become massive sources of sustainable growth (The Millennium Project, 2010; United Nations, 2012).

A.2 Water: How can everyone have sufficient clean water without conflict?

Regional considerations:

Asia has 60% of the world's population, but only 28% of its fresh water (UNEP, 2008). Inadequate sanitation costs the economies of four Southeast Asian countries the equivalent of about 2% of their GDP (Glenn *et al.,* 2011). Agriculture accounts for between 65% and 90% of national water consumption across the Middle East, and underground aquifers are rapidly depleting (The Millennium Project, 2010). Yemen may have the first capital city to run out of water; it has the world's second-fastest growing population; its water tables are falling by 6.5 feet per year, and increasing water prices could spark social unrest. A massive infrastructure project plans to take water from the Yangtze River Basin and supply Beijing by 2014. During 2011, the Beijing government set aside $3.5 million to buy water from other countries. It is

argued that more than 70% of China's waterways and 90% of its groundwater are contaminated; 33% of China's river and lake water is unfit for even industrial use and deep-groundwater tables have dropped by up to 90 metres in the Hai river basin. The water situation in China is expected to continue to get worse for the next six to nine years under the best-case scenarios. With only 8% of the world's fresh water, China has to meet the needs of 22% of the world's population. Forced migration due to water shortages has begun in China, and India should be next (State of the Future, 2011). India feeds 17% of the world's people on less than 5% of the world's water and 3% of its farmland. Mobile and nearly waterless public toilets that need to be cleaned only once a week will be piloted in Delhi, India (The Millennium Project, 2010).

North America may have passed its "peak water" level in the 1970s. More than 30 states are in litigation with their neighbours over water. Some 13% of Native American households have no access to safe water and/or wastewater disposal, compared with 0.6% in non-native households (Glenn *et al.,* 2011). Each kilowatt-hour of electricity in the United States requires about 25 gallons of water for cooling, making power plants the second largest water consumer in the United States of America (39% of all water withdrawals) after agriculture. Western Canada's tar sands consume an estimated 20–45 cubic meters of water per megawatt-hour, nearly 10 times that for conventional oil extraction. Canada is now mapping its underground water supplies to help policymakers prevent water shortages (State of the Future, 2011).

The Latin American region has 31% of the world's fresh water, yet 50 million people there have no access to safe drinking water, 125 million lack sanitation services, and 40% live in areas that hold only 10% of the region's water resources (WHO, 2006). The region's water demand could increase 300% by 2055. Mexico launched the "2030 Water Agenda" for universal water access and wastewater treatment. Costa Rica on the other hand needs to invest $2.4 billion to improve water and sanitation conditions by 2030. El Salvador will arguably be hit hardest by water shortages in the region. Glaciers are shrinking, risking the region's water, agriculture, and energy security; 68% of the region's electricity is from hydroelectric sources. World Bank (2011) argues that water crises might occur in megacities within a generation unless

new water supplies are generated, lessons from both successful and unsuccessful approaches to privatisation are applied, and legislation is updated for more reliable, transparent, and consistent integrated water resources management.

In 2009–10, water scarcity occurred in much of Southern Europe: the Czech Republic, Cyprus, and Malta reported continuous water scarcity; France, Hungary, the UK, Portugal, and Spain reported droughts or rainfall levels lower than the long-term average. The EU is to conduct a Policy Review for water scarcity and droughts in 2012. EU took Portugal to court for failing to submit river basin plans, an obligation under the EU Water Framework Directive (Kristensen, 2009). Water utilities in Germany pay farmers to switch to organic operations because they cost less than removing farm chemicals from water supplies (2004 Fresh Direct NZ Ltd, 2004). Spain is the first country to use the water footprint analysis in policymaking. The European Commission launched a €40-million fund to improve access to water in Africa, the Caribbean, and the Pacific (Jueves, 2011). The world's largest reserves of fresh water are in Russia, which could export water to China and Middle Asia (HydroOGK, 2012; Bazhenov, 2007; Sinhua, 2012).

Africa's rapid urbanisation has outpaced its capacity to provide sufficient water; the population without such access has nearly doubled since 1990 to over 55 million in 2011. The ZAMCOM agreement to consolidate regional water management needs ratification by one more of the eight countries sharing the Zambezi river basin to come into effect. However, Mozambique, Zambia, and Zimbabwe moved ahead and signed a memorandum of understanding to improve power generation along the river. UNDP (2011) argues that foreign aid covers up to 90% of some sub-Saharan African countries' water and sanitation expenditures. Without policy changes, the sub-Saharan region will not meet the MDG target on water until 2040 and the one on sanitation until 2076. Uganda launched a €212 million Kampala Lake Victoria Water and Sanitation project to upgrade and rehabilitate water supply and sanitation in urban and peri-urban Kampala. The "Safe Water for Africa" partnership plans to raise over $20 million to provide safe water to at least 2 million Africans by 2012. Since the majority of Africa depends on rain-fed agriculture, upgrading rain-fed systems and improving agricultural productivity will immediately improve millions of lives (CAB International, 2009; Wani, Rockstrom and Oweis, 2009).

A.3 How can population growth and resources be brought into balance?

Regional considerations:

Asia's urban population may grow to 3.1 billion by 2050 (UN, 2011). China has 88 cities with populations over 1 million. It plans to merge nine cities in the South to create a "mega-city" the size of Switzerland. China has to feed 22% of the world's population with less than 7% of the world's arable land. There were six Chinese children for every one elder in 1975; by 2035 there will be two elders for every one child. China is growing old before it has grown rich (Glenn *et al.,* 2011). The fertility rate in China has fallen from 5.8 children in 1970 to 1.5 today. By 2050, those 65 years or older will also be 38% of Japan's population and 35% of South Korea's. Approximately a third of the population in the Middle East is below 15; another third is 15–29; youth unemployment there is over 25%. New concepts of employment may be needed to prevent political instability (UN, 2011).

About 85% of the Latin American region will be urban by 2030, requiring massive urban and agricultural infrastructural investments. Over 53 million people are malnourished. Brazil, Ecuador, Venezuela, Guatemala, Honduras, and Nicaragua have approved food security laws to ensure local agricultural products are primarily used to feed their own populations and not for export; nine more countries are planning the same. Latin America's elderly population is likely to triple from 6.3% in 2005 to 18.5% in 2050 to 188 million. By 2050, half of Mexico's population will be older than 43, an 18 year increase in median age. As fertility rates fall in Brazil and longevity increases by 50% over the next 20 years, the ability to meet financial requirements for the elderly will diminish; hence, the concept of retirement will have to change and social inclusion will have to improve to avoid future intergenerational conflicts (World Bank, 2011).

The number of those 65 or older in the United States is expected to grow from about 40 million in 2009 to 72 million in 2030. About 15% of American girls now begin puberty by age 7, potentially increasing girls' odds of experiencing depression and behavioural problems. Less than 2% of the United States population provides the largest share of world food exports, while 37 million people in the United States

receive food from Feed America. Two-thirds of people in the United States are overweight or obese. Reducing "throw-away" consumption could change the population-resource balance. Biotech and nanotech are just beginning to have an impact on medicine; hence dramatic breakthroughs in longevity seem inevitable in 25–50 years. Vancouver, Toronto, and Calgary are among the five most liveable cities of the world (Glenn *et al.,* 2011).

After 2012, the European working-age population will start to shrink, while the number of individuals aged 60 and over will continue to increase by about 2 million per year (UN, 2011). Europe's low fertility rate and its ageing and shrinking population will force changes in pension and social security systems, incentives for more children, and increases in immigrant labour, affecting international relations, culture, and the social fabric. The EU27 population at-risk-of-poverty has fluctuated around 16.5% since 2005. Tensions among the EU member states over the influx of thousands of illegal immigrants in the wake of "the Arab Spring" intensify as Mediterranean countries, led by Italy, ask for greater burden sharing and may lead to changes in the Schengen treaty. Therefore, rural populations are expected to shrink, freeing additional land for agriculture (UN, 2011).

The Food and Agriculture Organization of the United Nations estimates that 20 million hectares of farmland have been acquired by foreign interests in Africa during the past three years, many with 50-year leases or more. About 40% of children under five are chronically malnourished (UNDP, 2010). Very rapid growth of the young population and low prospects for employment in most nations in sub-Saharan Africa and some nations in the Muslim world could lead to prolonged instability until at least the 2030s. Africa's population doubled in the past 27 years to reach 1 billion and could reach 3.6 billion by 2100. Niger's population growth exceeds economic growth; if its birth rate is halved by 2050, the population will grow from 14 million today to 53 million by 2050, while if the birth rate continues at current levels the population will grow to 80 million (Glenn *et al.,* 2011). Much of the urban management class in Africa is being seriously reduced by AIDS, which is also lowering life expectancy. Only 28% of married women of childbearing age are using contraceptives, compared with the global average of 62%. Africa's ecological footprint could exceed its bio capacity within the next 20 years (Glenn *et al.,* 2011).

Conflicts (UN, 2011; World Bank, 2011) continue to prevent development investments, ruin fertile farmland, create refugees, compound food emergencies, and prevent better management of natural resources.
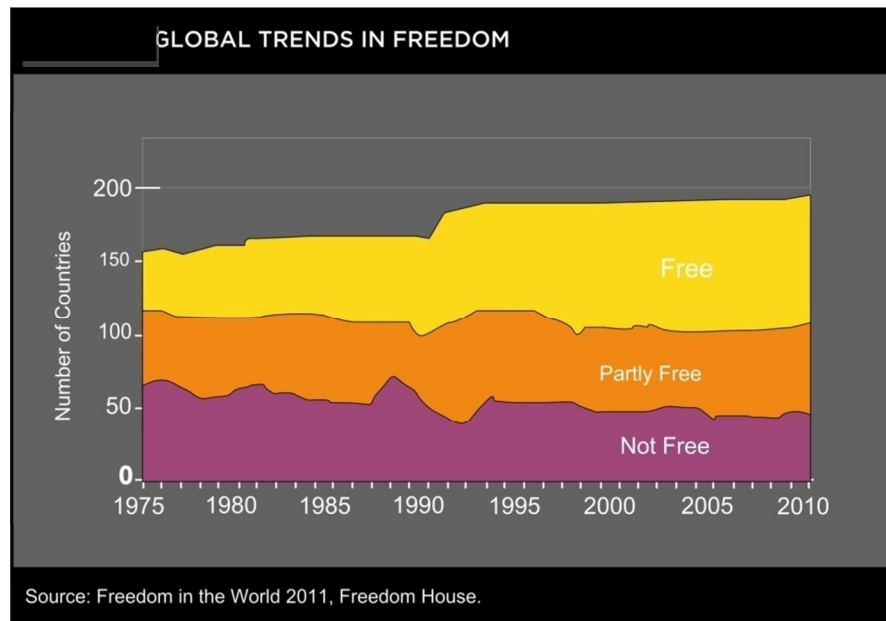
A.4 How can genuine democracy emerge from authoritarian regimes?

Regional consideration:

Over the past few years, South Asia experienced more gains than setbacks, notes Freedom House (2011). It rated 16 countries as "free" in the Asia-Pacific region, 15 as partially free and 8 as "not free", notably successful elections took place in the Philippines and Tonga, while Sri Lanka suffered the most prominent decline in the region, due to its elections. Violent reprisals and censorship continue in several other countries. President Hu of China announced plans to improve its social management system by the end of the decade and turn China into a Xiaokang (moderately prosperous and happy) society. Since China is home to over half of the world population currently living in countries rated "not free", a modification of its status would change the world map of democracy. Among Central Asian countries, Kyrgyzstan's status improved from "not free" to "partly free", while Afghanistan continued to decline. In the Middle East and North Africa, Israel remains the only country ranked "free" and qualifying as an electoral democracy, while 3 countries are "partly free" and 14 "not free". However, the uprisings of 2011 open new possibilities for a more democratic society, despite the violent response of some countries' authoritarian regimes.

Concerns persist in Canada and the United States about the electoral processes, the concentration of media ownership, and powerful lobbies. Greater corporate and union spending on election advertising increases worries over political corruption. The United States' State Department has budgeted $67 million to support democratic development in lower-income countries, while at home the future for 10–13 million illegal aliens challenges human rights and jurisprudence. Canada had four national elections in the past seven years. The Web site pairvote.ca is facilitating pairing voters from different voting districts to vote for each other's party, thus

keeping the balance of the popular vote unchanged while improving proportionate representation.

GLOBAL TRENDS IN FREEDOM

Number of Countries vs Year (1975–2010): Free, Partly Free, Not Free

Source: Freedom in the World 2011, Freedom House.

The democratisation of governments in the region Latin America is interrelated with the actions of the United States. The big challenge for Latin America is the institutional weakness in addressing organized crime that is threatening its democracies (The Millennium Project, 2010; Bailey, 2006). The interlinking of organized crime and government corruption caused Mexico's status to change in 2010 from "free" to "partly free." Freedom House rated 22 countries in the region "free", 10 "partly free", and 1 "not free". The system of primary elections in some countries favours those who are already in power and limits the freedom of choice for large majorities. However, a sense of solidarity of the people and increased influence of civil society organizations, as well as examples of democratic governance set by Chile and Brazil, are helping to strengthen democratic processes.

All 27 EU countries are rated "free", the EU Parliament is the largest transnational democratic electorate in the world, and the European Citizens' Initiative became law, enabling direct participation of citizens to propose regulations in areas under the Commission's authority. Yet an increasing number of immigrants from Africa and Asia and their poor integration challenge the region's tradition of tolerance and civil liberties. Several member states call for a revision of the Schengen treaty on open borders. While the European Union has the world's greatest press freedom,

Hungarians protested against new media control legislation that some felt could return state censorship. In most Central and East European (non-EU) countries, autocracy and lack of progressive institutions continues to hinder the democratisation process. However, gains were noted in Georgia and Moldova, while Russia continues aggressive efforts to curb corruption (Nichol, 2012).

North African revolutions are not reflected in Freedom House's 2010 ratings. Ratings for sub-Saharan African democracy continued to decline; Ethiopia and Djibouti changed status to "not free," while only Guinea improved to "partly free." Freedom House rated 9 countries in the region as "free", 22 as "partly free", and 17 "not free". Democratic elections are still difficult due to intimidation and fraud. The Charter on Democracy, Elections and Governance adopted by the African Union in 2007 was signed by 37 AU Members; as by May 2011 eight countries had ratified and another eight deposited the instruments of ratification, increasing the likelihood of increasing democratic values in the region. Priorities for building democracy in Africa include improving education, citizenry, and Internet access, while reducing corruption, sectarianism, violence, and patronage (The Millennium Project, 2010; Spence & Smith, 2009).

A.5 How can policymaking be made more sensitive to global long-term perspectives?

Regional considerations:

China's Five Year Plan of 2010 promotes long-term thinking, and since it tends to make decisions in a longer time frame than others, its increasing power and eventually that of India should lead to more global, long-term decision-making as these nations interact with the rest of the world (State of the Future, 2011). Japan includes private-sector companies in its long-term strategic planning unit and the Prime Minister's Office of Singapore has begun an international network of government future strategy units. The European Parliamentary Technology Assessment is currently a network and database of 18 European parliaments to integrate futures into decision-making. Forecasts of migrations from Asia and Africa are forcing Europe to reassess its future, as are the EU2020 strategy, Lisbon

Strategy, sovereign debt crisis, emergence of China, and forecasts of public finances for social and health services for an ageing population. The 7th Framework Programme of the EU expands foresight support; the Institute for Prospective Technological Studies provides futures studies for EU decision-making; the European Foresight Platform connects futurists; an annual European Futurists Conference is held in Switzerland; the Know Project scans for weak signals and wild cards, and the European Regional Foresight College improves futures instruction (State of the Future, 2011; Foren, 2001). The Netherlands constitution requires a 50-year horizon for land use planning. Russian Ministries currently use Delphi and scenarios for foresight, while corporations tend to use more technology roadmaps (The Millennium Project, 2010; State of the Future, 2011; Muqbil, 2012).

The United States of America has been creating a map of individuals and organisations with foresight to create a virtual organisation at the White House for regular input into the policy process. The same has happened for the Langevin Block in Canada where "Future considerations" have been added to standard reporting requirements. Examples of successful global long-range activities should be promoted in the United States of America along with cases where the lack of futures thinking proved costly. Global perspectives in decision-making are emerging due to the perpetual collaboration among different institutions and nations that has become the norm to address the increasing complexity and speed of global change. Global long-term perspectives also continue to be evident in the climate change policies of many local North American governments (The Millennium Project, 2010).

Foresightfordevelopment.org in South Africa makes research documents, projects, scenarios, people and blogs available to support African futures research. South Africa also produces the regional Risk and Vulnerability Atlas to aid long-range planning. Daily management of many African countries makes future global perspectives difficult; hence, more-regional bodies like the African Union and the African Development Bank are more likely to further futures work in Africa and should build on 10 years of work by the United Nations development program African Futures.

A.6 How can the global convergence of information and communications technologies work for everyone?

Regional considerations:

In North America it is free to all on the Internet, and Google as well as Wikipedia are making the phrase "I don't know" obsolete. Wikipedia is currently educating the world with 3.7 million articles in English and a lesser amount in nine other languages (UNESCO, 2009; Altbach, Reisberg & Rumbley, 2009). Silicon Valley continues as a world leader in innovative software due to company policies like Google's that gives its employees 20% free time to create anything they want. This "20-% Time" is credited with half of Google's new products (The Millennium Project, 2010). The United States is in ninth place in the world in access to high broadband connections (Soulskill, 2011) and broadband development in rural and underserved areas was undermined by the financial crisis, but it is still a United States national priority (Glenn *et al.,* 2011). The United States Computer Emergency Readiness Team reported an estimated 39% increase in cyber-attacks against government computer networks during 2010

INTERNET USERS IN THE WORLD BY GEOGRAPHIC REGIONS, 2011 (MILLIONS)

Source: internetworldstats.com
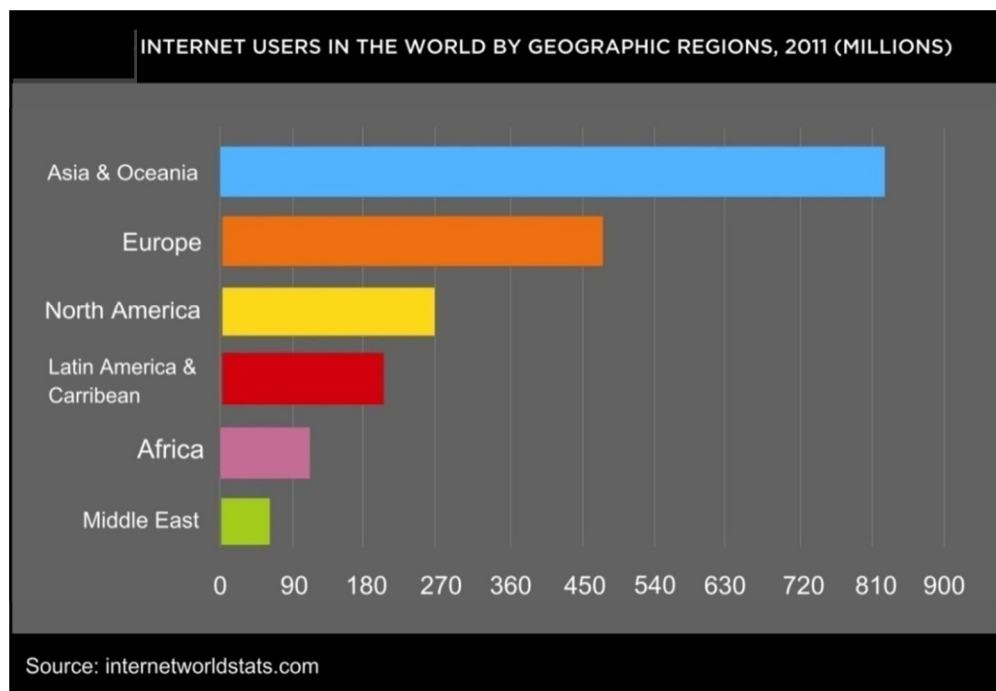
Asia has the largest share of the world's Internet users (42%) but only 20% penetration (The Millennium Project, 2010). China has about 420 million Internet users with nearly 280 million Internet-connected mobile phones and numerous controversies over control of Internet access continue in China (Miniwatts Marketing Group, 2010, 2011). Vietnam, India, Turkey, and Iran have tightened controls on Internet access and content (The Millennium Project, 2010). Phones are currently being smuggled into North Korea to post reports on conditions. The UN (2011) continues to rate South Korea the top e-ready country, but that nation is struggling with video game addiction (State of the Future, 2011). Some 300 000 people in Bangladesh are now learning English from the BBC and India is establishing e-government stations in rural villages. About 70% of EU-27 households had access to the Internet in 2010. Finland has made 1 MB/s broadband a legal right for all Finns. The European Union Safer Internet Programme is working in 26 European countries to counter child pornography, paedophilia, and digital bullying. The European Union policy is that Internet access is a right, but it can be cut off for misuse. Estonians (inside and outside their country) cast their votes for the Estonian parliament by mobile phones in March 2011. Macedonia is providing computers to all in grades 1–3 (The Millennium Project, 2010; Intel and Government, 2009). About 34% of the Latin American region has Internet access. The region's children with Internet access will rise from 1.5 million today to 30 million by 2015 (Glenn *et al.,* 2011; UNESCO, 1999; World Bank Development Report, 1999). Uruguay is the first country to provide all primary students with their own Internet-connected laptop, followed by Costa Rica and fulfilling the promise of these tools will require more serious attention to training.

According to www.worldinternetstats.com, Internet penetration in Africa is 10.9%, up 25% since 2010. There are also 506 million mobiles, for 50% penetration. The new 'Main One' and West Africa fibre-optic cables are cutting cost and increasing speed throughout Africa as a whole. Currently, Kenya's Digital Villages Project integrates Internet access, business training, and microcredit, and the Food and Agriculture Organization of the United Nations' Africa Crop Calendar Web site provides information for 130 crops (FAO, 2012). It is argued that Tele-education, tele-medicine, and e-government will become more important as African professionals die of AIDS in increasing numbers (State of the Future, 2007; The Millennium Project, 2010).

A.7 How can ethical market economies be encouraged to help reduce the gap between rich and poor?

Regional considerations:

The unemployment rate was 9% in the United States in April 2011 and 7.6% in Canada. The United States national debt is above the $14.3 trillion cap, and in 2010 over 43.9 million people (one in seven Americans) were enrolled in the food stamps program. Meanwhile, the top 0.1% of Americans control 10% of the nation's wealth, the United States has the most billionaires, and CEO pay rose 24%. The six largest United States banks control 63% of the United States gross domestic product, but new financial regulations give government more control over the banking system and financial markets and increase protection of the poor (The Millennium Project, 2010).

The Latin American region's economy on the other hand grew 6% in 2010, helped by rising commodity prices, 40% growth in 2010 capital flows (largest in history to the region), and stimulating policies. Regional GDP is expected to grow about 4% annually over 2011–15 (State of the Future, 2011). The Foreign direct investment for Brazil increased by a record 87% in 2010. Yet the region's rich poor gap continues as the world's largest. The wealthiest 20% manage 57% of resources, while the poorest 20% only get 3.5% of the income (The United Way of King Country, 2007). Brazil, Mexico, and Argentina experience the highest inequalities. The region needs to attract high technology investments, create better access to the means of production, change land tenure, encourage international companies to increase salaries, create long-range visions for education and labour demand, and expand microcredit with business training (State of the Future, 2011).

Asia's economy grew 8.3% in 2010, according to the International Monetary Fund (2010), while the World Trade Organization lists developing Asia's growth at 8.8%, and it is expected to grow over 8.4% per year over the next five years towards 2017, led by China's average of 10% per year. India's poverty ($1.25/day), which was 51.3% in 1990, is expected to fall to 22.4% in 2015. China's poverty was 60% in 1990 and it is likely to plummet to 4.8% by 2015 (Glenn *et al.,* 2011). China became the world's largest exporter (28% growth in 2010) and the second largest economy,

with over 13% share of world economic output in 2010 (China Economy, 2012). China is now challenged to keep its growth from generating dangerous inflation. Japan's reconstruction after its environmental disasters will force it to reduce its development funding for the region. Increasing pollution, water and energy problems, and the rich-poor gap threaten the future economic growth of developing Asia. Corruption, organized crime, and conflict continue to impede Central Asia's development. Natural disasters and the effects of climate change are threatening the development and the very existence of entire Pacific communities (United Nations Member States, 2009, 2012).

European Union-15 dynamic foreign direct investment to the other member states is fostering integration and helps economies across the European Union. Despite signs of economic recovery, unemployment is expected to remain at around 10% for 2011–12; by March 2011, average youth unemployment in the Euro zone was 19.8% (but 44.6% in Spain). Cutbacks in social expenditures were protested across much of Europe and are likely to increase economic disparities (The Millennium Project, 2010). The European Financial Stabilization Mechanism to stabilize the euro and assist debt-stricken European Union countries, along with the Europe 2020 Strategy, is intended to stimulate the regional economy; however, financial difficulties persist, causing friction during implementation (The Millennium Project, 2010). The combination of ageing populations, falling fertility rates, a shrinking middle class in some countries, and expensive public services is not sustainable without increasing the number of immigrants and more tele-entrepreneurs among retired Europeans (State of the Future, 2011). In emerging Europe and Central Asia, 36% of the population lives on less than $5 per day (UNDP, 2012). The Stabilization Fund helped Russia recover from the global financial crisis better than expected. It has one of the lowest foreign debts among major economies and its foreign reserves are the world's third largest, mainly due to revenues from oil and gas exports (State of the Future, 2011). Germany suggested lowering the European Union's agricultural subsidies to improve foreign assistance (Glen *et al.,* 2011).

Net bilateral official development assistance to Africa increased by 3.6% in 2010 to $29.3 billion, of which $26.5 billion went to sub-Saharan Africa (State of the Future, 2011). Despite a continued sustained economic growth since 2005 at an average of

4.7%, about half of sub-Saharan Africa continues to live in extreme poverty (Think Quest Team, 2006; World Bank, 2006; Human Development Indicators, 2005). Increasing commodity prices worldwide helped African oil exporters while having adverse effects on oil-importing countries. The rapidly evolving Chinese-African alliance is a new geopolitical reality that could help reduce income gaps for both sides; China-Africa trade is expected to triple between 2011 and 2015 (The Whitaker Group, 2012). The region's development continues to be impeded by high birth rates, increasing food prices, gender inequality, income and location biases, weak infrastructure, high indirect costs, corruption, armed conflicts, poor governance, environmental degradation and climate change, poor health conditions, and lack of education (The Millennium Project, 2010). Although the world will meet the Millennium Development Goals of halving poverty from 1990 to 2015 due to China's and India's growth, 17 African countries will not.

A.8 How can the threat of new and re-emerging diseases and immune microorganisms be reduced?

Regional considerations

A California Biobank 20-year study will evaluate genetic markers for risk of disease in 250 000 patients by linking DNA samples to electronic medical records. The United States has 1.2 million people with HIV; Canada has 73 000. About 33% of children in the United States are overweight or obese, and one survey found that children aged 8–18 spent on average 7.5 hours a day with entertainment media (OWL, 2012). The Latin America region has the highest life expectancy among developing regions. While Haiti's HIV rate has fallen from 6% to 2.2% over the past 10 years, the earthquake killed 300 000 people and has devastated medical systems and brought on a cholera outbreak, with more than 1 200 deaths and the possibility of its spreading to the Americas. The current HIV/AIDS epidemic remains stable, with 2 million people and 0.6% prevalence, and antiretroviral therapy is at almost 60%. Brazil has shown that free antiretroviral therapy since 1996 dramatically cut AIDS mortality, extended survival time, saved $2 billion in hospital costs, and keep prevalence to 0.6% (The Millennium Project Nodes, 2012). Neglected tropical diseases affect 200 million people in Latin America such as intestinal worms,

Chagas, schistosomiasis, trachoma, dengue fever, leishmaniasis, lymphatic filariasis, and onchocerciasis (Blyther, 2011).

For Asia and Oceania the emergent research on the NDM-1 gene and drug resistance found in the New Delhi water system has alerted WHO investigators to a "potential nightmare" situation as Asia is an epicentre of emerging epidemics. If Asian poultry farmers received incentives to replace their live-market businesses (the source of many viruses) with frozen-products markets, the annual loss of life and economic impacts could be reduced (The Millennium Project Nodes, 2012). HIV continues to increase in central Asia as at least 5 million people have HIV/AIDS in India and China.

The Ukraine has the highest prevalence of HIV in Europe, focused on sex workers and drug users, with 161 119 cases (31 241 AIDS and 17 791 deaths) but it has decreased the incidence from 18% to 6% from 2006 to 2009 due to extensive HIV programs. The ageing population of Europe continues to put pressure on government medical services, while infant mortality under five has been cut in half since 1990 and maternal mortality has dropped by one-fourth towards 2012. TB deaths continue to increase in Europe after a 40-year decline. With 11% of the world's population, Africa on the other hand has 25% of the world's disease burden, 3% of its health workers, and 1% of its health expenditures. Sub-Saharan Africa accounted for 68% of all people living with HIV in 2010 and it has one of the world's worst tuberculosis epidemics, compounded by rising drug resistance and HIV co-infection (State of the Future, 2011). Patients on ART increased from 1–2% in 2003 to 48% by the end of 2009 (The Millennium Project, 2010). PEPFAR (a United States programme) is funding 105 medical schools in the sub-Saharan region to encourage graduates to stay in Africa and is funding laboratories across the continent (The Lancet, 2011). Some 16% of children in Zimbabwe and 12% in Botswana are AIDS orphans; while 34 sub-Saharan African countries stabilized or decreased HIV infections by more than 25% between 2001 and 2009.

A.9 How can the capacity to decide be improved as the nature of work and institutions change?

Regional considerations:

Blogs and self-organising groups on the Internet are becoming de facto decision-makers in North America, with decisions made at the lowest level appropriate to the problem. Approximately 20% of United States corporations use decision support systems to select criteria, rate options, or show how issues have alternative business positions and how each is supported or refuted by research. Intellipedia provides open source intelligence to improve decision-making. The region's dependence on computer-augmented decision-making from e-government to tele-business creates new vulnerabilities to manipulation by organized crime, corruption, and cyber-terrorism (Janczewski, 2008). Chile is also pioneering e-government systems that can be models for other countries in the region (Ladipo, Sánchez & Sopher, 2009). For e-government to increase transparency, reduce corruption, and improve decisions, Internet access beyond the wealthiest 20% is necessary. The remaining 80% receive inefficient service, difficult access locations, restricted operating hours, and non-transparent processes. Government institutional design, management, and data for decision-making are weak in the Latin American region. Latin America has to improve citizen participation and public education for political awareness.

In Asia and Oceania (In general), decisions tend to focus more on the good of the family than on the good of the individual in Asian societies. Synergies of Asian spirituality and collectivist culture with more linear, continuous, and individualistic western decision-making systems could produce new decision-making philosophies (The Millennium Project, 2010). Kuwait on the other hand is introducing a collective intelligence system and a national SOFI for the Early Warning System in the Prime Minister's Office. The 2011, North African revolutions promise to open the decision-making processes, increasing freedom of the press to better inform the public (Boka, 2011). For tribally oriented Africa, the question remains, how can the cultural advantages of extended families be kept while making political and economic decisions more objective and less corrupt? Development of African civil society may need external pressure for freedom of the press, accountability, and transparency of

government. Microsoft is collaborating to help e-government systems improve transparency and decision-making. If the brain drain cannot be reversed, expatriates should be connected to the development processes back home through Internet systems (Azerbaijan Future Studies Society, 2010).

Bureaucratic complexity, lack of transparency, and proliferation of decision heads threatens clear decision-making in the EU. Europe is experiencing "reporting fatigue" due to so many treaties and bureaucratic rules and tensions between the EU and its member governments and among ethnic groups are making decision-making difficult (Glenn *et al.,* 2007). Russia is now improving policy decision-making efficiency by coordination among stakeholders in nanotechnology research among several Councils, Commissions at the Russian Parliament, government, and the Russian Academy of Science. This was a response to the cross-sectoral and multidisciplinary nature of nanotech (Murashov and Howard, 2011).

A.10 How can shared values and new security strategies reduce ethnic conflicts, terrorism, and the use of weapons of mass destruction?

Regional considerations

The Tunisian and Egyptian revolutions and Libyan internal fighting open North Africa and the wider Arab world to a variety of scenarios. Some researchers believe the death of Osama bin-Laden decreases Al Qaeda's role from Mauritania to Somalia, while others see a rising Muslim Brotherhood (Leslie, 2012). Sub-Saharan Africa has slowly decreased conflicts over the past 10 years and South Sudan has since achieved independence. During 2010 there were more than 250 000 Ethiopian IDPs, and there are 300 000 Somali refugees in a Kenyan camp. Serious unrest has broken out between Christians and Muslims in Nigeria, where $22 billion in oil revenues has vanished into local treasuries during 2010. Youth unemployment and millions of AIDS orphans may also fuel a new generation of violence and crime if not addressed properly by government officials in Africa.

The popular uprisings have spread from North Africa to Syria, Bahrain, and Yemen. With the potential for the collapse of Yemen, oil piracy along the Somali coast could

therefore increase (International Expert Group on Piracy off the Somali Coast, 2008). An internationally acceptable solution to Iran and North Korea's nuclear ambitions is still lacking, and Pakistan's internal instability and uncertain relationships with India and Afghanistan hinder the peace-making and counter-extremist efforts in all three countries (Kronstadt, 2010). The $7.5 billion in civilian aid given to Pakistan over the past five years has also been largely ineffective (Ibrahim, 2009). Young Palestinians are using online social networks to form a movement separate from Hamas and Fatah to promote the vision of a future Palestinian state (Duncan, 2008). Kurdish aspirations are still a cause of unrest in Turkey and Iraq, but 300 000 Kurds received Syrian citizenship (British Broadcasting Corporation, 2011). Relations between North and South Korea have deteriorated during 2011 (Alpert, 2012). China's internal problems over water, energy, demographics, urbanization, income gaps, and secessionist Muslims in the northwest will have to be well-managed to prevent future conflicts, while tensions with Taiwan are easing (Sui, 2011; United Press International, 2009).

In Europe the European Union has created a unit of the External Action Service to actively prevent conflicts (Euractiv, 2011). Poland, joined by the Czech Republic, Slovakia, and Hungary, has set up the Visegrad Battle Group, a mini-analogue to NATO (USNI, 2011). The large numbers of migrant labourers entering the European Union will require new approaches to integrate them better into society if increased conflicts are to be prevented (EU, 2009). This is aggravated by the new surge of immigrants from the Arab uprisings that Italy has taken in; however other countries are unwilling to accommodate them. As the Roma population continues to be a challenge across the continent (World Bank and Tang, 2000).

Although national wars are rare in the Latin American region, internal violence from organized crime paramilitaries continues to be fuelled in some areas by corrupt government officials, military, police, and national and international corporations (The Millennium Project, 2010). Mexico's war against organized crime has accelerated, with 35 000 deaths over four years (10 000 of them in 2010). Recent political changes have begun to improve opportunities for indigenous peoples in some parts of the Latin American region, while political polarization over policies to address poverty and development persists (World Bank, 2012; Hakim & Birdsall, 2007).

Colombia plans on returning to the rightful owners 2.5 million hectares of land seized by gangs (Barahona, 2012). Violence is also currently impeding development in Central America (Seelke *et al.,* 2011). As Arctic ice continues to melt, vast quantities of natural gas and oil will be accessible where national boundaries are under dispute. This could be a source of United States-Canadian tension, along with Russia, Norway, and Denmark. The United States Institute of Peace's SENSE multi-person training simulation has educated thousands of participants worldwide in the fundamentals of decision-making, resource allocation, and negotiation in post-conflict situations (Schmelzle, 2006). Cooperation on environmental security could therefore become a focus of United States-China strategic trust (Glenn and Coates 2012).

A.11 How can the changing status of women help improve the human condition?

Regional considerations:

In North America women make up half of the United States workforce, with an unemployment rate 1% lower than men's (Azmat, Güell & Manning, 2004). More women than men are currently gaining advanced college and bachelor's degrees, redefining the roles in the family (Dwyer, 2011). However, although women hold 51.5% of management, professional, and related positions in the United States of America, women account for only 3% of the Fortune 500 chief executives (The Guardian, 2012). The United States government estimates that approximately 75% of the 14 500–17 500 people annually trafficked into the country are female. Women's representation in the United States legislature is 16.9%, while Canada's is at 25%. Both United States and Canadian governments made critical cuts in domestic and international family planning programs for women (Guttmacher Institute, 2011). Women's participation in Latin American parliaments improved due to the introduction of quotas in many countries, while Argentina, Brazil, and Costa Rica have female presidents. More women than men attain tertiary education across the region, but wage discrepancies persist (Sharma, 2012). Although all countries in the region have ratified the Convention on the Elimination of all Forms of Discrimination against Women, as a result of restrictive legislation, one in three

maternal deaths is due to abortion and the lifetime risk of maternal death is 0.4% (Measure Demographic and Health Surveys, 2009). Mexico's programs and actions for the rights of women are among the best practices in Latin America, and many countries in the region are interested in emulating them (The Millennium Project, 2010).

In Europe women hold 41.6% of parliamentary seats in Nordic countries, 20.8% in OSCE countries (excluding Nordic ones) and 35.2% of European Union Parliament seats (Al Maaitah, Al Maaitah, Olaimat, & Gharaeibeh, 2012). The proportion of women on the boards of the top European companies was 12% in 2010; at current rates, this would reach parity in 16 years (Macpherson, 2012). Women make up 7% of the directors in Russia's 48 biggest companies, and a new draft law proposes at least 30% of parliamentary seats are to be occupied by women, as well as providing advantages for men to play a greater role in family life (Novosti, 2011). The UN estimates that there are between 200 000 and 500 000 illegal sex workers in the European Union, the majority from Central and Eastern Europe. France's rule banning full-face veils in public is aiming to enforce women's rights and might be emulated by other European Union countries (Reuters, 2011; Amnesty International 2011).

The average lifetime risk of maternal death in rural South and East Asia and the Pacific is over 4% (The Millennium Project, 2010). The preference for male children, largely due to inheritance laws and dowry liabilities, is causing a gender imbalance in many countries in the region, most notably in China and India where, in some communities, the birth ratio is as low as 60–70 females to every 100 males (Hesketh, 2012; Hsu, 2008). According to UNICEF, child marriage is a severe issue in Nepal and some parts of India, where about 40% of girls become child brides (UNICEF, 2005). Women's representation in the Arab States' legislature reached 10.7% (from 3.6% in 2000), the average of economically active adult female rose to 28%, and the social uprisings of 2011 are expected to further unsettle the patriarchal society dominating most Muslim-majority countries. In places such as Afghanistan, where 85% of women are illiterate and only 37% of students in schools are girls, women's rights should be central to peace and development agreements (Gross, 2009). It can

also be emphasised that half of the world's top 20 richest self-made women are Chinese (Hewlett & Rashid, 2012).

In Africa despite significant progress with enrolment in primary education, dropout rates are 40% and one in three children is engaged in child labour (Smith, 2011). Half of the world's maternal deaths occur in sub-Saharan Africa, and women have little say in their own health care. African countries experiencing conflict or natural disasters have a very high incidence of sexual violence. Women represent 19.1% of legislatures in sub-Saharan Africa, with Rwanda being the world's only women-majority parliament. However, conflicts between constitutional and customary law are an issue across Africa, and only 29 of the 53 African Union countries ratified the Protocol on Women's Rights (Obiora & Whalen, 2010).

A.12 How can transnational organized crime networks be stopped from becoming more powerful and sophisticated global enterprises?

Regional considerations

In North America the International Organized Crime Intelligence and Operations Centre integrates United States efforts to combat international organized crime and coordinates investigations and prosecutions. The 22-month anti-cross-border-drug Project Deliverance ended successfully in June 2010 after the arrest of 2 200 individuals and the seizure of more than 69 tons of marijuana, 2.5 tons of cocaine, 1 410 pounds of heroin, and $154 million in currency. Drug criminal gangs have escalated in the United States to an estimated 1 million members, responsible for up to 80% of crimes in communities across the continent. Organized crime and its relationship to terrorism should be treated as a national security threat.

In Latin America about 35 000 people have died in the Mexican drug war over the past four years, of whom 15 000 died in 2010. Mexico's cartels receive more money (an estimated $25–40 billion) from smuggling drugs to the United States than Mexico earns from oil exports. About $1 billion worth of oil was stolen from pipelines (396 taps) and smuggled into the United States over a two-year period. Mexican drug cartels are rapidly moving south, into Central America, and are branching out, with

'La Familia' exporting $42 million worth of stolen iron ore from Michoacán in a year. UNODC says crime is the single largest issue impeding Central American stability. Cocaine production in Colombia has dropped by two-thirds and is now done by small gangs, using farms hidden in the jungles and there drug gangs have largely replaced the paramilitaries. Ecuador has now become an important centre of operation for transnational organized crime gangs as 3 000 people have reportedly moved in from Colombia and police also seized a drug smuggling submarine in Colombia. It is argued that drug cartels exist in Latin America because of illegal drug consumption in the United States.

The Europe Europol published a 2011 Transnational Organized Crime Threat Assessment, indicating greater transnational organised crime mobility, operational diversity, and internal collaboration. The European Union has strengthened controls on money transfers across its borders to address trafficking and money laundering, especially in Eastern Europe. Russian officials have declared the drug situation in that country "apocalyptic." An estimated €30 million in EU carbon emission allowances were stolen in January. The Italian Guardia di Finanza arrested 24 people from a €2.7 billion Chinese counterfeit fashion operation, and Milan police arrested 300 members of 'Ndrangheta. During 2010 London police also smashed a £100 million drug and money laundering gang.

The International Conference on Asian Organized Crime and Terrorism held its eighth meeting to share intelligence during 2010. Disease cut Afghan opium production by almost half, but the acreage stayed the same; four more provinces became almost drug-free, but domestic addiction is spreading. China is the main source for counterfeit goods sent to the European Union. India is currently a major producer of counterfeit medicines. North Korea is perceived as an organized crime state backed up by nuclear weapons involved in illegal trade in weapons, counterfeit currency, sex slavery, drugs, and a range of counterfeit items. Myanmar is also accused of deporting migrants to Thailand and Malaysia, where they are exploited, and has reportedly become a centre for the ivory trade and elephant smuggling. Myanmar and China remain the primary sources of amphetamine-type stimulants in Asia as Myanmar rebels are exporting hundreds of millions of tablets to Thailand to raise money. A United Nations (2010) report indicates that Australia has a multi-

billion-dollar drug enterprise, and that Australians are among the world's highest per capita consumers of illicit stimulants (UN, 2010)

The West Africa Coast Initiative is in a partnership with UNODC, UN Peacekeeping, ECOWAS, INTERPOL, and others to address the problems that have allowed traffickers to operate in a climate of impunity. The drug traffic from Latin America through the West African coast to Africa and Europe has however been declining. Piracy, centring on Somalia and now invading the Indian Ocean, has become a major crisis, with 286 piracy incidents worldwide in 2010 and 67 hijacked ships and over 1 130 seafarers affected. Yemen's unsettled future could leave the oil shipping lanes of the Arabian Sea bordered by two failed states. A multinational naval force is combating the problem, which is complicated by the lack of clear international legal structures for prosecution and punishment; Kenya has however withdrawn its support in this area, but Somaliland and Puntland are helping. Some 930,000 sailors have signed a petition to the IMO to stop piracy. Smoking of "whoonga" has become a serious problem in South Africa, with robberies committed to support £90 per day habits. The 15 million AIDS orphans in sub-Saharan Africa, with few legal means to make a living, constitute a gigantic pool of new talent for the future of organised crime. Corruption remains a serious impediment to economic development in many African countries.

A.13 How can growing energy demands be met safely and efficiently?

Regional considerations:

There are more people without electricity in India (400 million) than the entire population of the United States. China uses more coal than the United States, Europe, and Japan combined; it also builds more-efficient, less polluting coal power plants. It is expected to add generation capacity equivalent to the current total installed capacity of the United States in the next 15 years. China invested more than $64 billion (1.4% of its GDP) in clean energy in 2010 and plans to expand its offshore wind turbines to 5 GW by 2015 and 30 GW by 2020. China added nearly 20 million vehicles in 2010 and now produces more cars than the United States and Japan, and it could lead the world in electric car production. India will invest $37

billion in renewable energy to add additional capacity of 17,000 MW by 2017. Oil and gas production in the Caspian region will grow substantially in the next 20 years; Kazakhstan and Turkmenistan lead the growth in oil and gas respectively. China has 13 nuclear reactors in operation and 25 under construction. India also plans to increase nuclear energy's share from 3% to 13% by 2030 (Schneider, 2009).

Lesser-known potential clean energy sources in the United States include high-altitude wind off the East Coast, OTEC in the Gulf Stream, solar thermal in the Midwest (four corners), drilled hot rock geothermal, and nano-photovoltaics. The United States investment in clean energy increased by 51% in 2010, but the United States dropped to third place after China and Germany. Algae farms for bio fuel may cost $46.2 billion per year to replace the current oil imports. California requires oil refineries and importers of motor fuels to reduce the carbon intensity of their products by 10% by 2020 and San Francisco's mayor called for the city to go 100% renewable by 2020. Pacific Gas and Electric Company of California now also agreed to buy 200 megawatts of space-based solar power by 2016 from Solaren. Recycling waste heat from nuclear power plants to home air conditioners and recycling body heat to recharge batteries could also reduce CO^2 by 10–20% in the United States (The Millennium Project, 2012).

Brazil is currently the world's second largest producer of bioethanol, with 33% of the world market, producing it at 60¢ per gallon and meeting 40% of its automotive needs; 90% of the automobiles produced in Brazil are flex-fuel. Argentina on the other hand is the world's second largest producer of biodiesel, with 13.1% of the market. Geothermal, solar, and wind are vast untapped resources for the region, as are gains from efficiencies. Installed wind power capacity in the region is expected to grow by 12.6% per year and reach 46 GW by 2025, with Brazil and Mexico having a dominant share. Ecuador announced that it would refrain from drilling for oil in the Amazon rainforest reserve in return for up to $3.6 billion in payments from industrial countries. Venezuela's Orinoco heavy oil reserves (requiring advanced production technology) are larger than Saudi Arabia's reserves. Argentina, Brazil, and Mexico have nuclear reactors but have not changed their nuclear policy, while Venezuela froze its plan to develop nuclear energy.

Conservation and efficiencies could arguably reduce the European Union's energy consumption about 30% below 2005 levels by 2055. Low-carbon technologies could provide 60% of energy by 2020 and 100% by 2055 according to the European Union's low carbon roadmap. Germany and Switzerland plan to phase out nuclear energy. Increasing imports of renewable energy from MENA and natural gas from Eastern Europe seem inevitable. The future pan-European smart grid should allow massive deployment of the low-carbon energy supply. A Swedish team certified Italian claims that low-energy nuclear reactions produced sufficiently more energy than consumed over 18 hours to trigger commercial planning. European Union now plans to have 10–12 carbon capture and storage demonstration plants in operation by 2015. Amsterdam plans to have 10 000 electric cars by 2015. Five geothermal power plants in Iceland supply 27% of the country's electricity needs and it believed that Europe is on track to generate 20% of its energy from renewable sources by 2020.

Over 70% of sub-Saharan Africa does not have access to electricity. The World Bank's Lighting Africa initiative mobilizes funding from the private sector to provide affordable and modern off-grid lighting to 2.5 million people in Africa by the end of 2012 and to 250 million people by 2030. The $80 billion Grand Inga dam in Central Africa could generate 40 000 MW of electricity, but the project is progressing slowly due to political instability, mismanagement of public finance, and possible environmental and social impacts. Algeria is believed to invest $60 billion in renewable energy projects by 2030. On the Brightside by 2055 estimate, some 10–25% of Europe's electricity needs could be met by North African solar thermal plants.

A.14 How can scientific and technological breakthroughs be accelerated to improve the human condition?

Regional considerations:

Research by the United States National Academy of Sciences, National Academy of Engineering, and Institute of Medicine is available for free downloads. The Massachusetts Institute of Technology makes 2 000 courses (many of them the top science and technology courses in the world) available online at no cost with videos,

lecture notes, and references. The United States Peace Corps has created Information Volunteers to help developing countries access science and technology information in the classroom. About 35% of world research and development is in the United States. Each week the United States Patent Office makes thousands of new patents freely available online. Prizes can speed the distribution of technology that benefits humanity, such as the Tech Awards from the Tech Museum in San Jose, California, or Richard Branson's new prize for a plan to remove a billion tons of carbon dioxide a year, as can tech sports like MIT's robot competitions (The Millennium Project, 2010).

The Organisation for Economic Co-operation and Development, UNESCO, European Union, the United States, and China are helping countries in the region with innovation systems. Chile has started a scientific news network for Latin America in order to reverse some of the lagging indicators in the region. Argentina, Brazil, Chile, and Mexico account for almost 90% of university science in the region, but half of the 500 higher education institutes produce no scientific research. Mexico however is leading the Innovation Network for Latin American and the Caribbean ((The Millennium Project, 2012).

The 2012 European Union science and technology budget increased research by 13%. The European Union is establishing a single European system for registering patents. Although the Lisbon Science and Technology Strategy expired in 2010 (succeeded by Europe 2020), the European Union target of 3% of GDP for Research and Development has been kept. Only two European Union member states have achieved the 3% target so far, while the average Research and Development expenditure of the EU27 stood at 2.01% of GDP in 2009. The newer members' R and D expenditure remains low, with many under 1%. Russia has lost over 500 000 scientists over the past 15 years, but a reverse trend is beginning, salaries have increased, innovation is encouraged, and high tech is being supported. Russian investments in nanotechnology Research and Development and corporations have also been substantial, even during the recent recession. Russia is building the Skolkovo Innovation Centre with funding from multinational corporations to accelerate Research and Development and applications.

Chinese patent filings on the other hand have gone up 500% in the past five years. China is investing more in cleaner energy technology than the United States does and it has the second largest Research and Development budget in the world. Asian countries with double-digit economic growth also have double-digit growth in Research and Development expenditures (CRCC Asia, 2012). Energy and environment is the focus of United States and China relations. Japan has launched a Venus probe that also carried a space sail that gains its energy from solar "wind" pressure in space (The Millennium Project Nodes, 2012).

In Africa the first Inter-Parliamentary Forum on Science, Technology and Innovation promises to increase the% of GDP for Science and Technology. African Innovation Outlook 2010 found Science and Technology for medicine has passed agriculture, but Africa's share of global science continues to decrease. These low levels of research and development investment, weak institutions, and poor access to markets are among the key challenges in actualizing Africa's innovation potential (The Millennium Project, 2010). The United Nations Economic Commission for Africa is supporting science training via "collaboratories" to connect African scientists with counterparts overseas to use science and technology more efficiently (Glenn *et al.,* 2011). Primary commodities account for 80% of Africa's exports; science and technology innovation is needed to create added value exports and to leapfrog into future biotechnology, nanotech, and renewable energy prospects (The FAO, 2009). UNESCO's 2010 World Social Science Report found a 112% increase in Africa's publications in social studies and humanities between 1987 and 2007 (UNESCO, 2012)

Patents Issued in the United States (per year)

Source: United States Patent Statistics
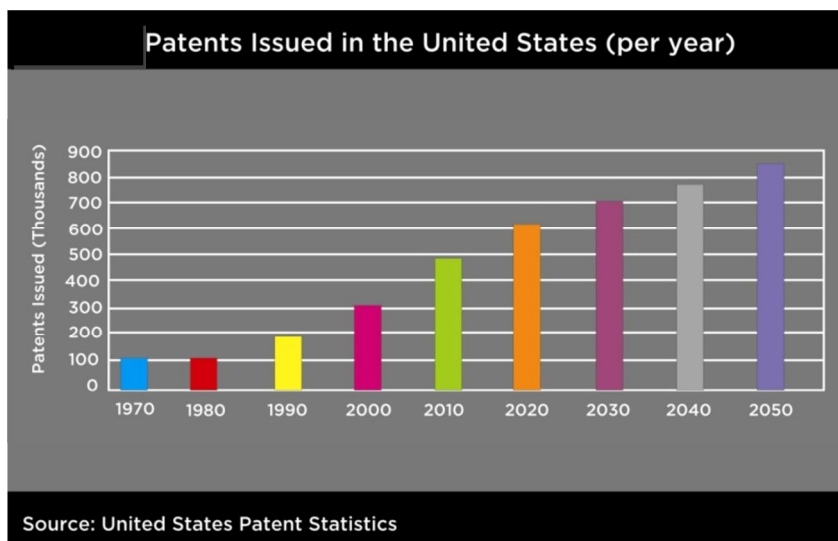
A.15 How can ethical considerations become more routinely incorporated into global decisions?

Regional considerations:

With the emergence of the G8 and BRICS and the increasing powers of the WTO, ICC, regional organisations, and social media, it is reasonable to forecast a transition from the United States being the only superpower to a more multi-polar world. But how that will change global decision-making and ethical considerations is not as clear. Although the United Sates has provided some leadership in bringing ethical considerations into many international organisations and forums, its ethical leadership is compromised and there is still no generally accepted way to get corrupting money out of politics and elections or to stop "cosy relationships" between regulators and those they regulate (State of the Future, 2011).

University courses in business ethics are growing throughout Latin America. Problems such as lack of personal security, limited access to education and health services, lack of faith in politics, badly damaged institutions that do not fulfil their role (such as the Justice system and police), and accelerated environmental degradation in some countries are aspects of a serious lack of ethical values. The prevalence of legal formality, in other countries, does not guarantee equal rights, as large sections of the population remain excluded from the guarantees of goods and people. It also manifests a serious lack of ethical standards in the mass media (The Millennium Project, 2010).

Long-range demographic projections indicate Europe will become the first Moslem majority continent. The European integration processes both help and challenge ethical standards as cultures meet and question each other's way of thinking and acting. Its future immigration policies will have global significance, increasing discussions of ethics and identity for Europe. The European Ethics Network is linking efforts to improve ethical decision-making, while Ethics Enterprise is working to mobilize an international network of ethicists and organize innovative actions to attract attention for ethics in business (The Millennium Project, 2012).

As China's global decision-making role increases, it will face traditional versus western value conflicts. Some believe the rate of urbanisation and economic growth is so fast in Asia that it is difficult to consider global ethics, while Asians do not believe there are common global ethics and maintains that the pursuit to create them is a western notion (The Millennium Project, 2012).

The North African uprisings in 2011 brought calls for ethics in decision-making. Transparency International chapters in sub-Saharan Africa work to counter corruption and the Business Ethics Network of Africa continues to grow, with conferences, research, and publications. However most African government anti-corruption units are not considered successful, Eight African countries surveyed by the Transparency International report indicated that 20% of those interviewed in eight African countries surveyed who had contact with the judicial system reported having paid a bribe (The Millennium Project, 2010).

Section 3.2 presented descriptions of the Global Challenges that have been identified and updated through an arguing Delphi process and environmental scanning. The scanning process included feedback from The Millennium Project (2011), global assessments and the future of specific issues such as media energy; education; scanning the internet; expert reviews; online feedback; regional input from The Millennium Project Node chairs, motivating conferences, services and publications. All of the above challenges were distilled for the patterns and data updated and cross-referenced for validation. South Africa as a developing nation needs to be "in tune" with these global challenges in order to adhere to global drivers of change affecting South Africa's progress towards 2055. The next sections will focus on human development affecting South Africa's population towards 2055.