THE DEVELOPMENT OF A SOCIO-ECONOMIC MODEL TO PROMOTE WOMEN EMPOWERMENT INITIATIVES IN THE RENEWABLE ENERGY SECTOR OF SOUTH AFRICA

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ABSTRACT

The South African Constitution is lauded as one of the most progressive in the world, and in some respects considered better than the Constitution of the United States of America with regards to Human and Socio-Economic Rights. Yet, South Africa exhibits the highest incidence of recorded rape in the world, with an increase in femicides, violence against women and children, and even more barbaric acts of burning their victims, and cannibalism in the Eastern Cape and KwaZulu-Natal. This research argues that if women were economically empowered, they would be able to extricate themselves from these perilous situations. The paradox between the South African Constitution and the reality, is indicative of deep structural challenges that will require exceptional solutions that will address the systemic issues that this study will discuss.

The renewable energy sector, which is one of the fastest growing business sectors in South Africa, could be that catalyst for this change, and, more importantly, change the stereotypical paradigm of women entrepreneurs as owners of *'chicken coops'* and *'veggie patches'*, to become owner-operators of their own power generation facilities, thereby making a meaningful contribution to women-led Independent Power Producers. However, it would be a lost opportunity if the renewable energy sector were to follow a similar trajectory to the mining sector in failing to mainstream gender, or if the renewable energy sector were to repeat the errors of the mining sector in attempting to empower women.

Based on the literature review, guidance from subject matter experts, survey data, and personal field experience, I examine the primary research question: ***What are the main contributors and variables which can positively influence the socio-economic empowerment of women initiatives in the renewable energy sector in the Republic of South Africa?*** In order to respond to this primary research question, a theoretical model was developed, which was informed by the academic literature, reports and studies from the public and private sectors, data garnered through a questionnaire, as well as face-to-face dialogue sessions. In order to address the primary objective of developing the theoretical model, several secondary goals were established by developing a conceptual model that comprised of variables determined through a detailed review of the related gender and renewable energy literature.

The objective of this research was, therefore, to evaluate and recommend new approaches to mainstream gender in the renewable energy sector. This objective would be achieved by introducing a model of the factors that contribute to the perceived success of the socio-economic empowerment of women within the renewable energy sector of the RSA. This study is equally beneficial to any Country that might be embarking on a Renewable Energy Independent Power Producer Procurement Program. Also, the research findings and recommendations are equally relevant to the mining, manufacturing, and agricultural sectors who wish to mainstream gender in their sectors.

From the empirical evidence, Executive Leadership (ethical leadership) positively influences Good Governance and Successful Women's Empowerment. Therefore, the inference can be made that the respondents deemed Executive Leadership to be a primary contributing factor to both Good Governance and Successful Women's Empowerment. According to the empirical results, Social Investment (funding) and Broad-Based Black Economic Empowerment (policy) positively influence Successful Women's Empowerment. Finally, the empirical results indicate that Sustainable Programmes are a positive contributing factor to Good Governance. The respondents did not consider Stakeholder Engagement statistically significant in relation to Good Governance or Successful Women's Empowerment. This could be a case of misinterpretation, or lack of experience regarding the importance of Stakeholder Engagement. However, the literature indicates the criticality of Stakeholder Engagement, as well as Change Management. Further research should be conducted to establish the lack of appreciation by respondents for the importance of Stakeholder Engagement and Change Management. These findings shed light on the opportunities for the socio-economic empowerment of women in the renewable energy sector of the RSA, by developing women-led Independent Power Producers.

Keywords: socio-economic empowerment, empowerment of women, mainstream gender, renewable energy, local economic development, ethical leadership, good governance, gender equality, radical economic transformation, structural challenges, systemic solutions.

DECLARATION

Student: Harvey Keown

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Qualification: Doctor of Philosophy

Title: A theoretical model to promote women's empowerment initiatives in the renewable energy sector.

In accordance with Rule G 5.6.3 and G 5.6.3, I, Harvey Keown, student number 21 712 2604, hereby declare that the dissertation for Philosophiae Doctor in the Faculty of Developmental Studies at Nelson Mandela University, to be awarded is my own work and that it has not previously been submitted for assessment or completion of any postgraduate qualification to another University or for another qualification.

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Harvey Keown

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ABBREVIATIONS

The following explanations are included to indicate to readers how these terms are used in this study.

ABET	Adult Basic Education and Training
ABSA	Amalgamated Banks of South Africa
ACHPR	African Charter on Human and People's Rights
AFAWA	Affirmative Finance Action for Women in Africa
AfDB	African Development Bank
AFSD	Africa Foundation for Sustainable Development
AGFI	Adapted Goodness of Fit Index
ALN	African Legal Network
ANA	Annual National Assessments
ANC	African National Congress
ANCWL	African National Congress Women's League
AsgiSA	Accelerated and Shared Growth Initiative for South Africa
BEE	Black Economic Empowerment
BHAG	Big Hairy Audacious Goal
BOOT	Build-Own-Operate-Transfer
BOT	Build-Operate-Transfer
BRIC	Brazil, Russia, India, and China
BRICS	Brazil, Russia, India, China, and South Africa
BSAP	Biodiversity Strategy and Action Plan
CBO	Community-Based Organisations
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CGC	Corporate Governance Council
CGE	Commission for Gender Equality
CIF	Climate Investment Fund
CIPC	Companies and Intellectual Property Commission
COP	Conference of Parties
CPS	Cash Paymaster Services

CSI	Corporate Social Investment
CSIR	Council for Scientific and Industrial Research
CSO	Civil Society Organisations
CSR	Corporate Social Responsibility
CSW	Commission of Status for Women
DAFF	Department of Agriculture, Forestry and Fisheries
DBSA	Development Bank of Southern Africa
DEA	Department of Environmental Affairs
DFI	Development Finance Institutions
DOE	Department of Energy
DOEA	Department of Environmental Affairs
DTI	Department of Trade and Industry
ED	Enterprise Development
EDGAR	Emissions Database for Global Atmospheric Research
EE	Economic Empowerment
EFA	Exploratory Factor Analysis
EIB	European Investment Bank
EPC	Engineering, Procurement and Construction
ERC	Energy Research Centre
ERP	Enterprise Resource Planning
EU	European Union
EWT	Endangered Wildlife Trust
EY	Ernst & Young
FAS	Fetal Alcohol Syndrome
FBO	Faith-Based Organisations
FICA	Financial Intelligence Centre Act
FIT	Feed-in tariffs
GCF	Green Climate Fund
GCN	GEF CSO Network
GDP	Gross Domestic Product
GE	General Electric
GEAP	Gender Equality Action Plan

GEF	Global Environmental Facility
GEPF	Government Employees Pension Fund
GFI	Goodness of Fit Index
GFP	Gender Focal Points
GGCA	Global Gender and Climate Alliance
GGO	Global Gender Office
GIBS	Gordon Institute of Business Sciences
GII	Gender Inequality Index
GNI	Gross National Income
HBS	Harvard Business School
HDI	Human Development Index
HDSA	Historically Disadvantaged South African
HG	Heads of Government
HS	Heads of State
IA	Implementation Agreement
IAWG	Inter-Agency Working Group
IBR	International Business Report
IDC	Industrial Development Corporation
IDP	Integrated Development Plans
IFC	International Finance Corporation
IHDI	Inequality-Adjusted Human Development Index
ILO	International Labour Organisation
IMF	International Monetary Fund
IMS	Information Management System
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power producer
IPU	Inter-Parliamentary Union
IRENA	International Renewable Energy Agency
IRP	Integrated Resource Plan
IUCN	International Union for the Conservation of Nature
JSE	Johannesburg Stock Exchange
KMO	Kaiser-Meyer-Olkin

KPI	Key Performance Indicators
LGBT	Lesbian, gay, bisexual, and transgender
LGIM	Legal and General Investment Management
LISREL	Linear Structural Relations
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MEA	Multilateral Environment Agreements
MIT	Massachusetts Institute of Technology
MOA	Memorandum of agreement
MP	Members of Parliament
NDP	National Development Plan
NERSA	National Energy Regulator of South Africa
NGO	Non-governmental organisations
NMMU	Nelson Mandela Metropolitan University
NMU	Nelson Mandela University
NPC	Non-Profit Company
NPO	Non-Profit Organisation
OECD	Organisation for Economic Co-operation and Development
OPIC	Overseas Private Investment Corporation
PBO	Public benefit organisation
PFMA	Public Finance Management Act
PIC	Public Investment Corporation
PIF	Project Information Form
PIRLS	Progress in Reading and Literacy Study
PISA	Programme for International Student Assessment
PMG	Parliamentary Monitoring Group
PMO	Project Management Office
POP	Persistent Organic Pollutants
POPI	Protection of Personal Information
PPA	Power Purchase Agreement
PPCP	Public-Private Community Partnership
PPIAF	Public-Private Infrastructure Advisory Facility

PPP	Public-Private Partnership
QSE	Qualifying Small Enterprises
RBM	Results-Based Management
REIPPPP	Renewable Energy Independent Power Producers Procurement Programme
RGC	Royal Government of Cambodia
RICA	Related Information Act
RMB	Rand Merchant Bank
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
ROE	Return on Equity
ROM	Run-of-mine
SAA	South African Airways
SABC	South African Broadcasting Corporation
SACCI	South African Chamber of Commerce and Industry
SACMEQ	Southern African Consortium for Monitoring Educational Quality
SADC	Southern African Development Community
SADTU	South African Democratic Teachers Union
SAEE	Southern African Association for Energy Efficiency
SAFEE	Southern African Females in Energy Efficiency
SANAS	South African National Accreditation System
SANEDI	South African National Energy Development Institute
SAP	Systems, Applications and Products
SAREC	South African Renewable Energy Council
SARS	South African Revenue Services
SASSA	South African Social Security Agency
SAWEP	South Africa Wind Energy Programme
SDG	Sustainable Development Goals
SDT	State Diamond Trader
SE	Stakeholder Engagement
SEC	Securities and Exchange Commission
SED	Socio-Economic Development

SEFA	Small Enterprise Finance Agency
SEM	Structural Equation Modelling
SGP	Small Grants Programme
SLM	Sustainable Land Management
SLP	Social and Labour Plans
SMME	Small, Medium, and Micro Enterprises
SOC	State Owned Company
SPMH	Satellite Project Management Hubs
SPV	Special Purpose Vehicle
STEM	Science, Technology, Engineering, and Mathematics
SWH	Solar Water Heaters
SWOT	Strengths, Weakness, Opportunities and Threats
TFP	Total Factor Productivity
TIMMS	Trends in International Mathematics and Science Study
TIMSS	Trends in International Mathematics and Science
TNC	Transnational Corporations
UAE	United Arab Emirates
UCT	University of Cape Town
UK	United Kingdom
UKZN	University of KwaZulu Natal
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
VAWG	Violence against women and girls
WCDA	Western Province Department of Agriculture
WEF	World Economic Forum
WiLDAF	Women in Law and Development in Africa
WLO	Women-Led Organisations
WMC	White Minority Capital
WWF	World Wildlife Fund
YLO	Youth-Led Organisations

CHAPTER ONE
OVERVIEW OF THIS STUDY

1.1. INTRODUCTION

"I think women are foolish to pretend they are equal to men, they are far superior and always have been", Sir William Gerald Golding (1911–1993).

Golding was a British novelist, playwright, and poet best remembered for his work, *Lord of the Flies*, (1954). In 1980 Golding was awarded the Booker Prize for literature for his novel, *Rites of Passage*, in 1983 he won the Nobel Prize for Literature in 1983 (Danni, 2015), and was further rewarded for his literary contribution by being knighted by Queen Elizabeth in 1988 (Danni, 2015). Golding's keen insights into human behaviour and psychology make his statement on the role of women significant in the light this study on female empowerment.

The researcher has worked in the mining, agricultural and renewable energy sectors with a focus on sustainable community development. However, it is only since the founding of Africa Foundation for Sustainable Development in 2009, and the subsequent exposure to the Global Environmental Fund that the researcher became more aware of the topic of women's empowerment. This research effort outlines concerns arising from these efforts and introduces the background to the field of research; it is followed by a statement of the research problem; and the research objectives and the rationale for this study. Regarding mainstreaming gender and renewable energy in general, this study outlines findings from the current literature on international policy relating to gender and environmental leadership, funding for the implementation of gender and climate-smart initiatives, women who occupy influential decision-making positions as Chief Executive Officer's (CEOs), and the status quo with regard to mainstreaming gender in the renewable energy sector of South Africa.

Strategy &, the consulting division of PricewaterhouseCoopers (PwC) conducted a study that researched 2,500 of the most significant global companies (McGregor, 2016). The findings indicated that of the 359 permanent or interim CEOs appointed in 2015, worldwide only ten were female.

At 2.8% of all new CEOs, this is the lowest rate since 2011 (McGregor, 2016). An International Business Report (IBR) subsequently published as *Women in Business: Turning Promise into Practice*, surveyed 5,520 businesses in 36 economies (Kilian, 2016). Of the 200 South African business executives surveyed, the IBR report revealed that women in South African corporations only occupied 23% of the senior positions, a decline from 27% from the previous year (Kilian, 2016). The same IBR report also revealed that 39% of businesses did not have any women in leadership positions (Kilian, 2016). The Johannesburg Stock Exchange (JSE) recognises that during the past decade there has been little change in the proportion of women in senior positions of listed companies and has changed its listing requirements to encourage listed companies to disclose female representation (Kilian, 2016). The director of marketing and corporate affairs at the JSE, Zeona Jacobs, anticipates that the disclosure will encourage companies to increase the nature and pace of gender transformation (Kilian, 2016).

Starfield (2016) conducted research titled *(The influence of numbers and the number of influences: the role of female quotas and female activism in passing gender-based violence legislation in Sub-Saharan Africa using South Africa as a case study)* cites Executive Director of the United Nations Women, Dr Phumzile Mlambo-Ngcuka at a Gender and Violence Lecture at Yale University, 06th November 2015, "*One thing governments have got is legislation. Legislation has an impact. It affects millions of people in a country just by a stroke of a pen*". Not only does Starfield's research highlight the importance of legislation, but more importantly, also highlights the need for activism. Starfield (2016) concluded that quotas alone are insufficient and that a combination of quotas and activism will prove more successful at delivering substantive legislation.

A request for proposals for research collaboration projects issued by the Ministry of Foreign Affairs of Denmark (MFA) cites the South African Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) as one of the most successful renewable energy procurement programmes globally (Ministry of Foreign Affairs of Denmark, 2016). According to the MFA, the REIPPPP is generating more renewable energy in four years than the rest of Sub-Saharan Africa has achieved in the past twenty years (Ministry of Foreign Affairs of Denmark, 2016).

The proposal further asserts that there are areas of improvement in the design and operational features of the REIPPPP (Ministry of Foreign Affairs of Denmark, 2016). The improvements to the REIPPPP are grid integration of renewable sources; suitability of systems dependent on variable energy sources; decentralised energy production from sources such as wind, biomass and solar power; and the possible inclusion of time-based energy blocks (Ministry of Foreign Affairs of Denmark, 2016). The potential benefit to South Africa is that many countries in Sub-Saharan Africa are planning renewable energy implementations and could leverage the South African expertise and experience (Ministry of Foreign Affairs of Denmark, 2016).

This research will be disseminated as widely as possible and further augment the existing body of knowledge relevant to mainstreaming gender and sustainable women's empowerment within the renewable energy sector of the RSA. This study is intended to be applied to renewable energy implementations, and it is envisaged that this study will positively impact the lives of women, youth and people living with disabilities. The research findings will also enhance the South African REIPPPP which has a target of 10,000 GWh of renewable energy. The Minister of Energy has also stipulated that 3,725 Megawatt (MW) should be generated from renewable energy sources to ensure the continued and uninterrupted supply of electricity. However, if the fundamental challenges of poverty, namely, land tenure, land ownership, fixed asset acquisition, and community-level fund management, are not addressed at the outset, women will remain shackled by initiatives such as *'veggie patches'* and *'backyard chicken coops'*. The hurdles are even more significant in rural areas where tribal land is still under the control of the traditionally male chief. The researcher has also introduced the socio-economic and political challenges which impede mainstreaming gender objectives with the RSA. Fundamental to the challenges that the RSA currently faces is the disparity between rich and poor, evidenced by the Gini coefficient (World Bank, 2016a). South Africa is considered one of the most unequal countries in the world. The disparity is further compounded because South Africa is now considered an Upper-Middle Income country as per the World Bank definition (World Bank, 2016a).

The purpose of this study is therefore to determine the factors that positively influence the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa. Socio-Economic Development (SED), Enterprise Development (ED), Economic Development, Corporate Social Investment (CSI), Corporate Social Responsibility (CSR), and Economic Empowerment (EE), can be considered as a collection of programmes, projects, or interventions. These programmes, projects or interventions are intended to uplift the social and economic position of communities, and through this process provides access to the economy for the beneficiary communities. The importance of ensuring that these initiatives are sustainable, replicable, and scalable can be considered as key success factors and should maximise the developmental investment. The analogy of "*teaching communities to fish*" focuses the developmental efforts on capacitating communities by imparting skills, developing access to markets and the workplace, increasing access to finance, and securing developmental finance. When these aspects are met, the outcomes lead to sustainable and financially viable enterprises.

The socio-economic empowerment of women within the renewable energy sector of South Africa has a complex stakeholder domain which includes government, the private sector, organised labour, and civil society. This stakeholder ecosystem could straddle one or any of these stakeholder domains. The target audience for this research is the decision makers at the executive level and how their decisions influence the socio-economic outcomes of women as beneficiaries of the developmental funding generated by the renewable energy sector. The approach to target executive level leadership is premised on the fact that human and financial resources, company culture, change management, good corporate governance, executive education, amongst other dependent variables, all combine to ensure the sustained socio-economic empowerment of women.

Although this research effort focuses on the economic empowerment of women within the renewable energy sector, this research is equally applicable to the mining, manufacturing, and agricultural sectors. This research effort will be beneficial to improving the lives of impoverished communities in the RSA and elsewhere. The intention of this study is, therefore, to provide a possible blueprint for mainstreaming gender and sustainable women's empowerment driven by the Green Economy.

The Green Economy can be a catalyst for mainstreaming gender and sustainable women's empowerment and is potentially the last remaining sector that is not yet entirely dominated by men (Inayatullah, 2010).

1.2. A COMMON UNDERSTANDING OF GENDER

Since the 14th century, gender has been used as a grammatical term referring to classes of noun designated as masculine, feminine, or neuter in some languages (Oxford Dictionaries, 2016). The sense of male or female has also been used since the 14th century but has become more common since the mid-20th century (Oxford Dictionaries, 2016). The words gender and sex are used in slightly different ways where sex refers to biological differences and gender refers to cultural or social differences (Oxford Dictionaries, 2016). The United Nations (UN) defines gender equality as the goal that has been accepted by governments and international organisations, and gender mainstreaming as the strategy (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002).

There is sufficient research evidence to demonstrate inequality patterns between women and men, and to illustrate that women tend to suffer violence from their partners more often than men (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002). The inequality is compounded as women have less political participation and decision-making, and less economic opportunities than men. There are more poor women than poor men, and a higher proportion of women and girls are trafficked and involved in the sex trade than men (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002). According to Angela King, Special Adviser to the Secretary-General on Gender Issues and Advancement of Women (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002), mainstreaming gender is essential for securing human rights and social justice for both women and men. King also points out that incorporating gender perspectives in different areas of development contributes to achieving social and economic goals (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002).

King continues by stating that mainstreaming gender could reveal a need for changes in goals, strategies, and actions to ensure that both women and men can influence, participate in, and benefit from, development processes (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002). According to King (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002), mainstreaming gender may also contribute to change in organisations, structures, procedures and cultures, to create an organisational environment conducive to the promotion of gender equality.

The United Nations (2002) acknowledges that in the past decade, the understanding of, and commitment to, mainstreaming gender has increased significantly within the United Nations. Systems, policies on gender equality, and strategies to implement gender mainstreaming have been developed (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002). Research on gender perspectives in different areas and the sex-disaggregation of data has increased, thereby increasing the knowledge base associated with gender perspectives (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002). The United Nations (2002) points out that several persistent constraints have to be addressed, namely, conceptual confusion, a poor understanding of gender linkages, and the different areas of the work of the United Nations (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002). One of the most severe constraints is the available capacity gap, combined with the lack of understanding of '*how'* gender perspectives can be identified and addressed.

1.2.1. Gender-Neutral Language

As recently as 1999, UNESCO drafted *"Guidelines on Gender-Neutral Language"* due to UNESCO's commitment to justice, and also to the avoidance of discrimination in all of UNESCO's competence areas (Desprez-Bouanchaud, Dooleage, & Ruprecht, 1999). Although the necessary legal instruments existed as a means to enforce these principles, a considerable proportion of women and girls remained excluded from the benefits of existing educational programmes (Desprez-Bouanchaud *et al.,* 1999).

According to Desprez-Bouanchaud *et al.,* (1999), the cause of this problem is diverse and complex, and women and girls cannot claim their equal rights all the while the economic, political, social, and cultural environments in which they reside remain exclusionary. Desprez-Bouanchaud *et al.,* (1999) argues that if people display higher sensitivity to the implications of the vocabulary they use, then a higher degree of precision would result since imprecise word selection could be interpreted as biased, discriminatory or demeaning, even if the vocabulary was not intended to be discriminatory or demeaning. Desprez-Bouanchaud *et al.,* (1999) further state that two issues that occur are ambiguity when it is unclear whether the author means one or both sexes; and stereotyping, where the writing conveys unsupported or biased connotations about sex roles and identity. The following examples of phrasing ambiguity and the alternative phrasing are presented in Table 1.1:

Table 1.1: Examples of Phrasing Ambiguity

	Example	**Alternative**	**Comment**
1	Man's search for knowledge has led him to improve scientific methodology.	The search for knowledge has led us to improve scientific methodology.	Rephrased, using the first person.
		People have continually sought knowledge. The search has led them.	Rewritten in two sentences.
		The search for knowledge has led to improvements in scientific methodology.	Rephrased, leaving the agent implicit.
2	The use of experiments in psychology presupposes the mechanistic nature of man.	The use of experiments in psychology presupposes the mechanistic nature of the human being.	Noun substituted.
3	Man, mankind	People, humanity, human beings, humankind, the human species, the human race, we, ourselves, men and women, homo sapiens, one, the public, society, the self, human nature	In this group of examples, a variety of terms may be substituted.
	Man's achievements	Human achievements, achievements of the human species, achievements of our ancestors	
	The average man, man in the street	The average person/individual, people in general, one	

	Primitive man	Primitive people or peoples, primitive human beings, primitive men, and women	
	To man (a project)	To staff (a project), hire personnel, employ staff, operate, run, administer	

Source: Desprez-Bouanchaud *et al.,* 1999

1.2.2. Key Gender Definitions

The following definitions extracted from the Gender Equality Action Plan (GEAP) of the Global Environmental Facility (GEF) defines the following key terms (Global Environmental Facility's Secretariat, 2014):

- **Gender Equity** is the process of being fair to women, men, girls, and boys through fair differential treatment that positively addresses a bias or disadvantage that is due to gender roles or norms or distinctions between the sexes. The fair and just treatment of both sexes that considers the various needs of the women and men, cultural barriers, and past discrimination of the specific group;
- **Gender Mainstreaming** is a globally accepted strategy for promoting gender equality; where mainstreaming ensures that gender perspectives and a focus on the purpose of gender equality are central to all activities. Mainstreaming gender may encompass the process of assessing the implications for women and men of any planned action, including legislation, policies, or programs, in any region, and at all levels. The strategy is intended to address the concerns and experiences of women and men by making this a fundamental element of the design, implementation, monitoring and evaluation of policies and programs in all political, economic, and societal spheres. Thereby ensuring that women and men benefit equally and eliminate policies and actions which perpetuate inequality. According to Alston (2014), gender mainstreaming denotes the process of incorporating a gender perspective in any policy, legislation, or action, to address the concerns of all concerned parties and to eliminate the perpetuation of gender inequalities through institutional means;

Alston (2014) also states that the implementation of gender mainstreaming around the world has not necessarily led to advances for women since gender mainstreaming is usually connected with a winding back of women-focused policies and programs. Emerging research indicates that climate change provides significant gendered impacts, yet policies and procedures designed to address and shape mitigation and adaptation strategies have not incorporated gender mainstreaming (Alston, 2014);

- **Women's Empowerment** gives women:
  - a feeling of self-worth;
  - the right to have and determine choices;
  - the right to have access to opportunities and resources;
  - the right to have the power to control personal lives both within and beyond the home;
  - the ability to influence the direction of social transformation to facilitate a more just social and economic dispensation, nationally and internationally.
- **Gender Analysis** is the collection and evaluation of sex-disaggregated information, where women and men perform different functions, resulting in different degrees of experience, knowledge, skills, and requirements. Gender analysis investigates these distinctions for policies, programs, and projects to identify and satisfy the various needs of women and men. In addition, gender analysis also facilitates the strategic usage of distinct knowledge and skills possessed by women and men;
- **Gender Audits** are institutional gender analysis and assessment tools designed to determine the extent to which gender equality has been integrated into institutions, policies, and programs. They cover financial audits, general organisational assessments, and international policy analysis. The primary objective of the auditing tools is to hold institutions and governments accountable with regard to gender integration;
- **Gender Equality** identifies the equal rights, obligations and opportunities of women, men, girls, and boys. It recognises the diversity of these groups and gives weight to their interests, needs, and priorities. Gender equality is not only limited to women's issues but should also engage men;

Also, equality between women and men is considered both as a human rights issue and as a precondition for sustainable people-centred development;

- **Gender Relevant/Relevance** is an assessment based on the kind of intervention and scope of activities, where the degree of relevance of gender measurements might vary considerably. Upon determination that gender is essential in the planned intervention, a gender perspective ought to be integrated into every phase of the project;
- **Gender Responsive Results** are changes that respond to the iniquities in the lives of women or men within the confirmed social setting and attempts to remedy these inequities;
- **Gender Sensitive** considers gender norms, roles and relations but does not address inequality generated by unequal norms or roles, meaning that no remedial action is developed;
- **Gender Specific** considers men's and women's specific requirements. It refers to gender norms, functions, and relations for women and men and how they affect access to, and control over, resources. The objective is to intentionally target and benefit a group of women or men to accomplish policy or program goals; and
- **Sex-disaggregated Data** is data that is typically gathered and presented separately about men and women, where the term 'sex' describes the biological and physiological distinctions that differentiate men, women, and intersex.

1.2.3. International and Continental Africa Perspectives

In this section, a literature review is provided based on previous research conducted in the renewable energy sector and the mainstreaming of gender. The entry point for this research effort is the body of knowledge that already exists within the United Nations, the World Bank, the World Economic Forum (WEF), the GEF, and other relevant institutions. This study investigated the status of women in business at an international, continental, and country level. This research was further augmented by investigating the empowerment status of women across Brazil, Russia, India, China, and South Africa (BRICS), the Southern African Development Community (SADC), and within the RSA.

The following section is intended to provide an international perspective of mainstreaming gender with regard to policy formulation and progress within the public and private sectors. In March 2015, the United Nations hosted its 59th session of the Commission on the Status of Women (CSW59/Beijing+20, 2015) in accordance with the United Nations Economic and Social Council resolutions 2009/15 and 2013/18 (United Nations Economic and Social Council, 2015). The representation consisted of member states, UN entities, and The United Nations Economic and Social Council (ECOSOC), and accredited NGOs (United Nations Economic and Social Council, 2015). The primary objective of the session was the review of the Beijing Declaration and Platform for Action and current challenges that impede achieving the objectives of the Platform for Action, gender equality, and the empowerment of women (United Nations Economic and Social Council, 2015).

The Commission also conducted a 20-year implementation progress review of the Beijing Declaration and Platform for Action adopted at the 4th World Conference on Women in 1995 (United Nations Economic and Social Council, 2015). The Beijing+20 also reviewed the first five-year assessment of the Platform for Action, which highlighted further actions and initiatives (United Nations Economic and Social Council, 2015). The session also addressed a post-2015 development agenda to identify opportunities for achieving gender equality and the empowerment of women (United Nations Economic and Social Council, 2015). The review was the consolidation of a two-year process that spanned reviews of 167 States at the national level, intergovernmental meetings of five regional commissions of the United Nations, and additional review activities conducted by CSOs and the UN (United Nations Economic and Social Council, 2015). A report was tabled to the Commission by the Working Group on Communications on the Status of Women which highlighted communications that had most frequently been submitted to the Commission (United Nations Economic and Social Council, 2015).

The most frequent submissions focused on:

- Sexual violence against women and girls, including rape and rape within the family, sexual abuse and sexual harassment committed by private individuals and military and law enforcement personnel;

- Other forms of violence against women and girls, including targeted killings of women, domestic violence, child and forced marriage, female genital mutilation, forced abortion and trafficking to commercial sexual exploitation;
- Abuse of power by law enforcement officials and military personnel, lack of due process and delays in proceedings, arbitrary arrest and detention and failure to grant a fair trial and prevent impunity;
- The pressure exerted on victims of violence by law enforcement officials, often preventing them from filing complaints;
- Inadequate conditions for women in detention and penitentiary systems and degrading treatment and torture of and sexual violence against those women;
- Serious and systematic violations of the human rights of women and girls, some of which target vulnerable groups, including discrimination, harassment, degrading treatment, and sexual violence;
- Intimidation, harassment, including judicial and sexual harassment, detention, general violence, and sexual violence against women human rights defenders, as a means of exerting pressure on them to stop their activities;
- Violations of the right to health, including sexual and reproductive health, and reproductive rights as stipulated in the Programme of Action of the International Conference on Population and Development of women and girls. Further violations include detention, restricted access to health-care services, gynaecological and obstetric services, and discrimination against women belonging to vulnerable groups;
- Discrimination resulting from stereotypical practices and attitudes towards women, including in the areas of education and employment and during court proceedings;
- Inadequate institutions, ineffective implementation, and enforcement of laws aimed at promoting and protecting women's human rights; and
- Legislation and stereotypical practices that discriminate against women.

1.2.4. Guiding Principles

On the 12th August 2015, the President of the General Assembly of the UN submitted the draft resolution A/69/L.85, *Draft outcome document of the United Nations summit*

for the adoption of the post-2015 development agenda (United Nations, 2015). The draft resolution articulated the integrated and coordinated implementation of the major United Nations conferences and summits relating to economic, social, and related fields. The draft resolution provided the action plan for the Sustainable Development Goals (SDGs) which is intended to stimulate action over the next 15 years in the areas of People; Planet; Prosperity; Peace and Partnerships (United Nations, 2015). The resolution is intended to support the goal of "*Transforming our world: the 2030 Agenda for Sustainable Development*" (United Nations, 2015). Seeking to build on the Millennium Development Goals (MDGs) and complete what they did not achieve, the 17 SDGs and 169 targets were also announced, and demonstrate the scale and ambition of the new universal agenda (United Nations, 2015).

Goal 5 of the SDGs will attempt to achieve gender equality and empower all women and girls by setting the following targets:

- End all forms of discrimination against all women and girls everywhere;
- Eliminate all forms of violence against all women and girls in public and private spheres, including trafficking, sexual and other types of exploitation;
- Eliminate all harmful practices, such as forced child marriage and female genital mutilation;
- Recognise and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate;
- Ensure women's full and active participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life;
- Ensure universal access to sexual and reproductive health and reproductive rights as agreed by the Programme of Action of the International Conference on Population and Development, the Beijing Platform for Action and the outcome documents of their review conferences;
- Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance, and natural resources, through national laws;

- Enhance the use of enabling technology, information and communications technology to promote the empowerment of women; and
- Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels (United Nations, 2015).

1.2.5. Gender Policy Framework

At the Fourth United Nations World Conference on Women in Beijing during September 1995, gender mainstreaming was established as a global strategy for the promotion of gender equality in the Beijing Platform for Action (Office of the Special Adviser on Gender Issues and Advancement of Women of the United Nations, 2002). The ECOSOC agreed on several important principles for gender mainstreaming. On the 13th October 1997, the then General-Secretary of the UN, Kurt Waldheim, sent a follow-up letter to heads of all UN entities to provide further concrete directives with an objective that the General Assembly's twenty-third special session in June 2000 would follow-up on the implementation of the Beijing Platform for Action. The Beijing Platform for Action enhanced the mainstreaming mandate within the United Nations. This was further supported in July 2001 with the ECOSOC resolution on gender mainstreaming which called on the ECOSOC to ensure that gender perspectives were considered in all its work, including functional commissions and recommended a five-year review of the implementation of the ECOSOC.

In March 2015, the fifty-ninth session of the Commission of Status for Women (CSW) (CSW59/Beijing+20 2015) gathered at the UN Headquarters in New York (UN Women, 2015). The session focused on the Beijing Declaration, the Platform for Action, and current challenges that affected implementation and the achievement of gender equality and the empowerment of women (UN Women, 2015). Regarding the implementation of the Beijing Declaration and Platform for Action, the CSW undertook a progress review covering the 20 years since their adoption at the Fourth World Conference on Women in 1995 (UN Women, 2015).

The session also addressed opportunities for achieving the gender goals in the post-2015 development agenda (UN Women, 2015).

1.2.6. Gender Indicators

According to the United Nations Educational Scientific and Cultural Organization (Desprez-Bouanchaud *et al.,* 1999) "*Mainstreaming gender training is one of the key methods to support the behavioural and organizational changes that are needed to effectively mainstream gender equality considerations into all policies and programmes of any organization*". Findings from a study by Brody, Demetriades, & Esplen (2008) reveal that country level indicators are imperative for ensuring that commitments on gender equality and sustainable development are achieved. Brody *et al.,* (2008) also argue that national level indicators could highlight structural inequalities such as policy commitment, legal frameworks, and national legislation.
The authors referred to Cambodia which has developed additional targets and indices to measure progress towards the MDGs, complementing international measures (Brody *et al.,* 2008).

The Cambodian Millennium Development Goals (CMDGs, 2008) include nine goals, 25 overall targets, and 106 specific targets. Brody *et al.,* (2008) also confirm that indicators are essential for ensuring development effectiveness at the country level if they are to contribute to effective poverty reduction. Gender indicators need to be given the same priority as other markers of change, such as economic growth, and the gender indicators should be developed as part of the planning and implementation policy (Brody *et al.,* 2008). According to a report prepared by Moser (2007), deciding what to measure is arguably also a political process, yet, in practice, the challenge is determining which aspects of change should be measured. The measurement criteria will differ depending on the actors involved.

For example, governments might elect to monitor *'progress'* for women and men; development agencies might focus on evaluating the *'impact'* of particular gender programmes; and gender equality activists might measure gender (in)equality or (in)justice (Moser, 2007). Figure 1.1 illustrates the change that is required at individual, societal, formal, and informal levels.

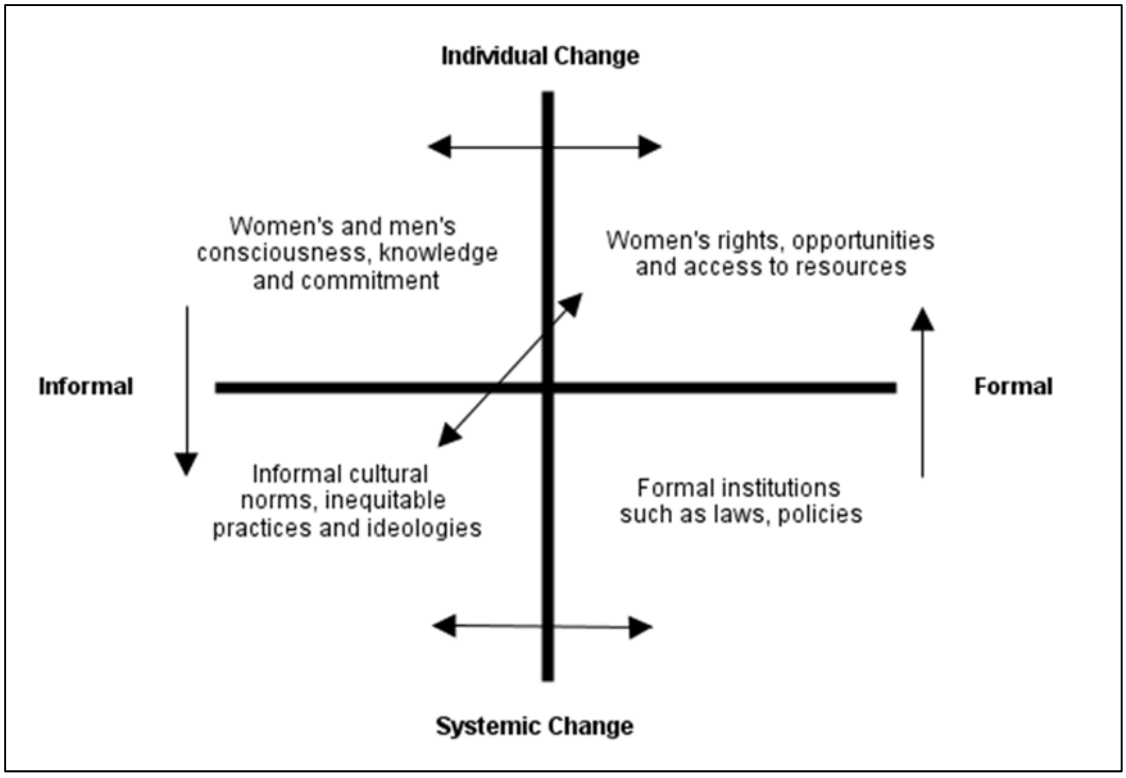


Figure 1.1: Gender at Work: What are we trying to change?

Source: Adapted from Rao and Kelleher, 2005

1.2.7. Mainstreaming Gender and Environmental Leadership

According to Naoko Ishii, Chairperson and Chief Executive Officer of the GEF, "*As the GEF moves forward with a new and innovative investment strategy, we are deeply committed to initiating and enhancing projects to more effectively deliver on the goals for gender equality while addressing the challenges mankind face on the global environment*. *These are not separate issues. Only by engaging partners, both women and men, the negative trends threatening our ecosystems can be reversed and save them for our future generation.*" (Global Environmental Facility, 2015).

On the 28th October 2014, at the 47th GEF Council in Washington DC, Ishii also stated that as a result of the GEFs sixth replenishment (GEF-6), the GEF Facility had a fund of US$ 4.4 billion for the next four years (Global Environmental Facility, 2014a).
Ishii also pointed out that the GEF had more resources, a strategy that would propel the GEF to even greater heights, and an even stronger policy agenda (Global Environmental Facility, 2014a).

During October 2014 the GEF Council reviewed the GEAP (document GEF/C.47/09, Gender Equality Action Plan) and approved the action plan and its implementation (Global Environmental Facility, 2016a). The understanding was that the GEF Secretariat would be creating a gender anchor function and would bring in external gender-specific expertise to develop capacities to deliver the commitments that had been agreed (Global Environmental Facility, 2016a). The Council also recognised the close collaboration among the GEF Secretariat, GEF Agencies, related Multilateral Environment Agreements (MEAs), Civil Society Organisations (CSOs), including women's groups, and other partners in developing the action plan (Global Environmental Facility, 2016a).

According to Christiana Figueres, Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC), "*Women living in developing countries face two different, but intrinsically linked scenarios when it comes to climate change. On the one hand, they are disproportionately vulnerable to the effects of climate change. On the other hand, they are powerful agents of change*", (Aguilar *et al.,* 2015). The International Union for the Conservation of Nature (IUCN) Global Gender Office (GGO) and the Global Gender and Climate Alliance (GGCA), compiled a study "*Roots for the Future, The Landscape and Way Forward on Gender and Climate Change*" Rojas *et al.,* (2015). Ana Rojas, Maria Prebble and Jackelline Siles contributed to the chapter, "*Mitigation - Flipping the switch: Ensuring the energy sector is sustainable and gender-responsive*", Rojas *et al.,* (2015). In this study, Rojas states that the energy sector is still generally gender '*blind*'. There are sound energy policies and interventions that are being executed, evidenced in small-scale, community-based projects and policies where there are strong interlinkages between different policy agendas that are aligned with the SDGs (Rojas *et al.,* 2015). Depending on the scale of the energy intervention, there may be gender elements that may be unique or amplified (Rojas *et al.,* 2015).

However, on large-scale energy projects, the impacts and benefits at this stage are promising but require further research (Rojas *et al.,* 2015). Rojas *et al.,* (2015) are also of the opinion that to achieve climate mitigation goals, renewable energy and energy efficiency interventions are crucial.

Also, the participation of women may be an essential success factor which will also increase woman's exposure to the labour force, and promote a development agenda that relies on more sustainable energy sources and consumption patterns (Rojas *et al.,* 2015). Therefore, the acknowledgement, recognition, and active pursuit of gender equality should contribute to the success of mitigation goals so that women and men can benefit equally from mitigation initiatives (Rojas *et al.,* 2015).

1.2.8. Woman CEOs

The 19th Annual Global Chief Executive Officer Survey conducted by Strategy &, the consulting division of PricewaterhouseCoopers (PwC) titled "*Redefining business success in a changing world*" (Snowden & Davies, 2016), aimed to determine how global CEOs are adapting to leadership in complicated times. PwC interviewed 1,409 CEOs in 83 countries, with 66% of CEOs believing that there are more threats to their business than in the past, and 76% of CEOs defining business success by more than financial profit. Dennis Nally, Chairman of PwC, stated that CEOs are less confident about future business opportunities, but considered that the best prospects for growth are in the United States (USA) and China (Snowden & Davies, 2016). Nally continues by stating that CEOs consider Germany and the United Kingdom (UK) as the next best prospects, followed by India, Brazil, Mexico and the United Arab Emirates (UAE) (Snowden & Davies, 2016).

The CEOs most significant concerns are overregulation, increased tax burden, governments' responses to fiscal deficits and debt burdens, and geopolitical uncertainty, which is amplified by regional conflicts and increased terrorist attacks (Snowden & Davies, 2016).

Adding to the CEOs concerns is the break-down of the globalised economic and social fabric as divergent political, business, societal and cultural movements appear to entrench themselves, driven mainly by digital technologies enabling global connectivity where people are better informed and increasingly empowered and inspired (Snowden & Davies, 2016; see below fig. 1.2). The study also posed the following question to the respondents:

Which three countries, excluding the one in which you are based, do you consider most important for your overall growth prospects over the next 12 months?

Although the respondents considered the BRICS as a prospect, the respondents did not consider South Africa or Africa as a potential opportunity (PwC's Strategy&, 2016). A search of the study for the words *'women'*, *'gender'*, *'female'* produced no results. Strategy& conducted a study titled, "*Women CEOs: Success study examines the degree, nature and geographic distribution of chief executive changes among the world's 2,500 largest public companies*" (PwC's Strategy&, 2016). The study was released during April 2016 and indicated that 87 new CEOs were appointed to the most significant public companies in the USA or Canada (PwC's Strategy&, 2016). According to the Strategy& study, out of the 87 new CEOs, there was only a single woman Chief Executive Officer appointed. (PwC's Strategy&, 2016). The study examined 2,500 of the most significant global companies, of the 359 permanent or interim CEOs appointed during 2015 worldwide only ten were female, at 2.8% the lowest rate of all new CEOs since 2011 (see Figure 1.3). With regard to the USA, the study cited that the decline did not appear to be due to a disproportionate number of changes in traditionally male-dominated industries such as energy or utilities, but this might have contributed to the decline in the global figure (PwC's Strategy, 2016).

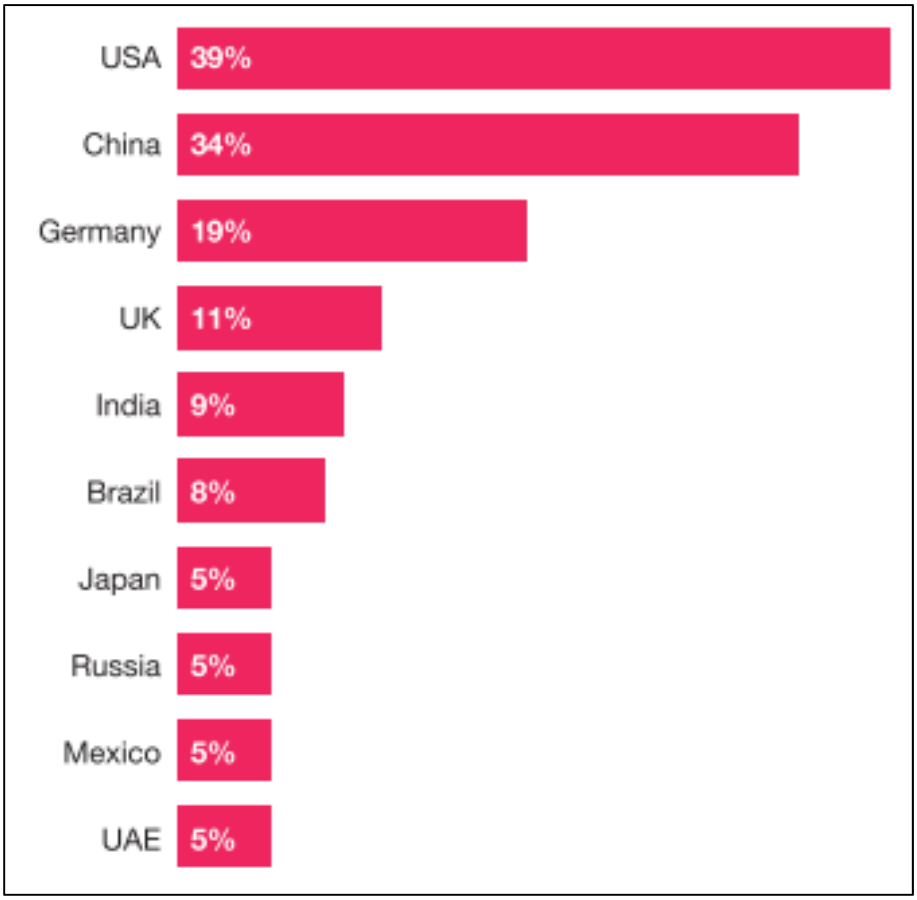


Figure 1.2: CEOs continue to see investment opportunities across the BRICS

Source: PwC's Strategy, 2016

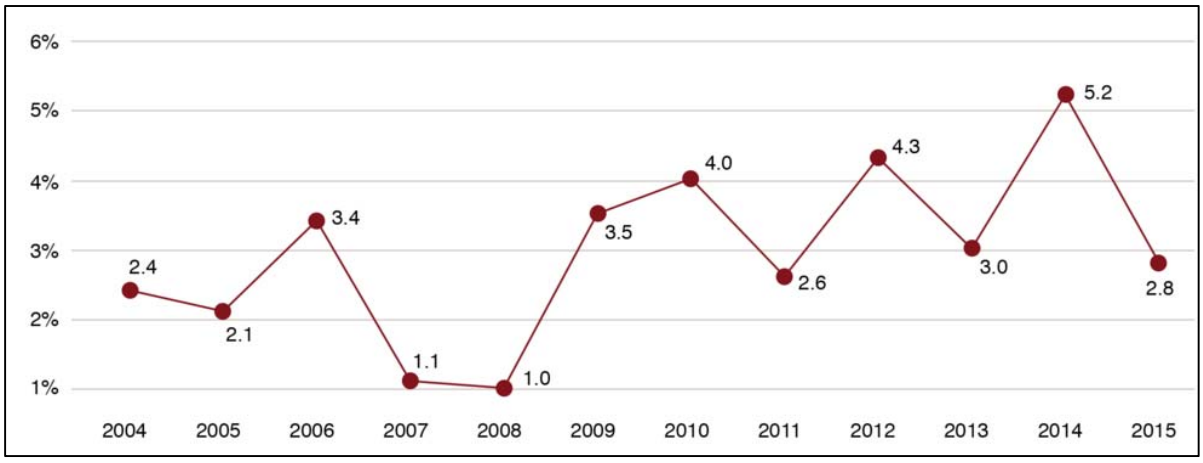


Figure 1.3: Percentage women CEOs appointed worldwide during 2004 – 2015

Source: PwC's Strategy, 2016

If we consider the new women CEOs by industry (Figure 1.4), at 1.6%, the energy sector occupies the lower end of the scale for appointing women CEOs, only outperforming the Industrials and Materials sectors (PwC's Strategy, 2016).

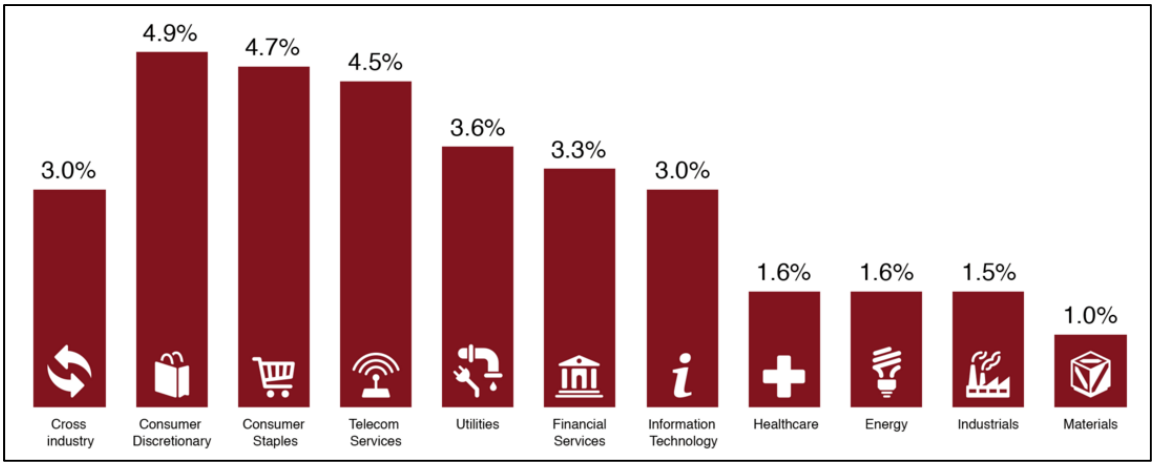


Figure 1.4: New women CEOs by industry, 2004 – 2015

Source: PwC's Strategy, 2016

Research conducted by Spencer Stuart regarding Board representation of the proxies of Standard & Poor's 500 (S&P 500) companies, revealed that some companies have become more transparent with shareholders regarding the composition of their Boards, as well as their approach to director succession planning (Spencer Stuart, 2015). The analysis also revealed statistics regarding women representation on the Boards, where women represented 31% (117 new female directors) of new directors in 2015, an increase of 1% from 2014 and almost 50% over the past five years (Spencer Stuart, 2015). The overall representation of women on Boards was 20%, a 5% increase during the past ten years. Women CEOs accounted for 4.4% (22 women CEOs) in S&P 500 companies (Spencer Stuart, 2015). In 2005, 12% of the S&P 500 companies had no women on their boards; in 2010 10% (50 companies) had no female directors; in 2015 3% (13) of the S&P 500 boards had no female directors. All of this indicates a gradual, albeit slow, improvement in the standing of women in international companies (Spencer Stuart, 2015).

1.2.9. Women on Boards

According to Marriage (2017) ("All-male boards in the US face investor backlash"), Legal and General Investment Management (LGIM), a prominent London-based asset management company with more than US$ 1 trillion of assets under its control, has vowed to vote against directors of US companies that have not appointed a woman to their Board.

The increasing investor frustration at the lack of transformation and persistent prevalence of male-dominated Boards of the US companies necessitated this action (Marriage, 2017). The frustration with the US companies was aggravated as LGIM started advocating for board diversity in the US in 2010 (Marriage, 2017). Four Standard and Poor's (S&P) 500 companies still have an all-male Board, while wider research indicates that 177 companies in the S&P 1500 index; and 18 of the US's 622 largest companies have no female representation on their boards (Marriage, 2017; MSCI USA index).

1.2.10. Women in the Renewable Energy Sector

According to the *Renewable Energy and Jobs Annual Review 2016* published by the International Renewable Energy Agency (IRENA), the renewable energy sector either directly, or indirectly, employed 8.1 million people during 2015 (Ferroukhi, Khalid, Renner, & López-Peña, 2016). The IRENA report cites favourable policy frameworks in several countries that influenced the renewable energy markets and employment which has led to regional shifts in deployment and increased labour productivity (Ferroukhi *et al.,* 2016). The countries that exhibited the highest number of renewable energy jobs were China, Brazil, the United States, India, Japan and Germany, with a continued shift of jobs to Asia (Ferroukhi *et al.,* 2016). According to the IRENA report, data within the renewable energy sector is still scarce (Ferroukhi *et al.,* 2016). IRENA addressed the data gap by conducting an online survey of approximately 90 international private companies in 40 countries that are active in the renewable energy sector (Ferroukhi *et al.,* 2016). The private companies are spread across the entire value chain, including manufacturing, installation, operations and maintenance, consulting and policy formulation (Ferroukhi *et al.,* 2016).

The results of the survey conducted by IRENA indicated that on average 35% of the workforce were women (Ferroukhi *et al.,* 2016). The IRENA report also stated that since the inception in 2011 of South Africa's REIPPPP, an estimated 20,000 jobs had been created in the solar industry (Ferroukhi *et al.,* 2016). Besada, Stevens, & Olender (2013) (*Addressing the Economic Costs of Sustainable Energy in the Global South)*, further add that, by adopting sustainable energy solutions, women who typically bear the brunt of household chores could be economically uplifted.

According to the report, the chores that the women have to contend with include the collection of biomass fuel sources, forfeiting education opportunities, and higher wage opportunities. The IRENA report also stated that since the inception in 2011 of South Africa's REIPPPP, an estimated 20,000 jobs had been created in the solar industry (Ferroukhi *et al.,* 2016).

1.2.11. Gender Policy and the African Union

The Chair of the Board of Women in Law and Development in Africa (WiLDAF), Dorcas Coker-Appiah, has remarked that *"It is important to have a regional instrument that adequately protects the rights of women taking into account the cultural specificity of Africa and the special needs of African women which may not be adequately addressed by the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW)"*, New York, March 2005 (African Union, 2005). The drafting process of the Protocol to the African Charter on Human and People's Rights (ACHPR) on the Rights of Women in Africa started in Lomé, Togo in March 1995 and concluded with the adoption of the Protocol eight years later in July 2003 in Maputo, Mozambique (African Union, 2005). Ratified by sixteen countries, the Protocol entered into force on the 25th November 2005, (African Union, 2005). To provide a sense of the 32 articles of the Protocol (African Union, 2005) an extract from the Protocol is presented in Table 1.2 which highlights the Articles emphasising woman's rights.

Table 1.2: Protocol to the African Charter on Human and People's Rights

Article 2	**Elimination of Discrimination against women:** any action preventing a woman from enjoying all the rights recognised by all human beings and in all fields because of their sex.
Article 3	**Right to Dignity:** the necessity to respect and ensure respect for women.
Article 4	**The Rights to Space and Life, Integrity, and Security:** every woman shall be entitled to respect for her life and the integrity, security, and protection of her person in the home, in her family, in society and throughout the Country.
Article 5	**Elimination of Harmful Practices:** states that parties shall prohibit and condemn all forms of harmful practices which negatively affect women's human rights, and which are contrary to recognised international standards.

Source: African Union, 2003

1.2.12. Gender Policy and the Southern African Development Community

The Heads of State or Government of the Member States of the SADC agreed to and signed the Protocol on Gender and Development in Johannesburg on the 17th August 2008 (Southern African Development Community, 2008). The primary objectives of the SADC Protocol on Gender and Development are the empowerment of women to eliminate discrimination through gender-responsive legislation, policies, programmes and projects to achieve gender equality and equity (Southern African Development Community, 2008). Also, the Protocol will attempt to harmonise the implementation of various gender instruments to which the SADC Member States have subscribed (Southern African Development Community, 2008). At regional, continental and international levels, there are several gender instruments, for example, the Convention on the Elimination of all Forms of Discrimination Against Women (1979), the Beijing Declaration and its Platform for Action (1995).

1.3. MAINSTREAMING GENDER AT COUNTRY LEVEL

1.3.1. A Brief Timeline

According to South African History Online, the South African women's struggle had already started in 1905, when a former Kimberley schoolteacher, Charlotte Maxeke, became the first black South African woman to receive her Bachelor's degree (Albert & Adams, 2011). During period of the Union of South Africa and the apartheid era, several women-led organisations were formed to become the primary source of resistance to many race-related restrictions, namely, the pass laws, which required Africans to carry documents permitting them to be in white-occupied areas (South African History Online, 2011).

In 1943 the African National Congress Women's League (ANCWL) was formed and assembled more than 20,000 women to march on government buildings in Pretoria to protest against the pass laws and other apartheid restrictions (South African History Online, 2011). In 1954, the Women's Defence of the Constitution League was formed and later renamed to the Black Sash (South African History Online, 2011).

The Kappiekommando was formed in 1970 by conservative Afrikaner women in support of apartheid, Afrikaner cultural preservation and to demand a return to traditional Afrikaner values (South African History Online, 2011). The Afrikanervroue-Kenkrag (AVK) was formed in 1983 with the objective to oppose racial integration in schools and other public places (South African History Online, 2011).

The South African Constitution (Kende, 2003), lauded as one of the most progressive in the world, has not been able to rise to the socio-economic challenges that South Africa faces. South Africa currently has the highest disparity worldwide between the rich and the poor (World Bank, 2016a). Fragility and diversification appear to be the significant sources of concern, a perspective that is supported by international companies that do not consider South Africa a viable business destination (World Bank, 2016a). The National Development Plan (NDP) of the RSA states that the present model of Broad-Based Black Economic Empowerment (B-BBEE) has not succeeded to any considerable degree in broadening the scope of ownership and control of large firms.

The NDP confirms the lack of socio-economic transformation, citing the following difficulties (National Planning Commission, 2011):

- Lack of capital to acquire ownership or control of significant parts of the economy, with the consequence of debt-driven deals that are likely to work only when the economy is rapidly growing and company profitability is expanding significantly;
- There have been some positive spin-offs from procurement policy, enabling fast and more visible growth of black entrepreneurs. However, this has also created perverse incentives such as causing job losses when firms import goods rather than use local producers. Also, the current processes are riddled with corruption and incompetence; and
- Misaligned targets and definitions between the B-BBEE Act (2003) and the codes and the sector charters, and the other redress legislation such as the Employment Equity Act and the Public Finance Management Act (1999).

South Africa has a Ministry of Women, located within the Office of the Presidency and headed by the Honourable Minister Susan Shabangu (Ministry of Women, 2016). The African Development Bank's Gender Division has been in existence since 2010, and during 2014 a special gender unit was created as usual diplomacy was not working as well as expected (Ghorbani, 2014). According to Special Envoy on Gender at the African Development Bank (AfDB), Geraldine Fraser-Moleketi, the goals of this special unit are too ensure that the AfDB is actively driving gender; to improve and expand the coordination of the gender portfolio across AfDB to develop guiding priorities relating to mainstreaming gender (Ghorbani, 2014).

The AfDB's Gender Strategy is articulated as, *Investing in Gender Equality for Africa's Transformation* (Office of the Special Envoy on Gender of the African Bank Group, 2014). Geraldine Fraser-Moleketi argued that *"This gender strategy is based on the reality that gender equality is integral to Africa's economic and social development, and this is a central part of the Bank's ambitious vision for Africa. The vision includes creating opportunities for women, disadvantaged and marginalised people, and communities so they can participate in, and benefit from, the development of their communities and nations. It is this inclusive growth and social cohesion that will lead to peaceful, stable and vibrant societies*", (Office of the Special Envoy on Gender of the African Bank Group, 2014) and on the 26th May 2016 in Lusaka, Fraser-Moleketi, in her role as Special Envoy on Gender at the AfDB, launched a US$ 300 million empowerment fund (African News Agency, 2016). The empowerment fund is designed to assist female-owned businesses on the African continent with finance to thrive, thereby launching the Affirmative Finance Action for Women in Africa (AFAWA) Program (African News Agency, 2016). The AFAWA Program aims to address the financing gap experienced by women entrepreneurs and to also assist with addressing the skills gap in female entrepreneurs (African News Agency, 2016).

1.3.2. Policy Framework and Socio-Economic Factors

Kende (2003) argues that the common assumption is that the United States Constitution protects negative rights, whereas the International Covenant on Economic, Social, and Cultural Rights require governments to provide affirmative socio-economic development.

Kende (2003) continues by stating that international human rights experts present three *'generations'* of rights broken down in the following manner:

- **First generation rights:** involve political and civil rights, and are usually negative rights;
- **Second generation rights:** involve the government's socio-economic obligations, and are frequently positive rights; and
- **Third generation rights:** are exemplified by the right to a clean and healthy environment and are commonly called *'green'* rights.

In the same journal article, Cass Sunstein stated that *"the South African Constitution is the most admirable constitution in the history of the world.*" (Kende, 2003). Sunstein states further that the South African Constitution contains a list of socio-economic rights intended to protect the poor, vulnerable and to assist people disadvantaged by apartheid (Kende, 2003). The South African Constitutional Court has required the government to implement these rights, yet the United States Supreme Court has been unwilling to find ways of protecting socio-economic rights within the United States Constitution (Kende, 2003).

The NDP of the Republic of South Africa has a bold goal to eliminate poverty and reduce inequality by 2030 (National Planning Commission, 2011). The strategy to achieve this goal is by drawing on the energies of all South Africans, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society (National Planning Commission, 2011).

According to the NDP, economic transformation encompasses broadening opportunities for all South Africans, in particular, the historically disadvantaged; increasing employment; reducing poverty and inequality; raising the standard of living and improving the quality of education (National Planning Commission, 2011). Also, the NDP aims to broaden ownership; control of capital accumulation, access to services such banking services, mortgage loans, telecoms and broadband services; and reasonably priced retail services (National Planning Commission, 2011).

One of the critical elements of the NDP is through employment equity in the workplace, and the employment equity intervention has successfully contributed to a growing black middle class since 1994 (National Planning Commission, 2011). However, two factors affect skills and staff development, namely rapid economic growth leading to increased career opportunities and incomes; and an improved education system which will produce more skilled black and female entrants to the workplace (National Planning Commission, 2011). Economic transformation is further defined by the Broad-Based Black Economic Empowerment Act (2003) (B-BBEE Act) in RSA as the empowerment of African, Indian, and Coloured people, as well as women, workers, the youth, people with disabilities and people living in rural areas, through:

- Increasing the number of black people that manage, own, and control enterprises and productive assets;
- Facilitating ownership and management of enterprises and productive assets by communities, workers, cooperatives, and other collective enterprises;
- Human-resource and skills development;
- Achieving equitable representation in all occupational categories and levels in the workforce;
- Preferential procurement; and
- Investment in enterprises that are owned or managed by black people.

The Broad-Based Black Economic Empowerment (B-BBEE) Codes of Good Practice (the Codes) under section 9 (1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003) were revised during October 2013 (Department of Trade and Industry, 2013). With a determination that the Codes would come into operation within twelve (12) months from the date of publication in the Government Gazette of South Africa. Table 1.3 summarises the revised B-BBEE scorecard (Department of Trade and Industry, 2013). Originally, narrow-based empowerment, which was limited to ownership and management, was followed by broad-based empowerment, which included seven elements, namely, ownership, management control, employment equity, skills development, preferential procurement, enterprise development and socio-economic development (Department of Trade and Industry, 2013).

The amended Codes of Good Practice for Broad-Based Black Economic Empowerment were gazetted in 2013 but only came into effect on the 01st May 2015 (Department of Trade and Industry, 2013). The amended Codes of Good Practice for Broad-Based Black Economic Empowerment would considerably reduce current compliance levels by two to three levels, with the number of elements also reduced to five, namely, ownership, management control, skills development, enterprise and supplier development and socio-economic development (Department of Trade and Industry, 2013). The primary difference is that the revisions identifying priority elements which companies should focus on, namely, ownership, skills development, enterprise development, and supplier development (Department of Trade and Industry, 2013). Non-compliance to a 40% sub-minimum in any of these priority elements would lead to an automatic reduction of one level in the company's contribution level.

Table 1.3: B-BBEE Generic Scorecard for RSA

Element	**Weighting**	**Code**
Ownership	25 points	100
Management Control	15 points	200
Skills Development	20 points	300
Enterprise and Development Supplier	40 points	400
Socio-Economic Development	5 points	500

Source: Department of Trade and Industry. Republic of South Africa, 2013

1.3.3. The South African Landscape within the context of the BRICS

According to a 2013 report by Moses Kgosana, a Partner at KPMG, (Kgosana, 2013), the economy grew by 0.7% QoQ, the weakest performance in four years. The manufacturing sector contracted by 6.6% QoQ primarily due to strikes in the automotive industry (Kgosana, 2013). The NDP remains South Africa's long-term plan to assist the economy in creating jobs and reducing poverty (Kgosana, 2013). The objectives of reducing unemployment to 14% by 2020 and 6% by 2030 and also, to reduce the level of inequality by reducing the Gini coefficient from 0.7 in 2009 to 0.6 by 2030 (Kgosana, 2013).

Table 1.4 is an extract of the Strengths, Weakness, Opportunities and Threats (SWOT) analysis extracted from the KPMG report and is included to provide further detail of the vulnerabilities that South Africa is exposed to (Kgosana, 2013).

Table 1.4: SWOT Analysis of RSA, KPMG Report

Opportunities	**Strengths**
Immense scope for wind and solar power generation, though institutional factors needs to be addressed.	Well-developed banking and financial sector remained healthy throughout the global financial crisis.
Growing trade and investment benefits from joining the BRIC (Brazil, Russia, India, and China) grouping.	Well-managed fiscal and monetary policy over the past decade.
Growing middle-class offering opportunities for the development of retail, entertainment, and tourism sectors.	A large group of mega corporates, supporting fiscal revenues, while the country is not dependent on foreign aid.
The geographic location offers a gateway to African investment; diverse economy, with exports, slowly moving away from minerals.	A diverse economy, with exports, slowly moving away from minerals.
Vulnerabilities	**What Is Being Done?**
Rising social unrest and political tension as the government fails to live up to their voters' expectations.	Not much. Electioneering in the run-up to 2014 national polls is constraining policy formulation and implementation.
Low economic growth is not keeping pace with employment creation and poverty reduction needs.	The government is continually increasing its spending on public employment and social grants.
Water and electricity supply under increasing pressure.	State and parastatal expenditure on capacity expansion is on-going and has already shown some success.
The export-oriented mining and manufacturing sectors are challenged by an unpredictable exchange rate.	The Central Bank is active in the currency market from time to time in a bid to limit volatility, though results have been mixed in recent years.

Source: KPMG Services, 2013

The KPMG report also highlights the opportunities in the renewable energy sector and the strengths of the financial sector (Kgosana, 2013). However, there are vulnerabilities due to rising social unrest and political tension persist (Kgosana, 2013).

The low economic growth, rising cost of living, the intermittent supply of electricity and exchange rate fluctuations continues to hamper growth (Kgosana, 2013). Of concern is the opinion expressed in the report that not much is being done to address social unrest and that the Government is responding by increasing the social grants (Kgosana, 2013).

1.3.4. Gender Leadership

The GEF is an umbrella organisation housed within the World Bank which creates a partnership for international cooperation with 183 participating countries cooperating with international institutions, Private Sector and CSOs to address global environmental challenges, (Global Environmental Facility, 2014b). Since its inception in 1991, the GEF has provided US$12.5 billion in grants and leveraged US$58 billion in co-financing for 3,690 projects in 165 developing countries (Global Environmental Facility, 2014b).

Over a 23-year period developed and developing countries have contributed to this funding pool to support development projects and programmes related to biodiversity, climate change, international waters, land degradation, chemicals and waste (Global Environmental Facility, 2014b). The GEF has also disbursed more than 20,000 grants to CSOs and Community Based Organisations (CBOs) to a sum of US$1 billion through its Small Grants Programme (SGP, 2016).

According to the GEFs (Global Environmental Facility, 2016b) project portfolio for South Africa, since 1995 South Africa has secured a total of US$1.3 billion in grants and co-financing (Global Environmental Facility, 2014b). However, to date, there are only six (6) registered South African CSOs or CBOs affiliated to the GEF CSO Network (GCN) (Africa Foundation for Sustainable Development, 2016b). One could envision a GCN in South Africa that will be globally competitive and will be able to develop the capacities of the communities, CSOs and CBOs (Africa Foundation for Sustainable Development, 2016b). The GEF could consider capacitating the women, youth, people with disabilities, CSOs, and CBOs in these communities in project implementation (Africa Foundation for Sustainable Development, 2016b).

By adopting a capacity development approach, the GEF would be addressing the imperatives of the NDP of the RSA through job creation, skills development, and by establishing sustainable Small, Medium, and Micro Enterprises (SMMEs) (Africa Foundation for Sustainable Development, 2016b). Also, this approach could attract upfront buy-in from communities and civil society to ensure the potential for these initiatives to succeed and to have longer-term sustainability (Africa Foundation for Sustainable Development, 2016b). The impact that could be created would be enormous if the GEF, Executing Agencies, communities, CSOs, and the CBOs were all aligned with the common objectives of climate change (Africa Foundation for Sustainable Development, 2016b). Simultaneously, the complex challenges of job creation, skills and capacity development and the creation of sustainable SMMEs can be addressed (Africa Foundation for Sustainable Development, 2016b).

In general issues relevant to gender and energy, international policy relating to mainstreaming gender, and environmental leadership; have been presented together with information on funding the implementation of gender and climate-smart initiatives. A holistic approach to mainstreaming gender ought to be employed to ensure the sustained promotion of gender equality and women's empowerment (Africa Foundation for Sustainable Development, 2016b). The approach should take into account all the drivers and detractors, the conversion of the mainly male-dominated public and private sectors, and the advancement of women to Board positions (Africa Foundation for Sustainable Development, 2016b). As women embrace their new empowerment opportunities, the ongoing support, coaching and mentoring will be crucial to ensure the success and sustainability of the initiatives (Africa Foundation for Sustainable Development, 2016b). Also, women located at the *"bottom of the pyramid"* in the beneficiary communities will require support of a different nature to overcome the hurdles that women have to contend with (Africa Foundation for Sustainable Development, 2014). Table 1.5 provides a detailed breakdown of the GEF projects in South Africa since inception and the potential funding sources and actors for the socio-economic empowerment of women, youth, and people with disabilities. Attention should be given to the project description and the Executing Agencies as these projects all provide an opportunity to mainstream gender, and the Executing Agencies should also be held accountable to ensure the attainment of the empowerment of women (Africa Foundation for Sustainable Development, 2016b).

Table 1.5: GEF Projects in South Africa since inception

ID	Country	Project Name	Focal Area	Agency	Executing Agency	Type	Status	Grant	Co-financing
17	South Africa	Conservation of Globally Significant Biodiversity in Agricultural Landscapes through Conservation Farming	Biodiversity	World Bank	National Botanical Institute, South Africa	MSP	Project Closure	750 000	965 000
19	South Africa	Concentrating Solar Power for Africa (CSP-Africa)	Climate Change	World Bank	Eskom	MSP	Project Closure	230 000	180 000
20	South Africa	Conservation Planning for Biodiversity in the Thicket Biome	Biodiversity	World Bank	Terrestrial Ecology Research Unit, University of Port Elizabeth, South Africa in association with the Institute for Plant Conservation, University of Cape Town, South Africa	MSP	Project Closure	738 950	123 020
134	South Africa	Cape Peninsula Biodiversity Conservation Project	Biodiversity	World Bank	National Parks Board; Table Mountain Trust Fund	FP	Project Closure	12 300 000	80 800 000
246	South Africa	First National Report to the CBD	Biodiversity	UNDP	Directorate: Biodiversity Management: Department of Environmental Affairs and Tourism	EA	Under Implementation	25 380	0
487	South Africa	Enabling Activities for the Preparation of Initial National Communication Related to UNFCCC	Climate Change	UNEP	Department of Environmental Affairs and Tourism (DEAT)	EA	Project Closure	321 000	75 000
564	South Africa	Clearing House Mechanism Enabling Activity	Biodiversity	UNDP		EA	CEO Approved	13 500	0
659	South Africa	Sustainable Protected Area Development in Namaqualand	Biodiversity	World Bank	South African National Park	MSP	Project Closure	748 000	4 630 000
805	South Africa	Solar Water Heaters (SWHs) for Low-income Housing in Peri-Urban Areas	Climate Change	UNDP	Department of Minerals and Energy, Government of South Africa	MSP	Project Completion	727 500	4 702 500

1055	South Africa	Agulhas Biodiversity Initiative (ABI)	Biodiversity	UNDP	South African National Parks	FP	Project Completion	3 147 675	8 558 550
1056	South Africa	Conservation and Sustainable Use of Biodiversity on the South African Wild Coast	Biodiversity	UNDP	Department of Environment and Tourism	FP	Project Completion	6 500 000	24 318 000
1167	South Africa	Greater Addo Elephant National Park Project	Biodiversity	World Bank	South African National Parks	FP	Project Completion	5 500 000	34 442 000
1311	South Africa	Pilot Production and Commercial Dissemination of Solar Cookers	Climate Change	UNDP	Department of Minerals and Energy	MSP	Project Closure	800 000	2 850 000
1338	South Africa	South Africa Wind Energy Programme (SAWEP), Phase I	Climate Change	UNDP	Department of Minerals and Energy (DME)	FP	Project Completion	2 000 000	8 565 187
1376	South Africa	Development and Implementation of the National Biodiversity Strategy and Action Plan (BSAP) in South Africa	Biodiversity	UNDP	Directorate General, Department of Environmental Affairs and Tourism	EA	CEO Approved	409 200	1 610 000
1472	South Africa	Best Environmental Practice in the Hosting of the World Summit on Sustainable Development	Multi-Focal Area	UNDP	Gauteng Province Department of Agriculture, Conservation, Environment, and Land Affairs	MSP	Under Implementation	1 000 000	2 727 500
1516	South Africa	C.A.P.E. Biodiversity Conservation and Sustainable Development Project	Biodiversity	World Bank	National Botanical Institute	FP	Project Completion	11 000 000	44 450 000
1782	South Africa	Richtersveld Community Biodiversity Conservation Project	Biodiversity	World Bank	Richtersveld Municipality	MSP	Project Completion	877 000	1 166 000
1785	South Africa	POPs Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants (POPs)	POPs	UNEP	Department of Environmental Affairs and Tourism/national Stockholm Convention Focal Point	EA	Project Closure	499 000	100 000

		National Implementation Plan for South Africa							
1894	South Africa	Renewable Energy Market Transformation (REMT)	Climate Change	World Bank	Dept. of Minerals and Energy (DME)	FP	Project Completion	6 000 000	11 300 000
2479	South Africa	National Capacity Self-Assessment for Global Environmental Management	Multi-Focal Area	UNDP	Department of Environmental Affairs and Tourism (DEAT)	EA	Under Implementation	200 000	35 000
2604	South Africa	Sustainable Public Transport and Sport: A 2010 Opportunity	Climate Change	UNDP	South African Department of Transport	FP	Project Completion	10 999 361	323 941 950
2615	South Africa	National Grasslands Biodiversity Program	Biodiversity	UNDP	South African National Biodiversity Institute (SANBI)	FP	Project Completion	8 300 000	37 261 764
2692	South Africa	Market Transformation through Energy Efficiency Standards and Labeling of Appliances in South Africa	Climate Change	UNDP	Department of Energy, Department of Trade and Industry	FP	Under Implementation	6 000 000	13 500 000
2924	South Africa	Development, Empowerment and Conservation in the Greater St Lucia Wetland Park and Surrounding Region	Biodiversity	World Bank	St. Lucia Wetland Park Authority	FP	Under Implementation	9 000 000	15 000 000
3022	South Africa	FC-1: Sub-project 1st Group/Plug Power - under the Global Fuel Cells Financing Initiative for Distributed Generation Applications (Phase 1)	Climate Change	World Bank	International Finance Corporation	FP	Project Completion	3 275 000	10 325 000
3934	South Africa	Reducing Disaster Risks from Wildfire Hazards Associated with Climate Change	Climate Change	UNDP	Forest Fire Association T/A Working on Fire	FP	IA Approved	3 536 400	31 800 000

3948	South Africa	Reducing the Carbon Footprint of Major Sporting Events, FIFA 2010 and the implementation of the national greening programme in liaison with 2010 FIFA LOC	Climate Change	UNEP	Department of Environment and Tourism, Central Energy Fund (CEF)	MSP	Project Completion	1 000 000	1 924 000
4514	South Africa	Greening the COP17 in Durban	Climate Change	UNIDO	The Department of Environmental Affairs, Government of South Africa and Energy Office in Durban Municipality (eThekwini Municipality)	MSP	Project Completion	1 000 000	1 350 000
4848	South Africa	Improving Management Effectiveness of the Protected Area Network	Biodiversity	UNDP	South African National Parks, Mpumalanga Tourism and Parks Agency, Department of Environmental Affairs, South African National Biodiversity Institute CapeNature East Cape Parks and Tourism Agency Limpopo Department of Economic Development, Environment and Tourism	FP	CEO Endorsed	8 550 000	47 500 000
4937	South Africa	Strengthening Law Enforcement Capabilities to Combat Wildlife Crime for Conservation and Sustainable Use of Species in South Africa (target: Rhinoceros)	Biodiversity	UNEP	Department of Environmental Affairs (DEA), Ministry of Water and Environmental Affairs, South Africa	FP	CEO Endorsed	2 690 455	11 659 174
5058	South Africa	Mainstreaming Biodiversity into Land Use Regulation and Management at the Municipal Scale	Biodiversity	UNDP	Department of Environmental Affairs, South Africa National Biodiversity Institute	FP	CEO Endorsed	8 177 730	41 957 000
5070	South Africa	National Biodiversity Planning to Support	Biodiversity	UNDP	Department of Environmental Affairs	EA	IA Approved	220 000	356 000

		the Implementation of the CBD 2011-2020 Strategic Plan in South Africa							
5237	South Africa	Enabling South Africa to Prepare Its Third National Communication (3NC) and Biennial Update Report to the UNFCCC	Climate Change	UNEP	Department of Environmental Affairs	FP	CEO Endorsed	4 006 650	1 351 000
5327	South Africa	Securing Multiple Ecosystems Benefit Through Sustainable Land Management (SLM) in the Productive but Degraded Landscapes of South Africa	Land Degradation	UNDP	Department of Environmental Affairs, Council for Scientific and Industrial Research; Agricultural Research Council Institute for Soil, Climate and Water (ARC-ISCW); Department of Agriculture, Forestry and Fisheries (DAFF); Development Bank of Southern Africa (DBSA Drylands Fund); Endangered Wildlife Trust (EWT); University of KwaZulu Natal (UKZN); Rhodes University	FP	CEO Endorsed	4 237 900	20 500 000
5341	South Africa	South Africa Wind Energy Project (SAWEP) Phase II	Climate Change	UNDP	Department of Energy lead, Department of Trade and Industry (DTI), South African National Accreditation System (SANAS), Department of Environment Affairs, Department of Higher Education & Training (DHET)	FP	CEO Endorsed	3 554 250	27 720 000
5379	South Africa	Industrial Energy Efficiency Improvement in South Africa through Mainstreaming the Introduction of	Climate Change	UNIDO	Department of Energy, Department of Trade and Industry and Department of Environmental Affairs, Republic of South Africa	FP	CEO Endorsed	5 776 484	27 600 000

		Energy Management Systems and Energy Systems Optimization							
5515	South Africa	GEF UNIDO Cleantech Programme for SMEs in South Africa	Climate Change	UNIDO	Technology Innovation Agency, Department of Trade and Industry, in collaboration with Council of Scientific & Industrial Research, DEA, DST, NBI, Innovation Hub	MSP	CEO Approved	1 990 000	6 000 000
5704	South Africa	Promoting Organic Waste-to-Energy and other Low-carbon Technologies in Small and Medium-scale Enterprises: Accelerating Biogas Market Development	Climate Change	UNIDO	Ministry of Water and Environmental Affairs, Ministry of Energy- South African National Energy Development Institute (SANEDI), Ministry of Trade and Industry (DTI), Ministry of Agriculture, Forestry and Fisheries (DAFF), Council of Scientific and Industrial Research and National Cleaner Production Center (NCPC)	FP	CEO Endorsed	4 222 110	25 450 000
5737	South Africa	Energy Efficient Low-carbon Transport	Climate Change	UNIDO	SANEDI, TIA, eThekwini Municipality, dti, DEA, DoT, Dept. of Energy	MSP	CEO Approved	1 300 000	6 050 000
9073	South Africa	Unlocking Biodiversity Benefits through Development Finance in Critical Catchments	Biodiversity	DBSA	SANBI, with support from Western Province Department of Agriculture (WCDA), Nelson Mandela Metro Municipality (NMBMM)	FP	Council Approved	7 201 835	30 500 000
9085	South Africa	Equity Fund for the Small Projects Independent Power Producer Procurement Programme (non-grant)	Climate Change	DBSA	Department of Environmental Affairs University of Pretoria Council for Scientific and Industrial Research	FP	Council Approved	15 000 000	190 450 000

9255	South Africa	Development of Value Chains for Products derived from Genetic Resources in Compliance with the Nagoya Protocol on Access and Benefit Sharing and the National Biodiversity Economy Strategy	Biodiversity	UNDP	Department of Environmental Affairs University of Pretoria Council for Scientific and Industrial Research	FP		6 210 046	
								170 035 426	**1 103 793 645**
								Total US$	**1 273 829 071**

Source: the Global Environmental Facility, 2012

From the above project overview, it would appear that there is no shortage of project grant financing, yet none of the projects directly address issues of gender. The real impact of those projects which have been funded to mainstreaming gender and the capacitation of surrounding communities should be quantified in order to measure the progress that has been attained.

1.4. RENEWABLE ENERGY SECTOR

Research conducted by Giddy (2016) indicates that there are several lessons to be learnt from Costa Rica's 20 years of wind generation, which started in mid-1994 with the first community engagement relating to the relocation of the communities for the Arenal wind farm and hydroelectric initiatives. Several years later during 2014, according to community leaders, the main lessons learnt have been the need to develop the capacity of communities to think beyond their basic needs and to develop and embrace long-term goals, requiring a visionary and strategic mindset to ensure long-term sustainability (Giddy, 2016). According to Amansure & Adendorff (2015), energy consumption on the African continent has increased four times faster than predictions to more than 15% of global demand in 2006. The IRENA estimated that Africa currently has an installed capacity of 147 GW, a capacity that China installs in one to two years (Amansure & Adendorff, 2015). Amansure & Adendorff (2015) further state that the average per capita electricity consumption in South Africa is one-fourth of the consumption in India and just 6% of the global average. The REIPPPP in South Africa will generate an estimated R11,5bn in Socio-Economic Development and Enterprise Development commitments over the next 20 years, with the Northern Cape being the majority power producer (Wlokas, 2015b). With this potential for renewable energy generation, South Africa could become the energy-producing hub of the SADC Region. This bodes well for neighbouring countries who are experiencing growth in conjunction with escalating costs of energy (Adendorff, 2015).

Denmark is an example of a country that is already meeting all its own energy needs from wind and solar power while exporting excess power to Sweden and Norway (Danish Energy Agency, 2013).

For Denmark, the percentage of renewable energy as a share of the gross energy consumption has grown from 2.7% in 1980 to 24.4% in 2013, while the supply of renewable energy has increased from 0.1% to 46.7% (Danish Energy Agency, 2013). A Renewable Energy Platform, namely a solar, wind, hydro and biogas operation, provides a unique opportunity to fundamentally change the lives of the communities within the area in which the platform is operating (Africa Foundation for Sustainable Development, 2014). These Renewable Energy Platforms could also set trends for electricity generation and sustainable community upliftment (Africa Foundation for Sustainable Development, 2014).

The fledgeling Renewable Energy Sector in South Africa has an opportunity to gain critical lessons from the mining, agricultural and manufacturing sectors as well as from international renewable energy best practices (Africa Foundation for Sustainable Development, 2014). Lessons from the mining, manufacturing, and agricultural sectors should be drawn on to embrace and replicate the positives, and to avoid or wholly eliminate the harmful activities (Africa Foundation for Sustainable Development, 2014). One approach is to empower communities to map and forge their paths by applying the principle of *"teaching communities to fish…"* while simultaneously providing support systems, tools, and guidance (Africa Foundation for Sustainable Development, 2014). This approach enables communities to design solutions that are most appropriate to their particular needs (Africa Foundation for Sustainable Development, 2014).

The well-established mining, manufacturing and agricultural sectors have already been commercially absorbed and are mainly male dominated, implying that the renewable energy sector is possibly the last catalytic sector that could drive sustainable women's empowerment (Africa Foundation for Sustainable Development, 2014). Due to the average 20-year operational lifespan of a wind farm, one of the key strategies has to be the leveraging of Corporate Social Investment funds to develop a portfolio of assets (Africa Foundation for Sustainable Development, 2014). These assets could be land, buildings, and viable businesses that will survive the operation of the wind farm (Africa Foundation for Sustainable Development, 2014). However, unless the lack of appropriate assets, such as land, is addressed the causes of poverty will remain (Africa Foundation for Sustainable Development, 2014).

Research has indicated that South Africa should reduce its reliance on the extractive sector and diversify its portfolio (Chuhan-Pole, Ferreira, & Calderon, 2015). The renewable energy sector offers excellent diversification and local economic development potential, especially since the sector has no past baggage (Africa Foundation for Sustainable Development, 2014). The renewable energy sector has the potential to learn from the mining, manufacturing and agricultural sectors and to continue enhancing the platform that has already been established to mainstream gender (Africa Foundation for Sustainable Development, 2014).

1.5. IMPACT AND SUSTAINABILITY

In view of the total investment of US$ 1,296,044,113 in grant and co-financing that South Africa has been able to secure, combined with a more collaborative approach, the GEF could be in a position to deliver even more significant impact and ensure the sustainability of its initiatives (Africa Foundation for Sustainable Development, 2016b). By capacitating women, the communities, CSOs and CBOs in project implementation, the potential to create jobs, develop skills, and create SMMEs is excellent (Africa Foundation for Sustainable Development, 2016b). The additional benefit to the GEF is immediate buy-in from the communities and the CSOs and the longer-term sustainability of the initiatives. Also, the objectives of the NDP would be addressed (Africa Foundation for Sustainable Development, 2016b). Against this backdrop, a programme of initiatives could be envisaged that will address the longer-term objectives of women's empowerment. To achieve these, bold objectives, the GEF could augment the existing Corporate Social Investment, Corporate Social Responsibility, Economic Development, Enterprise Development, and Socio-Economic Development funds.

These investments will be at a reduced risk as the renewable energy platforms are already operational and generating these funds. By augmenting these funds, the GEF can further drive the GEF 20/20 Strategy towards sustainability. Several factors positively influence the economic empowerment of women in the renewable energy sector of the RSA, namely, the presence of international policy relating to gender and environmental leadership; funding for the implementation of gender and climate-smart initiatives and women that occupy influential positions of decision making.

The converse also applies, and several factors negatively influence the economic empowerment of women (Chuhan-Pole *et al.,* 2015). According to the international executive search and recruitment company, Spencer Stuart, several vital aspects have to be addressed to ensure the sustained promotion of gender equality and women's empowerment (Spencer Stuart, 2015). A holistic approach that takes into account all the drivers and detractors, the conversion of the mainly male-dominated public and private sectors to encourage the advancement of women to Board positions, and the coaching and mentoring that will be required as women embrace their empowerment opportunities (Spencer Stuart, 2015).

1.6. THE RESEARCH PROBLEM

This research effort explored the extent to which mainstreaming gender is realistically possible within different renewable energy sectors of the South African population and in different geographic regions. The research focused on the factors which undermine and impede mainstreaming gender but also aimed to highlight the drivers and levers that promote and accelerate mainstreaming gender. Reports in the media detailing the extent to which the odds are stacked against empowering women are alarming. Even though there might be adequate policies in place to encourage mainstreaming gender, social, political, economic and market forces may be counterproductive (Hutt, 2016). According to Grant (2016), in 2016, the unemployment rate in South Africa was still at 28.5%, or 38.5% if the expanded definition that includes people who have stopped looking for work was considered. The South African Chamber of Commerce and Industry (SACCI), estimates that the expanded unemployment rate is 36.7%, and 65.3% of the unemployed had been looking for work for one year or longer (Greve, 2016). SACCI further estimate that 59.4% of job seekers did not have their matric certificate, 52.9% of the unemployed were between 15 and 24, and those aged between 15 and 34 accounted for 70.7% of all unemployed persons (Greve, 2016).

To further highlight the severity of the unemployment problem, according to economist Mike Schüssler, *"During the Great Depression of the 1930s America had had a 25% unemployment figure for only a few months. For South Africa to maintain these levels over more than a decade shows that we don't understand the problem."* (Roos, 2011).

Grant (2015) further argues that social grants in South Africa play a crucial role in alleviating poverty with the annual spend being estimated to be approximately 4% of GDP. However, according to the Republic of South Africa's National Treasury, grants are only sustainable if the economy grows at 3% a year (Grant, 2015).

This study aimed to establish, firstly, whether mainstreaming gender is indeed possible during challenging global economic times, times of political uncertainty within the RSA, and in a context in which cultural norms promote women's subservience to men; secondly, the practical steps required to achieve mainstreaming of gender; and thirdly, how to bridge the divide between international decision-making and practical and impactful implementation in local communities.

With these issues in mind, the main research problem was formulated as follows:

Due to the complexity and multi-dimensional nature of gender equality and women's empowerment across all industries in the RSA, the public organs of state, private sector, organised labour, and civil society are confronted with the challenge of identifying and quantifying the drivers of success needed to achieve sustainable socio-economic empowerment of women at all levels of society. This challenge was addressed with a focus on the renewable energy value-chain.

The primary research question is: What are the main contributors and variables which can positively influence the socio-economic empowerment of women initiatives in the renewable energy sector in the Republic of South Africa?

The primary research problem was supported by the secondary research questions as presented in Table 1.6.

Table 1.6: Research Questions

RQ1	What factors should be considered in the socio-economic empowerment of women?
RQ2	What models are currently in use in South Africa for the socio-economic empowerment of women?
RQ3	What are the strengths and limitations of the proposed socio-economic models?
RQ4	What role could the private sector undertake to assist with capacitation and support for the socio-economic empowerment of women?
RQ5	What role could the public sector undertake to assist with capacitation and support for the socio-economic empowerment of women?
RQ6	To maximise impact, what priority should be given to the various factors affecting the socio-economic empowerment of women?
RQ7	How can a conceptual model support future research and development in the socio-economic development of women?
RQ8	How can the proposed conceptual model be validated by empirical evaluation for the South African renewable energy sectors?
RQ9	What interpretations and conclusions can be drawn from the empirical findings?
RQ10	What priority should the variables be assigned that contribute towards the socio-economic empowerment of women?

1.7. RESEARCH OBJECTIVES

1.7.1. Primary Research Objective

The primary objective of this research was:

To investigate the drivers and variables that can positively influence the success and the possible structural impediments that inhibit the success of women in the renewable energy sector and subsequently develop a theoretical socio-economic model for women's empowerment in the South African renewable energy sector.

A vital aspect of the research was, therefore, to review successful global gender initiatives regarding the contribution of mainstreaming gender in a South African context. While comparative research from other countries with varied levels of growth, economic prosperity, education was useful, this research aimed to create a theoretical model for socio-economic empowerment for a South African, and even broader African renewable energy expansion program.

The research used an advanced statistical technique called Structural Equation Modelling (SEM) to analyse simultaneous multiple independent relationships against the dependent variable, namely, *"the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector in the Republic of South Africa"*.

Various factors (independent and dependent variables) were identified, investigated, and tested as part of this study and confirmed the existence of relationships between the independent variables and their influence.

The following research design objectives were identified to:

- Develop a theoretical model comprised of contributors that would positively influence the economic empowerment of women in South Africa;
- Develop an appropriate measuring instrument that would test the relationships as described in the model above;
- Test the model empirically by collecting and examining data from questionnaires;
- Analyse the data statistically; and
- Propose recommendations based on the results of the data analysis.

1.7.2. Secondary Research Objectives

The primary research objective was further supported by the secondary research objectives as listed in Table 1.7.

Table 1.7: Secondary Research Objectives

RO1	To undertake an in-depth assessment of the socio-economic empowerment of women
RO2	To undertake an in-depth assessment of the methods used in South Africa for the socio-economic empowerment of women
RO3	To analyse the specific requirements of the South African renewable energy landscape and environment
RO4	To analyse the potential role that the South African public sector may have in the socio-economic development of women

RO5	To analyse the potential role that the South African private sector may have in the socio-economic development of women
RO6	To construct a model that will describe the relationships between the independent and dependent variables
RO7	To prioritise the factors affecting the socio-economic development of women
RO8	To analyse the results and interpretations of the research, and to make appropriate and meaningful recommendations based on the results of the data analysis

1.8. CONTRIBUTION OF THE STUDY

The goal of this research was to develop a theoretical model for the socio-economic empowerment of women (youth and people with disabilities) in the renewable energy sector in the Republic of South Africa. The research also attempted to identify and prioritise the factors relevant to the promotion of women's empowerment in South Africa, which would contribute towards economic growth, social cohesion, and reduction of unemployment. This study strived to contribute towards the NDP of the Republic of South Africa by identifying factors which positively contribute to the socio-economic empowerment of women, youth, and people with disabilities. This approach enabled the prioritisation of interventions that could make a short term, medium term, and long-term impact on empowerment in the South African renewable energy sector. Also, this research aimed to inform the roles that public, private, organised labour and community actors could play in strengthening South Africa's local economy through wealth creation, reduction of unemployment, and to better position South Africa to compete on the global markets.

1.9. BENEFICIARIES OF THE RESEARCH

Table 1.8 represents the groups which could benefit from this research effort.

Table 1.8: Research Beneficiaries

Public Sector	Office of the President Dept. of Energy Independent Power Producer Office Dept. of Labour Dept. of Public Enterprises

	Dept. of Social Development Dept. Water Affairs and Forestry Dept. Environmental Affairs and Tourism Dept. of Trade and Industry (the dti Codes of Good Practice) Provincial, Local Government, Municipalities
Private Sector	Independent Power Producers/Engineering, Procurement, Construction Management/Financiers Johannesburg Stock Exchange Financial Institutions/Private Investors Development Agencies Mining Companies Training Institutions
Civil Society	NGOs/CBOs/NPOs/FBOs Traditional and Tribal Leaders Indigenous Peoples and Communities Faith-Based Organisations Women Organisations
Organised Labour	Association of Mineworkers and Construction Union (AMCU) National Union of Mineworkers (NUM) Congress of South African Trade Unions (COSATU) Solidarity/Solidariteit
International Partners	World Bank International Monetary Fund (IMF) the GEF UN Women IUCN (Global Gender Office) Countries, companies, institutions seeking to empower women
Funding Partners	Community and Farmers Private Enterprises Industrial Development Corporation (IDC) Small Enterprise Development Agency (SEDA)

1.10. THE RESEARCH FRAMEWORK

This research effort began with a literature review, followed by the collection and analysis of data with the aim of building the proposed theoretical model. The literature review focused on international best practices about mainstreaming gender and then compared South African approaches to the socio-economic empowerment of women. The research framework is presented graphically in Figure 1.5.

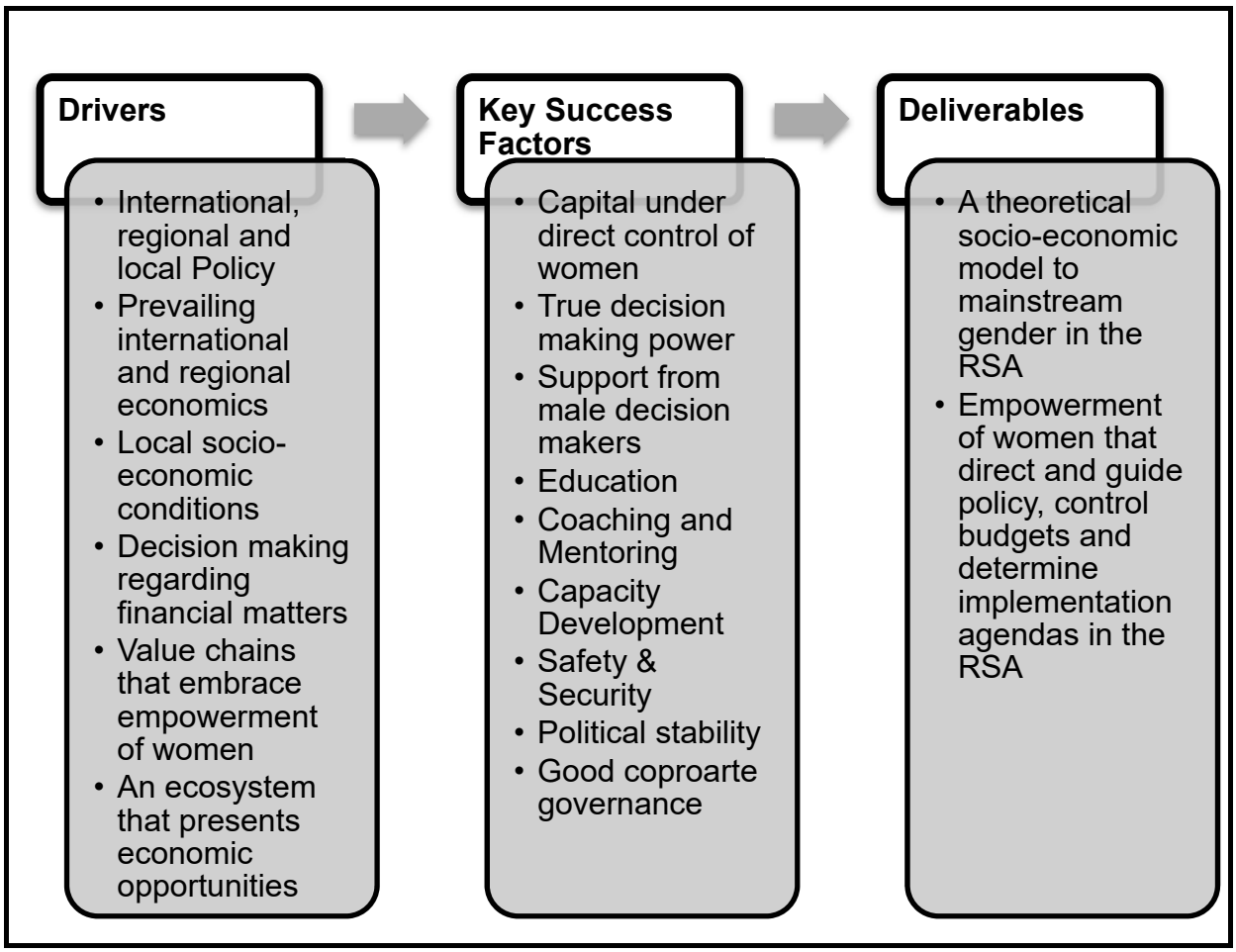


Figure 1.5: Research Framework

1.11. RESEARCH, DESIGN, METHODOLOGY

This research project can be described as a theoretical, model-building research effort. The proposed theoretical model is supported by the collection of empirical data from the following sources:

- Semi-structured interviews with policy, influencers, and decision makers;
- Structured interviews with women;
- Researcher field notes at sites where interviews are conducted; and
- Published reports on women's empowerment.

Several factors from the preliminary literature review informed the conceptual model. The proposed theoretical model was empirically interrogated by utilising the SEM technique.

1.11.1. Research Paradigm

Due to the complexity of the research problem, the research objectives, and the prevailing socio-economic complexities that influenced the research question, a positivistic research paradigm was proposed. Auguste Comte (1798-1857) is regarded as one of the founders of sociology and also a representative of positivism (Levine & Lenzer, 1977). Comte first described the perspective of positivism in a series of texts published between 1830 and 1842 (Levine & Lenzer, 1977). Comte may well be regarded as the first philosopher of science that observed both the circular dependence of theory and observation in science and thereby classifying the sciences in this manner (Levine & Lenzer, 1977). According to Levine & Lenzer (1977), Comte's work provides an insight into how the forces of social and political reaction began to be powerfully organised to combat the critical forces, and how positivism will be of importance to the work of philosophers, sociologists, political theorists, and historians. Collis & Hussey (2003) further describes a positivistic research paradigm as a quantitative, objectivist, scientific, experimentalist or traditionalist research paradigm. A positivistic paradigm process could be the literature study to establish a theoretical model and to construct and test a hypothesis (Levine & Lenzer, 1977).

According to Walwyn & Buys (2014), there are three possible aspects of a research project. The three possible aspects can be best described as the application of existing theories, models and methods to a *'new'* problem; the testing of existing theories, models and methods; building of new or improved theories, models and methods (Walwyn & Buys, 2014). By contrast, a feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture (Georgakellos & Macris, 2009). A feasibility study also investigates the strengths, weaknesses, opportunities and threats present in the environment, the resources required and the prospects for success (Georgakellos & Macris, 2009). Well-prepared feasibility studies should provide a historical background of the business or project, a clear description of the product or service, financial statements of accounts, operational management matters, marketing research and policies, financial data, legal requirements and tax obligations (Justis & Kreigsmann, 1979).

According to Georgakellos & Macris (2009) compiling a feasibility study forces the author to be an objective, critical and unemotional when investigating the business or project under review. Ethical issues surrounding social research should also play a role in the research methodology which raises awareness of the research topic, thereby attracting social scientists to become involved in political processes (Jupp, 2006).

1.11.2. The Systems Thinking Methodology

By using the *'Systems Thinking'* approach one can illustrate the complexity of finding solutions to complex social problems, but more importantly to provide a process that can be applied to complex social challenges (Senge, 2008). Senge (2012) states that the systems thinking approach assists in visualising the *'big picture'* and then identifying multiple leverage points that can support constructive change. The fundamental rationale of *'Systems Thinking'* is to understand how the most vexing, difficult, and intransigent problems manifest themselves, and how to give some perspective on these problems to provide some leverage and insight as to what might be done differently (Senge, 2008). Holtmann (2011) in her research, *"what it looks like when it's fixed"*, used the systems and design methodology to address the *"wicked social problems"* facing South African society. Holtmann (2011) concluded that sixteen criteria would have to be met to address the vexing social challenges. Maslow's *"Hierarchy of Needs"* further augments this set of criteria by defining physiological needs, safety needs, social needs, esteem needs, and self-actualisation need (Management Group, 2008).

Maslow describes the (community) needs as follows:

- **Primary Needs:** air, water, food, clothing, and shelter;
- **Safety Needs:** physical, environmental, and emotional security and protection, namely, job, financial, family members and health security;
- **Social Needs:** love, affection, care, belongingness, and friendship;

- **Esteem Needs:** internal esteem needs such as self-respect, confidence, competence, accomplishment, and freedom. External esteem needs such as recognition, power, status, attention, and admiration; and
- **Self-actualisation Needs** desire to become everything you are capable of becoming, everything you have the potential to be. Includes the necessity for development and self-contentment, the desire to acquire more knowledge, social-service, creativity, and increasing aesthetic awareness.

Peter Senge, scientist and director of the Center for Organizational Learning at the Massachusetts Institute of Technology (MIT) Sloan School of Management, states that *"Whenever I'm trying to help people understand what this word 'system' means, I usually start by asking: 'Are you a part of a family?' Everybody is a part of a family. 'Have you ever seen in a family, people producing consequences in the family, how people act, how people feel, that isn't what anybody intends?' Yes. 'How does that happen?' Well… then people tell their stories and think about it. But that then grounds people in the jargon of 'system' or 'systems thinking' but the reality – that we live in webs of interdependence"* (Senge, 2008). By using the Systems Thinking approach one can illustrate the complexity of finding solutions to complex social problems, but more importantly to provide a process that can be applied to complex social challenges (Senge, 2008). Another perspective on Systems Thinking is provided by Allen (2013) who describes systems thinking as an approach to integration that is based on the belief that the parts of a system will act differently when isolated from the system's environment or other parts of the system. By comparison to positivist and reductionist thinking, Systems Thinking sets out to view systems holistically (W. Allen, 2013). Figure 1.6 represents a diagrammatic perspective of Systems Thinking.

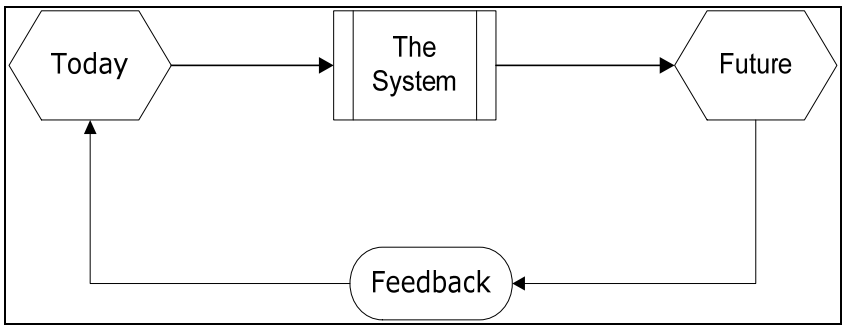


Figure 1.6: Systems Approach to Complex Problems

Source: Senge, 2012

Consistent with systems philosophy, Systems Thinking concerns an understanding of a system by examining the linkages and interactions between the elements that comprise the whole of the system (Senge, 2008). When we encounter situations which are complex and messy, then Systems Thinking can help understand the situation systemically (Senge, 2008). The Systems Thinking approach also helps reveal the connectivity between elements in the situation to support joined-up actions (Senge, 2008).

1.11.3. An Approach to Addressing Complex Problems

The Dinokeng Scenarios demonstrate the critical need for analysing complex real-world problems, as well as the need for visionary leadership, leadership that is able to articulate a well thought through strategy and to underpin that strategy with a cogent strategic implementation plan. The Dinokeng Scenarios were premised on a post-1994 democratic South Africa where the hopes of the citizenry were writ in the narrative of liberty (Altman *et al.,* 2008). There was a vision of nationhood for all and of significant improvement in the standard of life for the victims of apartheid (Altman *et al.,* 2008). This vision was even shared by those citizens that had been part of the previous oppressive minority who were encouraged by a sense of new-found pride in a country that could hold its head high in the global community (Altman *et al.,* 2008). However, after fifteen years of democratic rule the realities of constructing a new nation were uncovered and a more complex task than had previously been anticipated (Altman *et al.,* 2008).

The legacy of South Africa's past had again triggered a task of reconstruction because South Africa had not been able to defeat its past; nor had South Africa entirely constructed its future (Altman *et al.,* 2008). In order to respond to these dilemmas, a group of thirty-five South Africans from a broad spectrum of South African society gathered at Dinokeng to analyse South Africa's present, and to consider possible futures (Altman *et al.,* 2008). The reason was to engage citizen-leaders from all parts of South Africa in a conversation about South Africa's future.

The purpose of the Dinokeng Scenarios was, therefore, to respond to the following:

- *"What will our country look like in 2020?"*
- *"How will our citizens fare?"*
- *"How will we stand in the world?"*

Table 1.9 presents the Dinokeng Scenario Team comprised of leaders from civil society, government, political parties, business, public administration, trade unions, religious groups, academia and the media (Altman *et al.,* 2008). The Scenario Team was facilitated by six convenors most of whom were actively involved in national issues (Altman *et al.,* 2008).

Table 1.9: The Dinokeng Scenario Team

Convenors		
Mamphela Ramphele	Njongonkulu Ndungane	Rick Menell
Vincent Maphai	Graça Machel	Bob Head
Scenario Team		
Miriam Altman	Moemedi Kepadisa	Yogan Naidoo
Frans Baleni	Reuel Khoza	Maite Nkoana-Mashabane
Ann Bernstein	Kallie Kriel	Thandi Nontenja
Nkosinathi Biko	Antjie Krog	Thami ka Plaatjie
Cheryl Carolus	Mary Malete	Sonja Sebotsa
Angela Coetzee	Daniel Mminele	Raenette Taljaard
Ryan Coetzee	Namhla Mniki	Mathatha Tsedu
Paul Hanratty	Aaron Motsoaledi	Sim Tshabalala
Haniff Hoosen	Jay Naidoo	Musa Zondi

Source: Altman *et al.,* 2008

The Dinokeng Process was decomposed into the following three steps:

- **Step One:** Thirty-five leaders representing different sectors of society came together to discuss the current political, social, and economic realities facing South Africa;
- **Step Two:** Potential future scenarios for South Africa were developed, and the messages of the Dinokeng Scenarios were shared with various stakeholders; and

- **Step Three:** A media and engagement campaign was launched to extend the reach of the Dinokeng Scenarios to organisations, groups and communities across South Africa.

Figure 1.7 represents the three possible scenarios of a future for South Africa as of 2009.

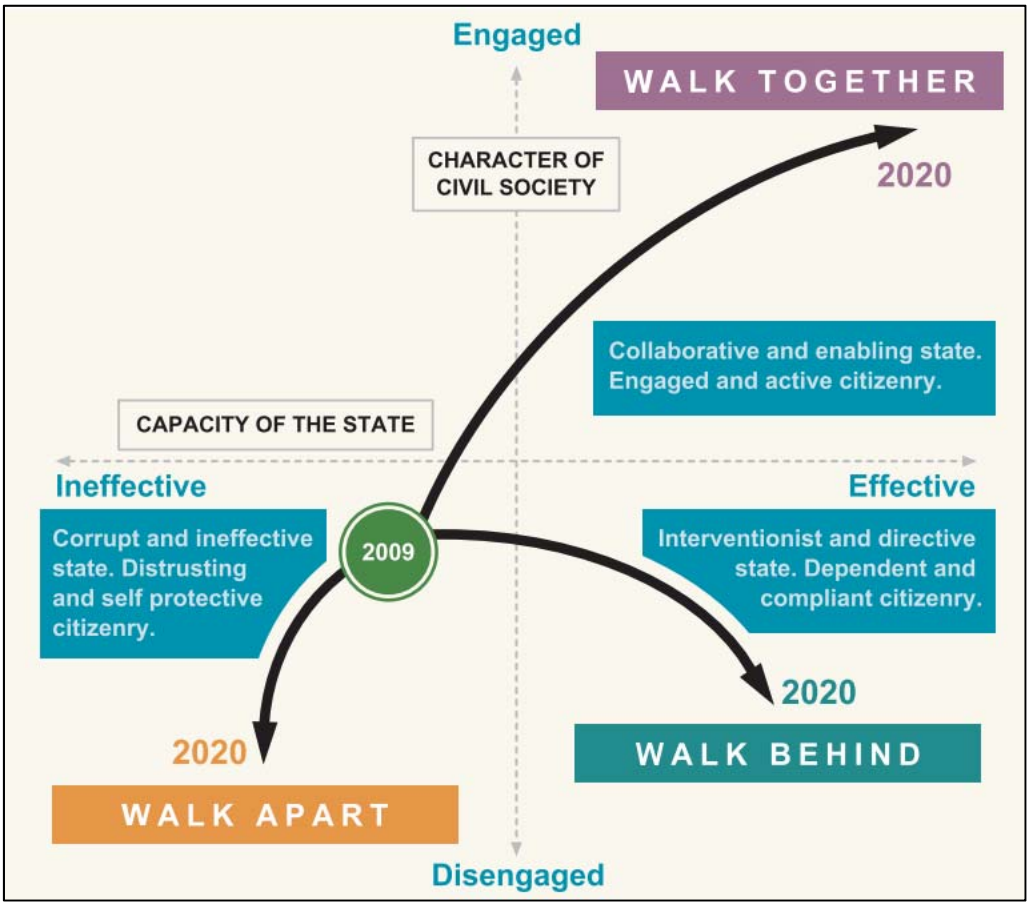


Figure 1.7: The Dinokeng Scenarios

Source: Altman *et al.,* 2008

Table 1.10 presents the results of the Dinokeng Scenario process, detailing the three scenarios, namely, Walk Apart, Walk Behind, and Walk Together, against my own research.

Table 1.10: Dinokeng Scenarios: Walk Apart, Walk Behind, Walk Together

	2009 to 2011	2012 to 2014	2015 to 2017	2018 to 2020
SCENARIO 1 WALK APART	**Tomorrow is the same as yesterday**	**Tinkering around the edges**	**The shadows lengthen**	**Rule of the strongman**
	Ruling party retains the majority	Cronyism and corruption in government appointments and tenders	Crime increases: private security guards outnumber police 3 to 1	The cracks widen; budget deficit balloons; delivery worsens
	Global crisis leads to declining investment, growth, and tax revenues	Education and healthcare deteriorate	Criminal justice system becomes more inefficient because of cronyism and corruption	Elites buy their way out, and poor people lose patience
	Crisis pact between government, labour and business fails	The rift between government and citizens	Investment shrinks. Further, unemployment grows	Gangs, self-appointed mayors, and taxi associations rule local areas
	Government expands the Public Works Programme to create jobs	Government increases social grants and civil servants pay	Service delivery fails; alternative modes of delivery develop, and shadowy forces become more powerful	"Strongman" wins the election, outcome contested
	Citizens get restless, and government increases social grants	Ruling party wins elections with a reduced majority		Protests spiral and the government declares a state of emergency
The Message of *"Walk Apart"*	If we fail to address our critical economic and social challenges and if we fail to strengthen the state: • Citizens will disengage further • Pockets of alternative control and delivery by unaccountable groups outside the state will develop • Our country will decline and disintegrate rapidly			

	2009 to 2011	2012 to 2014	2015 to 2017	2018 to 2020
	Accelerating development	**Dispelling dark clouds**	**State backs "winners"**	**The tide turns**
	Ruling party retains the majority	Job losses mount as global crisis bites harder; government spreads social welfare net	Government accelerates large-scale infrastructure programme to boost development	Prescribed asset laws alienate business: investment contracts and unemployment worsen
	Global crisis means declining investment, growth, and tax revenues	Government increases tax rates freezes civil service wages	Government suffers skills shortage as it tries to develop key high-tech SOEs – “winners"	The state borrows at high-interest rates to fund growing deficit
SCENARIO 2 WALK BEHIND	Government commits to continued investment in large infrastructure projects - debt rises. Government tries to boost its capacity through greater coordination and training	National Economic Summit results in Growth and Investment Accord	Improvement of skills through better education and artisan training is prioritised, but the returns are insufficient	Election run on "Growth and Redistribution" ticket
	Expanded Public Works Programmes create more unskilled jobs	An election campaign run on pro-poor" platform	Some "winners" become "losers", with substantial costs to the fiscus	The country gets IMF loan conditional on sharp cut-back in state expenditure
		Ruling party victory was taken as a mandate for even stronger state intervention in the economy	Prescribed asset laws force private investment in large projects	Widespread discontent and protests: government cracks down
The Message of *"Walk Behind"*	• State-led development requires the capacity for planning, coordination and delivery • Large-scale state projects require heavy borrowings • State-directed investment weakens private initiative, and state control creates citizen dependency • Pervasive state intervention and control is therefore unsustainable			

	2009 to 2011	2012 to 2014	2015 to 2017	2018 to 2020
SCENARIO 3 WALK TOGETHER	**The bleak years**	**Citizens demand more**	**A social pact emerges**	**Building a Nation**
	Ruling party retains the majority	Healthcare and parent associations spread through the country	The economy begins slow recovery but insufficient to deal with deepening poverty 2020	Government focuses on delivering core public goods
	Global crisis means declining investment, growth and tax revenues	Government promises action against incompetent managers and civil servants	A 'Citizens' Charter is born	Investor confidence buoyed by co-operative governance
	Crisis pact wobbles along	Improvements in service delivery	A formal social pact emerges: it includes political parties, labour, business, citizens' groups	Citizens lobby for more accountability from politicians, opposition parties take up the call
	Service delivery deteriorates	Ruling party runs election campaign on a ticket of clean and competent government	Business shoulders more responsibility in education, infrastructure, health	Citizens, parliamentarians, and courts effect change in the voting system, so politicians are directly accountable to voters
	Pockets of citizen groups take action over health, education, crime	A weakened ruling party is returned to power; it forms an alliance with other parties	Trade unions back measures to combat youth unemployment	
			Citizens work with the government to monitor education, health, crime	
The Message of *"Walk Together"*	• We can address our critical economic and social challenges only if civil society, business, labour and the state engage and cooperate • Together we need to increase accountability, build the capacity of the state, deliver core public services, and develop a common identity and nationhood • We can succeed if and only if citizens and leaders from all sectors rise above their narrow self-interests and contribute purposefully to building our nation			

Source: Altman *et al.,* 2008

The Dinokeng Scenario Team concluded that the three scenarios suggest three different possible futures for South Africa (Altman *et al.,* 2008). The Dinokeng Scenario Team pointed out that South was at a crossroads and that each individual, citizen, and leader had to choose how to "walk forward" (Altman *et al.,* 2008). Several questions were posed to the Dinokeng Scenario Team and are summarised below (Altman *et al.,* 2008).

What would you do?

- Through the choices each one of us makes, we will create our nation's future;
- What will you choose to do? When? How? With whom?
- What will your next step be?

What can you do?

- **Act** to create a better future for South Africa;
- **Share** the messages of the Dinokeng Scenarios with leaders and citizens;
- **Reach** organisations, groups, and communities across the country;
- **Use** various material - reports, translations, opinion pieces, fact-sheets, DVD, the Dinokeng website (www.dinokengscenarios.co.za);
- **Host** targeted engagements - briefings, presentations, workshops; and
- **Engage** with the media - print, TV, radio, websites -about the future you would like to see.

To conclude this section, several years post the Dinokeng Scenario process, the results of the Dinokeng Scenario process are even more relevant against the backdrop of the *'State Capture'*, the femicides and rape and murder of women and children, the failing Educational system and the stalled mining and manufacturing sector. The Dinokeng Scenario also reveals the need for different leadership styles depending on the maturity of the country, as well as the change management that would be required as the citizenry evolves over time. Of great concern is the maturity and wisdom of the current South African political landscape. The Dinokeng Scenarios offers South Africa an approach to unify South Africans around a shared vision of the future.

1.11.4. Primary Research

According to Zikmund (2003), primary data is collected and analysed individually for the research project. For this research project, the data will be collected based on the identified factors that positively influence the economic empowerment of women. This data collection method to acquire the primary data will be based on engagement with a representative sample.

1.11.5. Secondary Research

Secondary data refers to data that would have been previously collected for a research project and would include books, periodicals, government sources, media sources and commercial sources (Zikmund, 2002). To the best of the researcher's knowledge, there was no similar previous research focusing on the socio-economic empowerment of women in the renewable energy sector in RSA conducted in the Republic of South Africa. A preliminary literature review established the international, continental, and country level status quo towards the economic empowerment of women within the global renewable energy sector. The preliminary literature review researched international, continental, and country level policy which included data sources like the World Bank, the African Union, the Southern African Development Community, and the South African policy landscape. The research findings were used to produce a situational analysis of the policy and the implementation associated with the socio-economic empowerment of women. A literature review can further assist the researcher to gain a better historical perspective as well as gaining an appreciation for prior research conducted about similar research (Leedy & Ormrod, 2001).

1.11.6. Data Collection

The research was a combination of in-depth literature review and in-field research augmented with in-field experience. The research adopted a top-down approach, meaning that all stakeholders and interested and affected parties were researched.

The data gathering included the following stakeholders:

- Women at the executive level, C-suite senior management;
- International organisations like the African Union, the World Bank, and the United Nations;
- The renewable energy sector in the RSA; and
- Beneficiary communities in the RSA.

The snowball sampling method which is used in sociology and statistics research is a non-probability sampling technique where existing study subjects recruit future subjects from among their associated network, meaning that the sample group grows like a rolling snowball (Zikmund, 2002). In this study, convenience snowball sampling, which is a non-probability sampling method was employed instead of a random probability sampling method. Subjects included in this sample were selected to meet specific criteria.

1.11.7. Data Analysis

According to (Kerlinger, 1966) adding to existing knowledge will require the research worker to master the research tools and techniques and also understand the process by which scientific knowledge increases. This research project used an advanced statistical technique called Structural Equation Modelling to analyse simultaneous multiple independent relationships against the dependent variable, and given the multi-functional nature of the topic, which is global in scale, the expected contribution of the SEM technique is significant. The SEM technique can be used in real life situations using quantitative data gathering and analysis in a format compatible with the proposed theoretical research model (Hair, Black, Babin, & Anderson, 2009). SEM also allows for both exploratory and confirmatory modelling which means it is suited to both model testing and model development (Wothke, 2010). SEM is a multivariate technique that combines aspects of multiple regression and factor analysis to estimate a series of interrelated relationships simultaneously (Hair *et al.,* 2009).

The main elements of SEM are the structural model showing potential causal dependencies between endogenous and exogenous variables and the measurement model showing the relations between the latent variables and their indicators (Hair *et al.,* 2009). SEM has also been used widely in fields of study as a technique for evaluation because it provides a mechanism for analysing multiple relationships simultaneously while providing for statistical efficiency for assessing the relationships comprehensively and for providing a transition from exploratory to confirmatory analysis (Hair *et al.,* 2009). The approach corresponds to more significant efforts in all fields of study toward developing a more systematic and holistic view of problems (Hair *et al.,* 2009).

1.11.8. Research Hypotheses

Table 1.11 indicates the original research hypotheses based on a series of positive relationships tested during the research stage. However, during the questionnaire design stage, specific variables were added, amended, or deleted.

Table 1.11: Original Relations

$+H^1$	**Socio-Economic Development:** There is a positive relationship between the ability to drive socio-economic development and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^2$	**Stakeholders' Interest:** There is a positive relationship between stakeholder's interest and the perceived success of socio-economic empowerment initiatives for women in the renewable energy sector.
$+H^3$	**Strategic Acumen:** There is a positive relationship between strategic business acumen and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^4$	**Strategic Planning:** There is a positive relationship between strategic planning and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^5$	**Broad-Based Black Economic Empowerment:** There is a positive relationship between B-BBEE and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^6$	**Leadership:** There is a positive relationship between leadership and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.

$+H^{7}$	**Supporting Services:** There is a positive relationship between supporting services and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{8}$	**Change Navigation:** There is a positive relationship between the ability to navigate change and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{9}$	**Education:** There is a positive relationship between the educational level and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{10}$	**Financial Management:** There is a positive relationship between financial management and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{11}$	**Outside Advice:** There is a positive relationship between outside advice and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{12}$	**Culture:** There is a positive relationship between culture and the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{13}$	**Socio-Economic Development:** There is a positive relationship between the ability to drive socio-economic development and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{14}$	**Stakeholders' Interest:** There is a positive relationship between stakeholder's interest and good governance towards the perceived success of socio-economic empowerment initiatives for women in the renewable energy sector.
$+H^{15}$	**Strategic Acumen:** There is a positive relationship between strategic business acumen and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{16}$	**Strategic Planning:** There is a positive relationship between strategic planning and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{17}$	**Broad-Based Black Economic Empowerment:** There is a positive relationship between B-BBEE and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{18}$	**Leadership:** There is a positive relationship between leadership and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{19}$	**Supporting Services:** There is a positive relationship between supporting services and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.

$+H^{20}$	**Change Navigation:** There is a positive relationship between the ability to navigate change and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{21}$	**Education:** There is a positive relationship between the educational level and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{22}$	**Financial Management:** There is a positive relationship between financial management and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{23}$	**Outside Advice:** There is a positive relationship between outside advice and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{24}$	**Culture:** There is a positive relationship between culture and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.
$+H^{25}$	**Good Governance:** There is a positive relationship between the independent variables and good governance towards the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector.

1.11.9. Proposed Conceptual Model

Figure 1.8 provides a graphical representation of the original socio-economic model which represented the positive relationship between the independent variables, good governance, and the perceived success of women's empowerment initiatives in the renewable energy sector of the RSA. The process of theoretical model building is best divided into three phases of data collection, analysis and the extrapolation of the new hypothesis (Walwyn & Buys, 2014).

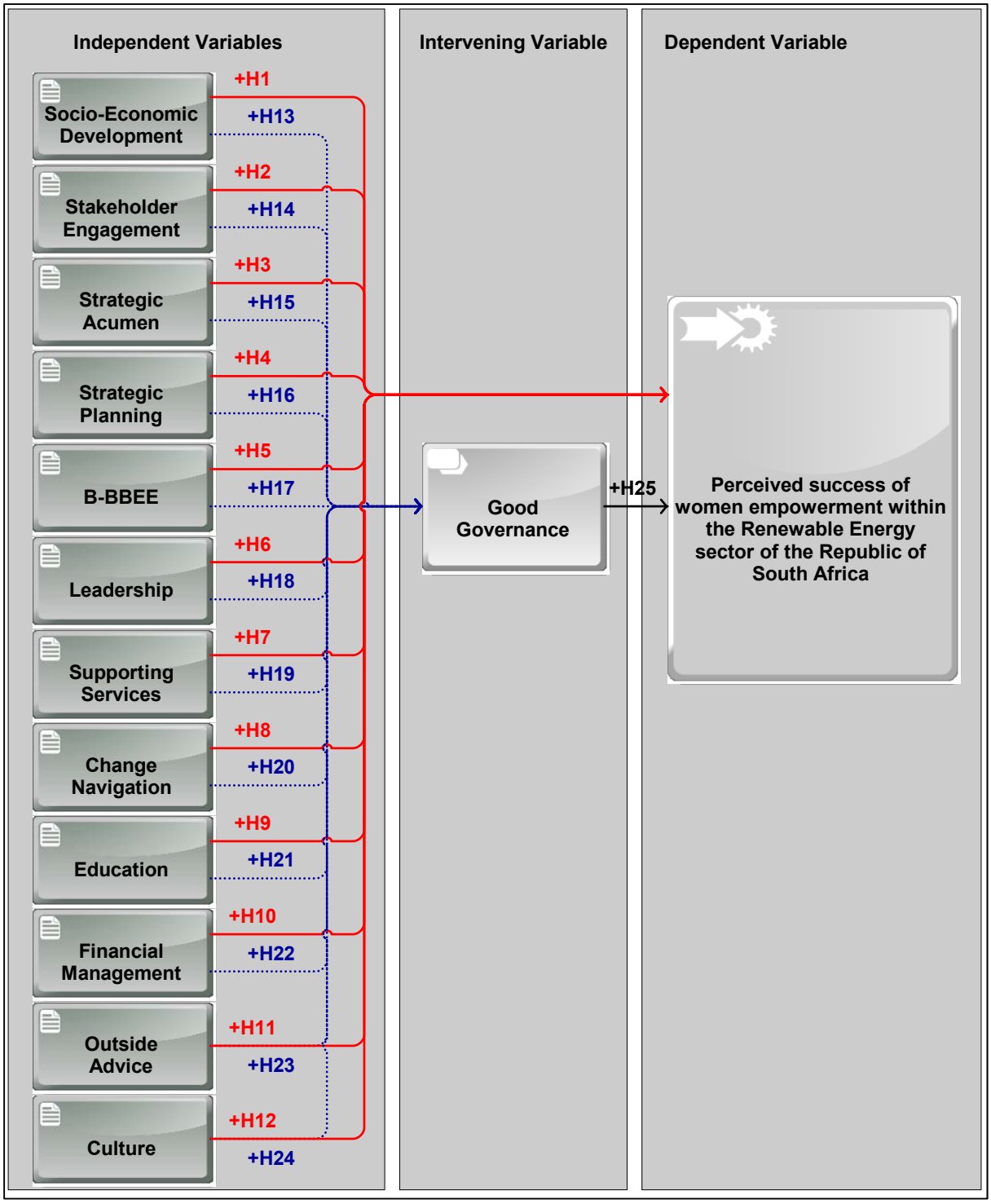


Figure 1.8: Proposed Socio-Economic Model

1.11.10. Operationalisation of the Variables

The socio-economic empowerment of women within the renewable energy sector of the RSA has an associated complex stakeholder domain which includes government, the private sector, organised labour, and civil society.

The socio-economic empowerment of women can straddle one or any of these stakeholder domains, and the target audience for this research questionnaire is focused on the decision-makers and decision-making processes at the executive level, and how this influences the socio-economic outcomes of women at the beneficiary community level. Human and financial resources, culture, change navigation amongst other variables, all combine to ensure sustainable socio-economic empowerment of women at the community level.

1.11.10.1. Socio-Economic Development

Socio-Economic Development refers to a process that seeks to identify both the social and the economic needs of a community. The process includes creating strategies and interventions to address the socio-economic needs of communities practically and which will best serve the interest of the communities over the longer term. SED is essential to ensure the sustainability of the interventions employed and to ensure that the communities derive sustained benefit from these strategies. The broad objective is to develop strategies that will improve the standard of living and local economy within the immediate and surrounding communities. Socio-Economic Development typically occurs in rural, peri-urban, and urban-poor communities in rural towns, small cities, and even large metropolis.

1.11.10.2. Stakeholders' Interest

Stakeholders' Interest refers to the interest that stakeholders exhibit regarding the economic empowerment of women within the renewable energy sector of the RSA. A stakeholder can be further defined as a party that has an interest in a company, the community, the economic empowerment of women in these communities, a government representative or any other interested party. For illustration, the primary stakeholders in a company are its investors, employees, service providers and customers; and could even include additional stakeholders such as civil society (community), government, or organised labour. The distinction between the *'internal'* stakeholders that are core to the business and the *'external'* stakeholders that are non-core to the business is important to note as the engagement, outcomes; deliverables are invariably different.

The most influential stakeholders are the shareholders, then employees, and the service providers. These should all should function in unison with the complex array of *'external'* stakeholders.

1.11.10.3. Strategic Acumen

Strategic Acumen can be considered as a process in which people think about, consider, and create the future for themselves and others (Systems Thinking). Strategic Acumen includes the ability to come up with practical plans and interventions that are aligned with the strategic objectives of the company within a socio-economic situation. Strategic thinking helps decision makers review policy issues, perform long-term planning, set goals, determine priorities, and identify potential risks and opportunities.

1.11.10.4. Strategic Planning

Strategic Planning is a process where companies determine their vision for the future, identify their goals and objectives, outline the activities that will achieve the stated objectives, and, most importantly, put in place the monitoring and evaluation plan that will guide the achievement of their objectives. This strategic planning will also consider the human, financial, and any additional resource requirements to achieve the strategic direction.

1.11.10.5. Broad-Based Black Economic Empowerment

Broad-Based Black Economic Empowerment (B-BBEE) was initiated by the South African Government to address the gross inequality that exists in South Africa. The intent of B-BBEE is to distribute wealth across as broad a spectrum of previously disadvantaged South African's as possible. The B-BBEE Act (Act 53 of 2003) is premised on the notion that decades of systemic racism have contributed to the socio-economic challenges that the RSA faces.

The B-BBEE guidebook (Government Gazette 29617 (09th Feb. 2007)) provides information relevant to measuring ownership, management control, employment, skills development, preferential procurement, enterprise development, socio-economic development, and Qualifying Small Enterprises (QSEs).

1.11.10.6. Leadership

Leadership is the ability of a company's Board and its leadership/management/executive team to set and to implement challenging goals, to make decisive decisions, to be competitive and to inspire the rest of the company to contribute to the overall positive performance of the company. These executive functions are typically called the Chief Executive Officer or Managing Director. Leadership could involve establishing a clear strategic vision, sharing that vision, and energising the rest of the company's employees to align with that vision. A good leader will be able to function well during times of crisis and to think and act creatively in stressful situations. Effective leadership exhibits the character traits of trust, honesty, integrity, ethics, and demonstrates a strong moral compass.

1.11.10.7. Supporting Services

Supporting Services can be considered as an activity that is required to execute a product, program, or process successfully. The support services are managed by a department/function within the company, but there can also be instances where the support services are out-sourced to a service provider or consultancy. Supporting services are extremely important for any company to achieve their strategic vision and associated objectives.

1.11.10.8. Change Navigation

Change Navigation or **Change Management** refers to an approach to transition individuals, teams, and companies. Change Navigation is equally applicable to the beneficiary communities and will improve the socio-economic circumstances of the broader communities.

Change Navigation is intended to guide or significantly reshape a company by using change navigation methods to re-direct the use of human and financial resources, processes, or other operating modes. Change Navigation spans several disciplines from behavioural and social sciences, information technology and business solutions.

1.11.10.9. Education

Education refers to the capacity development of the intended beneficiaries, which could be the communities or the women within these communities. Capacity development could take several forms ranging from formal to informal training, mentorship, learnerships, Adult Basic Education and Training (ABET) and short courses. An essential facet of education would be financial literacy training of the beneficiary communities.

1.11.10.10. Financial Management

Financial Management is the efficient and effective management of financial resources to achieve the strategic vision of the company. If the company is well managed the flow through to the beneficiary communities will also be realised in the form of the improved socio-economic conditions. Several key factors can positively influence the financial management of a company, namely, good corporate governance, sound financial planning, budgeting, financial controls, and excellent support systems.

1.11.10.11. Outside Advice

Outside Advice refers to a subject matter expert, which could be an individual or an implementation partner that is an expert in socio-economic development. The subject matter expert would have a demonstrated track record of successful socio-economic implementations and will provide the advice and guidance that is typically not present in the company as socio-economic development is invariably not its core business.

1.11.10.12. Culture

Culture refers to the prevailing culture within a company towards the socio-economic development of the intended beneficiaries. To further elaborate, there could be a very proactive, long-term approach to socio-economic development or there could be a very narrow, short-term compliance approach. Experience has demonstrated that longer-term approaches to initiatives tend to deliver more sustainable outcomes. Also, companies that have recognised that they did not have the necessary socio-economic development expertise in-house and engaged outside advice, potentially delivered more impact through their socio-economic investment. According to the theory of cultural determinism, human nature is determined by the ideas, beliefs, values, and meanings that people acquire as members of society, *"we are what we learn"*. An optimistic approach to cultural determinism imposes no limits on the abilities of human beings to achieve their objectives, with some anthropologists suggesting that there is no defined way of being human. Therefore, the assumption is that the prevailing company culture is critical to achieve a sustainable socio-economic outcome for the communities.

1.11.10.13. Good Governance

The intervening variable of **Good Governance** can be considered as the processes to make and implement decisions, with the emphasis being on the best possible process for making those decisions. Governance can apply to a company, government, community, governing body, or any entity that manages an outcome.

1.11.10.14. Women's Empowerment within the Renewable Energy Sector

The dependent variable is the perceived success of **women's empowerment within the renewable energy sector of South Africa**. The dependent variable is defined as the extent to which the proposed socio-economic empowerment model, will contribute to the sustained socio-economic development of women. Socio-Economic Development for intended beneficiary communities is envisaged over the short, medium, and longer-term.

The strategic vision and objectives set by the contributing company will be attained through the sustained socio-economic empowerment of women.

1.12. LIMITATIONS OF THE RESEARCH/OUTLINE OF THE STUDY

The objective of this research was to evaluate the contributing factors which positively influence the socio-economic empowerment of women in the renewable energy sector of the RSA. Part of this research effort rests on the knowledge, opinions and experience of women that are empowered, women that have attempted and failed, and those women who aspire for socio-economic empowerment.

1.13. STRUCTURE OF THE THESIS

In the chapters which follow, I will discuss the following aspects of this study.

Chapter One: Overview of this Study

Chapter One is an introduction to this study of mainstreaming gender in the renewable energy sector of the RSA. This study aims to develop a socio-economic model for the economic empowerment of women. Included in this chapter are the purpose, objectives, and hypothesis of the study. The primary research question is articulated as follows:

What are the main contributors and variables which can positively influence the socio-economic empowerment of women initiatives in the renewable energy sector in South Africa?

Chapter Two: Literature Review of the Renewable Energy Sector in the RSA

This study aimed to build on international best practices and use this as a baseline for comparison for the RSA. The gap that may, or may not exist, provided the criteria for the monitoring and evaluation that would support the SEM.

Due to the complex nature of mainstreaming gender in the RSA, the identification of factors that influence the success of new and sustainable women's empowerment initiatives were equally complex and elusive.

Chapter Three: Literature Review of Woman Empowerment in the RSA

Chapter Three will apply a local lens to determine the status quo of the gender landscape in the RSA. Emphasis was placed on women within the renewable energy sector and the positions and decision-making power that they command. The Independent Power Producer (IPP) Office of the Department of Energy collaborated on the input data. Environmental Leadership and Socio-Economic Development also formed part of this chapter.

Chapter Four: Proposed Theoretical Model

Chapter Four provides further detail on the proposed theoretical model of the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector of the RSA. Also, Chapter 4 also elaborates on the theoretical model and the independent and intervening variables which may positively influence the dependent variable, namely, the socio-economic empowerment of women in the renewable energy sectors of the RSA.

Chapter Five: Research Methodology

Chapter Five focuses on the research design and methodology of this study. It discusses the methodology, and the process followed; the development of this questionnaire, a stakeholder map to identify the key stakeholders, and the method that was employed to collect the requisite data. This chapter also reviews the sampling technique and the design administration of the questionnaire survey. This chapter also describes the SEM statistical analysis and details the measurement instrument, the formulation and construction of the conceptual model to analyse the statistical data.

Chapters Six: Presentation and Analysis of Data

Chapter Six analyses the acquired data; reports the empirical results, and the quality of the measurement instruments. This chapter also presents the results of the empirical assessments of the various factors impacting on the perceived success of empowering women within the renewable energy sector of the RSA.

Chapter Seven: Recommendations and Conclusion

Chapter Seven summarises this research effort and provides recommendations, limitations, and conclusions of the study. This chapter will conclude with specific recommendations that will potentially ensure the effective implementation of women led socio-economic empowerment initiatives in the renewable energy sector of the RSA.

1.14. SUMMARY

The objective of this study was to provide a holistic turn-key solution to mainstreaming gender and sustainable women's empowerment initiatives driven by the Green Economy. The Green Economy can be a catalyst to mainstream gender and sustainable women's empowerment (Inayatullah, 2010). Also, the renewable energy sector is potentially the last remaining sector that is not yet entirely dominated by men (Inayatullah, 2010). The ambitious objective of this research is to provide a practical strategy and implementation plan to drive these objectives. This research will be disseminated as widely as possible and further augment the existing body of knowledge relating to mainstreaming gender and sustainable women's empowerment in the renewable energy sector. The outcome of this research is intended to be applied to renewable energy implementations, in ways which will positively impact the lives of women, youth, and people with disabilities.

The research findings will also enhance the South African Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) which has a target of 10 000 GWh of renewable energy.

The Minister of Energy of South Africa has also stipulated that 3 725 MW should be generated from renewable energy sources and is required to ensure the continued uninterrupted supply of electricity. However, if the fundamental challenges of poverty, namely land tenure, land ownership, fixed asset acquisition, community level fund management are not addressed at the outset, women will remain shackled to *"veggie patches and backyard chickens"*. The hurdles are even greater in rural areas where tribal land is still under the control of the traditionally male chief. The researcher also discusses the socio-economic-political challenges in the RSA which impede mainstreaming gender objectives. Fundamental to the challenges that the RSA currently faces is the disparity between rich and poor, evidenced by the Gini coefficient. The problem is further compounded as the RSA is now considered an *"Upper Middle Income"* country as per the World Bank definition (World Bank, 2016a). To conclude, the researcher envisages that this research will demonstrate the potential of the Green Economy, driven by the renewable energy sector, to mainstream gender and the sustainable socio-economic empowerment of women.

This study, therefore, continues to build on the knowledge, opinions, and experience of women that are already empowered, women that have attempted and failed, and those women who aspire for socio-economic empowerment.

CHAPTER TWO
LITERATURE REVIEW OF THE RENEWABLE ENERGY SECTOR IN THE RSA

2.1. INTRODUCTION

This chapter will provide a background to the Renewable Energy Sector, and its Renewable Energy Independent Power Producer Procurement Program. It describes the processes that encompasses the REIPPPP; the actors, decision makers and influencers that have shaped the REIPPPP; the economic factors that have driven the REIPPPP; and the outcomes that have been achieved. This chapter will also demonstrate similarities with other programmes, such as the GEF and Development Bank of Southern Africa (DBSA) projects.

The renewable energy sector, through its REIPPPP, has the potential to substantially contribute to mainstreaming gender. Therefore, the renewable energy sector, through the Economic Development funds generated by the IPPs, could be the catalyst to transition women entrepreneurs to become owner-operators of their own power generation facilities. This research study intends building on international best practices and used this as a baseline for comparison for the RSA. The gap that may, or may not exist, will provide the criteria for the SEM. Due to the complex nature of mainstreaming gender in the RSA, identifying the factors that influence the success of new and sustainable women's empowerment initiatives are equally complex and elusive. This chapter will not attempt to interrogate the technical aspects of the REIPPPP as there is already sufficient literature available on the topic.

Finally, this chapter will attempt to reveal the impact that the REIPPPP has contributed towards mainstreaming gender and the socio-economic empowerment of women within the renewable energy sector of the RSA.

2.2. REIPPPP BACKGROUND

The report by Eberhard, Kolker, & Leigland (2014) positions South Africa's REIPPPP as one the most effective policy instruments to accelerate and sustain private investment within the renewable energy sector.

The South African government's first foray into the renewable energy sector started with exploring feed-in tariffs (FITs), which were rejected and replaced with a competitive tender process known as the REIPPPP (Eberhard *et al.,* 2014). Eberhard *et al.,* (2014) further state that the REIPPPP has managed to achieve competitive prices by attracting significant private sector expertise and investment into grid-connected renewable energy in the RSA. This positive sentiment towards the REIPPPP is shared in a request for proposals for research collaboration projects, issued by the Ministry of Foreign Affairs of Denmark (MFA) (Ministry of Foreign Affairs of Denmark, 2016). The MFA states that the South African REIPPPP is one of the most successful renewable energy procurement programmes globally, with the REIPPPP generating more renewable energy in four years, more than the rest of Sub-Saharan Africa has achieved in the past twenty years (Ministry of Foreign Affairs of Denmark, 2016). The proposal by the MFA further asserts that there are areas of improvement in the design and operational features of the programme, including grid integration of renewable sources and suitability of systems depending on variable energy sources (Ministry of Foreign Affairs of Denmark, 2016). The proposal further points out that decentralised energy production from sources such as wind, biomass and solar power should be further investigated, as well as the possible inclusion of time-based energy blocks (Ministry of Foreign Affairs of Denmark, 2016). The potential benefit to the RSA is that many countries in Sub-Saharan Africa are planning renewable energy initiatives which could leverage South African expertise and experience (Ministry of Foreign Affairs of Denmark, 2016).

The REIPPPP is internationally considered as a success and sets the standard in international best practices for implementing a competitive bid process (Slabbert, 2016). However, on the 12th May 2016, the Eskom CEO, Brian Molefe, delivered the quarterly State of the System briefing (Slabbert, 2016). Molefe stated that the renewable energy sector is like an ancient cell phone and that it had failed to provide energy when Eskom most needed the energy (Slabbert, 2016). Molefe continued, by stating that the technology had not developed sufficiently to perform efficiently and make a meaningful contribution to electricity supply in South Africa (Slabbert, 2016). Molefe pointed out that Eskom was forced to procure electricity from renewable projects at a higher cost than Eskom's generation, when at that stage, Eskom had excess capacity (Slabbert, 2016).

Also, Eskom was contractually obliged to sign twenty-year power purchase agreements, and at the end of the twenty-year period the assets, which would have exhausted their operational lifespan, would be transferred to Eskom (Slabbert, 2016).

The South African Photovoltaic Industry Association (SAPVIA) cited a study conducted by the Council for Scientific and Industrial Research (CSIR) (Slabbert, 2016). This study concluded that the operational wind and Photovoltaic (PV) generation facilities achieved diesel cost-savings linked to the Eskom load-shedding (Slabbert, 2016). The wind and PV IPPs saved Eskom between R3.7 billion and R3.5 billion for 2014 and the first half of 2015, resulting in a net-saving of R4.8 billion to the South African economy. Unfortunately, the sentiment echoed by the CEO of Eskom is overshadowed by the obsession to deliver a nuclear power plant, fracking, as well as the implications in the *'State of Capture'* Report published by the Public Protector of South Africa (Public Protector of South Africa, 2016).

2.3. RENEWABLE ENERGY POLICY

This section will attempt to demonstrate the absence of gender policy and legislation throughout the REIPPPP, and the absence of activism to mainstream gender from the inception of the REIPPPP. It is unlikely that policy and legislation in isolation will achieve the objective of socio-economic empowerment of women, and this perspective is reinforced by research conducted by Starfield (2016). Starfield (2016) postulates that countries in Sub-Saharan Africa with quotas and activism will have stronger legislation, by comparison, countries that have no quotas, or only quotas, or only activism, will have weaker legislation. Starfield's (2016) first independent variable is legally binding commitments to ensure that a certain number of women are appointed to governance structures, generally at national legislature level. The second independent variable, female activism, is defined as active participation in a feminist movement between 1990-2011, using Weldon and Htun's definition of a feminist movement (Starfield, 2016).

Geraldine Fraser-Moleketi and Charlene Smith, both emphasised the importance of comprehensive policies, aggressive implementation, and attitude and mindset shifts (Starfield, 2016).

Fraser-Moleketi elaborated on the fact that Parliament was very receptive because the legislation had the support of sympathetic, progressive men and, more importantly, a more substantial number of ANC women in the executive and the legislature (Starfield, 2016). Starfield's perspective is further supported by the fact that even though great strides have been accomplished, gender-based violence rates remain high in most Sub-Saharan African countries, with South Africa exhibiting the highest incidence of recorded rape in the world since 2004 (Starfield, 2016). In relation to climate change and mainstreaming gender, the Paris Conference of Parties (COP) Agreement of December 2015, where 195 countries adopted the legally binding global climate contract, defines a global plan of action to limit global warming to below 2°C (European Commission, 2016b). Governments agreed to the following mitigation actions to keep the global average temperature below 2°C (European Commission, 2016b).

The risks/impacts of climate change will be reduced by:

- Limiting the increase to 1.5°C;
- Establishing a plateau for global emissions, and developing quick, innovative reductions;
- Adaption interventions centred around strengthening CSOs ability to deal with the impacts of climate change; and
- Providing support for adaptation interventions to developing countries.

(European Commission, 2016b)

According to studies conducted by the World Bank, approximately 1.1 billion people globally lack access to electricity, with a further 2.9 billion people relying on fossil fuel or other biomass fuels to service their cooking and heating needs (African Development Bank, 2015). The World Bank also estimates that 4.3 million deaths per annum can be ascribed to the use of these fuels (African Development Bank, 2015) (African Development Bank, 2015): "*Africa has 640 million of its people who don't have access to electricity. A total of 7 million Africans have no access to clean energy and the majority use charcoal and kerosene. This always leads to deaths. We should stop this*", Akinwumi Adesina, the President of the AfDB, (African Development Bank, 2015) [sic].

Speaking at the COP21 in Paris, Adesina stated that it is regrettable that Africa is often referred to as a dark continent due to the lack of access to electricity by the majority of its residents (African Development Bank, 2015). Adesina continued by stating that the AfDB would also triple its financing to climate change initiatives by 2020 (African Development Bank, 2015).

Naoko Ishii, the Chairperson and CEO of the GEF stated, *"As the GEF moves forward with a new and innovative investment strategy, we are deeply committed to initiating and enhancing projects to more effectively deliver on the goals for gender equality while addressing the challenges mankind face on the global environment. These are not separate issues. Only by engaging partners, both women and men, can we reverse the negative trends threatening our ecosystems and save them for our future generation.*" (Global Environmental Facility, 2014a). On the 28th October 2014, at the 47th GEF Council in Washington DC, Ishii stated that as a result of the GEFs sixth replenishment (GEF-6), the (GEF) Facility had a fund of US$ 4.4 billion for the next four years (Global Environmental Facility, 2014a). Ishiialso stated that the GEF had more resources, a strategy that would propel the GEF to even greater heights, and an even stronger policy agenda (Global Environmental Facility, 2014a).

According to scientists from the Intergovernmental Panel on Climate Change (IPCC), Africa will be one of the continent's most severely impacted by climate change (Intergovernmental Panel on Climate Change, 2016). The impact of climate change is due to Africa's CO_2 emissions of approximately 650 million tons per annum from the energy and transport industries (Intergovernmental Panel on Climate Change, 2016). The main contributors of CO_2 emissions are power generation from coal in South Africa (approx. 350 million tons) and gas flaring in the Niger Delta (approx. 100 million tons) (Intergovernmental Panel on Climate Change, 2016). Figure 2.1 and Figure 2.2 present the comparison between emissions in several industrialised countries and emerging economies, demonstrating the rapid increase in emissions by these emerging economies in both relative and absolute figures (Olivier, Janssens-Maenhout, Muntean, & Peters, 2014). Since 1990, the European Union's (EUs) CO_2 emissions decreased from 9.2 to 7.3 tonnes per capita, the United States from 19.6 to 16.6 tonnes per capita, with China increasing from 2.1 to 7.4 tonnes per capita (Olivier *et al.,* 2014).

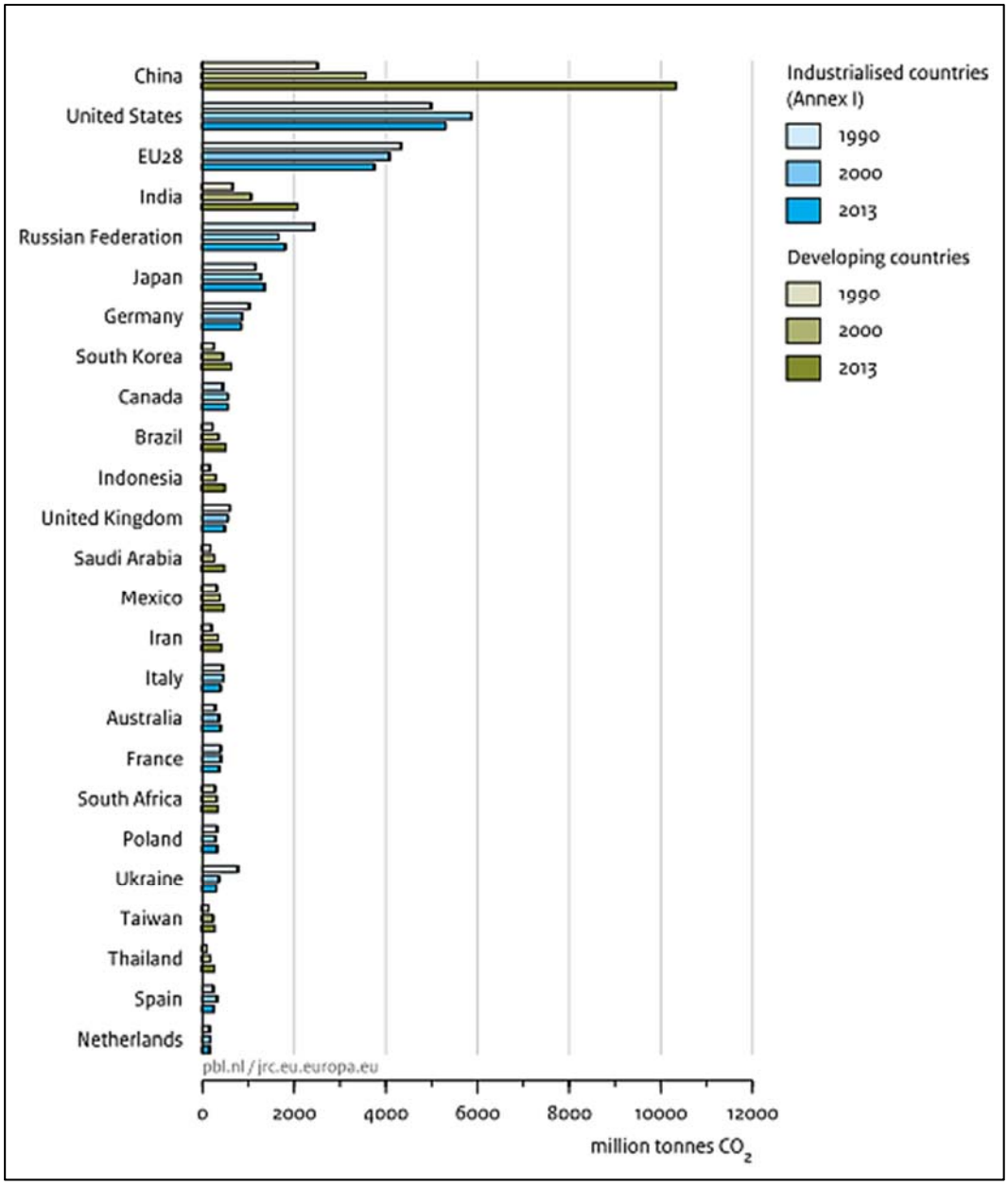


Figure 2.1: CO_2 emissions per country from fossil-fuel and cement production

Source: Olivier *et al.,* 2014

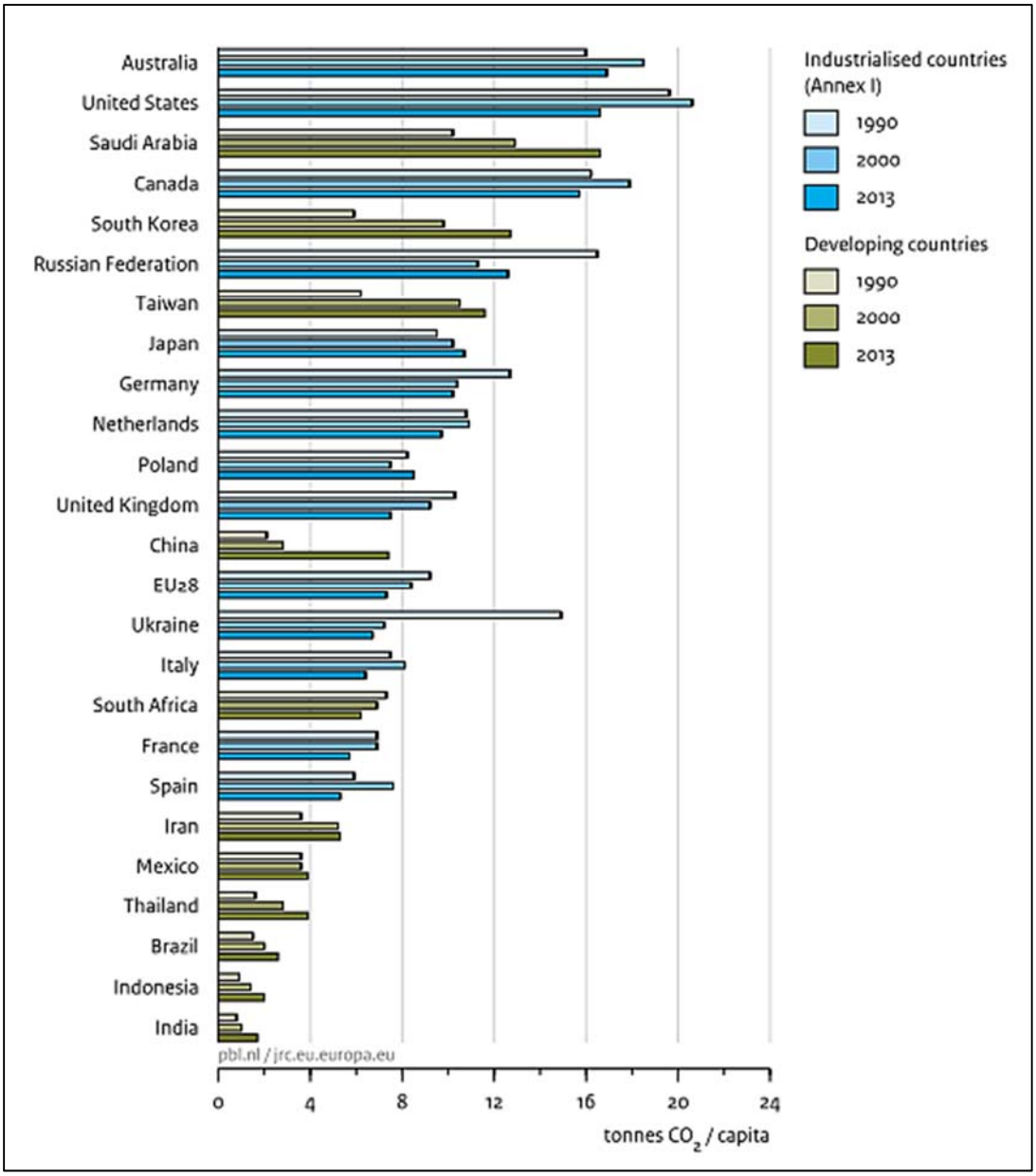


Figure 2.2: CO_2 emissions per capita from fossil-fuel use and cement production

Source: Olivier *et al.,* 2014

Figure 2.3 is based on data from the Emissions Database for Global Atmospheric Research (EDGAR) (European Commission, 2016a). The database was created by the European Commission and the Netherlands Environmental Assessment Agency and represents sovereign states and territories by carbon dioxide emissions (European Commission, 2016a). The carbon dioxide emissions are categorised based on specific forms of human activity, such as the burning of fossil fuels, cement manufacture, but not emissions from land use, land-use change, forestry, international shipping or bunker fuels (European Commission, 2016a).

From the data, it is evident that the top ten emitter countries account for 67.6% of the world's total with South Africa the highest emitter in Africa (European Commission, 2016a).

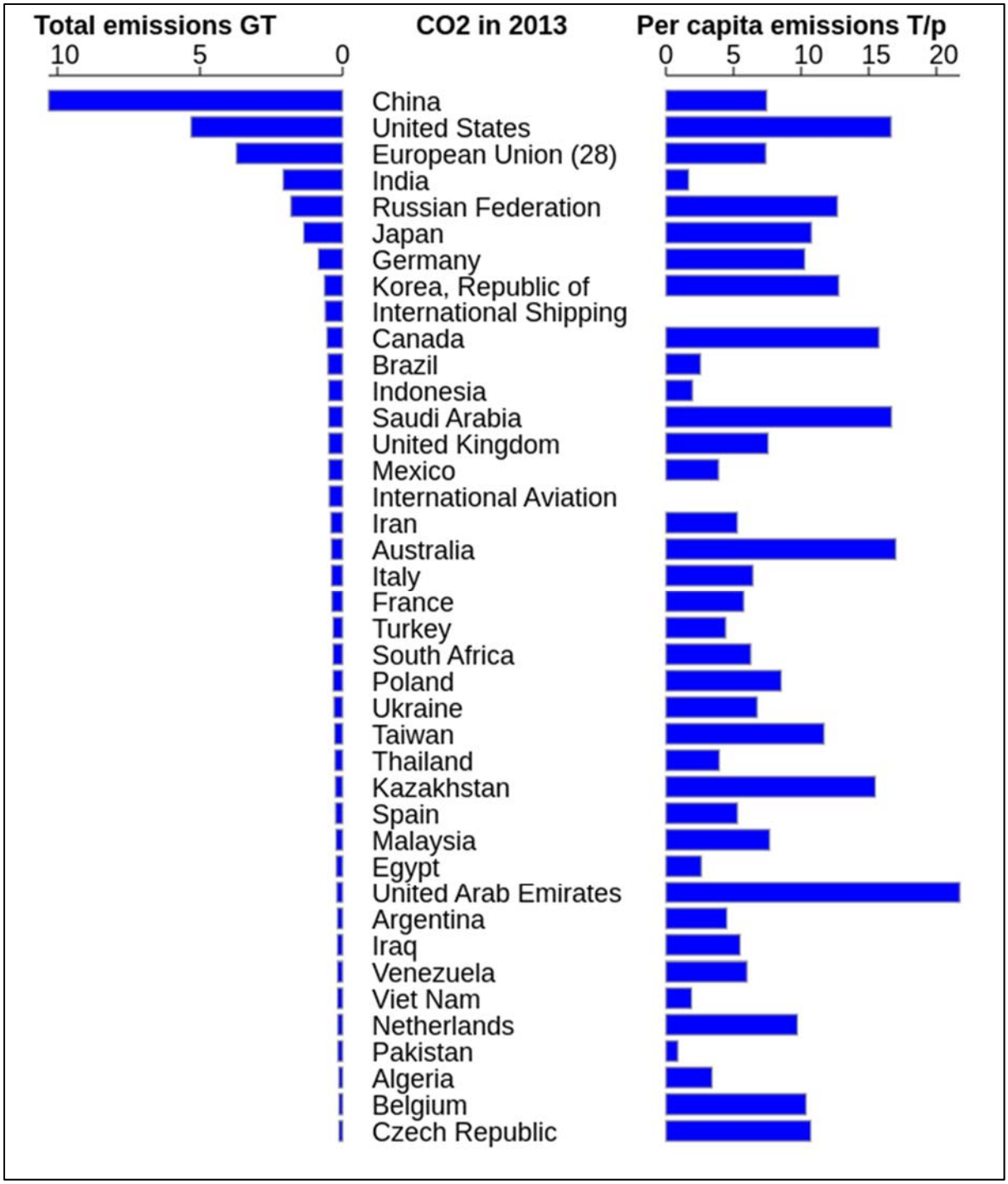


Figure 2.3: CO_2 emissions of the top 40 countries by total 2013 emissions

Source: Data from the European Commission's EDGAR database, 2016a

Figure 2.4 clarifies the RSA's CO_2 emissions within a continental perspective. It illustrates that South Africa is the highest emitter in Sub-Saharan Africa, and the continent at large (Grid Arendal, 2016).

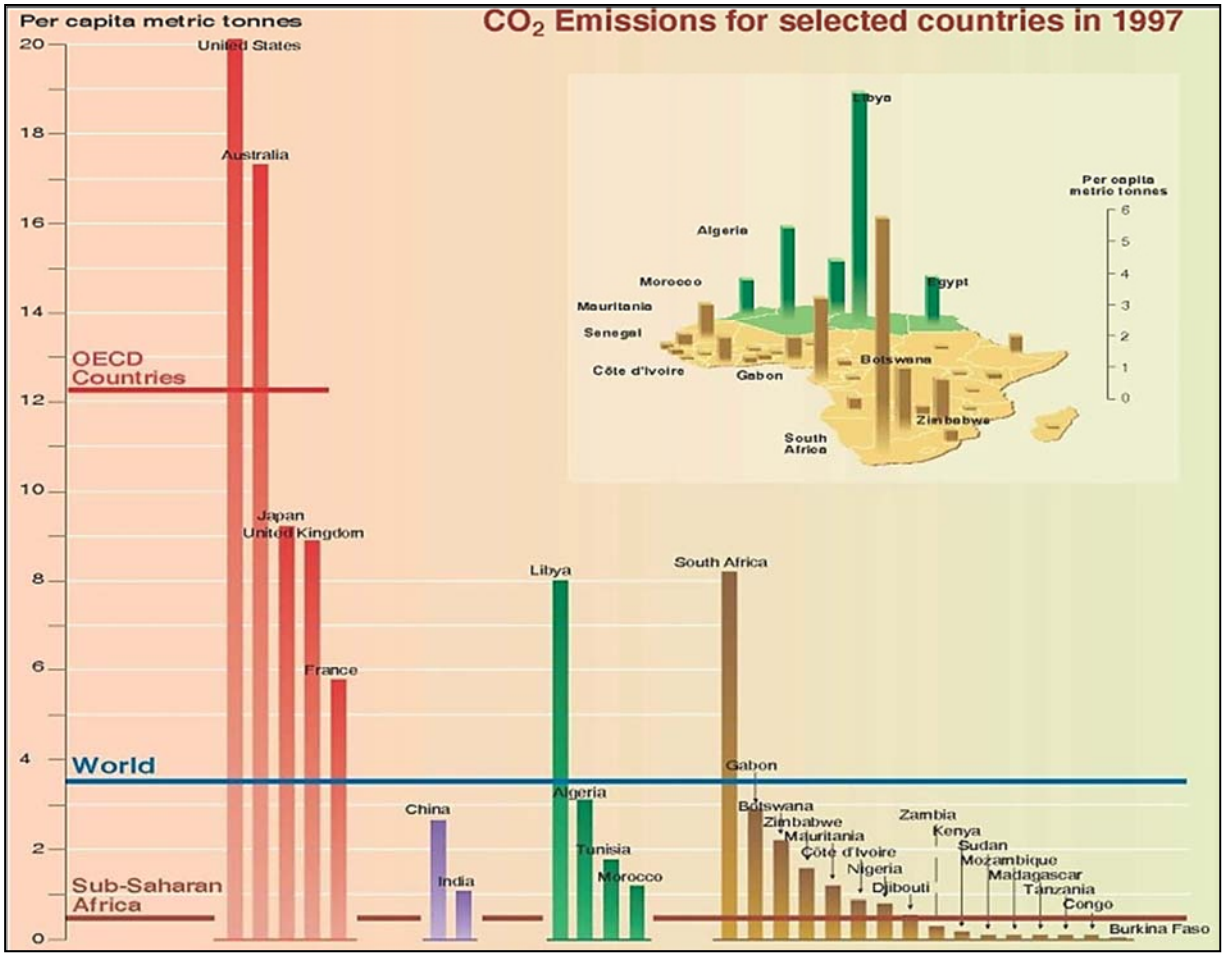


Figure 2.4: South African CO_2 Emissions from a Continental perspective

Source: Grid Arendal, 2016

The current South African government no longer allows Eskom exclusive rights to plan power and has mandated the Department of Energy (DOE) to produce an electricity plan for South Africa (Eberhard *et al.,* 2014). The electricity plan or the Integrated Resource Plan (IRP), was updated in 2013, for the period 2010 to 2030 (Eberhard *et al.,* 2014). For the first time, the IRP 2010-30 included a carbon emissions cap with renewable energy options, setting a 17.8 GW target for solar and wind energy capacity by 2030 (Eberhard *et al.,* 2014). The IRP forms the basis of decision making for the Minister of Energy, who periodically issues determinations about the quantity and source of new energy generation (Eberhard *et al.,* 2014).

The National Energy Regulator of South Africa (NERSA) is responsible for issuing licences for new capacity within the parameters of the ministerial determinations (Eberhard *et al.,* 2014).

South Africa, and consequently the South African economy, is heavily reliant on coal resulting which means South Africa has disproportionately high carbon emissions (Eberhard *et al.,* 2014). Eberhard *et al.,* (2014) state that although the official renewable energy policy was not very useful in implementing practical strategies, the policies to mitigate climate change have had a broader impact. Under the Kyoto Protocol, South Africa is a non-Annex one country and therefore has no obligations to reduce greenhouse gas emissions Eberhard *et al.,* (2014). Based on the research of Long-Term Mitigation Strategies commissioned by the Department of Environmental Affairs (DOEA), in 2009 President Zuma pledged at the Copenhagen COP that South Africa would reduce its CO_2 emissions (Eberhard *et al.,* 2014). The pledge by President Zuma was that by 2020 emissions would be reduced by 34%, and below 42% by 2025 (Eberhard *et al.,* 2014). The pledge by President Zuma was on the condition that South Africa would receive financial and technical support from the international community (Eberhard *et al.,* 2014).

The commitment by president Zuma in 2009 subsequently informed the development of the IRP 2010-2030, where the South African power sector contributed approximately half of South Africa's carbon emissions, setting an effective emissions cap of approximately 275 Mt/annum CO_2 equivalent (Eberhard *et al.,* 2014). During 2011, public and private sector representatives attending the COP17 in Durban agreed to 12 commitments in support of the South African's objective of creating 300,000 new jobs in the '*green economy*' by 2020 (Eberhard *et al.,* 2014). Figure 2.5 from the Department of Energy (2013) provides additional clarity on the legal and contractual framework of the REIPPPP. Figure 2.5 also demonstrates the complex stakeholder regime that the IPP has to navigate (Department of Energy, 2013b).

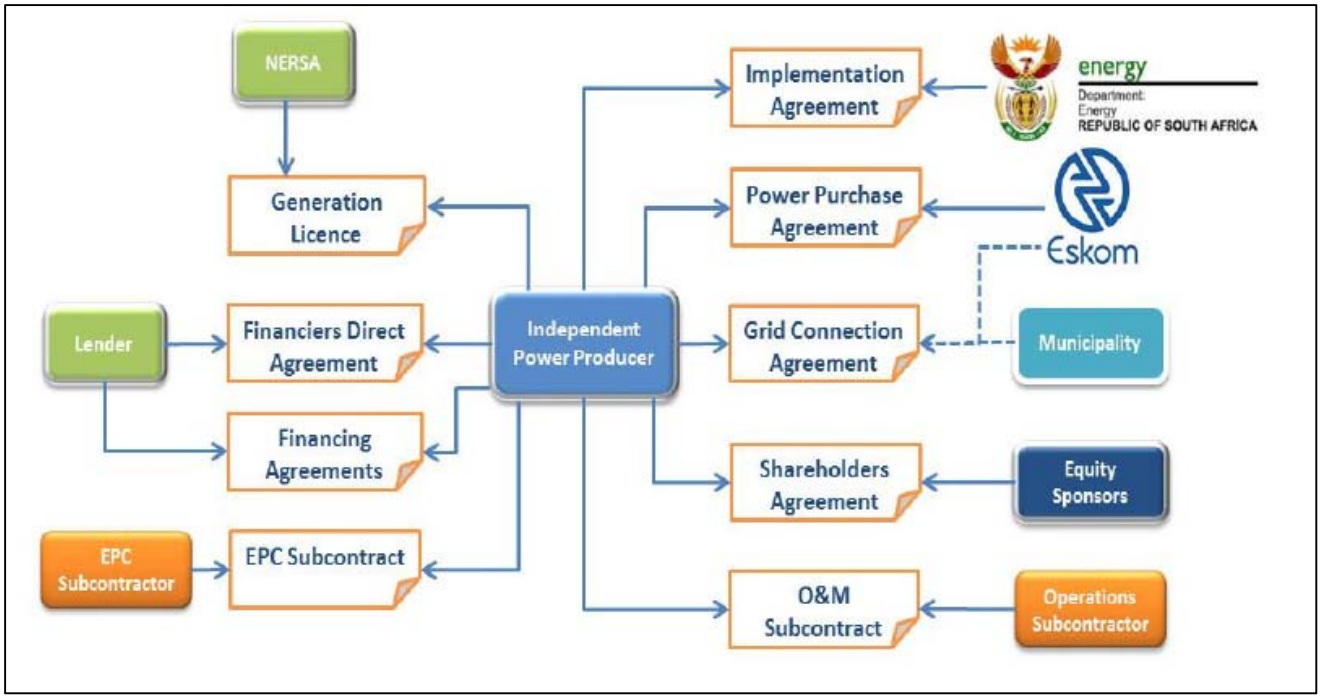


Figure 2.5: Legal and Contractual Framework of the REIPPPP

Source: Department of Energy, 2013

The complex Legal and Contractual Framework of the REIPPPP is summarised below:

- NERSA issues the generation licence;
- The Lender provides the funding and financial agreements;
- The Engineering, Procurement and Construction (EPC) subcontractor is responsible for the construction;
- The Operations Subcontractor is responsible for the daily operation of the plant;
- Equity Sponsors are responsible for Shareholder Agreements;
- The Municipality/Eskom for the Grid Connection Agreement;
- Eskom for the Power Purchase Agreement;
- The Department of Energy for the Implementation Agreement.

2.4. ECONOMIC DEVELOPMENT

The most controversy and uncertainty among the REIPPPP bidders was due to the firm reliance on non-price factors, namely the Economic Development requirements which were designed to incentivise bidders to promote job creation, local manufacturing, community development, and black economic empowerment

(Eberhard *et al.,* 2014). There were several reasons for the controversy; the international bidders were of the opinion that the economic development obligations were too demanding (Eberhard *et al.,* 2014), while the domestic bidders who had the support of the South African trade unions, were of the opinion that the economic development requirements were not sufficiently stringent (Eberhard *et al.,* 2014). The uncertainty was exacerbated as no guidance on how such plans should be prepared or how they would be evaluated was provided (Eberhard *et al.,* 2014). In addition, as the process matured after the three bidding rounds, the economic development requirements became more onerous (Eberhard *et al.,* 2014).

Eberhard *et al.,* (2014) state that the REIPPPPs elaborate Monitoring and Evaluation (M&E) System for rewarding and penalising the IPP against economic development targets raised concern regarding the resource requirements necessary to execute performance monitoring, decision making, imposition of penalties, dispute resolution, and mediation. The contractual aspects of the Economic Development obligations between the Department of Energy and the IPPs were embodied in the Implementation Agreement (IA) (Eberhard *et al.,* 2014). The IA incorporated a financial model that articulated the socio-economic benefits that communities within a 50 km radius of the renewable energy facility would derive over the twenty-year lifespan of the renewable energy facility (Eberhard *et al.,* 2014). According to Amansure & Adendorff (2015), the IPP is obligated to contribute to the socio-economic development of the RSA and create opportunities for citizens that were previously disadvantaged under the apartheid regime. Amansure & Adendorff (2015) further state that due to quarterly reporting, and the potential risk of termination points, the financial planning and management should be well planned to ensure the meaningful impact is delivered to the beneficiary communities.

The difference between B-BBEE and REIPPPP was that the REIPPPP emphasised black job creation over black ownership, and reclassified enterprise development and socio-economic development as local community development targets rather than Black Economic Empowerment (BEE) targets (Eberhard *et al.,* 2014). Government officials, therefore, viewed REIPPPP as a program that "*is inherently excellent for achieving positive socio-economic outcomes*" (Eberhard *et al.,* 2014).

Eberhard *et al.,* (2014) state that the standard IAs attached to the proposals by the winning bidders for signature by the DOE presented an elaborate quarterly reporting system for performance rewards and penalties, based against economic development commitments. Performance would be assessed quarterly with performance credits or penalties which would determine if the IPP owes the DOE penalty payments for under-performance during the period, with over-performance only used to off-set under-performance, and under-performance during a quarter resulting in *'termination points'* (Eberhard *et al.,* 2014). If the IPP did not take corrective action to address the underperformance and the termination points exceed the designated thresholds, the DOE has the authority to terminate the Implementation Agreement (Eberhard *et al.,* 2014). Table 2.1 expands on the economic development performance achieved by the IPPs with information sourced from the DOEs IPP Office and data that differs from DOE presentations (Eberhard *et al.,* 2014). The renewable energy projects in bid rounds one, two and three were projected to create approximately 20,000 temporary construction jobs and approximately 35,000 operational jobs.

Table 2.1: REIPPPP Economic Development Outcomes

Technology	**Round 1**	**Round 2**	**Round 3**
Solar PV			
Local content %	38.4%	53.4%	53.8%
Local construction jobs	2,381	2,270	2,119
Local operations jobs	6,117	3,809	7,513
Wind Energy			
Local content %	27.4%	48.1%	46.0%
Local construction jobs	1,810	1,787	2,612
Local operations jobs	2,461	2,238	8,506
Concentrated Solar Power			
Local content %	34.6%	43.8%	44.3%
Local construction jobs	1,883	1,164	3,082
Local operations jobs	1,382	1,180	1,730

Source: Eberhard *et al.,* 2014

2.4.1. Ownership, Quality Jobs versus Capacity Development

According to Eberhard *et al.*, (2014) the criteria of ownership, management control and jobs for South Africans amount to 45% of the non-price value of the bids.

This, he argues, might be misguided, as international best practices have indicated that the focus should be on local capacity building and domestic value-addition, irrespective of the nationality of the firms, employees, or investors. Eberhard *et al.,* (2014) further argue that although local ownership might be desirable, it is not the same as capacity building, which involves the development of managerial, technical, and operational skills in national corporations and the domestic labour force. To achieve the highest level of industrial capacity building policymakers should focus on fundamental policy deficiencies affecting infrastructure development, trade/industrial policy, and skills development and skills transfer, as these requirements will be additional costs for foreign operators and to the end users (Eberhard *et al.,* 2014). During round three, firms were encouraged to move away from local content that merely sourced products like support structures, towards the establishment of local manufacturing capacity for high-value components, like wind turbines and blades (Eberhard *et al.,* 2014). However, this approach created several risks, as global manufacturing of wind and PV components involve mature technologies and industries, and these industries are experiencing over-capacity and intense competition resulting in small profit margins (Eberhard *et al.,* 2014).

Eberhard *et al.*, (2014) also state that the REIPPPPs job figures are misleading as the unit of measure for operational jobs is person-years, calculated over the 20-year operational lifespan of the project. However, the measure for construction phase jobs is person-years calculated over the construction period which is typically 18 months. According to Eberhard *et al.,* (2014), the job statistics are highly aggregated to compare the statistics with other industries, but the comparisons are questionable as the measures are different for other industries. Overall the REIPPPPs job measurement is simplistic, where job creation is marketed to the public in a manner that is not necessarily entirely understood (Eberhard *et al.,* 2014). Eberhard *et al.,* (2014) further question the sustainability of local manufacturing in respect to the government-driven demand for renewable energy, and if sufficiently high prices can make the establishment of these manufacturing entities commercially viable.

There is a concern because power generation has lagged behind demand in an economic environment where consumers are already unhappy with the high cost of electricity (Eberhard *et al.,* 2014).

According to international experts, governments should encourage research and development in innovative renewable technologies that can create a new wave of early international or local movers, instead of protecting non-competitive local producers of standard, and possibly dated technology (Eberhard *et al.,* 2014).

2.4.2. Socio-Economic and Enterprise Development

The Economic Development obligations were sub-divided into a) Socio-Economic Development and b) Enterprise Development commitments which accounted for 20% of the non-price bid value of REIPPPP proposals (Eberhard *et al.,* 2014). The Economic Development obligations created confusion for many bidders, mainly because the bidders had to determine the needs of the surrounding communities within a 50 km radius of the project site (Eberhard *et al.,* 2014). The bidders then had to define a developmental strategy that would invest the Economic Development contributions generated by the power plant in the economic development of the surrounding communities (Eberhard *et al.,* 2014).

Eberhard *et al.,* (2014) further state that the DOE provided insufficient guidance in the tender documentation on how to prepare acceptable developmental plans, how to demonstrate possible benefits, or how the submissions would be scored. Experts at the Energy Research Centre (ERC) of the University of Cape Town (UCT) raised their concern that bidders had no prior community development experience, and that the lack of guidance would introduce severe risks to the development program (Eberhard *et al.,* 2014). The ERC considered that including the community development as part of the bid process, premature to develop meaningful socio-economic development plans, and the arbitrary 50 km radius requirement created the risk of dividing communities, villages and towns into beneficiaries and non-beneficiaries (Eberhard *et al.,* 2014).

The project developer also had the responsibility of informing communities about the economic development requirements because the bid documents and relevant guidance notes were never disclosed to the public (Eberhard *et al.,* 2014).

Other critics also raised concerns surrounding severe conflict of interest between developers and owners of the projects, where developers promised substantial community benefits to secure the necessary permits for the project (Eberhard *et al.,* 2014). In some instances where the owners were different from developers, the owners had to deliver on these promises (Eberhard *et al.,* 2014).

2.4.3. Community Trust Funds

The bidders also raised concerns about the direct financial benefits to local communities, in particular, the project dividends that flowed directly into the community trust (Eberhard *et al.,* 2014). The dividends from the Community Trust Fund would only be realised after several years of operation after the loans to service the equity/debt had been repaid (an estimated payback period of fifteen years, with an estimated operational life-span of twenty years) (Eberhard *et al.,* 2014).

This deferred financial benefit might also create disappointment with community leaders, and the community at large, who were expecting quick financial gains from REIPPPP, invariable this delayed pay-out might not have been clarified with the communities during the early project development stage (Eberhard *et al.,* 2014). Also, further concerns were raised regarding the capacity of the DBSA and the Industrial Development Corporation (IDC) to continue funding the community equity (Eberhard *et al.,* 2014).

2.4.4. Summary

At the heart of this issue is whether IPPs should be responsible for Economic Development, as the core business of the IPP is the efficient generation of energy. The IPP does not have the expertise or in-house skills for education, healthcare, and a myriad of other Socio-Economic Development practices that are/should be the domain of government. Also, the consequences of entities that lack the requisite experience interfering in education and healthcare can be devastating to the communities.

There are the unintended consequences of the disparate Socio-Economic Development and Enterprise Development initiatives and using education as an example; there might come a time when potentially all these initiatives will have to be consolidated. Of even more significant concern are the parallels that can be drawn between the equivalent Social and Labour Plans (SLPs) in the mining sector that has created inter-community tensions between the communities that benefit from the mining operation and their projects, and those communities that do not benefit. The renewable energy sector has similar practical challenges as it has demarcated communities within a 50 km radius of the power generation plants as beneficiaries. To add a further layer of complexity, the Community Development Trust, which promises to generate significant proceeds after an estimated 15 years of operation will only succeed in creating higher expectations within these depressed communities. As the Socio-Economic Development and Enterprise Development initiatives deliver increasing impact, the expectation will continue to increase from both the beneficiary and non-beneficiary communities.

Over time, the communities will become increasingly aware of the funds generated by the REIPPPP regarding the Economic Development and Community Trust Fund proceeds that the IPPs are generating. In the worst-case scenario, from the experience of the mining sector, at this juncture, when the communities become aware of the (substantial) funds available, the renewable energy operations could be forcibly stopped from operating by the communities.

Finally, one argument is that the Economic Development contributions are in effect a form of tax, and should be levied as such, and, possibly, these proceeds should contribute to a sovereign wealth fund.

2.5. REIPPPP ARCHITECTS

This section will review the parties that constructed the REIPPPP and the factors that contributed (or did not contribute) to mainstreaming gender. Furthermore, this section investigates the contribution that these multinational entities made towards mainstreaming gender and the capacitation of women within the renewable energy sector.

It will also review the parties that might have exhibited the requisite developmental expertise that would translate the Economic Development strategy into sustainable Socio-Economic Development and Enterprise Development projects.

2.5.1. REIPPPP Management Team

The team leader for the REIPPPP team was a credible senior manager from the National Treasury's Public-Private Partnership (PPP) Unit and was supported by additional legal and technical experts (Eberhard *et al.,* 2014). Eberhard *et al.,* (2014) consider the management style of the REIPPPP management team to have played an essential role in the successful implementation of the REIPPPP. Eberhard *et al.,* (2014) also point out the extensive contracting of private local and international advisers/consultants to assist with the design and management of the program, to review bid proposals, and to incorporate lessons learnt into the program. Table 2.2 provides further details of the evaluation consultants and advisors to the REIPPPP:

Table 2.2: REIPPPP Evaluation Consultants/Advisors

International Reviewers	**Legal:** Linklaters (UK)
	Technical: Tony Wheeler Consulting (UK)
	Governance: Ernst & Young
Project Management	SPP Project Solutions
Legal Evaluation	Bowman Gilfillan
	Edward Nathan Sonnebergs (ENSafrica)
	Ledwaba Mazwai
	Webber Wentzel
Technical Evaluation	Mott MacDonald
Financial Evaluation	Ernst & Young
	PwC

Source: Eberhard *et al.,* 2014

Figure 2.6 presents an organogram of REIPPPP consultants/advisors and highlights the international consultants, that are mainly constituted by financial and legal entities. There appears no entity that represents the Economic Development expertise, or the expertise to mainstream gender.

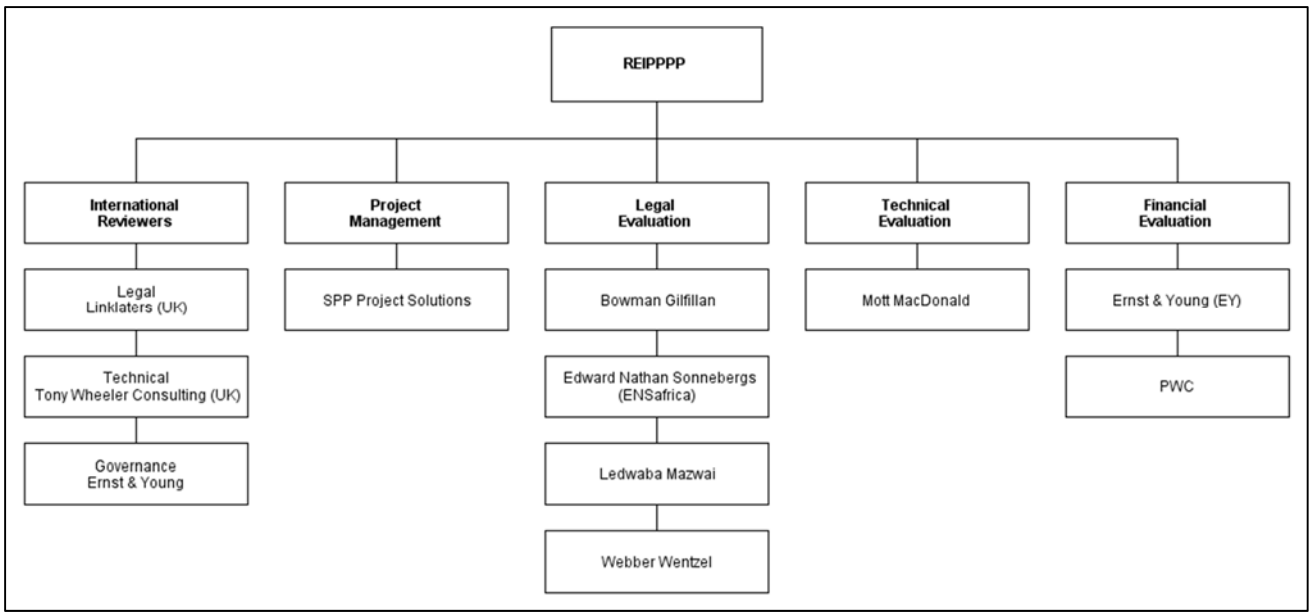


Figure 2.6 Organogram of REIPPPP Consultants/Advisors

Source: Researcher's construction

Table 2.3 gives an overview of the history of each of the consultants/advisors in order to highlight the interconnections between each of the entities. It is essential to understand these interrelations as this was the core body that would drive the REIPPPP and the resultant socio-economic empowerment of women within the renewable energy sector of RSA. The responsibility and accountability for the success or failure of the Economic Development strategy should therefore ultimately rest with these architects of the REIPPPP.

Table 2.3: Background of Consultants/Advisors

International Reviewers	
Legal: Linklaters (UK)	Linklaters was established in 1838 when John Linklater formed a partnership with Julius Dods and formed Dods & Linklaters, a London based firm of solicitors (Linklaters, 2017). During 1920 Linklaters merged with Paine, Blyth & Huxtable, forming Linklaters & Paines. Offices were established in Milan (1962), New York (1972), Brussels (1973), Paris (1973), Hong Kong (1976), Tokyo (1987), Singapore (1992), Frankfurt (1992), Moscow (1992), São Paulo (1997), Bangkok (1998), Shanghai (1998) and Madrid (1999) (Linklaters, 2017). In 1998, an alliance was formed between Linklaters & Paines and several European law firms: De Bandt, van Hecke, Lagae & Loesch (Belgium and Luxembourg), Lagerlöf &

	Leman (Sweden) and Oppenhoff & Rädler (Germany) (Linklaters, 2017). The firm was rebranded as Linklaters. It subsequently opened offices in Beijing (2002), Lisbon (2002), Dubai (2006), Düsseldorf (2007), Abu Dhabi (2011), Allens of Australia (2012), and **Webber Wentzel of South Africa (2013)** (Linklaters, 2017).
Technical: Tony Wheeler Consulting (UK)	At the time of research, a Google search for *"Tony Wheeler Consulting"* did not produce a company website. However, a further search delivered a sparse LinkedIn profile: https://www.linkedin.com/company/tony-wheeler-consulting-limited/.
Governance: Ernst & Young	Ernst & Young (EY) started in 1980 when Arthur Young, originally from Glasgow, Scotland, relocated to the United States to pursue his accounting profession. In 1906 with his brother Stanley, he formed an accounting company, Arthur Young & Company (Ernst and Young, 2017). During the same period, in 1903, Alwin C Ernst from Cleveland, USA, with his brother Theodore, established a small public accounting firm called Ernst & Ernst (Ernst and Young, 2017). In 1924 both companies entered the global arena and allied with prominent British companies, Young & Co. with Broads Paterson & Co, and Ernst & Ernst with Whinney Smith & Whinney (Ernst and Young, 2017). In 1989 the two companies' combined to create Ernst & Young (Ernst and Young, 2017).
Project Management	
SPP Project Solutions	SPP Project Solutions (Pty) Limited (SPP) was founded in 2003 as a collaboration between SPP Investment Banking Corporation (Pty) Limited, G5 Specialised Finance (Pty) Limited, and Trans SA (Pty) Limited. SPP specialises in project advisory services, namely, financial, legal and technical solutions (SPP Projects, 2017).
Legal Evaluation	
Bowman Gilfillan	In 1998, the merger of three legal entities: Bowman Gilfillan Hayman Godfrey (est. 1902), Findlay & Tait (est. 1885), and John & Kernick (est. 1923), resulted in the formation of Bowman Gilfillan (Bowman Gilfillan, 2017).
Edward Nathan Sonnebergs (ENSafrica)	Edward Nathan & Friedland was formed in 1905. In 1999, Edward Nathan & Friedland was acquired by Nedbank for R400 million (ENSafrica, 2014). The acquisition of Edward Nathan & Friedland by Nedbank led to an exodus of clients and lawyers. Consequently, Nedbank sold Edward Nathan & Friedland back to the 47 directors for R50 million in 2004 (ENSafrica, 2014). During 2006, the

	Johannesburg based firm Edward Nathan & Friedland merged with Cape Town-based law firm Sonnenberg Hoffmann & Golombik which was established in 1936, forming Edward Nathan Sonnenbergs (ENS) (ENSafrica, 2017).
Ledwaba Mazwai	In 1996, Metja Ledwaba and Lungile Mazwai established the law firm Ledwaba Mazwai to showcase the capabilities and excellence of black legal practitioners in a sector from which they were historically excluded (Ledwaba Mazwai Attorneys, 2017). Ledwaba and Mazwai gained their experience with established law firms which would provide them with the necessary expertise in commercial law to deliver legal services to government, institutional and corporate clients (Ledwaba Mazwai Attorneys, 2017).
Webber Wentzel	The Webber Wentzel law practice was founded in the Eastern Cape in 1868 by Edward Solomon. In 1904, Edward Solomon partnered with Henry Hull, Walter Webber and Charles Wentzel (Nicol, 2006). In 1918, Webber & Wentzel merged with Hudson & Frames, forming Webber Wentzel Solomon & Friel. Then in 1972, Webber Wentzel Hofmeyr Turnbull and Co. merged with Dumat Pitts & Blaine. In 1976, former Webber Wentzel partner Eric Pfaff, established a Webber Wentzel presence in Luxembourg, and in 1994, Webber Wentzel merged with Bowen, Sessel & Goudvis to form Webber Wentzel Bowens. In 2008, Webber Wentzel Bowens merged with Cape Town-based firm, Mallinicks, resulting in the dissolution of the association between Webber Wentzel and the Maitland Group. In 2012, Webber Wentzel became affiliates to the African Legal Network (ALN), and during 2013 allied with global law firm Linklaters (Nicol, 2006).
Technical Evaluation	
Mott MacDonald	The Mott MacDonald Group is a multidisciplinary consultancy based in the United Kingdom which was formed in 1989 through a merger of Mott, Hay and Anderson with Sir M MacDonald & Partners, providing engineering and management services (Mott MacDonald, 2017).
Financial Evaluation	
Ernst & Young	See above.
PricewaterhouseCoopers (PwC)	In 1849, Samuel Lowell Price founded an accountancy practice in London. In 1865, Price joined with William Hopkins Holyland and Edwin Waterhouse. Holyland left shortly after the merger and from

	1874 the company was known as Price, Waterhouse & Co. (G. Allen & McDermott, 1993). In 1890, Price Waterhouse established an office in New York. Then in 1904, the original British firm established an office in Liverpool, with further offices across Britain and worldwide. In 1989, Price, Waterhouse and Arthur Andersen explored a potential merger. However, the negotiations failed due to conflicts of interest, and the radically different cultures of both companies (G. Allen & McDermott, 1993). In 1854, William Cooper founded the Cooper Brothers in London. Half a century later, in 1898, in the United States, Robert H. Montgomery, William M. Lybrand, Adam A. Ross Jr. and his brother T. Edward Ross created Lybrand, Ross Brothers and Montgomery. The formal merger between the two companies occurred in 1957 when the Cooper Brothers, Lybrand, Ross Bros & Montgomery, and a Canadian company McDonald, Currie and Co., agreed to adopt the name Coopers & Lybrand to form a global practice. In 1973, the three-member companies in the United Kingdom, United States of America and Canada changed their names to Coopers & Lybrand, and in 1980 Coopers & Lybrand acquired Cork Gully, a UK based entity. In 1990, Coopers & Lybrand merged with Deloitte Haskins & Sells to form Coopers & Lybrand Deloitte, but just two years later, in 1992, Coopers & Lybrand Deloitte reverted to Coopers & Lybrand (G. Allen & McDermott, 1993). In 1998, Price Waterhouse merged with Coopers & Lybrand and created PricewaterhouseCoopers (PwC). In 2000, PwC acquired Omnilogic Systems, Canada's most significant consulting partner in data processing for Systems, Applications and Products (SAP). In October 2002, PwC sold the entire consultancy business to IBM for approximately $3.5 billion in cash and stock, and PwC's consultancy business was absorbed into IBM Global Business Services. From 2009 to 2013, PwC started rebuilding its consulting practice by acquiring the Paragon Consulting Group, BearingPoint Diamond Management & Technology Consultants, PRTM, Logan Tod & Co, Ant’s Eye View, BGT and Booz & Company, combing with PwC to create Strategy& (G. Allen & McDermott, 1993).

	The following section of PwC's commitment to the crypto-currency market is included below to illustrate further opportunities for the socio-economic empowerment of women. By acquiring the crypto-currency expertise, women could also make significant strides in the emerging technology. In 2015, PwC published a report called *"Money is no object: Understanding the evolving crypto-currency market,"* (G. Allen & McDermott, 1993). The report concluded that cryptocurrency would replace conventional markets with new technology-driven markets. In October 2016, PwC and InvestCloud entered into a non-exclusive joint business relationship in order to accelerate the adoption and implementation of the InvestCloud Digital App Platform (G. Allen & McDermott, 1993). In November 2017, PwC became the first of the Big Four accounting firms to accept bitcoin as payment for advisory services (G. Allen & McDermott, 1993). The PwC's Hong Kong office also accepted the cryptocurrency with regards to services from local companies that focus on blockchain technology and cryptocurrencies (G. Allen & McDermott, 1993). During January 2017, PwC announced a five-year agreement with General Electric (GE) to deliver managed tax services to GE on a worldwide basis, consequently transferring more than 600 of GEs in-house global tax team to PwC (G. Allen & McDermott, 1993). The agreement also meant that PwC would acquire GEs tax systems, offer managed services to GE, and to various other PwC clients (G. Allen & McDermott, 1993).

Source: Researcher's construction

To conclude this section, a necessary question concerns what substantive opportunities were created for women by the international Consultants/Advisors? The cost of these consulting services would presumably have been quite significant at the outset of the REIPPPP. By comparison, the cost associated with developing policy for the socio-economic empowerment of women would have been insignificant. The International Reviewers, Legal Evaluation, Technical Evaluation and Financial Evaluation were mainly British and US law and accounting firms that had evolved since the 1800's through acquisitive growth.

The international Consultants/Advisors appear to have had little appreciation for the socio-economic realities within the RSA, a point that was highlighted in the frustration of the international bidders and the attempts of the IPPs to comply with their Economic Development obligations. This means that there has been limited evidence for the mainstreaming of gender from the outset of the projects. The implications are that mainstreaming of gender must now be retrofitted, rather than being an integral part of the planning and design at the inception of the REIPPPP.

2.5.2. Extended REIPPPP Management Team

A subsequent list of international and local consultants and advisors published by the IPP Office for the *"Cogeneration IPP Procurement Programme"* listing the local advisory companies that were included later into the REIPPPP is outlined in Table 2.4 (Department of Energy's IPP Office, 2015).

Table 2.4: International and Local Consultants/Advisors

Project Stream	**Advisor Company**	**Representatives**
Programme Management	J Maynard (Pty) Ltd	John Samuel
Technical	Aurecon South Africa (Pty) Ltd	Ashley Grohn
		Warrick Pierce
		Tony Sproule
		At van der Merwe
	Mott MacDonald P.D. Naidoo (Pty) Ltd	Bob Ashley
		Clare Rhodes James
		Rashaan Arscott
		Fezile Sibande
	Tony Wheeler Consulting	Tony Wheeler
Legal	Webber Wentzel in alliance with Linklaters	Brigette Baillie
		Garyn Rapson
		Mzukisi Kota
		Andrew Russell
		Simonne Morley
		Alexandra Sourvas
		Kirsty Gilmour
	Ledwaba Mazwai Attorneys	Metja Ledwaba
		Lungile Mazwai

		Viola Ngwenya
		Wezi Phiri
	Wragge & Co LLP	Jonathan Brufal
		Kieron Dwyer
	Bowman Gilfillan Inc	Daryn Webb
		Clare Tucker
	Edward Nathan Sonnenbergs Inc.	Pippa Reyburn
		Georgina Robinson
Financial	J Maynard (Pty) Ltd	Darron Johnson
		Mike Fitzpatrick
		Paul Wroblicki
		Anand Moodley
		Sharnell Maharaj
	EY	Jeff Gibbon
Economic Development	Letsema Consulting and Advisory (Pty) Ltd	Sizwe Kuzwayo
	Empowerdex (Pty) Ltd	Steven Hawes
	Genesis Analytics (Pty) Ltd	Paul Jackson
		Paul Zille

Source: Department of Energy's IPP Office, 2015

Table 2.4 above has been included to demonstrate the expertise of each of the International and Local Consultants/Advisors. This core body that would be responsible for the successful implementation of the REIPPPP and the resultant socio-economic empowerment of women within the renewable energy sector of the RSA.

2.6. RESOURCES

Funding of the REIPPPP was initially facilitated through a memorandum of agreement (MOA) between the Department of Energy, the South African National Treasury, and the DBSA (Eberhard *et al.,* 2014). The latter provided a share of senior debt on the projects and ZAR 80 million for consultants, a project office, and capacity building (Eberhard *et al.,* 2014). Additional funding for technical assistance was made available by several bi-lateral donor agencies, including those representing Denmark, Germany, Spain, and the United Kingdom (Eberhard *et al.,* 2014).

A US$ 6 million grant was also secured for advisory services from the World Bank's Global Environment Facility (GEF) under the Renewable Energy Market Transformation Project (Eberhard *et al.,* 2014). At the end of 2010, the external donors advised that the REFIT process could not proceed which gave rise to the REIPPPP's tender process, with the National Treasury responding by making ZAR 100 million available. A portion of this amount was used to repay the DBSA (Eberhard *et al.,* 2014).

2.7. REIPPPP PROCESS

2.7.1. Bid Evaluation Phase

The bid evaluation process was divided into two phases, where bidders had to satisfy certain minimum thresholds in six areas, namely, environment, land, commercial and legal, economic development, financial, and technical criteria (Eberhard *et al.,* 2014). The environmental review examined approvals, the land review assessed tenure, lease registration, and proof of land use applications (Eberhard *et al.,* 2014). The commercial review assessed the project structure and the Power Purchase Agreement (PPA), while the financial review considered the financial models used by the evaluators (Eberhard *et al.,* 2014). Technical specifications were defined for each of the technologies (Eberhard *et al.,* 2014). Wind developers had to produce wind data collected over a twelve-month period for the designated site and an independently verified generation forecast (Eberhard *et al.,* 2014).

Bids that were considered to meet the thresholds then proceeded to the second phase of evaluation process (Eberhard *et al.,* 2014). The bid price accounted for 70% of the total score, and the remaining 30% was scored according to job creation, local content, ownership, management control, preferential procurement, enterprise development and socio-economic development (Eberhard *et al.,* 2014).

Bidders also had to provide two prices, one which was entirely indexed for inflation and a price that was partially indexed. Initially, bidders had the discretion to determine the split, but this was changed in subsequent bid rounds where floors and caps were instituted (Eberhard *et al.,* 2014). At the end of 2016, four bid rounds had been completed. The round four bidders began to commission their operations by the latter part of 2016 (Energy Intelligence, 2016). Bid round five projects, which began in 2017, covered onshore wind, solar photovoltaic, concentrated solar power, biomass, landfill gas, small hydropower, and biogas energy solutions (Energy Intelligence, 2016). Figure 2.7 below depicts the renewable energy power plants across the RSA:

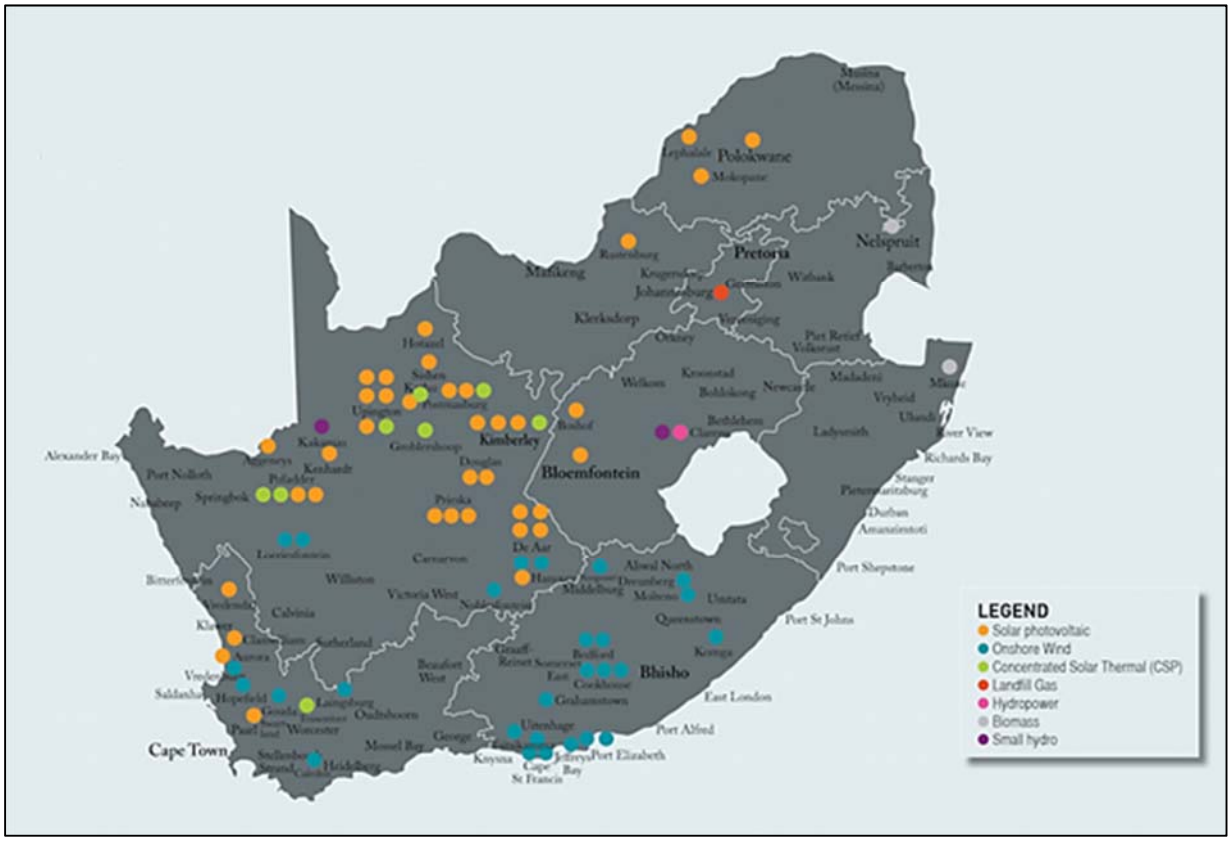


Figure 2.7: Renewable Energy Power Plants

Source: Energy Intelligence, 2016

2.8. FINANCING STRUCTURE

Project finance has been the norm as a financing structure for the REIPPPP, except for bid round three, which allowed corporate financing arrangements (Eberhard *et al.,* 2014). Commercial banks provided the most significant share of debt funding at ZAR 57 billion. The balance of debt funding was provided by Development Finance Institutions (DFI) to the extent of ZAR 27.8 billion and pension and insurance funds contributing ZAR 4.7 billion (Eberhard *et al.,* 2014). South African entities raised 86% of the debt financing with a debt tenor typically extending between 15 to 17 years from Commercial Date of Operation (COD) (Eberhard *et al.,* 2014). Debt funding typically implies borrowing funds and not relinquishing ownership of a project, in contrast to equity funding which implies issuing additional shares of common stock to an investor (Surbhi, 2015). However, in addition to repaying the interest and the principal debt on specified dates, debt financing has strict conditions or covenants (Surbhi, 2015). Table 2.5 provides a more detailed comparison between debt and equity financing, and also reflects the financial stresses and resulting behaviour that shareholders might exhibit (Surbhi, 2015).

Table 2.5: Comparison Chart between Debt and Equity Financing

Basis for Comparison	Debt	Equity
Meaning	Funds owed by the company towards another party is known as Debt.	Funds raised by the company by issuing shares is known as Equity.
What is it?	Loan Funds	Own Funds
Reflects	Obligation	Ownership
Term	Comparatively short term	Long-term
Status of holders	Lenders	Proprietors
Risk	Less	High
Types	Term loan, Debentures, Bonds etc.	Shares and Stocks.
Return	Interest	Dividend
Nature of return	Fixed and regular	Variable and irregular
Collateral	Essential to secure loans, but funds can be raised otherwise also.	Not required

Source: Surbhi, 2015

According to Energy Intelligence (2016), REIPPPP funding is delivered via several foreign private equities, local private equity, and large commercial and development banks. Some of that funding consists of local private equity funds for black economic empowerment that represent the surrounding communities. As of March 2016, the approved REIPPPP projects amounted to R 192.6 billion rand of which 28% was derived from foreign investment (Energy Intelligence, 2016).

Table 2.6: Companies involved in REIPPPP by geography

IPPs, Project Developers		**Project Financiers, Equity Firms**	**OEMs, Suppliers**
Americas	BrightSource Energy (U.S.) Globeleg (U.S.) SkyPower (Canada) SolarReserve (U.S.) SunPower (U.S.) SunEdison (U.S.)	International Finance Corporation (U.S.) Overseas Private Investment Corporation (U.S.)	First Solar (U.S.) SunPower (U.S.)
Asia	China Longyuan Power (China) Shapoorji Pallonji Group (India)	China Development Bank (China) Industrial and Commercial Bank of China (China)	JinkoSolar (China) ReneSola (China) Vikram Solar (India)
Europe	Abengoa (Spain) Acciona Energia (Spain) Building Energy (Italy) EDF Energies Nouvelles Enel Greenpower (Italy) Engle (France) Grupo Cobra (Spain) Juwl Renewable Energies (Germany) Mainstream Renewable Power (Ireland) Norwegian Investment Fund (Norway) Scatec Solar (Norway) Solafrica (Switzerland) Solairedirect (France)	Actis Africa (UK) Deutsche Bank (Germany) Investec (UK)	ABB (Switzerland) Elettronica Santemo (Italy) Energia Ercam (Spain) FG.de (Germany) Grid Renewable Industries (Spain) Nordex SE (Germany) Siemens (Germany) SMA (Germany) Vestas (Denmark)
Middle East	ACWA Power (Saudi Arabia)		

South Africa	AE AMD Renewable Energy Afri-Devo Ample Solar CEF Group Enzani Technologies Emvelo Ennex Developments Eskom Mulilo Renewable Energy Old Mutual Life Assurance Company Red Cap Investments Simacel Solar Capital Thebe Investment Corporation Usizo Engineering	ABSA Bank African Infrastructure Investment Managers Industrial Development Corporation Nedbank Public Investment Corporation Rand Merchant Bank Standard Bank	ARTsolar DCD Wind Towers

Source: Energy Intelligence, 2016

As of 2014, the three REIPPPP bid rounds received proposals from domestic and international project developers, project sponsors, equity shareholders, banks, insurers, DFIs, and international utilities (Eberhard *et al.,* 2014). According to Eberhard *et al.,* (2014), 64 private sector projects implemented within a two-and-a-half year period were awarded a private sector investment of US$ 14 billion generating 3,922 megawatts of renewable energy. More than 100 different shareholder entities participated in the 64 projects, with 46 of these shareholder entities, or slightly less than 50% of these shareholder entities participating in more than one project (Eberhard *et al.,* 2014). As of May of 2015, the REIPPPP had approved 79 wind, solar and hydro projects on the basis that the IPPs contribute towards local community development through socio-economic and enterprise development, local ownership and local job creation (Wlokas, 2015a). Table 2.7 shows the number and value of renewable energy projects.

Table 2.7: Renewable Project Investment

	Projects	Generation	Private Sector	Commercial Banks	Development Finance Institutions	Pension, Insurance Funds	No of Shareholder Entities	Number of shareholders with more than one
2014	64	3,922 MW	US$14bn	R57bn	R27.8bn	R4.7bn	100	46

Source: Eberhard *et al.,* 2014

According to Wlokas (2015a), an estimated ZAR 11.5 billion in CSI revenues will be generated by the renewable energy sector, and the Northern Cape will receive the majority of this CSI funding. Figure 2.8 shows the project process, the generation of CSI funds, and the jobs created.

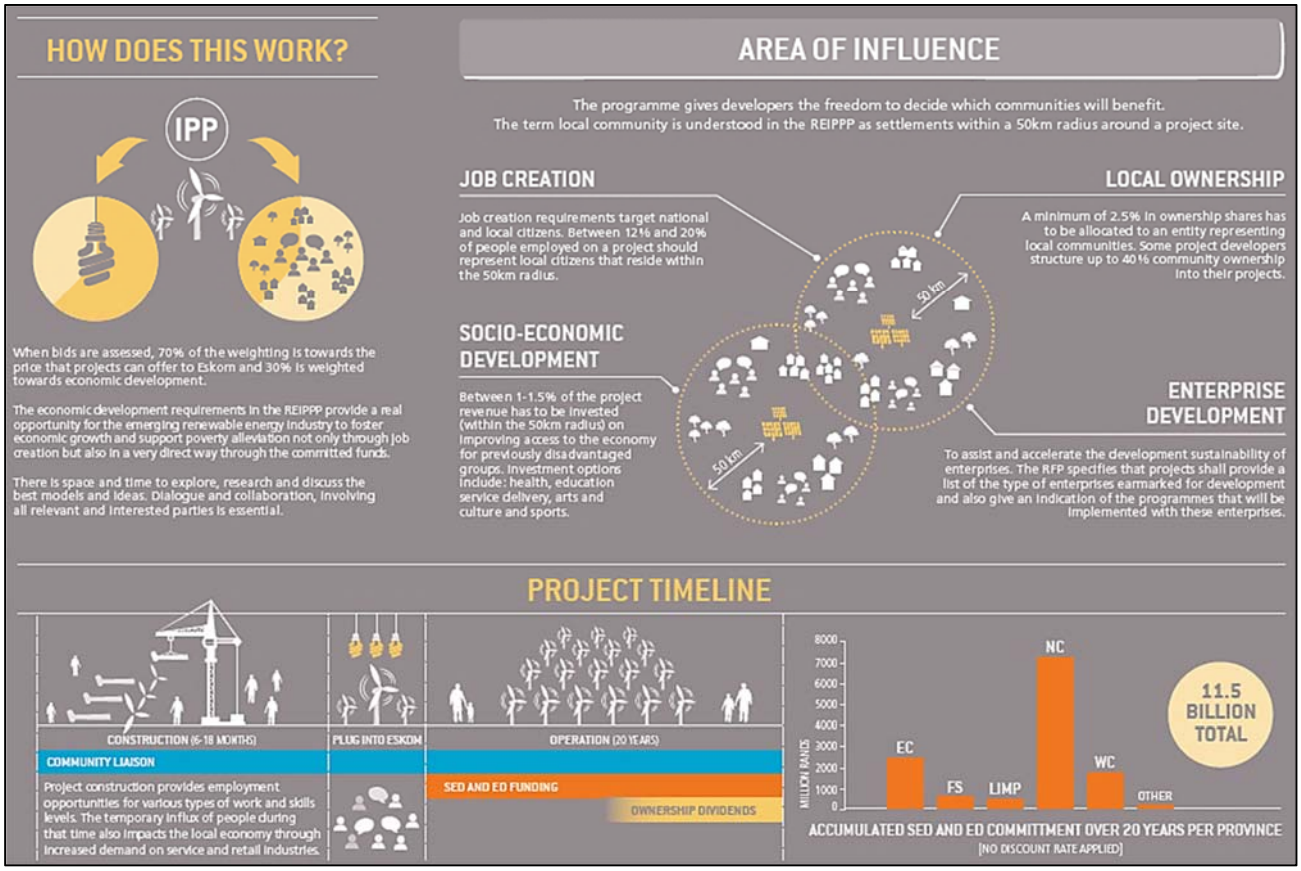


Figure 2.8: Renewable Energy Sector in South Africa

Source: Wlokas, 2014

2.9. PRIVATE SECTOR ACTORS

This section argues that the private sector is driven by a need to offer tangible, commercial benefit to their investors and stakeholders, as well as servicing their obligations to repay and to service the loan agreements. Therefore, the motivation to mainstream gender and promote the socio-economic development of surrounding communities will be a secondary, if not a tertiary, driver since they are not activities which provide tangible profit or monetary revenue but are simply an obligation to be fulfilled. However, mainstreaming gender can be shown to have important beneficial effects on the long-term socio-economic development of the local communities concerned. Therefore, countries embarking on a similar REIPPPP should incorporate mainstreaming gender, and the socio-economic development approaches from the outset, and infuse these requirements into the upfront policy statements.

2.9.1. Project Sponsors

There were several equity partners including Old Mutual, Standard Bank of South Africa, and the Industrial Development Corporation (IDC) (Eberhard *et al.,* 2014). There were also professional funding organisations, for example, the Africa Infrastructure Investment Fund, and sponsors such as Mainstream, Mulilo, and Thebe (Eberhard *et al.,* 2014). Enel Green Power, an Italian utility, secured six successful projects in bid round three (Eberhard *et al.,* 2014). Figure 2.9 provides further information relating to the REIPPPP shareholders, graphically presented by the number of projects per shareholder.

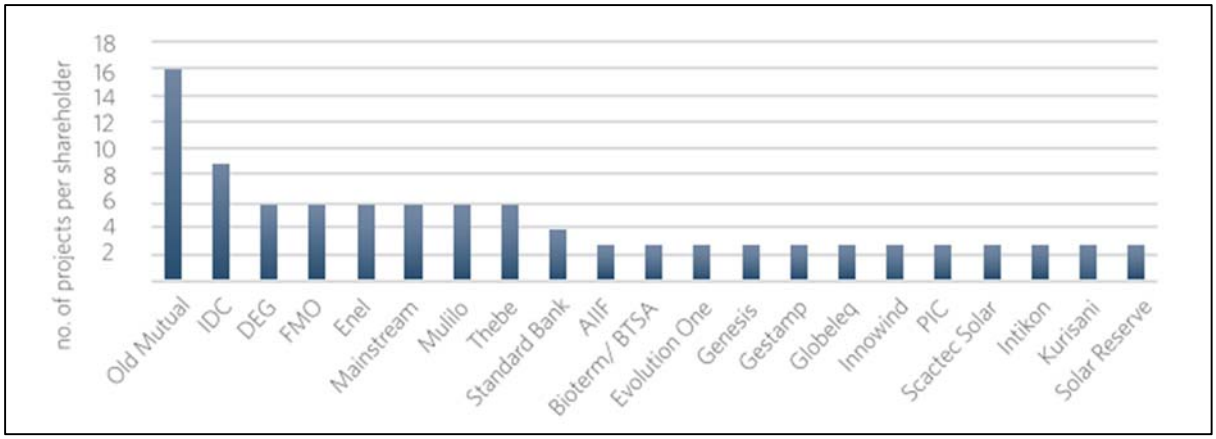


Figure 2.9: Shareholders in REIPPPP Bid Rounds 1, 2 & 3

Source: Eberhard *et al.,* 2014

2.9.2. Financiers

56 out of the 64 projects for bid rounds one, two, and three were project financed (Eberhard *et al.,* 2014). The majority of the funding was two-thirds of debt funding, with the highest proportion in bid round two, and the lowest proportion in bid round three (Eberhard *et al.,* 2014). The other one-third were funded from equity and shareholder loans, with the balance from corporate finance (Eberhard *et al.,* 2014). The bulk of the debt funding was from commercial banks which contributed 65% or ZAR 57 billion (Eberhard *et al.,* 2014). DFIs contributed ZAR 27.8 billion, and pension and insurance funds ZAR 4.7 billion (Eberhard *et al.,* 2014). 86% of debt funding was raised from within South Africa (Eberhard *et al.,* 2014).

Based on the published reports, all the indications are that corporate-financed projects in bid round three had a low Return on Equity (ROE) (Eberhard *et al.,* 2014). If this trend were to continue, there is potential for more international utilities, especially European utilities that are struggling to grow market share in their home territory, will be interested in entering the South Africa renewable energy market (Eberhard *et al.,* 2014). Figure 2.10 depicts the proportion of debt financing for bid rounds one, two, and three.

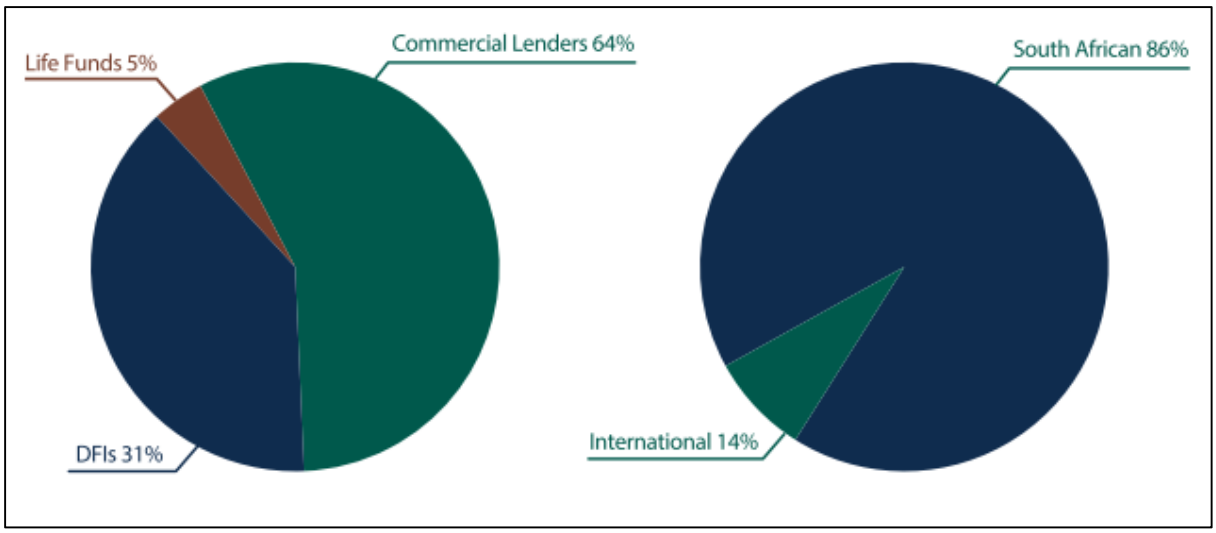


Figure 2.10: Debt Financing in REIPPPP Bid Rounds 1, 2 & 3

Source: Eberhard *et al.,* 2014

The South African commercial banks have dominated REIPPPP lending (Eberhard *et al.,* 2014). Standard Bank, Nedbank, the Amalgamated Banks of South Africa (ABSA), Rand Merchant Bank (RMB) and Investec were the most significant institutional investors (Eberhard *et al.,* 2014). Figure 2.11 presents the relative share of commercial and overall debt financing. The majority of bid round three projects were financed mainly by Nedbank and ABSA. Some project sponsors complained that there was insufficient competition between the banking institutions because the resulting premiums did not fall as expected, as the banks became more familiar with the REIPPPP process (Eberhard *et al.,* 2014). The balance of debt funding was provided by the Industrial Development Corporation (IDC) with twenty projects, and the DBSA with sixteen projects. These institutions provided mainly *'vendor financing'* for black economic empowerment and community participation.

Vendor financing is the lending of money by a company to one of its customers so that the customer can buy products from the company (Investopedia, 2017). By doing this, the company increases its sales even though it is buying its own products (Investopedia, 2017). Vendor financing is a method whereby a company can increase sales, but is also very risky, as the companies it lends money to are usually not financially stable, and may never pay back the money (Investopedia, 2017). In the event that the debt is not repaid, the lending company will merely write-off the loss as bad debt, (Investopedia, 2017).

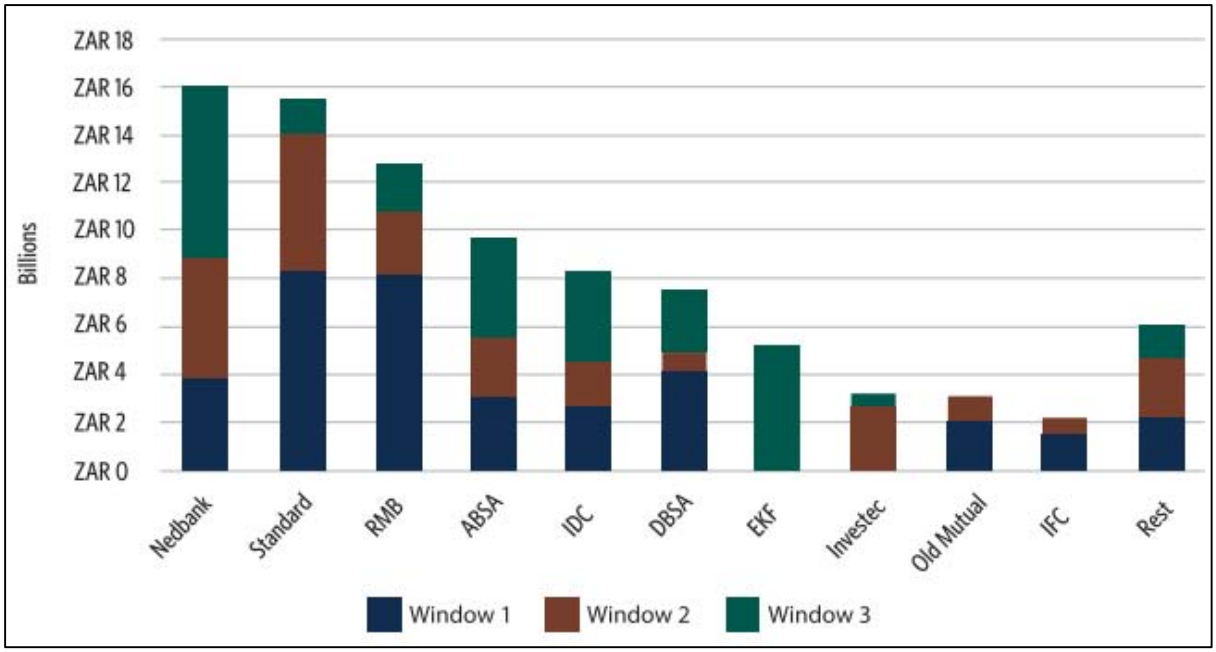


Figure 2.11: Share of Initial Debt Providers in REIPPPP

Source: Eberhard *et al.,* 2014

Included in the local financing mix were insurance and pension funds such as Old Mutual, Sanlam and Liberty (Eberhard *et al.,* 2014). Old Mutual participated directly through its Ideas and Future Growth Funds, and indirectly through the African Clean Energy Developments (AECD), a joint venture with Africa Infrastructure Investment Managers (Eberhard *et al.,* 2014). This, in turn, is a joint venture between Macquarie Africa and Old Mutual and a Mauritian-registered company, AFPOC Limited (Eberhard *et al.,* 2014).

Development finance was provided by the International Finance Corporation (IFC), the Danish Export Credit Agency (EKF), and the Netherlands Development Finance Company (FMO) (Eberhard *et al.,* 2014). AfDB, European Investment Bank (EIB) and the Overseas Private Investment Corporation (OPIC) also contributed to the development finance pool (Eberhard *et al.,* 2014).

2.9.3. Engineering, Procurement, Construction Contractors, Equipment Suppliers

The majority of the forty-nine EPC contractors were involved in one or more of the sixty-four projects during bid rounds one, two and three, either as the primary or secondary contractor (Eberhard *et al.,* 2014). Throughout 2014, several EPC contractors (listed below) were involved in three or more projects:

- Vestas (Danish);
- Acciona (Spanish);
- Consolidated Power Projects (South African);
- Group Five Construction (South African);
- Juwi Renewable Energies (German);
- Murray and Roberts (South Africa);
- Abengoa (Spanish);
- ACS Cobra (Spanish);
- Iberdrola Engineering and Construction (Spanish);
- Nordex Energy (Germany);
- Scatec (Norwegian);
- Suzlon (India); and
- Temi Energia (Italian).

Figure 2.12 depicts the prominent suppliers of wind turbines and PV equipment (Eberhard *et al.,* 2014). The wind turbine suppliers include Vestas, Siemens, Nordex, ABB, Guodian, and Suzlon (Eberhard *et al.,* 2014). While the PV equipment suppliers were Siemens, SMA Solar Tech, BYD Shanghai, Hanwha Solar, 3 Sun, AEG and ABB (Eberhard *et al.,* 2014).

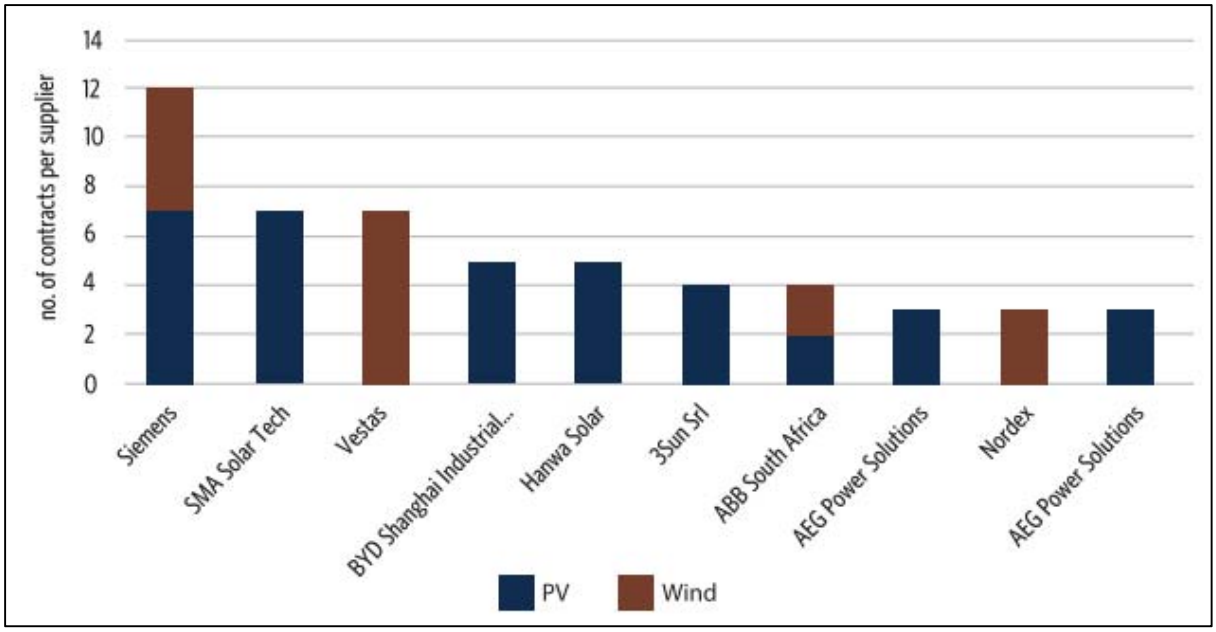


Figure 2.12: Wind and PV Equipment Suppliers in REIPPPP Rounds 1, 2 & 3

Source: Eberhard *et al.,* 2014

2.10. DEVELOPMENT OF HUMAN ASSETS

Zinn (2017) states that several policy interventions have had limited impact in addressing the high poverty, unemployment, and inequality rates in South Africa. These policy interventions include the BEE Codes, the Employment Equity Act, the Skills Development Act, and a range of Enterprise Development initiatives (Zinn, 2017). Zinn (2017) further states that approximately 17 million elderly citizens and young or disabled South Africans are reliant on social grants because of the persistent poverty. With a 37% unemployment rate, combined with a 63% youth unemployment, many black South Africans are not able to support themselves and to interact with the supply and demand of goods and services (Zinn, 2017).

Zinn (2017) points out that the challenges are inherently unsustainable and pose a significant risk to the social and economic stability of South Africa. Research has demonstrated that business leaders should build companies that are concurrently purpose-driven, performance-focused, and principles-led; in a volatile, uncertain, complex and ambiguous business environment (Zinn, 2017).

According to Zinn (2017), higher-education institutions also have an obligation to partner with the private, public sectors, and with individuals to navigate the multiple complexities in a fast-paced world. There is a plethora of human development models available. For example, Abraham Maslow's "Hierarchy of Needs", Barbara Holtmann's "What it looks like when it's fixed", Etsko Schuitema's "Care and Growth Model", or Ichak Adizes' "Adizes Methodology". Any of these models can be applied to individuals, families, corporates, government agencies, and societies in general. These models provide deep insights into the developmental needs of communities, as well as the structural challenges that exist within these communities.

Typically, a community needs analysis will seek to respond to the following questions:

- What are communities requesting?
- What are the needs of communities?
- What are the needs of women, youth, and people with disabilities within these communities?
- What are the needs of the children within these communities?
- Is it possible to develop SMMEs, recognising the constraints that rural businesses are faced with?
- Are these projects/initiatives sustainable?
- Will the projects contribute (positive) impact?

However, the deep structural challenges are generally overlooked, and the more easily implementable infrastructure, SMME Development, and Education projects are implemented, without taking cognisance of the deep structural challenges that persist. This section will discuss two models for human development, namely "Maslow's Hierarchy of Needs" and "What it looks like when it's fixed".

2.10.1. Maslow's "Hierarchy of Needs"

In 1943, Abraham Maslow, an American psychologist proposed the "Hierarchy of Needs", a theory of psychological wellness based on fulfilling innate human requirements in order of priority and culminating in self-actualisation (Management Group, 2008). According to the Management Group (2008), Maslow's "Hierarchy of Needs" is a classical depiction of personal inspiration. The theory is predicated on the assumption that there is a hierarchy of five desires within every individual, with a varying degree of urgency for these needs. Figure 2.13 is a graphical depiction of Maslow's "Hierarchy of Needs":

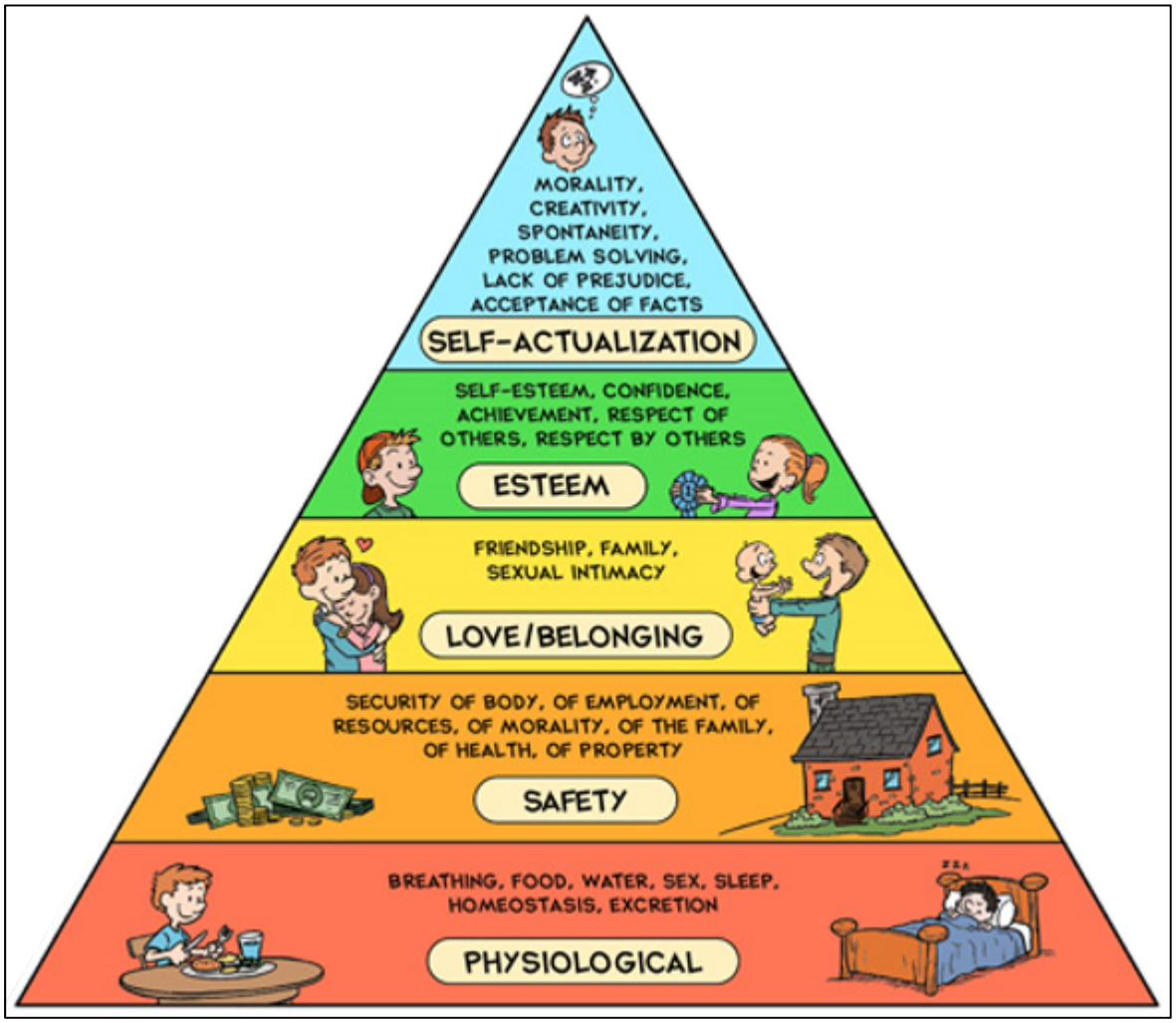


Figure 2.13: Maslow's Hierarchy of Needs Chart

Source: van de Vall, 2014

Maslow stated that individuals are motivated by unsatisfied needs and, as each one of these needs is significantly satisfied, individuals are driven to achieve the next need that presents itself (Management Group, 2008). Maslow grouped the five needs into two categories of higher-order needs which are characterised by needs such as social inclusion, esteem, and self-actualisation needs; and the lower-order needs such as physiological and safety needs, with the lower-order needs, typically being satisfied by external sources (Management Group, 2008). According to the Management Group (2008), during a boom cycle, the lower-order needs of employees are significantly satisfied. However, post the 2008 global economic crisis, communities have been under increasing economic pressure.

The Management Group (2008) further clarify Maslow's "Hierarchy of Needs" as follows:

- **Physiological Needs:** the essential needs of air, water, food, clothing, and shelter;
- **Safety Needs:** these include physical, environmental, and emotional security and protection, namely, job, financial, family members, and health security;
- **Social Needs:** the need for love, affection, care, belonging, and friendship;
- **Esteem Needs:** are internal esteem needs such as self-respect, confidence, competence, accomplishment, and freedom; and external esteem needs such as recognition, power, status, attention, and admiration;
- **Self-Actualisation Need:** the desire to become everything you can become, everything you have the potential to be, and includes the necessity for development and self-contentment, the desire to acquire more knowledge, social-service, creativity and increasing aesthetic awareness. As a person grows psychologically, new opportunities will continue to present themselves, and therefore the self-actualisation need is never fully satisfied.

There are implications of Maslow's "Hierarchy of Needs" for the modern workplace, whereby managers should identify employees' need-levels and then use Maslow's theory to further motivate the employee for better engagement and productivity.

The Management Group (2008) recommends the following interventions to managers:

- **Physiological Needs:** appropriate salaries should be paid to employees to purchase the necessities of life, adequate breaks and eating possibilities should be provided;
- **Safety Needs:** ensure employees have job security, safe and hygienic work environment, and retirement benefits for retention purposes;
- **Social Needs:** encourage teamwork and organise social events;
- **Esteem Needs:** value and reward employees on accomplishing and exceeding their targets, by rewarding the deserving employee a higher job rank or position within the organisation;
- **Self-actualization Needs:** provide employees challenging jobs where the skills and competencies of the employees are fully utilised, create career growth opportunities to ensure that employees can attain their peak.

There are however limitations of Maslow's theory, as not all employees are governed by the same group of needs, and different individuals may be governed by different needs at the same juncture in time (Management Group, 2008). Although the theory has not been empirically tested, the strongest, unsatisfied need will motivate an individual. Finally, the theory might not be applicable in all cases. For example, a starving artist might still strive for recognition and achievement even if the artist's primary needs have not been satisfied (Management Group, 2008).

2.10.2. A Systemic Model to Transform Fragile Social Systems

Holtmann (2011) argued that the more research is conducted to study the significant social challenges such as poverty, crime, unemployment, health and the environment, the higher the realisation that conventional solutions are failing to deliver the critical impact. According to Holtmann (2011), the crimes that are committed on an almost daily basis in South Africa are invariably violent, demonstrate a lack of empathy, lack compassion, and are generally without any apparent motive or benefit to the offender. South Africans are exposed to these crimes via the daily newspapers, radio, television, and in their homes (Holtmann, 2011).

Holtmann's work (2011) provides a new holistic methodology to understand complex social systems better, build stakeholder cohesion, and design sustainable solutions (Holtmann, 2011). She concludes that sixteen criteria will have to be met to address South Africa's vexing social challenges. Figure 2.14 is a graphical representation of "What it looks like when it's fixed":

Figure 2.14: What it looks like when it's "fixed"

Source: Holtmann, 2011

Legend

- Schools are centres of community activity;
- Classrooms have working electrical lighting;
- Schools are equipped with computers;
- There are books for the children to read;
- Health facilities are easy to access;
- There are recreational facilities where children can play freely and safely;
- Trees create shade and uplift the environment;
- People live in proper brick houses;

- Community buildings are of solid construction;
- Teachers are present, pleasant, and qualified;
- Happy, healthy children go to school;
- There are taps with clean running water;
- Community activities like growing vegetables keep people busy;
- There are gardens with flowers;
- Youngsters play soccer on a field with real grass and goalposts; and
- Organised extramural activities keep children busy.

More than 50% of Holtmann's criteria are associated with Education. Holtmann's (2011) research further argues that there is no definitive solution for the lack of safety within communities. She understands this to be a *'wicked problem'* best addressed by creating a workable social system. The "Safe community of opportunity" model developed by Holtmann (2011) represents a functional system to deliver safety at the local level and is presented in Figure 2.15:

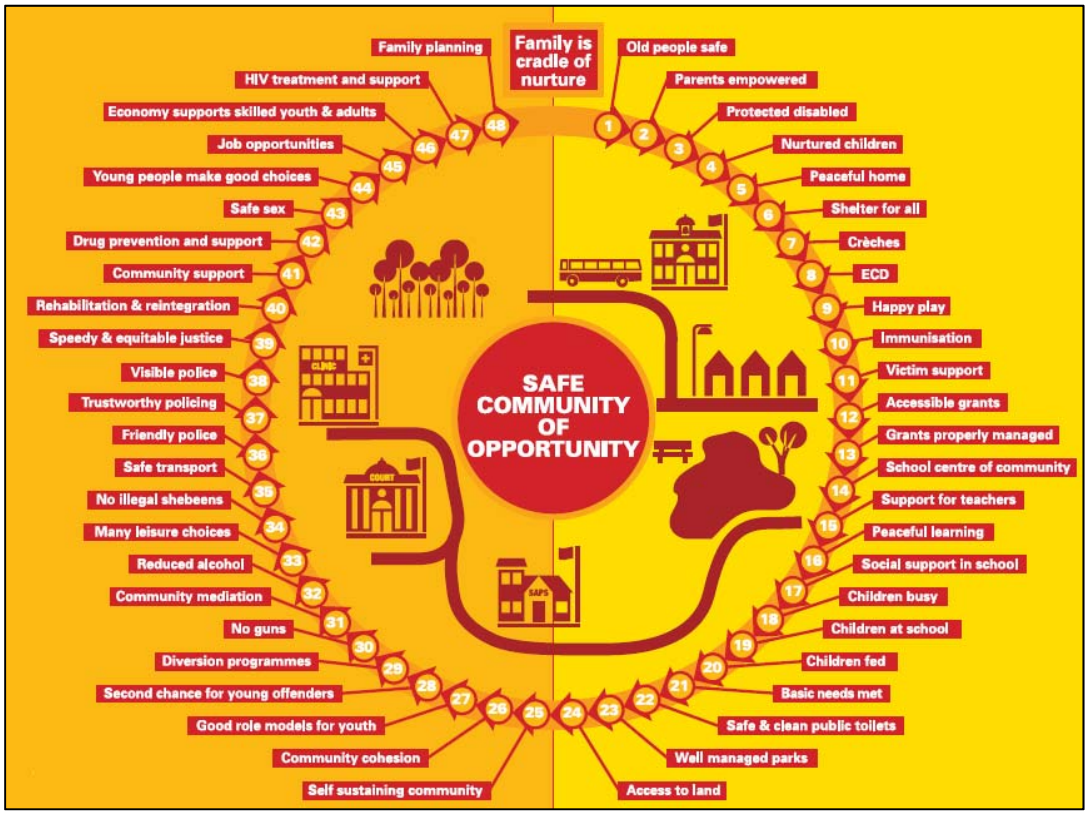


Figure 2.15: The 'Safe Community of Opportunity' Model

Source: Holtmann, 2011

The “Safe community of opportunity” model is articulated into forty-eight elements that catalogue the complex relationships that should be in place to achieve sustainable safety (Holtmann, 2011). This model is premised on the idea that “Family is the cradle of nurture” centred around the priorities of “Old People Safe, Parents Empowered, Protected Disabled, Nurtured Children”, and “Peaceful Home and Shelter for All”. Various elements of Holtmann’s model also point to the need to mainstream gender, for example, self-sustaining communities, social support in school, and the safety and well-being of old people safe.

2.10.3. Public Education

The importance of education to sustain a safe community is clearly highlighted in Holtmann’s research. This section will, therefore, investigate the public education system in South Africa and the implications to the socio-economic empowerment of women in these communities.

According to *The Economist* (2017), funding is not the cause of the education problem in South Africa. South Africa spends approximately 6.4% of GDP on public education, in contrast to the average spend in EU countries which is estimated at 4.8% of GDP (Economist, 2017). *The Economist* (2017) raised concerns regarding the lack of accountability and the inferior quality of most of the teachers in South African schools. According to a report published in May 2016, *‘widespread’* corruption and abuse was uncovered in South African schools, which included teachers paying union officials for prestigious jobs, and female teachers being promised jobs in exchange for sex (Economist, 2017). The South African Democratic Teachers Union (SADTU), which is allied to the ruling ANC, seems to be complicit in the systemic failures of South African schools (Economist, 2017).

During 2017 SADTU successfully lobbied for the cancellation of standardised tests (Economist, 2017). SADTU has also ensured that school inspectors should provide a school with one year’s notice before arriving at the school, yet by comparison, the norm in England is less than twenty-four hours (Economist, 2017).

The Economist (2017) further argues that, even if SADTU were to be removed with immediate effect, there would be no guarantee that the education of the learners would improve. *The Economist* (2017) cites a 2007 study of mathematics teachers, where the teachers took the same test as their 11 and 12 year old pupils: 79% of teachers obtained below the level anticipated of their pupils (Economist, 2017).

According to Spaull (2012), South Africa spends approximately US$ 1,225 per child on primary education, yet by comparison achieves less than Kenya which spends only the equivalent of US$ 258 per child (Spaull, 2012a) (Spaull, 2012). Spaull's findings were based on statistical analysis, comparisons on the national datasets from the Annual National Assessments (ANA), the international Trends in International Mathematics and Science Study (TIMMS), the Progress in Reading and Literacy Study (PIRLS) and the continental Southern African Consortium for Monitoring Educational Quality (SACMEQ) competency tests (Spaull, 2012).

Spaull (2012a) points out that despite the high spending, and several interventions over the past twenty years, the South African education system remains virtually unchanged. South Africa therefore still has two different education systems, an impoverished, weak, and dysfunctional schooling system (75%) and a wealthy, strong, functional schooling system (25%) (Spaull, 2012a). South Africa spends 20% of total government expenditure on education, of which 78% of the budget is for teacher salaries (Spaull, 2012a). Spaull (2012a) argues that even with the substantial investment in education, the South African education system continues to propagate inequality, and if one is born into a family which is poor, the prospects for social mobility are very slim.

Table 2.8: Education Challenges: Unequal, Inefficient and Underperforming

2 Education Systems	
Dysfunctional Schools (75%)	**Functional Schools (25%)**
Weak Accountability	Strong Accountability
Incompetent School Management	Good School Management
Lack of Culture of Learning, Discipline and Order	Culture of Learning, Discipline and Order

Inadequate Learning and Teaching Support Materials	Adequate Learning and Teaching Support Materials
Weak Teacher Content Knowledge	Adequate Teacher Content Knowledge
High Teacher Absenteeism (1 month/year)	Low Teacher Absenteeism (2 weeks/year)
Slow Curriculum Coverage, little Homework or Testing	Covers the Curriculum, Weekly Homework, Frequent Testing
High Repetition and Dropout Gr 10 – 12	Low Repetition and Dropout Gr 10 – 12
Extremely Weak Learning: most Students Fail Standard Test	Adequate Learner Performance Primary and Matric

Source: Spaull, 2012a

According to a report titled, “South Africa has one of the world’s worst education systems”, a 2015 assessment of education systems by the OECD of 76 primarily wealthy countries, ranked South Africa 75th (Economist, 2017). According to the recent Trends in International Mathematics and Science (TIMSS), the results of a quadrennial test of 580,000 pupils in 57 countries, placed South Africa at the lower end of the scale on several rankings (Economist, 2017). The report further stated that 27% of pupils that have attended school for six years could not read, as opposed to 4% in Tanzania and 19% in Zimbabwe (Economist, 2017). Approximately half of the pupils could not compute 24 divided by three equals eight, this after completing five years of schooling. (Economist, 2017). The report estimates that 37% of pupils that started schooling will pass the matriculation exam, and only 4% will earn a degree (Economist, 2017).

Quartz (2014) state that teenagers in Shanghai spend approximately fourteen hours a week on homework, while students in Finland spend only three hours a week on homework. Quartz (2014) point out that the report was based on data from the Organisation for Economic Co-operation and Development (OECD). The data was collected from countries and regions that participate in a standardised test to measure academic achievement for 15-year-olds, the Programme for International Student Assessment (PISA). Figure 2.16 represents the global trend of the number of hours that 15-year olds spend on homework.

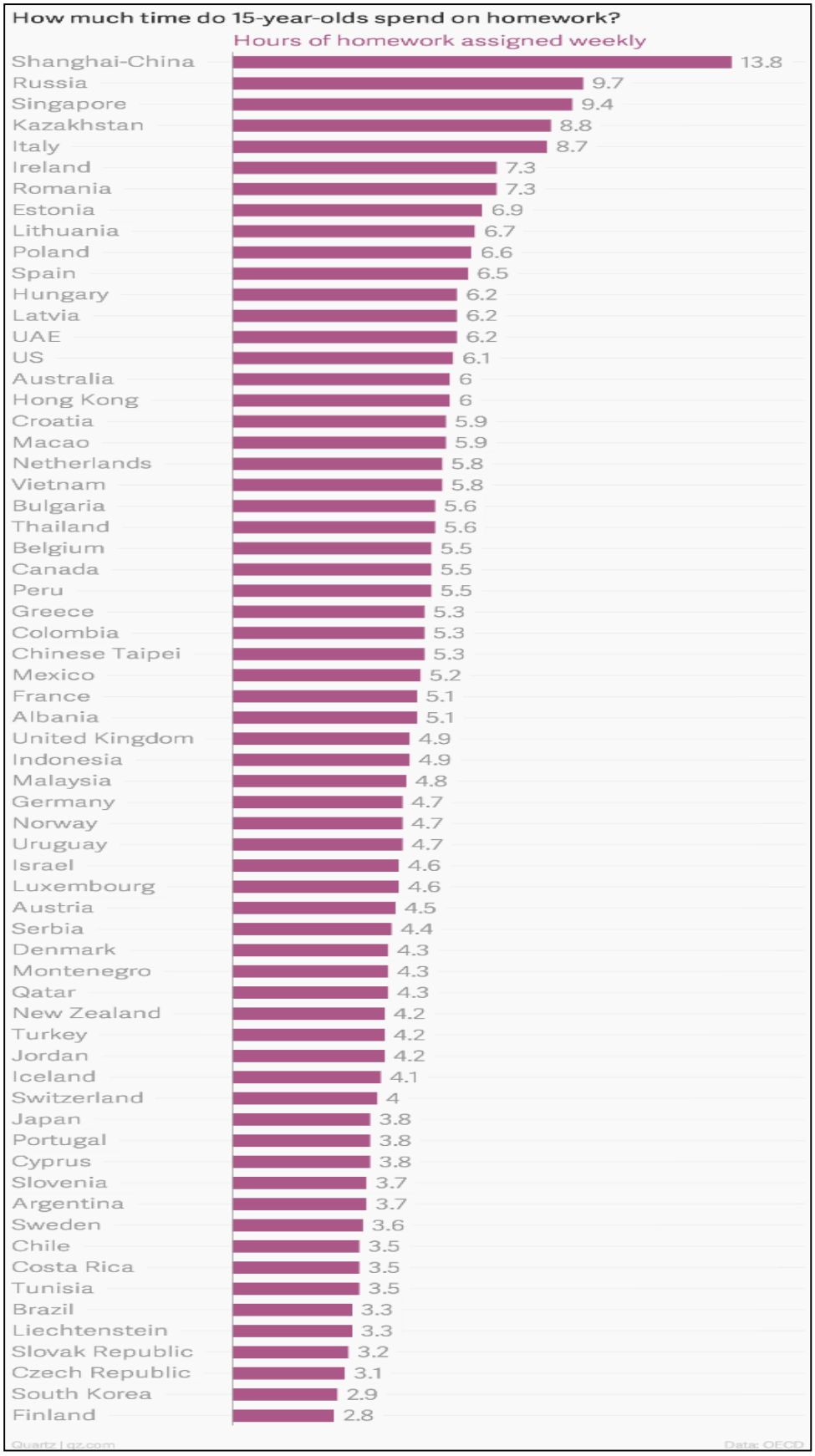


Figure 2.16: The number of hours that 15-year olds spend on homework

Source: Quartz, 2014

Figure 2.17 presents the results of the research conducted by the Eurasia Group, that plotted the impact of “Future Innovation Policy” mapped against a country’s “Current State of Innovation” (Bill and Melinda Gates Foundation, 2017).

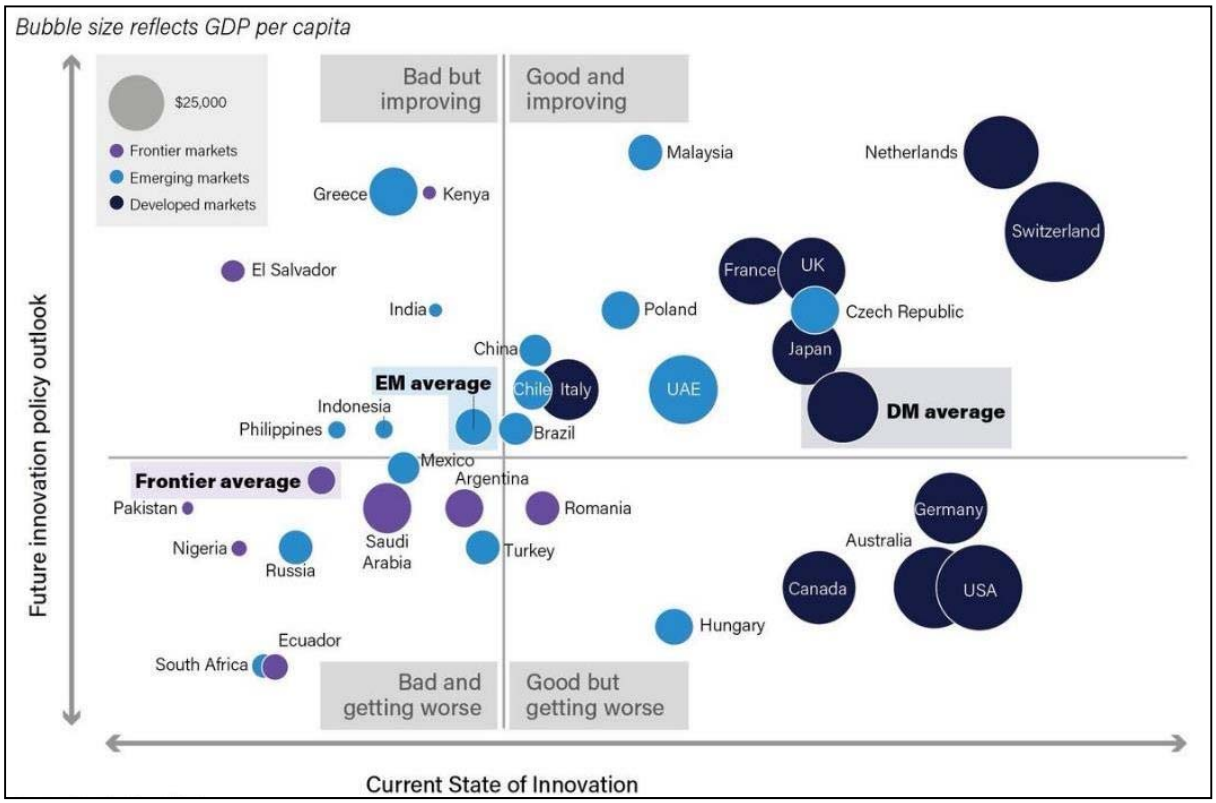


Figure 2.17: Future Innovation Policy vs Current State of Innovation
Source: Bill and Melinda Gates Foundation, 2017

Although South Africa is ranked in the “Bad and getting worse” quadrant, the diagram provides a perspective of where South Africa is positioned within the global landscape and demonstrates the opportunity to improve its ranking relative to other countries.

There are several examples of countries that have used education to position themselves amongst the top-ranking international performers economically. For example, the economic success that Singapore is enjoying today can be traced back to Lee Kuan Yew and his successor's investments in education. Lee Kuan Yew's strategy was "to develop Singapore's only available natural resource, its people" (Yiannouka, 2015).

Singapore routinely ranks among the very best performers in educational attainment as measured by the Organisation for Economic Cooperation and Development's Programme for International Student Assessment (Yiannouka, 2015). The success of Singapore's education system is rooted in a meritocratic approach, a focus on identifying and developing the very best talent, and directing that talent towards public service (Yiannouka, 2015). Yiannouka (2015) points out that government scholarship recipients are obliged to serve in the public sector for at least two years for each year of study. It is this same meritocratic strategy that governs the advancement and promotion of teachers (Yiannouka, 2015). Top-performing teachers receive leadership responsibilities without unnecessary regard to rank or years of service, and there is a free-flow between the Education Ministry, classrooms, and school administration (Yiannouka, 2015). Yiannouka (2015) points out that Singapore's education system is persistently forward-looking. For example, Lee Kuan Yew and his colleagues are credited with making the difficult, but visionary decision to adopt a global language (English) for a global city (Yiannouka, 2015). English was selected based on a multi-ethnic society's need for a common language, and also the acknowledgement of English's fast emergence as the lingua franca of global commerce and science (Yiannouka, 2015). Furthermore, educators are frequently seconded to handle policy work, and there is an emphasis on STEM (Science, Technology, Engineering, and Mathematics) (Yiannouka, 2015).

Finland also has an outstanding international reputation for its educational policies and successes, despite times of deep economic recession and rising unemployment (Stenbäck, 2015). According to Stenbäck (2015), the past Minister of Education and of Foreign Affairs of Finland, the answer is rooted in the following:

- Education and learning should be a respected and admired part of your culture. Finland built and secured its national identity in the nineteenth century through investing in education for all and when independence was achieved;
- *“Leave no child behind”* was a slogan adopted in Finnish schools. Pupils with learning difficulties are patiently brought up to the average level of their classmates by teachers and assistants who give them the extra attention; and

- You need high-quality teachers with compassion. Only 11% of applicants to the teaching profession are accepted.

The Singaporese and Finnish models of education are valuable for South Africa as they provide proven models of education that can be readily implemented. In order to avoid further generations of learners that have not had the educational opportunity of their international counterparts, the South African education will have to implement, at an accelerated pace, proven educational models of education.

Earlier in this chapter, the dysfunctional nature of the Basic and Higher Education Institutions in South Africa was discussed. This study is not intended to be an assessment of the Educational System in South Africa. However, any form of Human Capacity Development is inextricably linked to the National Educational System and the schools within or surrounding the communities. The golden thread that runs through all the educational success stories appears to be the high quality of the teaching staff, a common language, and the opportunity to progress.

The onus is therefore on the South African Government, as the custodians of Education in the RSA, to consider the following:

- Who is looking after the interests of the learners?
- What should South African education look like?
- How will South Africa produce future international leaders?
- Does South Africa wish to develop globally competitive youth or cheap labour?

Considering the investment that renewable energy and the mining sectors have made in education, both in infrastructure and human capacity development, the opportunity exists for the sectors to collaborate and deliver an educational system that will ensure that South Africa can be globally competitive. The mandate at government and industrial level, whether private or public sector, should be to produce learners who are globally competitive, visionary, ethical and competent to be the future leaders of South Africa.

2.11. ENVIRONMENTAL DRIVERS

According to the GEF (Global Environmental Facility, 2016c), since joining the GEF, South Africa has received grants amounting to US$ 108,138,421 that secured US$ 725,859,645 in co-financing resources for thirty-one national projects. These include sixteen projects in biodiversity, twelve in climate change, two multi-focal area projects, and one for persistent organic pollutants. South Africa also participated in thirty-seven regional and global projects financed by the GEF amounting to US$ 288,707,819 securing an additional US$ 595,132,762 in co-financing. These include thirteen projects in biodiversity, ten in international waters, six in land degradation, four multi-focal area projects, two in persistent organic pollutants, and two in climate change. During the GEF-5 replenishment period (July 2010 to June 2014), South Africa received an indicative allocation of US$21,680,000 in biodiversity, US$ 25,710,000 in climate change, and US$ 5,250,000 in land degradation (Global Environmental Facility, 2016c).

As of March 2016, there were several GEF Agencies and GEF Executing Agencies operating in South Africa, yet, by contrast, there were only six (6) registered South African CSOs (Table 2.9). A detailed summary of the US$ 1.3 bn projects has been included in Chapter One, *the GEF Projects in South Africa since inception*. There might be significant change if the GEF Executing Agencies were to commit to developing the capacities of the communities, with particular attention to the women, people with disabilities, youth, and elders within the communities, the CSOs, CBOs, NGOs, SMMEs, and civil society at large. The Agencies could develop CBOs that would implement their projects on a much broader scale, thereby creating jobs, developing skills, and incubating SMMEs. By developing the capacities of civil society, the GEF would have a much broader pool of implementers that would be able to replicate and scale projects, ensure the sustainability of the projects, and to develop PPP initiatives that would further enhance the Paris Agreement, the SDGs and the aims of the GEF.

Table 2.9: the GEF International Agencies and Project Agencies in South Africa

the GEF Agencies	**Registered South African CSOs**
• African Development Bank • Food and Agriculture Organization (FAO) • International Fund for Agricultural Development (IFAD) • United Nations Development Programme (UNDP) • United Nations Environment Programme (UNEP) • United Nations Industrial Development Organization (UNIDO) • The World Bank **GEF Executing Agencies** • Development Bank of Southern Africa • International Union for Conservation of Nature (IUCN) • World Wildlife Fund (WWF) • Conservation International (CI) • United Nations Development Program (UNDP)	• All for Africa Foundation • Community Initiative for Social Enhancement • Environmental Monitoring Group • Human People to People in South Africa • Olive Leaf Foundation • Peace Parks Foundation

Source: Researchers own construction

According to Eberhard *et al.,* (2014), the renewable energy policy has not been effective in applying practical implementation strategies, however, the policies to mitigate climate change have had a more profound impact. The surprise is that as a non-Annex 1 country under the Kyoto Protocol, South Africa was not obliged to reduce greenhouse gas emissions (Eberhard *et al.,* 2014). However, the Department of Environmental Affairs commissioned research into long-term mitigation strategies (Eberhard *et al.,* 2014). President Zuma used these studies as a basis to commit South Africa to reduce its CO_2 emissions by 34% by 2020, and below 42% by 2025 (Eberhard *et al.,* 2014). President Zuma made this pledge at the Copenhagen Conference of Parties in 2009 (COP15) on condition that the international community supported South Africa financially and technologically (Eberhard *et al.,* 2014).

2.12. FAILURES OF GOOD GOVERNANCE, ETHICAL LEADERSHIP

This section will attempt to illustrate the extent of the structural failures, more precisely, the corruption and systemic failures of Eskom, especially as they relate to

mainstreaming gender. The “State of Capture” report published by the Public Protector of South Africa raised concerns regarding the transactions and links between Eskom and Tegeta, the Gupta family entity (Public Protector of South Africa, 2016).

Mike Levington, a board member of the South African Renewable Energy Council (SAREC), which represents the wind, solar and energy efficiency industry bodies, also raised similar concerns (Creamer, 2016). Levington considered the criticism of the REIPPPP by Molefe, the Eskom CEO, increasingly irrational, inaccurate, and difficult to gauge since there was no direct engagement with the industry through well-established channels (Creamer, 2016).

The Public Protector asserts that the only real reason for awarding contracts to Tegeta to supply Arnot Power Station was solely to finance Tegeta and to enable Tegeta to buy all the shares in Optimum Coal Holdings (Public Protector of South Africa, 2016). The Public Protector argues that the only beneficiary from Eskom’s decisions regarding the Optimum Coal Mine/Optimum Coal Holdings was Tegeta (Public Protector of South Africa, 2016). To illustrate the quantum of the benefit, Tegeta failed to meet all its commitments to Optimum Coal Mine which was owed R 148,027,783.91 as at the 31st July 2016, and an amount of R 289,842,376.00 as at the 31st August 2016 (Public Protector of South Africa, 2016).

2.12.1. State Capture

This section will discuss the nexus between Good Governance, Ethical Leadership, and their negative influence on mainstreaming gender. Due to the lack of ethical leadership at Eskom, the renewable energy sector was unfairly punished, to the extent that projects were delayed by almost two years. The consequence is that the Economic Development proceeds that could have been invested to mainstream gender were not forthcoming.

The definition of state capture can be derived from the concept of regulatory capture, where State regulatory agencies are reported to be *‘captured’* when State regulatory agencies regulate businesses relative to the private interests of the regulated, instead of the public interest for which these State regulatory agencies were established

(World Bank, 2000). The World Bank (2000) points out that state capture is a broader concept than regulatory capture as it encompasses the forming of laws, rules, and decrees by a wider range of state institutions, executive, ministries and state agencies, legislature, and the judiciary.

Simultaneously, there is also a narrower definition of state capture that focuses specifically on illicit, illegitimate, and non-transparent types of influence. According to Kaufmann, Hellman, Jones, & Schankerman (2000), corruption can be used as an indicator of fundamental institutional weaknesses, and therefore, be viewed within a broader governance framework. Kaufmann *et al.,* (2000) further state that corruption flourishes in situations where the State is unable to control its government, to safeguard property and contractual rights, or even to provide institutions that support and uphold the rule of law. Also, governance failures at the national level cannot be isolated from the interface between the corporate and the State sectors, specifically from the influence that companies may exert on the State (Kaufmann *et al.,* 2000).

The State Capacity Research Project is an interdisciplinary, inter-university research partnership intended to contribute to the public debate regarding the 'State Capture' in South Africa (Bhorat *et al.,* 2017). Since Public Protector, Thuli Madonsela published "The State of Capture" in 2016, the topic of State Capture has dominated public debate regarding the future of democratic governance in South Africa (Bhorat *et al.,* 2017). The "State of Capture" Report officially documented the process whereby President Zuma and senior government officials colluded with a shadow network of corrupt brokers (Bhorat *et al.,* 2017). Subsequent to the publication of the report, there were increasing demands for President Zuma to resign, yet, according to Bhorat *et al.,* (2017), there were limited contributions by the academic fraternity towards this debate. Eberhard & Godinho (2017) attempts to provide an independent and fact-based chronicle of the alleged cases of governance failure and corruption at Eskom, the most significant State-Owned Company (SOC) in South Africa.

Eberhard & Godinho (2017) point out that any approach to repurpose Eskom's governance to facilitate systematic corruption in the energy sector ultimately undermined and threatens Eskom's financial viability, its ability to power South Africa's economy or to enhance the welfare of South Africa's citizens.

The significant role that Eskom Holdings SOC Ltd commands within the South African economy is highlighted by the fact that Eskom and its subsidiaries, generates, transmits, and distributes electric power to industrial, mining, commercial, agricultural, and residential clients in South Africa (Bloomberg, 2018).

Eskom manages the entire value chain, from generation, transmission, distribution, energy purchases/sales, group customer services, group capital, and several other segments (Bloomberg, 2018). Bloomberg (2018) points out that Eskom generates power through nuclear, hydro, wind, gas turbine, coal, and pumped storage plants, and operates a service concession for the generation and transmission in Uganda.

Bhorat *et al.,* (2017) recommend that a new national economic agreement has to be formulated. Bhorat *et al.,* (2017) argue that the short-lived post-1994 Reconstruction and Development Programme developed by the Presidency was unilaterally replaced in 1996 by government's macroeconomic strategy, Growth, Employment and Redistribution (GEAR), a policy framework produced by the Ministry of Finance and adopted without the Alliance partners approval. Simultaneously, the Department of Labour's Presidential Labour Market Commission developed a social strategy (Bhorat *et al.,* 2017). In 2004 the South African Government was mandated to halve poverty and unemployment by 2014 (Presidency of South Africa, 2006). This gave effect to the Accelerated and Shared Growth Initiative for South Africa (AsgiSA), which was also adopted without full consensus (Bhorat *et al.,* 2017). Bhorat *et al.,* (2017) point out that during 2002 the adoption of the *'Developmental State'* framework had the broadest consensus but lacked substance and focused mainly on a poorly defined industrial policy framework. Finally, Bhorat *et al.*, (2017) recommend that all stakeholders, specifically future the political actors, should commit to realising the vision of a new economic consensus within the framework of the Constitution and relevant legislation.

To conclude this section on *'State Capture'*, further research should be conducted to establish the feasibility of listing Eskom Holdings SOC Ltd, or any other State-Owned Enterprise on the Johannesburg Stock Exchange. Besides the standard benefit of listing, the State-Owned Enterprises would be subjected to the same governance principles and scrutiny as any other privately listed entity.

2.12.2. Governance Framework – King III

The King III Report advocates ethical leadership, sustainability, and corporate citizenship, and is further described by the following fundamental principles (Engelbrecht, 2009):

- Effective leadership;
- Sustainability;
- Innovation, fairness, and collaboration;
- Social transformation and redress; and
- Sustainability reporting as a core aspect of corporate governance as explicitly required by King II.

King III points out that good governance is actually about effective leadership, and leaders must define the strategy, provide direction, and create the ethics and values which will influence and guide practices and behaviour as it applies to sustainability performance (Engelbrecht, 2009). King III also states that the board of directors, in its collective decision-making capacity, can deviate from the recommended practice if a decision might not be in the best interests of the company (Engelbrecht, 2009). In the event of a deviation from the recommended code, the board should explain its rationale and methodology for adopting an alternative practice (Engelbrecht, 2009).

According to King III, the legacy of apartheid, which is fundamentally unsustainable, will depend on the successful implementation of social transformation and redress initiatives (Engelbrecht, 2009). King III, therefore, considers social transformation and redress essential aspects that should be integrated into the broader transition to sustainability (Engelbrecht, 2009).

Companies listed on the JSE are required to comply with King II, and, as such, South African listed companies are regarded by foreign institutional investors among some of the best-governed companies in the world's emerging economies (Engelbrecht, 2009).

2.12.3. Governance Framework – Sarbanes-Oxley

Companies could be governed on a statutory basis, or as a code of principles and practices, or a combination of the two (Engelbrecht, 2009). The USA has opted to codify a substantial portion of their governance into an Act of Congress, commonly referred to as the Sarbanes-Oxley Act (SOX). This statutory regime is based on a principle of *'comply or else'*, meaning that there are legal sanctions for non-compliance (Engelbrecht, 2009).

2.12.4. State of Capture – a Public Sector Governance Crisis

The "State of Capture" report was prepared in response to three complaints regarding the alleged improper and unethical conduct associated with the appointments of Cabinet Ministers (Public Protector of South Africa, 2016). According to the Public Protector (2016), by December 2015 the significance of South Africa's coal reserves in the economy was illustrated by the fact that Eskom was the seventh largest electricity generator in the world. Eskom had thirteen coal-fired power stations, and thirty-three coal supply contracts serviced by approximately twenty-eight suppliers. In addition, Eskom is also the biggest producer of greenhouse gasses in Sub-Saharan African (Grid Arendal, 2016).

The Public Protector (2016) proceeded to quote the City Press article of the 12th June 2016 with the title *"How Eskom bailed out the Guptas - Eskom has quietly awarded a contract worth more than R564 million to a coal mining company owned by the Gupta family and President Jacob Zuma's son Duduzane"*. Tegeta's significant shareholders include the Gupta family's Oakbay Investments (29%); Duduzane Zuma's Mabengela Investments (28.5%); Gupta associate Salim Essa's company, Elgasolve (21.5%); and two unknown investors in Dubai (Public Protector of South Africa, 2016). The Public Protector (2016) further argued that the Eskom Board possibly contravened section 38 and 51 of the Public Finance Management Act (PFMA) (Public Protector of South Africa, 2016).

The PFMA states that a Board should prevent fruitless and wasteful expenditure, which can be an act of financial misconduct under section 83 (1)(a) of the PFMA and subject to the penalties under section 86(2) of the PFMA. In the same report, The Public Protector (2016) proceeds to list several breaches of governance, and these breaches are summarised below:

- The Board of Eskom was improperly appointed and not in line with the spirit of the King III report on good Corporate Governance;
- A mechanism should have been put in place to deal with the Eskom Board conflicts as they arose, and managed actual or perceived bias;
- The Eskom Board did not act in the best interests of the RSA at all times; and
- The Minister of Public Enterprise as Government stakeholder took no action to prevent these apparent Eskom Board conflicts.

The machinations around the new nuclear build for South Africa also resulted in the breakdown in governance. In 2017, a South African court decision ruled that Eskom should halt its request for information for the new nuclear build (Cordeur, Groenewald, Fin24, Yelland, & EE Publishers, 2017). Despite the court ruling, Eskom forged ahead in preparation for the resuscitation of the tender process, which saw the nuclear vendors from France, Russia, and China prepared lengthy proposals (Cordeur *et al.,* 2017). The deployment of Brian Molefe as the CEO of Eskom created further delays for the REIPPPP (and subsequent developmental funding) (Cordeur *et al.,* 2017). In November 2017, the Minister of Finance, Malusi Gigaba, stated that the government had no further guarantees to provide Eskom, yet, the new Minister of Energy, David Mahlobo and President Jacob Zuma stated that the nuclear programme would proceed in the future (Cordeur *et al.,* 2017). Finally, Eskom's shareholder report indicated that the power utility is projected to make an annual loss of approximately R3.5bn (Cordeur *et al.,* 2017).

The Board, the Chief Executive Officer, Company Secretary, Legal, Risk, Procurement, and ultimately, the Chief Financial Officer (past and present) should be held to account for their complicity in allowing these breaches of *'Good'* Governance.

Besides the adverse effect that these decisions had on the business operations of Eskom, the potential developmental funding generated by the REIPPPP were halted indefinitely while the plundering of Eskom continued unabated.

2.12.5. State of Capture – a Private Sector Governance Crisis

The real extent of the corruption and greed at Eskom would begin to unfold during late 2017 and early 2018. In particular, the corruption scandal involving Eskom/McKinsey/Trillian transaction (Brock, 2017). The scope of the Eskom/McKinsey/Trillian transaction was for a *'Turnaround Plan'* implemented at Eskom during the first-half of 2016. In accordance with the details of the turnaround plan, McKinsey would earn approximately R1 billion, and Trillian, a local consultancy owned by the Gupta family, and billionaire friends of President Zuma, would benefit by R564 million.

In November 2017, McKinsey's Global Lead for the Public and Social Sector, David Fine, appeared before the South African Parliament's probe into *'State Capture'*, more specifically, with regard to the Eskom/McKinsey/Trillian transaction (Sithole, 2017). South African born Fine, now located in London, made a statement in Parliament that McKinsey would pay back the money, irrespective of the legality of the transaction between Eskom/Trillian (Sithole, 2017). Fine denied knowing the Guptas and stated that McKinsey was not aware of Salim Essa, former owner of Trillian, and his links to the Gupta family (Sithole, 2017).

In 2017, the London-based public relations company, Bell Pottinger, was also exposed for driving a public campaign to garner support for President Jacob Zuma and his friends (the Guptas) by promoting the narrative that the South African economy is mainly in white hands (Cameron, 2017a). Bell Pottinger, in a calculated manner, used social media to manipulatively divide South Africans along racial and economic lines, using the classic *"divide and rule"* approach to promote their White Minority Capital (WMC) campaign.

The extent of the commercial benefit to Bell Pottinger was exposed through the #GuptaLeaks, where Bell Pottinger invoiced approximately £350 000 (R5,5m) for a 4-day assignment that included a prepared speech for Collen Maine of the ANC Youth League, and a statement for the Umkhonto we Sizwe Veterans Association (Cameron, 2017a).

It is, therefore, ironic that McKinsey's Global Lead for Public and Social Sector, South African born, Fine, who is now based in London, did not query the unusually "too good to be true" R1 billion transaction. Nor did any of Fine's McKinsey principals based in New York raise any flags. McKinsey USA which is governed by SOX compliance should also be held to account for allowing McKinsey to participate in the Eskom/McKinsey/Trillian transaction. Due diligence would have uncovered the parties involved in the transaction and would have been red flagged as an internal risk to McKinsey's global heads. The consequence of this oversight is the damage to its reputation that McKinsey now has to manage.

The breakdown in governance was further highlighted in July 2017, when SAP, the German, Enterprise Resource Planning (ERP) company suspended four executives following accusations that SAP had paid R100m in bribes to a Gupta connected company for SAP to secure South African government contracts (Pilling, 2017). For approximately fifteen years, KPMG audited the Gupta accounts, and during this period allowing a Gupta-owned company to embezzle money (Pilling, 2017). KPMG was also implicated in compiling a report which was subsequently retracted, that supported a political manoeuvre to remove the then Finance Minister, Pravin Gordhan. KPMG has admitted that its South African arm *"made serious mistakes and errors of judgment"*.

Then there is also the recent financial scandal surrounding the accounting irregularities of Steinhoff International. One of Africa's largest asset managers, the South African Public Investment Corporation (PIC) of South Africa, lost an estimated R 24.7 billion (Presence, 2018). The PIC manages assets on behalf of South Africa's Government Employees Pension Fund (GEPF) (Presence, 2018). The market value of shares held by the GEPF in Steinhoff declined from March 2017 at R 27.6 billion to R 2.9 billion by 19th January 2018 (Presence, 2018).

According to Jannie Rossouw, economics and business expert at the University of the Witwatersrand, the Steinhoff collapse highlights the significant gaps in stopping the unethical corporate behaviour in South Africa (Cameron, 2017c). According to Rossouw, the Steinhoff International case also demonstrates that corruption is not limited to the Gupta and Zuma families, and global accounting giants KPMG and management consultancy McKinsey are implicated in these corrupt activities (Cameron, 2017c). The questions are now being posed as to why the investment community failed to identify the problems at Steinhoff (Cameron, 2017c). Also, the investment community is being challenged as to why the investment community continues to support companies that maintain KPMG as their auditor partner when it is public knowledge that KPMG failed in their duties to expose the financial irregularities involving Gupta entities (Cameron, 2017c).

The Gupta's strategy was to gain control of media companies in South Africa and, thereby, gain access to significant government advertising budgets. Part of the strategy was also able to manipulate editorial messages and public sentiment (Cameron, 2017b). The Gupta's own and control the *New Age* newspaper and ANN7, a 24-hour news channel (Cameron, 2017b). According to Cameron (2017), Survé, who heads Independent Media group, was entrenched in the Gupta family, until evidence in the #GuptaLeaks emails exposed the deterioration of the relationship between Survé and the Gupta's when the parties disagreed about money. Cameron (2017) is scathing of Survé stating, "He has been ploughing his furrow, also with Zuma at his side. Survé should be rounded up with the rest of the gang when the forces for good finally overwhelm the clique that has actively worked to undermine South Africa's young democracy for personal profit".

2.13. SUMMARY

This section is intended to provide context around the importance of Good Governance, but also that the application of Good Governance is dependent on the ethical behaviour of the custodians, namely the Board of Directors. This section demonstrates the breakdown of Good Governance through unethical leadership both in the public and private sectors.

This breakdown in governance also occurs within communities, especially when money is involved. One can thus conclude that this is a crisis of Ethical Leadership and not a breakdown in Governance.

The complicity of the international and local accounting and consulting firms are also laid bare, and thus demonstrates that even in cases where ethical leadership and ethical behaviour is expected, these are not necessarily forthcoming. Considering that South Africa has some of the best mining, manufacturing expertise, legal and support services globally, the question has to be raised as to the over-reliance of the initial REIPPPP on the international legal, commercial and technical consultants. From the literature review, the international consultants might not have had any real understanding of the day-to-day socio-economic challenges in South Africa. Furthermore, the review of those international consultants shows that mainstreaming of gender did not feature prominently.

Ethical leadership is yet again brought to the fore and further amplified when the King III Report points out that good governance is actually about effective leadership. Reuel Khoza also stated that one of the defining features of leadership is integrity (Zinn, 2017). Zinn (2017) also states that one of the leadership traits is that a good leader will not avoid unpopular decisions.

In all this corruption the regulatory entities and professional bodies also have a role to play, especially the professional bodies concerned with the financial sector. It is of concern that CFOs and Company Secretaries have been allowed to flagrantly disregard good governance practices, or have their organisations plundered, to the extent that has been discussed. The inability of the regulatory or professional bodies to intervene when members bring their profession into disrepute should be further investigated.

For this study, good Corporate Governance can be considered as the processes to make and implement decisions, with the emphasis being on the best possible process for making those decisions. Governance can apply to a company, government, community, governing body, or any entity that manages an outcome.

Specifically, this applies to proper Corporate Governance and the integrity of the IPP, its Executive Leadership, and its Shareholders, as they relate to decision-making regarding the obligatory socio-economic development initiatives in the renewable energy sector.

Chapter Two concludes by unveiling the absence to mainstream gender in the REIPPPP at the levels of policy, financing, implement or ongoing operation. The absence of mainstreaming gender is further highlighted by the absence of gender in the well-prepared report published by the Public-Private Infrastructure Advisory Facility (PPIAF) of the World Bank Group, *South Africa's Renewable Energy IPP Procurement Program: Success Factors and Lessons*, (Eberhard *et al.,* 2014). In this same report, there are only two references to *'women'*, and this is in the context of the REIPPPP Economic Development Scorecard under the Preferential Procurement category. From the REIPPPP process, it is apparent that the Preferential Procurement category is only relevant during the construction phase, and therefore women are potentially excluded during the entire twenty-year operational period.

Finally, the REIPPPP should ensure that appropriate Good Governance structures are in place to protect the significant developmental funds that will be generated by the IPPs. However, more importantly, as this research has surfaced, the choice of ethical Board representation is probably even more crucial than the governance practices itself.

CHAPTER THREE
LITERATURE REVIEW OF WOMAN EMPOWERMENT IN THE RSA

3.1. INTRODUCTION

Chapter Three will review the approach to mainstream gender in South Africa with reference to the history of the empowerment, or lack thereof, of women. This chapter will also review international best practices in the area of women empowerment and how it has been applied. It will then draw comparisons between the progress that has been achieved, or not achieved, within a South African context. For the international best practices, the evolutionary gender processes of the GEF will provide a baseline for comparative purposes. The methodical approach was to review the latest international best practices and outline the current trends in mainstreaming gender. This chapter will then consider the status quo of the gender landscape in South African relation to these trends. Although the GEF focuses on environmental matters, the mainstreaming of gender within its projects indicates very mature policies, processes, procedures, and systems. Therefore, the renewable energy sector in South Africa might be able to avoid *"re-inventing the wheel"* and expand on the methodologies already developed by the GEF and other international entities.

The purpose of this chapter is, therefore, to ascertain **the factors that positively influence the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa**. Socio-Economic Development, Enterprise Development, Economic Development, Corporate Social Investment, Corporate Social Responsibility, and Economic Empowerment are a collection of programmes, projects, or interventions that uplift the social and economic position of their beneficiaries, and through this process provides access to the economy for the target beneficiaries.

3.2. GLOBAL PERSPECTIVE OF WOMEN AND THE INFLUENCE OF THE GEF

The World Bank study *"Integrating Gender into the World Bank's Work: A strategy for action"* (World Bank, 2002) concluded that mainstreaming gender in development projects increases the effectiveness of these developmental projects.

Housed within the World Bank, the Global Environment Facility is a partnership for international cooperation where 183 countries interact with international organisations, civil society agencies and the private sector, to address global environmental issues (Global Environmental Facility's Gender Office, 2017). Since its inception in 1991, the GEF has facilitated US$ 13.5 billion in grants and leveraged US$ 65 billion in co-financing for 3,900 projects in 165 developing countries (Global Environmental Facility's Gender Office, 2017). Over a period of 23 years projects linked to biodiversity, climate change, international waters, land degradation, and chemicals and waste in the context of developmental projects and programs have been funded by developed and developing countries (Global Environmental Facility's Gender Office, 2017).

In addition to the above, the GEF also facilitates projects through the SGP and has facilitated more than 20,000 grants to civil society and CBOs in excess of US$1 billion (Global Environmental Facility's Gender Office, 2017). Several significant outcomes of these investments by the GEF include the following (Global Environmental Facility's Gender Office, 2017):

- Establishment of international protected areas approximately the area of Brazil;
- Decreased carbon emissions by 2.3 billion tonnes, including elimination of the usage of ozone-depleting chemicals in European countries and Central Asia;
- Improved administration of 33 primary river basins and one-third of the world's marine ecosystems; and
- Reduced desertification in Africa by enhancing agricultural practices, while simultaneously contributing to the improved livelihoods and food security of millions of people.

During the GEF GEF-6 replenishment, thirty donor countries pledged US$ 4.43 billion over a four year period to support initiatives of developing countries to avoid degradation of the global environment (Global Environmental Facility's Gender Office, 2017).

3.2.1. Brief History of The GEF and Mainstreaming Gender

The Independent Evaluation Office (the IEO) of the GEF, report, *"Evaluation on Gender Mainstreaming in the GEF"* (Independent Evaluation Office of the Global Environmental Facility, 2017) stated that the GEF Policy on Gender Mainstreaming was first approved by the GEF Council at the 40th Council Meeting during May 2011 (Independent Evaluation Office of the Global Environmental Facility, 2017). Before this stage, the only GEF policy with a gender component was the 1996 Policy on Public Involvement which mentioned women as part of *"disadvantaged populations linked to the project site"* (Independent Evaluation Office of the Global Environmental Facility, 2017). The IEO further states that the 2011 GEF Gender Policy was preceded as an annexe II of the GEF Policies on Environmental and Social Safeguards, Standards and Gender Mainstreaming (Independent Evaluation Office of the Global Environmental Facility, 2017).

According to the Independent Evaluation Office of the Global Environment Facility (2017), the GEF Policy on Gender Mainstreaming has its origins guided by several conventions where the conventions elevated the gender-related aspects. The UNFCCC was the last convention that did not provide a clear mandate on gender mainstreaming (Independent Evaluation Office of the Global Environmental Facility, 2017). During 2010, the UNFCCC subsequently released its mandate at the 16th session of the COP16 through the Cancun Agreements in Mexico (Independent Evaluation Office of the Global Environmental Facility, 2017). In May 2014, the GEF 2020 Strategy, which defined several core operational principles, was accepted by the GEF Council at the 46th Council Meeting (Independent Evaluation Office of the Global Environmental Facility, 2017).

According to the IEO, the core operating principles are:

- The mobilisation of local and global stakeholders;
- Continued strengthening of gender mainstreaming and women's empowerment, accompanied by the utilisation of gender analysis within socio-economic assessments and gender-sensitive indicators; and

- Sex-disaggregated data to be included in projects to measure concrete results and progress linked to gender equality.

The GEAP was accepted by the GEF Council at the 47th Council Meeting in October 2014, in order to implement the gender policy.

3.3. GLOBAL PERSPECTIVE OF WOMEN EMPOWERMENT

In 2015, the Inter-Parliamentary Union (IPU) and UN Women launched the Women in Politics 2015 Map (Inter-Parliamentary Union & UN Women, 2015). The Map is based on data as at 1st January 2015 and sourced from the world ranking of women in parliament (Inter-Parliamentary Union & UN Women, 2015). According to the Inter-Parliamentary Union & UN Women (2015), the number of women government ministers for 2014 increased from 670 to 715, representing 17.7% of all government ministers globally. Since 2005 women ministers have increased by 3.5%, and thirty countries have 30% or more women ministers (Inter-Parliamentary Union & UN Women, 2015). African countries where women account for more than 30% of ministers in the cabinet include Cape Verde, Rwanda, and South Africa. South Africa which has the most substantial number of women ministers at 41.7%, was ranked 11th overall (Inter-Parliamentary Union & UN Women, 2015).

The Americas continue to have the highest percentage of women ministers at 22.4%, followed by European countries, then Africa (Inter-Parliamentary Union & UN Women, 2015). In the preceding year, the Americas and Africa experienced a decline in figures of 0.6% and 0.5% respectively (Inter-Parliamentary Union & UN Women, 2015). After several years of progress, Africa is now at 19.8%, which is slightly above the level attained in 2010 (Inter-Parliamentary Union & UN Women, 2015). The decline in the number of African women ministers and MPs is of concern (Inter-Parliamentary Union & UN Women, 2015). By contrast, the Arabic, Asian, European, and Pacific regions have attained the highest quotas ever for women ministers (Inter-Parliamentary Union & UN Women, 2015). The IPU further argue that Europe is the only continent to increase the total number of women Heads of State and Government (Inter-Parliamentary Union & UN Women, 2015).

Table 3.1 demonstrates that, although the number of women in executive government and parliament continues to increase, albeit, at a slow pace, the global development plans are severely impacted by the slow pace (Inter-Parliamentary Union & UN Women, 2015). The Women in Politics 2015 Map presents the most recent data and global rankings for women in politics and presents a mixed view of gender equality in executive government and parliament at regional and national levels (Inter-Parliamentary Union & UN Women, 2015).

Table 3.1: Women in the highest positions of State

Women Heads of State (HS) (6.6%) and Women Heads of Government (HG) (7.3%)	Argentina (HS/HG), Bangladesh (HG), Brazil (HS/HG), Central African Republic (HS), Chile (HS/HG), Croatia (HS), Denmark (HG), Germany (HG), Jamaica (HG), Latvia (HG), Liberia (HS/HG), Lithuania (HS), Malta (HS), Norway (HG), Peru (HG), Poland (HG), Republic of Korea (HS), Switzerland (HS/HG), and Trinidad and Tobago (HG)
Women Speakers of Parliament (15.8%)	Australia, Antigua and Barbuda, Austria (2 chambers), Bahamas, Bangladesh, Barbados, Belgium, Bolivia, Bosnia and Herzegovina, Botswana, Bulgaria, Chile, Dominica, Dominican Republic, Ecuador, Equatorial Guinea, Fiji, Gabon, India, Italy, Lao People's Democratic Republic, Latvia, Lithuania, Mauritius, Mozambique, Netherlands (2 chambers), Peru, Portugal, Russian Federation, Rwanda, Serbia, Singapore, **South Africa (2 chambers)**, Suriname, Swaziland, Turkmenistan, Uganda, United Kingdom, United Republic of Tanzania, Zimbabwe
Women Deputy Speakers of Parliament (26.7%)	Of the 249 chambers in 177 countries for which information is available, 106 have at least one woman deputy speaker

Source: Inter-Parliamentary Union & UN Women, 2015

The Inter-Parliamentary Union & UN Women (2015) ranked the countries according to the percentage of women in unicameral parliaments or the lower house of parliament. Rwanda was ranked 1st with 63.8% of women in parliamentary positions, Finland was ranked 8th with 42.5 % women representation, and South Africa was ranked 10th with 41.5% women representation (Inter-Parliamentary Union & UN Women, 2015).

Figure 3.1 presents the 1,116 portfolios, in 191 countries, that are held by women. Although social affairs, education, family, and women's affairs are the most common portfolios held by women ministers, the quotas of women commanding more senior functions such as defence, environment and foreign affairs have declined (Inter-Parliamentary Union & UN Women, 2015).

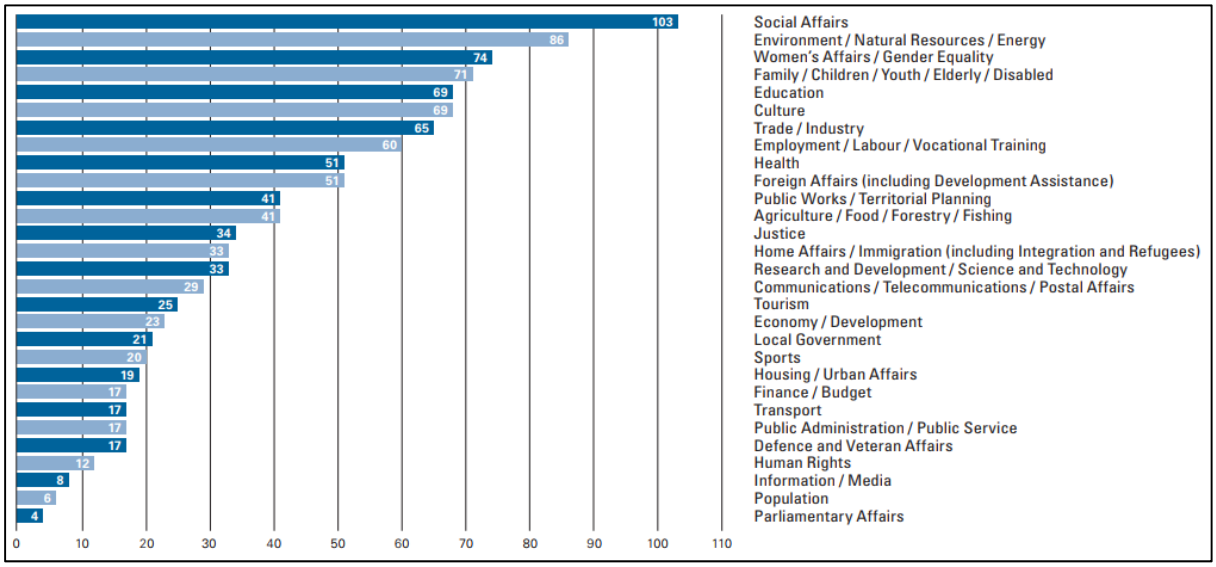


Figure 3.1: Portfolios held by Women Ministers

Source: Inter-Parliamentary Union & UN Women, 2015

3.3.1. International Instruments and the Empowerment of Women

The Constitution of the RSA commits to comply with international law and human rights standards, ensuring a precise alignment between the Constitution and international instruments (Department of Women, 2015). Those international human rights standards contain measures to eradicate inequality between women and men in every aspect of their lives, including in respect of the justice system, the family, societal practices, and the economy (Department of Women, 2015).

South Africa is a signatory to several regional and international commitments on women's empowerment and gender equality (Department of Women, 2015):

- The United Nations Convention on the Elimination of all Forms of Discrimination against Women (CEDAW). Signed January 1993; ratified in December 1995;

- The Beijing Declaration and Platform for Action. Signed September 1995;
- The African Union Heads of States' Solemn Declaration on Gender Equality in Africa. Adapted and ratified August 2004;
- The Optional Protocol to the African Charter on Human and People's Rights on the Rights of Women in Africa. Ratified December 2004;
- The Commonwealth Plan of Action for Women's Empowerment and Gender Equality 2005-2015. Adopted 2005;
- The Southern African Development Community Protocol on Gender and Development (2012). Ratified 2011; and
- The Sustainable Development Goals (2015). Ratified 2015.

The adoption of these international instruments by the South African Government consequently commits the Government to the complete and effective implementation at national level, as well as the advancement of the socio-economic empowerment of women in the RSA (Department of Women, 2015).

3.3.2. Historical Perspective of Women in the RSA

The researcher attempted to visualise a future where women are politically, emotionally, and financially empowered to be the masters of their own destiny, without fear of retribution. To achieve this envisaged future-state, one could imagine a future where the renewable energy sector has facilitated the evolution of women to the stage where women are the owner-operators of their own renewable energy power plants. Regrettably, the stereotype of the *'veggie patch'* and *'chicken coop'* paradigms persist, where intuitional investors are only prepared to fund low-risk initiatives. This thinking is further reinforced where the executive teams of the IPPs believe that *"we know what is best for those people"*. It is essential to envision women that have moved beyond the *'veggie patch'* to a future where women are the owner-operators of their own renewable energy power generation operations.

The early stages of this research effort were premised on the supposition that, ***"if women were economically empowered, it would be easier to mainstream gender, drive gender equity and eliminate gender-based violence"***, because women would then have the financial resources to extricate themselves from these dire situations. However, the systemic failures that South Africa currently experiences in its political leadership, education, safety and security, healthcare and to mainstreaming gender, can only be solved by long-term sustainable interventions, not just by policy and money. Starfield (2016) argues that quotas, regardless of whether the quotas are legislated or voluntary, are insignificant if not augmented with activism, as there is no guarantee that women's voices will be heard and their concerns championed. Starfield (2016) concludes that quotas alone are insufficient and that a combination of quotas and activism will prove more successful at delivering substantive legislation. Starfield's perspective is further supported by the fact that the rate of gender-based violence remains high in most of the Sub-Saharan African countries, with the RSA exhibiting the highest incidence of recorded rape in the world since 2004.

To further support Starfield's hypothesis regarding the need for activism, in August 2016, the South African Cabinet constituted 41% women ministers, 47% women deputy ministers, with a 41% representation of women in the National Assembly (Pitamber, 2016). Before the first democratic elections in South Africa in 1994, there was a meagre 2.7% representation of (predominantly white) women in parliament (Pitamber, 2016). According to Pitamber (2016), before 1994, leadership positions in politics were dominated by (predominantly white) men, and post-1994 South Africa's globally acclaimed narrative of triumph was underpinned by the inclusion of women in political and decision-making positions. However, the statistics relating to gender-based violence in South Africa indicate that policy and quotas alone are entirely inadequate in addressing gender-based violence.

The following questions regarding the motivation of women appointed to political and decision-making positions should be posed:

- Do women have full decision-making powers?

- Have the appointed women been hired as window dressing?
- Do the appointed women have the requisite experience and competency to fulfil the requirements of these positions?
- Have women been appointed to satisfy quotas?
- Have women been set up to fail?
- Have women been appointed to be manipulated to deliver a particular political agenda?

For this study, the researcher included an international population of respondents to analyse international perspectives about mainstreaming gender, as the South African approach to mainstreaming gender appeared to have shortcomings. One of the key shortcomings is the fact that South Africa is considered to have one of the best Constitutions in the world as it relates to Human Rights, yet, South Africa also has the highest rate of gender-based violence, with an increasing rate of femicides, and even cannibalism.

3.4. EMPOWERMENT OF WOMEN AND POLITICAL OFFICE IN THE RSA

According to the Executive Director of UN Women, Phumzile Mlambo-Ngcuka, (a South African woman), there is a requirement for a renewed commitment and investment to attain the Beijing Platform for Action's target for gender balance (Inter-Parliamentary Union & UN Women, 2015). Mlambo-Ngcuka further states that *"If today's leaders front-load gender equality, if they start now to make good on those 20-year-old promises, we can look forward to gender equality by 2030 at the latest."* (Inter-Parliamentary Union & UN Women, 2015). When Jacob Zuma was inaugurated as the President of the Republic of South Africa for his second term in office on the 24th May 2014, his inauguration was followed by an announcement of his new cabinet on the 25th May 2014 (Parliament of the Republic of South Africa, 2017). In August 2016, the South African Cabinet constituted 41% women ministers and 47% women deputy ministers (Parliament of the Republic of South Africa, 2017). The sex-disaggregated South African cabinet (Table 3.2) indicates that the cabinet consists of 33% women (Parliament of the Republic of South Africa, 2017).

In this section, I discuss the performance of the Department of Social Development headed by Minister Bathabile Dlamini, who is also the President of the ANC Women's League, and Ministers Lulu Xingwana and Susan Shabangu, the past and present Minister of Women.

Table 3.2: Second Cabinet of Jacob Zuma

Post	Minister	Term		Party	Male	Female
President of South Africa	Jacob Zuma	2009	–	ANC	1	
Deputy President of South Africa	Cyril Ramaphosa	2014	–	ANC	1	
Minister in the Presidency	Jeff Radebe	2014	–	SACP	1	
Minister of Women in the Presidency	Susan Shabangu	2014	–	ANC		1
Minister of Agriculture, Forestry, and Fisheries	Senzeni Zokwana	2014	–	SACP	1	
Minister of Arts and Culture	Nathi Mthethwa	2014	–	ANC	1	
Minister of Basic Education	Angie Motshekga	2009	–	ANC		1
Minister of Communications	Ayanda Dlodlo	2017	–	ANC		1
	Faith Muthambi	2014	2017	ANC		1
Minister of Cooperative Governance and Traditional Affairs	David van Rooyen	2015	–	ANC	1	
	Pravin Gordhan	2014	2015	ANC	1	
Minister of Defence and Military Veterans	Nosiviwe Mapisa-Nqakula	2013	–	ANC		1
Minister of Economic Development	Ebrahim Patel	2009	–	SACP	1	
Minister of Energy	The Hon. David Mahlobo MP	2017	–	ANC	1	
	Tina Joemat-Pettersson	2014	2017	ANC		1
Minister of Environmental Affairs	Edna Molewa	2014	–	ANC		1

Minister of Finance	Malusi Gigaba	2017	–	ANC	1	
	Pravin Gordhan	2015	2017	ANC	1	
	David van Rooyen	2015	2015	ANC	1	
	Nhlanhla Nene	2014	2015	ANC	1	
Minister of Health	Aaron Motsoaledi	2009	–	ANC	1	
Minister of Higher Education and Training	Hlengiwe Mkhize	2017	–	ANC		1
	Blade Nzimande	2009	2017	SACP	1	
Minister of Home Affairs	Malusi Gigaba	2014	–	SACP	1	
Minister of Human Settlements	Lindiwe Sisulu	2014	–	ANC		1
Minister of International Relations and Cooperation	Maite Nkoana-Mashabane	2009	–	ANC		1
Minister of Justice and Correctional Services	Michael Masutha	2014	–	ANC	1	
Minister of Labour	Mildred Oliphant	2010	–	ANC		1
Minister of Mineral Resources	Mosebenzi Zwane	2015	–	ANC	1	
	Ngoako Ramatlhodi	2014	2015	SACP	1	
Minister of Police	Fikile Mbalula	2017	–	ANC	1	
	Nkosinathi Nhleko	2014	2017	ANC	1	
Minister of Public Enterprises	Lynne Brown	2014	–	ANC		1
Minister of Public Service and Administration	Ngoako Ramatlhodi	2015	–	ANC	1	
	Collins Chabane	2014	2015	ANC	1	
Minister of Public Works	Thulas Nxesi	2011	–	ANC	1	
Minister of Rural Development and Land Reform	Gugile Nkwinti	2009	–	ANC	1	
Minister of Science and Technology	Naledi Pandor	2014	–	ANC		1
Minister of Small Business Development	Lindiwe Zulu	2014	–	ANC		1

Minister of Social Development	Bathabile Dlamini	2010	–	ANC		1
Minister of Sport and Recreation	Thembelani Nxesi	2017	–	ANC	1	
	Fikile Mbalula	2010	2017	ANC	1	
Minister of State Security	Bongani Bongo	2017	–	ANC	1	
	David Mahlobo	2014	2017	ANC	1	
Minister of Telecommunications and Postal Services	Siyabonga Cwele	2014	–	ANC	1	
Minister of Tourism	Tokozile Xasa	2017	–	ANC	1	
	Derek Hanekom	2014	2017	ANC	1	
Minister of Trade and Industry	Rob Davies	2009	–	SACP	1	
Minister of Transport	Joe Maswanganyi	2017		ANC	1	
	Dipuo Peters	2013	2017	ANC		1
Minister of Water and Sanitation	Nomvula Mokonyane	2014	–	SACP		1
Total					**34**	**17**

Source: Parliament of the Republic of South Africa, 2017

The performance of the Ministers, as well as the contribution of their ministries to mainstreaming gender, is beyond the scope of this study.

3.5. MINISTRY OF WOMEN IN THE PRESIDENCY IN THE RSA

In this section, the researcher assesses the policy, implementation, and contribution to mainstream gender by the Department of Women in South Africa. Since 2014 until the present, the Department of Women in the RSA has been headed by the Minister of Women in the Office of the Presidency, the Honourable Susan Shabangu (Department of Women, 2017).

3.5.1. Strategy

The following statement is from the Department of Women in the RSA regarding their mandate, vision, mission, and values:

- **Mandate:** “The mandate of the Department is therefore to champion the advancement of women’s socio-economic empowerment and the promotion of gender equality”. [sic]
- **Vision:** “A society that realises the socio-economic empowerment of women and the advancement of gender equality”. [sic]
- **Mission:** “Accelerate socio-economic transformation for women empowerment and the advancement of gender equality”. [sic]
- **Values: “**The department pledges to place society at the centre of its work through treating people with respect, conducting ourselves with integrity; being accountable for our actions; striving for excellence and equity in all that we do. In interacting with stakeholders, we will act with fairness, respect, and demonstrate teamwork and commitment to the cause. In delivering our mandate, we will honour the faith that is placed in us as the Ministry and Department responsible for advancing the cause of women”. [sic]

The Department of Women’s Strategic Plan 2015 – 2020 (Department of Women, 2015) states that post-1994 legislation development and policy formulation was influenced by the principles of gender equality in every sector. This law reform led to the formulation of an unprecedented body of laws and policies for which the Department of Women became responsible for monitoring and evaluating the impact of these laws and policies on women (Department of Women, 2015). Section 9 (3) and (4) of the Constitution of the RSA prohibits unfair discrimination by the State or an individual against another person based on gender, race, or any other factors (Department of Women, 2015).

The following legislation has been formulated to avoid and prohibit unfair discrimination by race, class, gender, and people with disabilities:

- The Promotion of Equality and Prevention of Unfair Discrimination Act, 2000 (Act No. 4 of 2000);
- The Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997);
- The Employment Equity Act (the EEA), 1998 (Act No. 55 of 1998); and
- The Preferential Procurement Policy Framework Act, 2000 (Act No. 4 of 2000).

The Department of Women is also guided by the objectives of the NDP of the RSA to eliminate poverty and reduce inequality by 2030 (Department of Women, 2015). These objectives will be realised through a process of unifying South Africans, releasing the energies of its citizens, developing an inclusive economy, building capabilities and enhancing the ability of the State and its leaders to cooperate to resolve complex problems (Department of Women, 2015). In 2000, the Cabinet approved the National Gender Policy, which stipulated that Ministers and Director-Generals mainstream gender in their departments and organisations, report on progress, and apply the recommendations of the National Gender Policy to improve the socio-economic empowerment of women (Department of Women, 2015). Located within the Director-Generals offices, the GFPs will have access to strategic decision-making processes, enabling the GFPs to aid gender mainstreaming within their departments (Department of Women, 2015). The GFPs will also determine the most applicable mechanisms for gender-responsive budgeting or gender scorecards, and to ensure that the strategic plans include the essential gender indicators (Department of Women, 2015).

3.5.2. Ministerial Performance

President Nelson Mandela championed women's empowerment by establishing the first department for women during his presidency, and in 1994 at parliament's first session, Mandela stated that *"freedom cannot be achieved unless women have been emancipated from all forms of oppression"* (Thelwell, 2014). In May 2009, President Zuma created a new department and appointed Minister Lulu Xingwana to oversee women, children and disabled people, which President Zuma collectively referred to as *"vulnerable groups in our society"* (Thelwell, 2014). Xingwana was widely criticised for her use of the department's budget, an estimated R 198.3m in 2013, to host lavish parties, international excursions, and designer furniture (Thelwell, 2014).

In May 2014, President Zuma removed Xingwana, dissolved the Ministry of Women, Children and People with Disability, and created a separate Ministry of Women within the Presidency (Department of Women, 2015).

President Zuma appointed the former mining minister, Susan Shabangu to head the ministry, and transferred support for children and people with disabilities to the Department of Social Development which was under the management of Minister Bathabile Dlamini (Department of Women, 2015). Minister Dlamini is also the President of the ANC Women's League since August 2015 (Thelwell, 2014). The objective of the Women's Ministry is to champion women's socio-economic empowerment and women's rights (Department of Women, 2015). Consequently, the Department of Women should advance from an organisation focused on the plight of marginalised and vulnerable groups to an organisation focused specifically on women's socio-economic empowerment and gender equality (Department of Women, 2015).

Shabangu's term of office has also been marred by controversy (Davis, 2014). In November 2014, Shabangu held a meeting in Ekurhuleni to announce the Department's plans for the international 16 Days of Activism for No Violence against Women and Children campaign (Davis, 2014). When Shabangu addressed an audience of women's organisations, she remarked that men are supposed to be the *"protectors of society"* and that women have to *"get their confidence back"* (Davis, 2014). Further concerns were directed at Shabangu who stated that women should be submissive to their husbands, that feminism is un-African, and that domestic abuse ought to be dealt with in the home as opposed to financing centres for abused women and children (Davis, 2014). At one of the parliamentary portfolio committee meetings dealing with the Ministry of Women, proceedings were delayed by eighty minutes because the department's second-quarter report was incomplete, and Minister Shabangu did not even attend the meeting (Davis, 2014). The fact that the department did not appear to have a website only furthered perceptions that the Department had achieved very little (Davis, 2014). On the 26th of February 2018, Minister Bathabile Dlamini was moved from the Department of Social Development to the Ministry of Women in the Presidency, and Minister Shabangu was moved to the Ministry of Social Development.

In terms of the Constitution, the function of the Parliamentary Portfolio Committee is to facilitate oversight and monitor the government by scrutinising legislation, oversee government action, and interact with the public (Davis, 2014).

According to the recorded minutes of the Parliamentary Monitoring Group (PMG), there have been several occasions where the Parliamentary Portfolio Committee could not respond to questions posed by the public, due to the lack of response from the Department of Women (Davis, 2014). According to the Democratic Alliance Shadow Women's Minister, Denise Robinson, the Women's Ministry was in shambles. In 2014-2015 only eighteen of the thirty targets were achieved during the first quarter of 2014/15 (Davis, 2014). The transition from the Department of Women, Children and Disabilities to the Ministry of Women in the Presidency also contributed to the functional confusion where the parliamentary reporting focused mainly on the department's previous incarnation (Davis, 2014).

Davis (2014) points out that there were several concerns regarding the performance of the Department of Women:

- The 2013 monitoring and evaluation results for the former Department of Women indicated that the ministry rated below the national average in key performance areas, except strategic management;
- According to the PMG's minutes, the Annual 2013/2014 Report of the Department of Women stated that there was a considerable staff turnover in the previous financial year;
- Questionable allocation of performance bonuses;
- Questionable use of donor funding on core programs, as well as a failure to attain targets in some of the programs;
- Consistent overspending by the department on aspects of travel, administration, and salaries; and
- Concerns that the Commission for Gender Equality was expending 64% of its 2013/2014 budget on the compensation of employees.

The PMG report, *"Department of Women in the Presidency progress report on Audit Findings and BRRR, with Minister"* raised concerns that the Action Plan was not ready, and, therefore significant findings could not be addressed (Parliamentary Monitoring Group, 2017).

Further concerns were raised regarding internal controls, especially in areas of finance, supply chain management, non-compliance with legislation, and the absence of a Chief Financial Officer (CFO), not to mention several other vacancies (Parliamentary Monitoring Group, 2017).

3.5.3. Department of Social Development

During President Zuma's term in office, he transferred support for children and people with disabilities to the Department of Social Development which was under the management of Minister Bathabile Dlamini. Dlamini has been implicated in several scandals. In 2006 she was implicated along with thirteen other ANC Members of Parliament (MPs) relating to the abuse of parliamentary travel vouchers (Magadla, 2018). The abuse became known as the *'Travelgate'* scandal, where Dlamini's charge sheet stated that she understood that the travel vouchers could only be used for flights. However, Dlamini had also used the parliamentary travel vouchers to cover the costs of hotel accommodation, car hire, and various other benefits (Magadla, 2018). Dlamini was convicted of fraud after pleading guilty to R 245 000 in fraudulent travel claims (Magadla, 2018).

Considering this fraudulent activity, President Zuma still deemed it appropriate to transfer support for children and people with disabilities to Dlamini's Department of Social Development. Dlamini's responsibility would be to manage the disbursements of social grants to more than nine million beneficiaries that can be considered some of the most indigent in South Africa (de Wet, 2017). In February 2016, the then Finance Minister, Pravin Gordhan, announced that social grants represented 94.2% of the Social Department's total budget allocation (Jadoo, 2016). The Department of Social Development was scheduled to pay grants to approximately 18.1 million beneficiaries by the end of 2018/19 (de Wet, 2017). The total 2016/7 budget for social protection amounted to R 167.5 billion, or approximately R 13.2 billion in monthly disbursements for social grants.

At this stage, one should pause and ask why a Minister with a criminal record was entrusted with the responsibility to manage the monthly disbursement of R13.2 billion, projected to almost double to a monthly disbursement of R26.4 billion by the 2018/9 fiscal year. One also should ask how someone with a criminal record of defrauding the State retains their ministerial position.

In April 2005, the South African Social Security Agency (SASSA) was established as a national agency of the South African government, a public entity under Schedule 3A of the PFMA (South African Government, 2004). SASSA was established to distribute social grants on behalf of the Department of Social Development. The Department of Social Development provided oversight of SASSA, but no operational control (South African Government, 2004). The function was also designed to reallocate the responsibility of social security from the provinces of South Africa to the national government and reporting to the Department of Social Development.

The controversy surrounding Dlamini's Department of Social Development continued with scandals relating to the monthly disbursements of the social grants by Net1 UEPS Technologies (Net1), the parent company of social grant payment provider, Cash Paymaster Services (CPS) (Tilley, 2018). In May 2017, Net1 informed the Constitutional Court of South Africa that Net1 had derived R 1.1 billion in profit over the last five years for paying social grants on behalf of the Department of Social Development. Net1 continued by stating that during 2012, 2011 and 2010 fiscal years, Net1 derived 41%, 47%, and 66% of Net1's revenues respectively from CPS social welfare grant distribution business (Tilley, 2018).

The controversy surrounding Net1 began in January 2012, when CPS was awarded the five-year tender, valued at R 10 billion, to distribute social grants on behalf of SASSA starting in February 2012. AllPay, a competing bidder, challenged the procurement process in court, and, in 2014, the Constitutional Court of South Africa found that due process was not followed and consequently declared the tender invalid (Tilley, 2018). However, the Constitutional Court elected to suspend the order to avoid disruption to grant payments and to allow SASSA an opportunity to initiate a new| tender process (Tilley, 2018).

The monthly grant payment process was initiated by a monthly transfer effected by the National Treasury of South Africa, with a deposit into a Nedbank trust account. Grindrod Bank manages all the social grant beneficiary's accounts, and according to Grindrod Bank's website, *"Grindrod Bank proudly provides banking services for the South African Social Security Agency grant recipients, paying 17 million grants to 10.6 million distinct cardholders amounting to R 11bn per month in close association with Cash Paymaster Services who provide the card technology and manage the card programme on behalf of the government of South Africa."* (Grindrod Bank, 2018).

Grant recipients can withdraw their grants from ATMs, any SASSA (Net1) pay point, or from designated retailers such as Pick 'n Pay, which works with EasyPay, yet another Net1 company. Two Net1 subsidiary companies also provide the following services:

- Moneyline provides loans to grant recipients; and
- Umoya Manje enables grant beneficiaries to buy cellphone airtime on credit.

As a consequence of the Department of Social Development/SASSA/Net1 scandal, CEO Serge Belamant received an estimated R 263 million in cash for agreeing to resign one year earlier than his scheduled retirement date (de Wet, 2017). Net1 also committed to pay Belamant an estimated monthly salary of approximately R 660 000, for two more years (de Wet, 2017). According to Net1 the terms of the separation agreement with Belamant was filed with the American Securities and Exchange Commission (SEC). According to Net1, Belamant would receive $1 million in recognition of his 27 years with Net1, and another $7 million gratuity for Belamant's cooperative resignation (de Wet, 2017). Also, Net1 would accelerate the vesting of Belamant's share options, approximately US$ 11 million (de Wet, 2017).

The Department of Social Development/SASSA/Net1 scandal further supports the statement expressed in the NDP of the RSA, that the present model of Broad-Based Black Economic Empowerment has not succeeded to any considerable degree in broadening the scope of ownership and control of large firms, i.e. economic transformation.

The Department of Social Development/SASSA/Net1 scandal is similar, if not even more extreme, than the perverse incentives created by B-BBEE such as causing job losses when firms import goods rather than use local producers, as well as the processes that are riddled with corruption and incompetence.

At the same time as the corruption scandal, the South African Government has argued for *"Radical Economic Transformation"* and the elimination of *"White Minority Capital"*, but these scandals only entrench the existing paradigms and accelerate the disparity between rich and poor. The more significant concern is that the South African Parliament, the Department of Social Development, and to some extent SASSA, allowed a private company to amass an estimated R 1.1 billion in profits over a 3-year period from funds that were ultimately destined for the most indigent South African citizens.

3.5.4. Department of Education

The state of the South African Public Education System was discussed in Chapter Two. This section will discuss the educational system in South Africa in relation to the two ministers responsible for Basic Education, and Higher Education and Training. Ironically, the educational system in South Africa has been under the control of a female and male minister, with Angie Motshekga responsible for Basic Education and Blade Nzimande responsible for Higher Education and Training. After almost a decade, in 2017, Nzimande was moved to the Ministry of Transport, but Motshekga was retained as Minister of Basic Education.

In 2009, President Zuma split the Department of Education into the Department of Basic Education and the Department of Higher Education and Training. In hindsight, the decision by Zuma has potentially had a negative effect on the education in South Africa. Also, the rationale to divide the Department of Education could have been part of the strategy to increase the number of pro Zuma ministers. Table 3.3 lists the Ministers responsible for the Ministry of Education since 1994:

Table 3.3: Ministers responsible for the Ministry of Education since 1994

Minister	Department	Tenure
Sibusiso Bengu	Education	1994 - 1999
Kader Asmal	Education	1999 - 2004
*Naledi Pandor	Education	2004 - 2009
*Angie Motshekga	Basic Education	2009 - present
Blade Nzimande	Higher Education and Training	2009 - 2017
*Prof. Hlengiwe Mkhize	Higher Education and Training	2017 - present

Source: Parliament of the Republic of South Africa, 2017

Notes: *Indicates a women Minister

According to Cohen (2017), the South African government spends a higher proportion of its annual budget on education compared to the USA, UK and Germany. From March 2016 to March 2017 the government spent R 213.7 billion on primary education, or approximately 15% of the total South African budget (Cohen, 2017). The education allocation is projected to increase by an estimated 7.4% annually over the next three fiscal years, based on projections from the National Treasury (Cohen, 2017). From these financial figures, the inference can be made that South Africa has sufficient budget for Basic Education, and Higher Education and Training. However, the lack of leadership at the highest level, especially with regard to Basic Education, will most likely see and a further decline in the quality of education. Thereby, further committing the South African youth to being globally uncompetitive and reinforcing the paradigm that South African youth will only be a source of cheap labour. The REIPPPP should ensure that the developmental funds are vigorously defended against any potential looting, and the REIPPPP should make every attempt to contribute to the educational system to avoid producing a nation of *"cheap labour"*.

3.6. GENDER MAINSTREAMING AND THE EMPOWERMENT OF WOMEN IN THE RSA

The Department of Women's Strategic Plan 2015-2020 describes gender mainstreaming as the process of assessing the implications of any planned actions, which could include legislation, policies, budgets and programmes for women, men, boys and girls, in all areas and at all levels (Department of Women, 2015).

According to the Department of Women (2015), gender equality will require the implementation of corrective measures for avoidance and alleviation of prejudice, removal of barriers, and the reduction of disparities between women and men, girls and boys.

The Strategic Plan 2015-2020 further articulates the essential principles of gender mainstreaming as:

- System-wide mainstreaming at all levels and across all spheres of government, the private sector, labour movements, and CSOs;
- Suitable and sufficient accountability mechanisms for monitoring progress;
- Identification of all issues and problems across all areas of activity that expose distinctions and disparities between men and women, girls and boys;
- Intervention to ensure issues are gender neutral from an equality, empowerment, and rights perspective;
- Translation of the concept into practice, to ensure political will is present and that adequate resources are allocated for gender mainstreaming; and
- Broadening of participation at all levels of decision-making.

Accordingly, the Strategic Plan 2015-2020 states that the strategy of gender mainstreaming incorporates targeted, women-specific policies, programmes and legislation, in addition to a need for specialised units or focal points, gender-sensitive strategic planning and gender responsive budgeting (Department of Women, 2015).

3.6.1. Strategic Plan, Implementation, Monitoring and Evaluation

The objectives of the Department of Women's Strategic Plan are to promote:

- Strategic leadership, good governance, effective, efficient, and economical utilisation of public resources for the socio-economic empowerment of women and the promotion of gender equality;
- Gender mainstreaming of socio-economic and governance programmes to accelerate a just and equitable society for women;

- Gender knowledge, analysis of policy, and the implementation of policy for the socio-economic empowerment of women;
- The implementation of monitoring, evaluation, and reporting systems to facilitate interventions targeted at the socio-economic empowerment of women and gender equality; and
- The development of outreach and advocacy initiatives to enable public participation in the activities of the Department of Women (Department of Women, 2015).

Figure 3.2 presents the organisational structure for the Department of Women in the Presidency for the RSA.

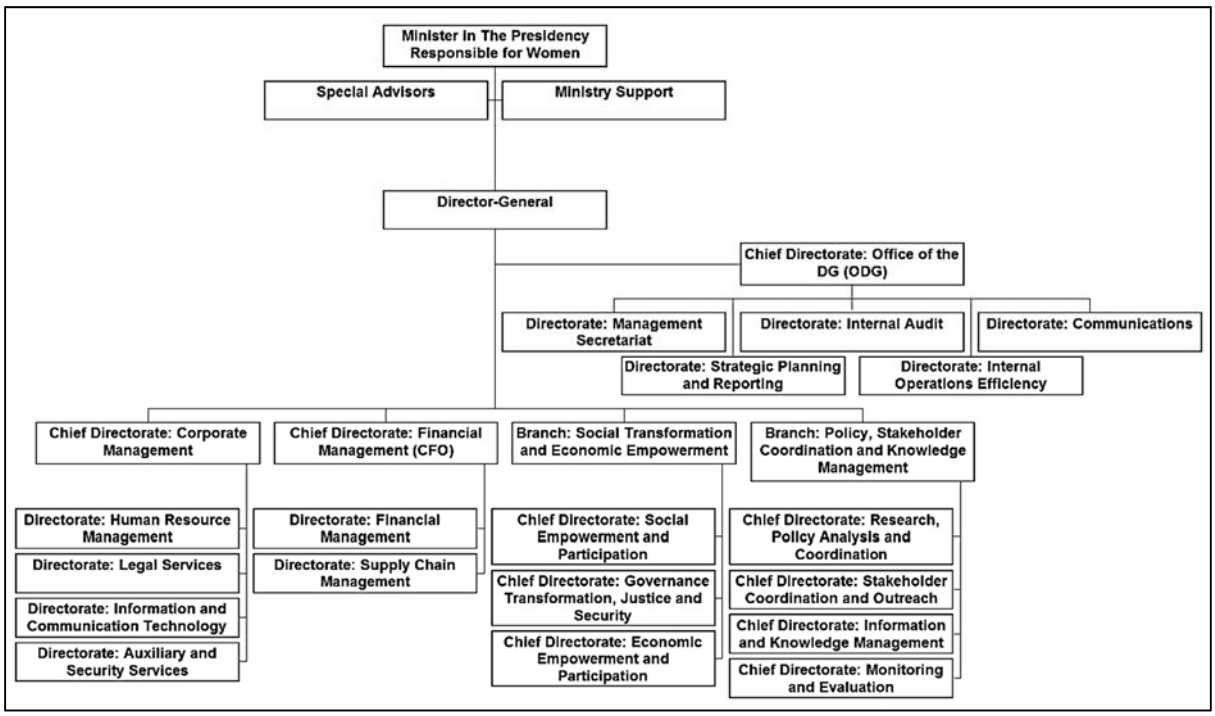


Figure 3.2: Organisational Structure of the Dept. of Women in the RSA

Source: Department of Women in the RSA (2017)

From this organogram, it would appear that the Department of Women is appropriately staffed with executive level resources to support the objectives of Department of Women's Strategic Plan. One would, therefore, expect much more impactful delivery from the Department of Women than what is currently being delivered.

3.6.2. Programmes

According to the Department of Women in the RSA (2017), there are three thematic programme areas: administration; social transformation and Economic Empowerment; Policy, Stakeholder Coordination and Knowledge Management:

- The objective of the Administration Programme is to make available strategic leadership, management, and administrative support services to the Department of Women and comprises three sub-programmes: Departmental Management; Financial Management; and Corporate Management;
- Programme 2 - Social Transformation and Economic Empowerment is intended to facilitate and to promote the achievement of women's socio-economic empowerment and gender equality. This programme also consists of three sub-programmes: Social Empowerment and Transformation; Economic Empowerment and Participation; and Governance Transformation, Justice, and Security; and
- Finally, Programme 3 - Policy, Stakeholder Coordination, and Knowledge Management: is intended to perform research, policy analysis, knowledge management, monitoring, evaluation, outreach, and stakeholder coordination for women's socio-economic empowerment and gender equality. This programme consists of the following four sub-programmes: Research and Policy Analysis; Information and Knowledge Management; Stakeholder Coordination and Outreach; and Monitoring and Evaluation.

At a glance, the thematic themes and the supporting programmes appear to link well with the strategy. However, given the high incidence of femicide in South Africa, one would have expected a greater level of impact delivered by the Department of Women. As an example, the Administrative Programme will effectively capacitate the Department of Women with expertise that would be expected from the executive resources. Also, it is unlikely that Programme 3, Policy, Stakeholder Coordination, and Knowledge Management, will have the desired impact unless supported by measurable delivery.

Therefore, of the Department of Women's strategy, resourcing, and execution might have to be critically reviewed in relation to the gender-based violence and femicides that South African women are exposed to.

3.6.3. Partnerships

As a consequence of launching the National Dialogues on Violence Against Women and Children Programme during 2016, the Department of Women developed partnerships with provincial government and private institutions (Shabangu, 2017). These partnerships enabled the Department of Women to engage communities in improving their understanding of the causes of violence against women and children. They also provided a platform for victims and perpetrators of violence against women and children to engage in constructive dialogue and to search for solutions (Shabangu, 2017). Shabangu (2017) further states that the National Dialogues have attracted both men and women who attended the dialogue sessions to discuss their experiences of violence against women and children. The dialogue sessions focused on Provincial Government, district and local municipalities, and traditional leadership (Shabangu, 2017). Shabangu (2017) continues by also commending the increasing involvement of men through the *"#Not in theirName"*, *"#Stop Excuses"* and *"#There is No Excuse for Violence"*. According to Shabangu (2017), Faith Based Organisations (FBOs) are critical as advocates to ensure that South Africa is safe for women and children, as the FBOs stakeholders are highly receptive to messages of the FBOs.

The following partnerships and initiatives were also identified as important by Shabangu (2017):

- The South African National AIDS Council's Men's Sector (SANAC) and entities such as Takuwani Riime;
- DialDirect, Namola mobile crime response application which was deployed nationally, and endorsed by the Minister of Police;
- First4Women which invest funds to fight gender-based violence; and
- Faith-based organisations such as Rhema Church, the National Religious Leaders Forum, and the Jewish Board of Deputies.

It is commendable that the Department of Women has been able to establish these partnerships. However, given the extent of the gender-based violence, a much more substantive number of partnerships will have to be established. In addition, the contribution from these partnerships should be equally substantive and should go beyond the mobile applications, to enforcement of the law.

3.6.4. The Commission for Gender Equality

This section will discuss the relationship that exists between the Department of Women in the Presidency and the Commission for Gender Equality (CGE). In particular, the possible duplication in structure, especially in relation to support and administrative function. The delivery of the two entities, although not a focus of this study, should also be considered in relation to the extent of the gender-based violence and increasing femicides.

The CGE is a constitutional entity established by the Constitution of South Africa (Maema, 2017). The Commission for Gender Equality Act, 1996 (Act 39 of 1996) stipulates the establishment of an institution that will promote and monitor gender equality as set out in Chapter Nine of the Constitution (Department of Women, 2015). The mandate of the CGE is to educate the public, in particular women, regarding their rights, and to monitor government‘s implementation of the Bill of Rights as enshrined in the Constitution of the RSA (Department of Women, 2015).

The CGE is premised on the desire for a free and equal society in every fundamental and material aspect of life (Maema, 2017). Internationally there is a recognition that an undemocratic political system, male dominance in political, economic, social and cultural affairs, and a society that has endured a protracted patriarchy, requires a transformation in gender relations. In South Africa, this has been addressed by the establishment of the CGE (Maema, 2017). The CGE is one of several institutions entrusted with the duty of strengthening constitutional democracy in the RSA (Department of Women, 2017). The CGE is independent and subject only to the Constitution and the law (Department of Women, 2017). It is intended to be impartial and should execute its powers without fear, favour, or prejudice (Department of Women, 2017).

However, an administrative/budgetary relationship exists between the Minister in the Presidency responsible for Women, and the CGE (Department of Women, 2017). The CGEs budget is incorporated within the budget vote of the Department of Women in the Presidency (Department of Women, 2017). The President of the RSA designated the Minister in the Presidency Responsible for Women, and consequently, any legislative amendments to the Act are presented in Cabinet by the Minister in the capacity as a member of the national executive (Department of Women, 2017). Therefore the Department of Women is accountable for the legislative processes essential to amend this Act (Department of Women, 2017). All these factors potentially contribute to the impartiality of the CGE.

The Mission of the CGE is, *"To promote, protect, monitor and evaluate gender equality"* (Maema, 2017). The operating model of the CGE has two levels, with employed staff as per the Public Service conditions; and Commissioners who are nominated by the general public are then recommended by a multiparty parliamentary committee; and finally appointed by the President of the RSA (Maema, 2017).

The focus areas of the CGE is divided into the following key themes (Maema, 2017):

- Gender and Poverty;
- Gender – HIV;
- The National Gender Machinery;
- Gender-Based Violence;
- Gender, Culture, Religion, and Traditional Practices; and
- Gender, Democracy, and Good Governance.

The structure of the Department of Women was previously discussed. Figure 3.3 presents the organogram that supports the mission, objectives and themes of the CGE (Maema, 2017).

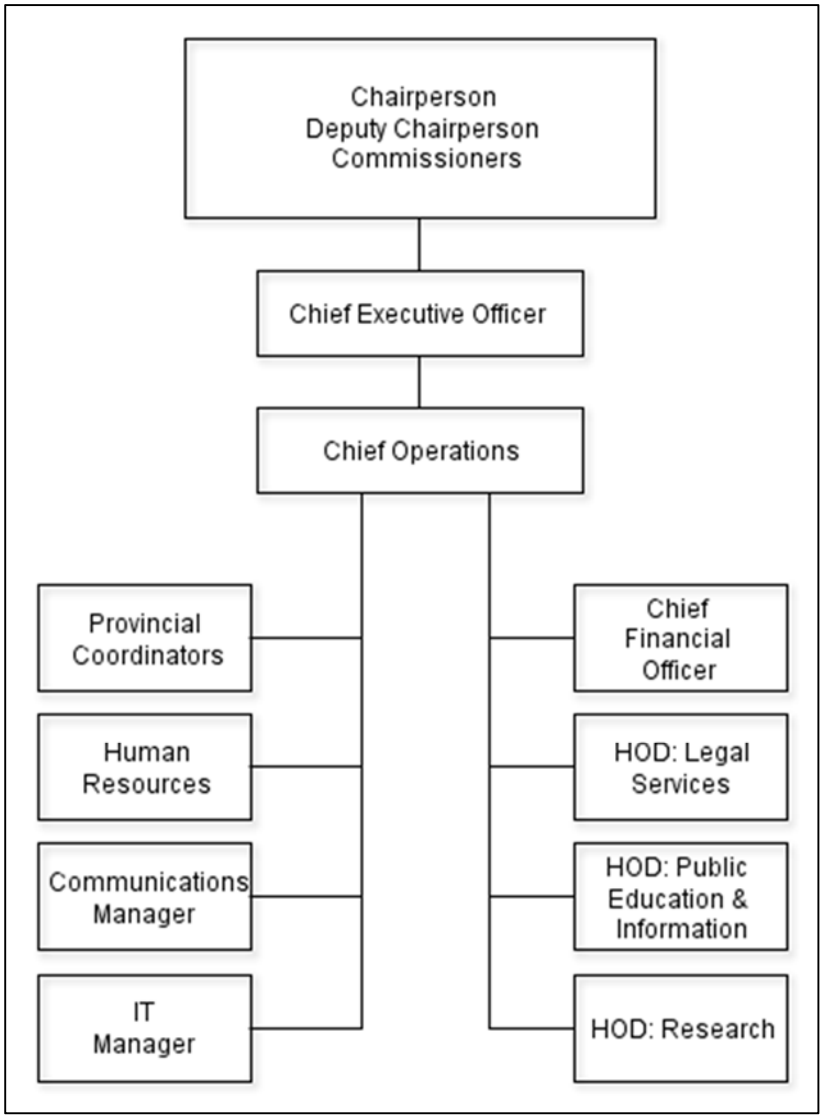


Figure 3.3: Organogram of the Commission for Gender Equality

Source: Commission for Gender Equality, 2017.

The two structures raise concern regarding the possible duplication of executive, support, and administrative staff. However, of greater concern, is the expected output that these two entities should be delivering. Although there is an appreciation regarding the different mandates of the Department of Women in the Presidency and the CGE, considering the dire position that woman face on a daily basis in South Africa, it would be advisable that these two entities are combined to focus their collective effort on addressing the high degree of gender-based violence and increasing femicides in South Africa.

3.7. A REVIEW OF WOMAN EMPOWERMENT AND THE INDUSTRIAL SECTOR IN THE RSA

3.7.1. Structural Exclusion

This research effort also has implications for the future as it will augment the existing body of knowledge in the mining, agricultural, and manufacturing sectors, and will attempt to develop a theoretical socio-economic model to promote gender equality, women's empowerment, and to mainstream gender in the renewable energy sector of the RSA. For various reasons, the mining, manufacturing, and agricultural sectors have had limited impact in delivering on the promise of women's empowerment (Africa Foundation for Sustainable Development, 2016a). For example, in the agricultural sector, women do mainly menial jobs in co-operatives, and there is little integration of women into the agriculture value chain (Africa Foundation for Sustainable Development, 2010). The political transition introduced during the 1990s brought both political and economic change to the white Afrikaner elite that had benefited from National Party patronage (Ponte, 2008). In 1994, after the abolition of the apartheid government, the newly democratically elected African National Congress (ANC) Government introduced new labour and employment legislation using the International Labour Organisation's (ILO) minimum level and to ensure that fundamental human and social rights were afforded to all workers under the law (Kruger, du Toit, & Ponte, 2006). By increasing the necessary human, social, and economic rights of farm workers, this intervention resulted in increased labour costs, including compliance with the new legislation, and increased levels of casualisation and externalisation (Kruger *et al.,* 2006).

Some historical background to the disempowered status of women politically and socially will help to understand some of the challenges faced. For example, women in the United States of America (USA) were not allowed to vote and were not encouraged to expand their knowledge (Rao, 2014). In 1873, a Harvard gynaecologist, Edward H. Clarke stated that women risked neuralgia, uterine disease, hysteria, and other instabilities of the nervous system such as infertility (Rao, 2014). Clarke's rationale was premised on the fact that a woman's system is not capable of simultaneously performing two functions equally well (Rao, 2014).

In 1885, three women from India, Japan and Syria respectively, enrolled as students at the Women's Medical College of Pennsylvania (WMCP), and are considered to be pioneers of gender equality (Rao, 2014). The Quakers believed sufficiently in women's rights to set-up the WMCP in 1850 in Germantown, and thus the WMCP was the first women's medical college in the world (Rao, 2014). Figure 3.4 presents from left to right, Dr Anandibai Joshi from India, Dr Keiko Okami from Japan and Dr Sabat Islambouli from Syria, who were student doctors at the Women's Medical College of Pennsylvania (Rao, 2014).

Figure 3.4: Three Women Medical Students, 1885
Source: Rao, 2014

3.7.2. Advancing the Gender Envelope

Figure 3.5 presents the Dahomey Women Warriors parading outside the gates of a Dahomean town, with the severed heads of their defeated foes adorning the walls (Dash, 2011). The Kingdom of Dahomey was the small West African Kingdom that existed from 1600 until 1894, now located within the region of the present-day country of Benin (Dash, 2011). Dahomey was renowned as a *"Black Sparta"*, a fiercely militaristic culture determined on conquest, whose soldiers would elicit fear in their enemies all along the *"Slave Coast"* (Dash, 2011).

According to Alpern, author of the only full-length English-language account of the Dahomey Women Warriors, the women warriors were first recruited during the 17th century (Dash, 2011). One theory traces the origins of the women warriors to teams of female hunters referred to as gbeto (Dash, 2011). There are additional examples of successful warrior queens, the most prominent being Nzinga of Matamba, who is considered one of the most important figures of 17th century Angola (Dash, 2011). Nzinga fought the Portuguese, drank the blood of sacrificial victims, and maintained a harem of 60 male concubines, whom Nzinga dressed in women's clothing (Dash, 2011).

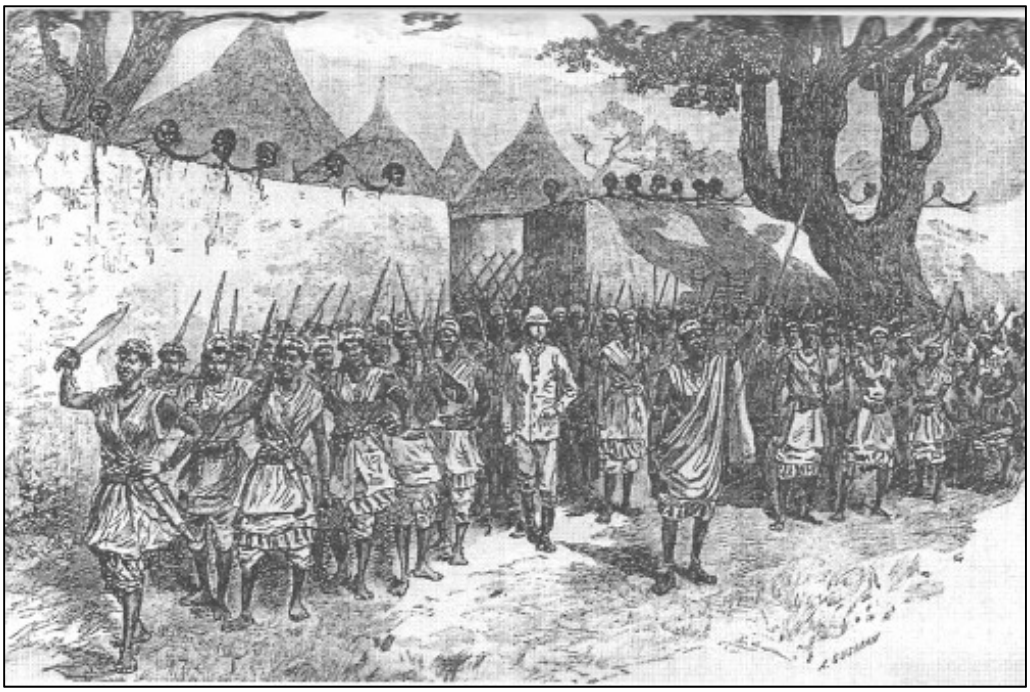


Figure 3.5: Women warriors parade outside the gates of a Dahomean town
Source: Dash, 2011

According to Roberts, Mayo, Ely, & Thomas (2018), when African-American women are underrepresented in an organisation's senior leadership roles despite excellent academic credentials and work experience, their challenges invariably indicate a broader problem (Roberts *et al.,* 2018). Roberts *et al.*, (2018) point out that women require extraordinary ability, perseverance, and support to transcend the organisational challenges (Roberts *et al.,* 2018). According to McGregor (2018), there are only three black CEOs in the Fortune 500 Companies, and no black female CEOs leading companies in the S&P 500 index.

Recent research featured in the Harvard Business Review state that only 13% of black female Harvard MBAs in the last 40 years reach the senior executive ranks (McGregor, 2018). In preparation for the commemoration of the 50th anniversary of the founding of the African-American Student Union at Harvard Business School (HBS), Roberts *et al.,* (2018) conducted a study of the careers of approximately 2,300 alumni of African descent who graduated from HBS since its founding in 1908. The study reviewed 532 African-American women who graduated between 1977 and 2015 (Roberts *et al.,* 2018). The study then analysed the career paths of 67 of the women who attained the position of chair, CEO, or a C-level executive in a company or senior managing director, or partner in a professional services company (Roberts *et al.,* 2018). The women studied had three skills which were key to their resilience: emotional intelligence, authenticity, and agility (Roberts *et al.,* 2018). The study also surfaced one of the most significant challenges faced by the women, the double-edged sword of *'visibility and invisibility'* (Roberts *et al.,* 2018). A senior finance executive stated, *"I was always the only black person. I literally spent the first 20 years not really ever seeing another black person in the day-to-day course of work."*, (Roberts *et al.,* 2018). Black women were anomalies within their organisations and African-American women stood out from the rest of the organisation (Roberts *et al.,* 2018).

According to Farhar (1998), in the developing countries, women are the primary producers of energy, and households in developing countries are the primary users of energy. As a consequence of gender roles and traditions being overlooked in the energy sector, the global potential for renewable energy has been negatively affected (Farhar, 1998). The Gender Policy of the AfDB (2001) reaffirms the African Development Bank's commitment to mainstream gender as a way of fostering poverty reduction, economic development and gender equality within the region. Its policy focuses on gender equality as a development goal instead of on women as a target group.

The REIPPP is, however, making strides to address the gender imbalance. After the initial success of the Southern African Females in Energy Efficiency (SAFEE) mentorship programme, SAFEE aims to establish the mentorship programme in other provinces, and also host SAFEE chapters several tertiary institutions across South Africa (Breytenbach, 2018).

SAFEE is a division of the Southern African Association for Energy Efficiency (SAEE) and focuses mainly on supporting and celebrating the function of women in the energy efficiency sector (Breytenbach, 2018). SAFEE presents yet another entry-point that women within the renewable energy sector.

In order to provide a European perspective to mainstream gender, one of the EUs founding values is the equality between women and men which dates back to 1957 when the principle of *"equal pay for equal work"* was introduced into the Treaty of Rome (European Commission, 2017). The EU has made significant progress during the last decades mainly through equal opportunity legislation, by integrating gender perspectives into policies, and by developing particular measures for the advancement of women (European Commission, 2017). The Strategic engagement of the EU for gender equality was published in December 2015 and articulates the framework for the EU's future interventions that will improve gender equality (European Commission, 2017).

The Strategic engagement of the EU through the 2020 Strategy, stipulates the following five priority areas (European Commission, 2017):

- Increasing female labour market participation and equal economic independence;
- Reducing the gender pay, income, and pension gaps, thereby addressing poverty among women;
- Promoting equality between women and men in decision-making;
- Fighting gender-based violence, safeguarding, and supporting victims; and
- Promoting gender equality and women's rights.

In relation to the REIPPPP, women should be afforded the opportunity to Build, Operate and Own a portion of power generation plants. Women-led IPPs can be implemented by expanding existing power generation plants. The environmental and technical studies have already been completed, the capital has already been invested, and the IPPs are generating energy. A low risk, low investment approach is to expand and scale-up existing IPPs.

The potential to create spin-off industries is unlimited given an innovative and supportive environment. In some respects, one requires the radical, tenacious, entrepreneurial approach displayed by Elon Musk in order to promote gender equality within the REIPPPP.

For this study, the emphasis was placed on women within the renewable energy sector and the positions and decision-making power that they command at the executive level. During the data collection phase of this study, it became apparent that within South Africa, the renewable energy sector was very well understood by most respondents. However, mainstreaming gender was not as prominent as expected. Because of the chasm between the renewable energy sector and mainstreaming gender, the research population incorporated an international audience to develop a baseline for mainstreaming gender. The baseline would be used to compare the local South African status quo of mainstreaming gender. The GEF was used as a benchmark for their approach and policies to mainstreaming gender.

3.7.3. Measure of Poverty

The Nobel-prize winning economist, Amartya Sen, is widely respected for his contribution to poverty-related studies and has written extensively about creating conditions to improve global poverty and other types of social exclusion (Lipina, 2014). Sen argued that one of the primary tools to defeat poverty may be the development of human agency within the context of social, political, and economic freedoms (Lipina, 2014). Agency, according to Sen, displays the knowledge of initiating activity and implementing goals that are consistent with one's values and life goals (Lipina, 2014). Sen proposed that agency is most probably to emerge when people reside in communities that present the following freedoms: *"economic opportunities, political freedoms, social facilities, transparency guarantees, and protective security."* (Lipina, 2014). The notion that education is a form of freedom essential for creating agency among individuals and organisations further supports Sen's perspective (Lipina, 2014).

Sen also argued against material, resource-related calculations to measure poverty, for example, poverty lines, emphasising instead that money and resources are crucial because they enable people to participate in social relationships in safety, dignity, and freedom (Lipina, 2014). Sen emphasised that the exclusion of the indigent from such participation constitutes a primary deprivation and creates other forms of deprivations such as unemployment (Lipina, 2014).

The UN's 1997 Human Development report reflects Sen's perspectives within the UNs policy statements, where poverty was conceptualised as the denial of the most fundamental choices and opportunities to human development (Jolly, 1997). These fundamental choices include the opportunity to live an extended, healthy, creative life and to enjoy a good standard of living, freedom, self-esteem, and the respect of others, instead of the narrow definition as the poverty of income (Jolly, 1997). The UN report suggested strategies for addressing poverty that included the eradication of gender inequity predicated on the consequence of inequity (Jolly, 1997). The UN report also points out that majority of the world's poor are women and their children, economic growth priorities which are not pro-poor, and insufficient factors to ensure poor people's participation in the decisions that affect their lives (Jolly, 1997). Figure 3.6 presents the linkages between the human development approach and the 2030 Agenda (Jahan *et al.,* 2016).

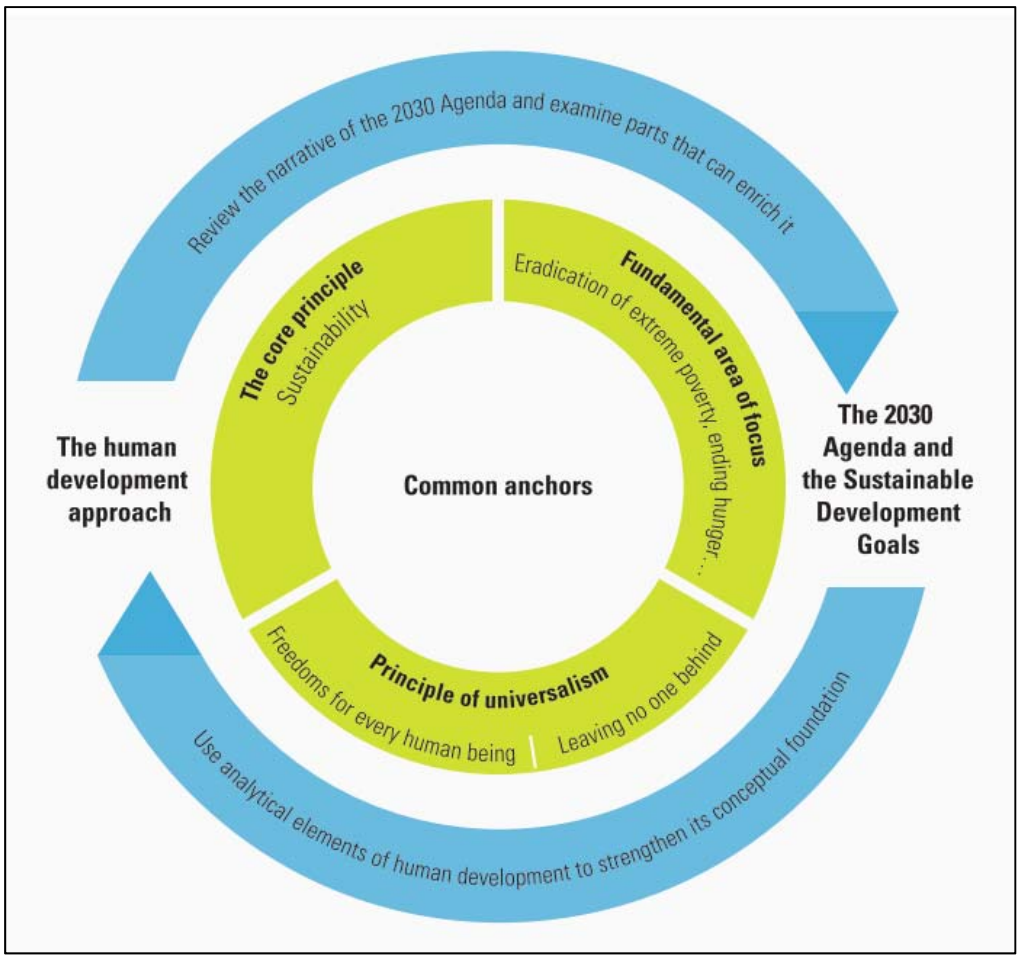


Figure 3.6: Links between human development and the 2030 Agenda

Source: United Nations Development Programme, 2016

In 2000, informed by the human development approach, the Millennium Declaration, and the Millennium Development Goals, were agreed by 189 governments and heads of state, with the objective to decrease basic human poverty by 2015 (Jahan *et al.,* 2016). The human development approach also guided the 2030 Agenda and the Sustainable Development Goals, the successor to the Millennium Development Goals (Jahan *et al.,* 2016). The three common analytical links between the human development approach and the 2030 Agenda is that: both are anchored in universalism; both share the same fundamental focus of eradicating extreme poverty, ending hunger, reducing inequality, and ensuring gender equality; both are guided by sustainability as their core principle (Jahan *et al.,* 2016).

According to the United Nations Development Programme (2016) universalism is central to human development, and even though progress has been achieved in human development over the past twenty-five years, there are still significant challenges and obstacles to universal human development.

3.7.4. Discrimination against Women

Due to discrimination, deficits in primary human development tend to persist among several groups, particularly women (Jahan *et al.,* 2016). Women are especially discriminated against in respect of opportunities and are burdened with disadvantaged outcomes (Jahan *et al.,* 2016). Figure 3.7 shows how women are discriminated against in respect of opportunities.

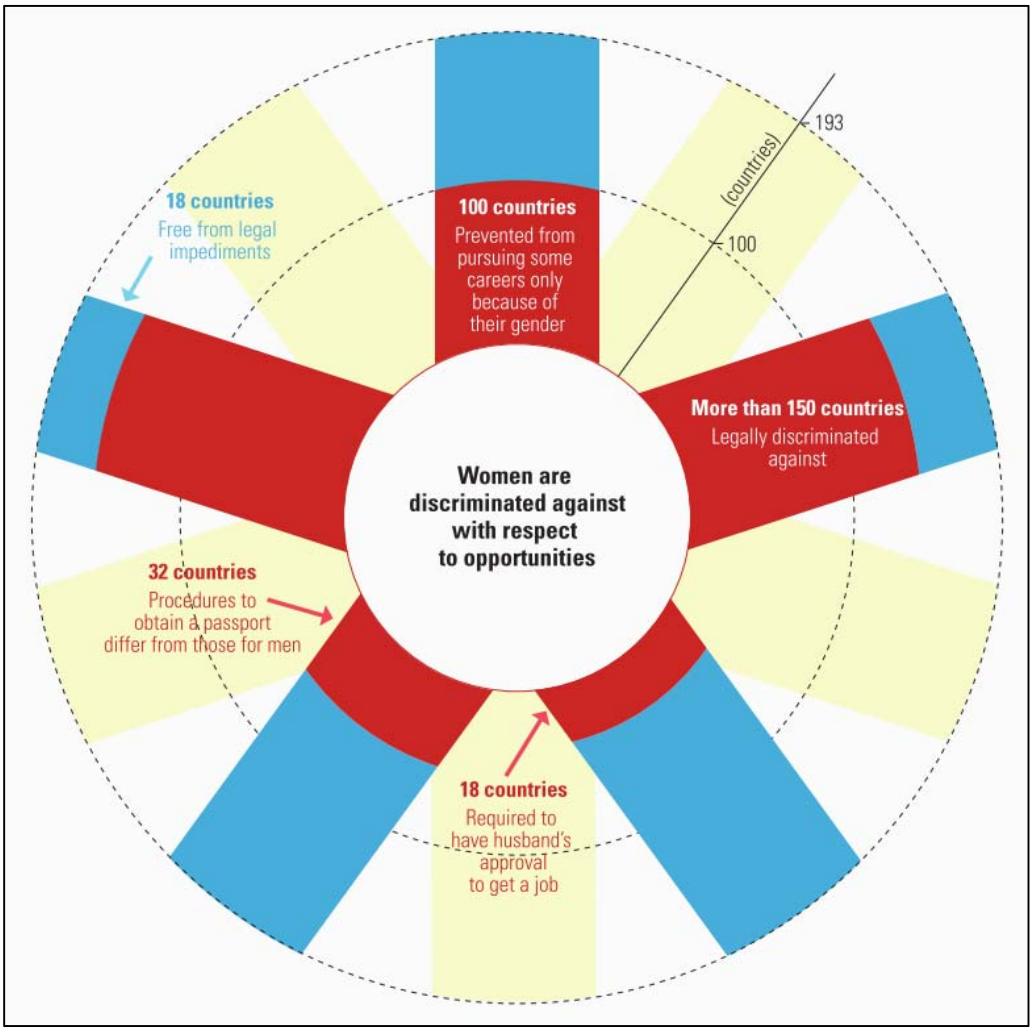


Figure 3.7: Women are discriminated against in respect of opportunities

Source: United Nations Development Programme, 2016

In several societies, women are discriminated against concerning productive assets, for example, the right to land and property. Consequently, only 10% - 20% of landholders in developing countries are women (Jahan *et al.,* 2016). Of the 193 member states of the United Nations, in more than one hundred and fifty countries women are legally discriminated against; an estimated one hundred countries prevent women from pursuing a career; in eighteen countries women require a husband's approval to obtain a job; and only in eighteen countries are women free from legal discrimination (Jahan *et al.,* 2016).

3.7.5. Impact of Climatic Change

According to the GEF, women suffer the impacts of climate change in a different manner than men and are often disproportionately affected due to gender inequalities (Global Environmental Facility's Secretariat, 2015). In addition, women constitute the majority of the world's poor and are therefore more dependent on natural resources for their livelihood which is increasing threatened by climate change (Global Environmental Facility's Secretariat, 2015). The GEF (2015) point out that women's capacity for dealing with and adapting to climate change are negatively impacted when a woman's access to financial resources, land, education, health, rights, and opportunities are restricted. These inequalities further prevent women from contributing to or profiting from climate adaption and mitigation initiatives, compounded by the unequal participation in the decision-making processes (Global Environmental Facility's Secretariat, 2015).

Climate change is not a new phenomenon and the impact thereof is evidenced in the Great Bengal Famine with an unofficial estimate of between three to four million people perishing due to starvation. Sen, in his essay, Poverty and Famines, *"An Essay on Entitlement and Deprivation, The Great Bengal Famine"*, Sen points out that an estimated 1.5 million perished from starvation during the 1943 Bengal famine (Sen, 1981).

Although critics of the official Famine Inquiry Commission estimate the deaths to be between 3 – 4 million, W.R. Aykroyd who was a member of the commission and responsible mainly for the calculation acknowledges that there was an under-estimation as the Commission did not take into account roadside deaths (Sen, 1981). Sen (1981) further states that the inadequacy of official policy to address the Bengal famine is widely noted and criticised. In Bengal, there were three rice crops, the winter aman crop that was sown around May/June, and harvested in November/December; the autumn aus crop that was sown around April and harvested in August/September; and the spring boro crop that was planted in November and harvested in February/March (Sen, 1981).

According to Sen (1981), the most crucial crop was the winter crop, and this was evidenced by the yields of the past five years from 1939 - 43: 73%, 24% and 3% respectively. In 1942, the autumn crop was less than normal for the preceding four years by 97%; the winter crop was moderately less by 83% of the average preceding four years (Sen, 1981). Sen (1981) points out that the reduced yield was due mainly due to the consequence of a cyclone in October, accompanied by torrential rain in several parts of Bengal, followed by a consequent fungus disease. In addition to the climatic influences, the Japanese occupied Burma in 1942, eliminating the rice imports from Burma, and placing further pressure on the rice stocks of Bengal (Sen, 1981). In 1941, with the burden of financing of Britain's war in Asia, the approach of balanced budgets was completely ignored and the huge burden of war financing, the equivalent of three times the normal budget, was shifted onto India (Patnaik, 2003). Patnaik (2003) points out that the printing of money by the British colonialist, thereby extracting forced savings via food price inflation, was the primary mechanism of financing, resulting in deaths by starvation, especially in Bengal.

The cause of these Bengalese deaths can, therefore, be traced back to a change in climate, political change, and questionable economic policy decisions. The consequence for women, who might not be part of the decision-making process is therefore even more dire. The challenges that women face is further emphasised by the fact that in more than one hundred and fifty countries women are legally discriminated against.

3.7.6. Adverse Incorporation

Du Toit (2011) argues that post-apartheid policy in South Africa has failed to address the implications of the structural legacy of apartheid. Du Toit (2011) argues that *'jobless de-agrarianization'* which results in people being pushed out of land-based employment (with limited opportunity to enter the non-farm economy) is a direct consequence of the nature of South African agro-food processes and systems. Additionally, critical marginalising dynamics inherited from the apartheid era have been left unchallenged (du Toit, 2011). du Toit (2011) further argues that poverty has to be approached as a structural aspect of post-apartheid South African society. The structural legacy has a central agrarian dimension, and therefore the nature of the current agro-food system is one of the central drivers of continued marginalisation and poverty in South Africa (du Toit, 2011).

According to (du Toit, 2011), *"The present unequal distribution of wealth, risk and income in South Africa is not simply a legacy of segregation and Apartheid policies. It is the result of broader relationships between the social and economic power of which the institutions of formal racial discrimination were but a part"*. Du Toit (2011) further states that the situation of South Africa's poor is not merely that they are disconnected from the opportunities of the market, but that the poverty situation is better characterised as *'adverse incorporation'*. Millions of poor, black South Africans find themselves excluded from the economy as farmers, growers, producers, workers and traders, but included as consumers of the manufactured goods and services created by the South African core economy (du Toit, 2013). Figure 3.8 summarises Du Toit's argument regarding adverse incorporation:

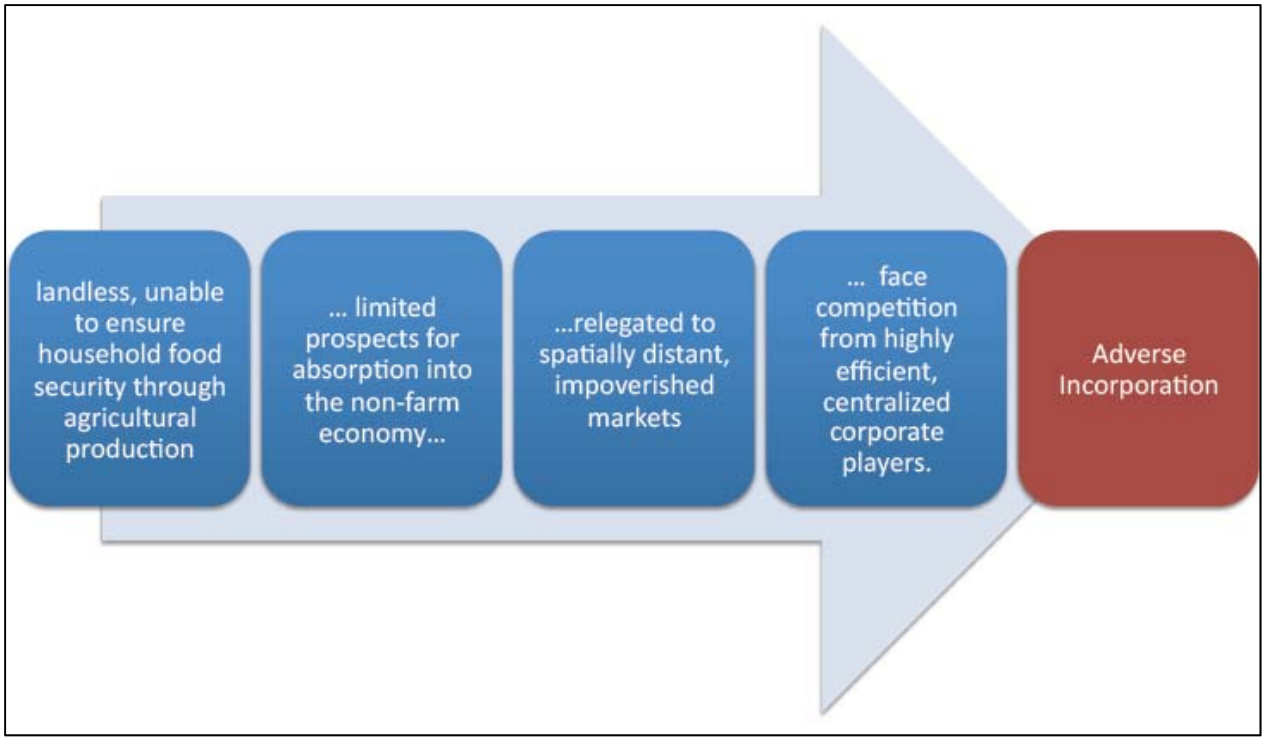


Figure 3.8: Adverse Incorporation

Source: du Toit, 2013

3.7.7. Agro-processing Value Chain

The rise of the agro-Transnational Corporations (TNC) has created a globalised agro-value chain where a small number of massively sized firms are situated between many producers and even consumers (Weis, 2007). These TNC's with a disproportionate amount of influence on the quality, quantity, type, location of production and price of the product at the production stage and throughout the entire food system (Weis, 2007). Figure 3.9 presents the Agro-processing value-chain in South Africa.

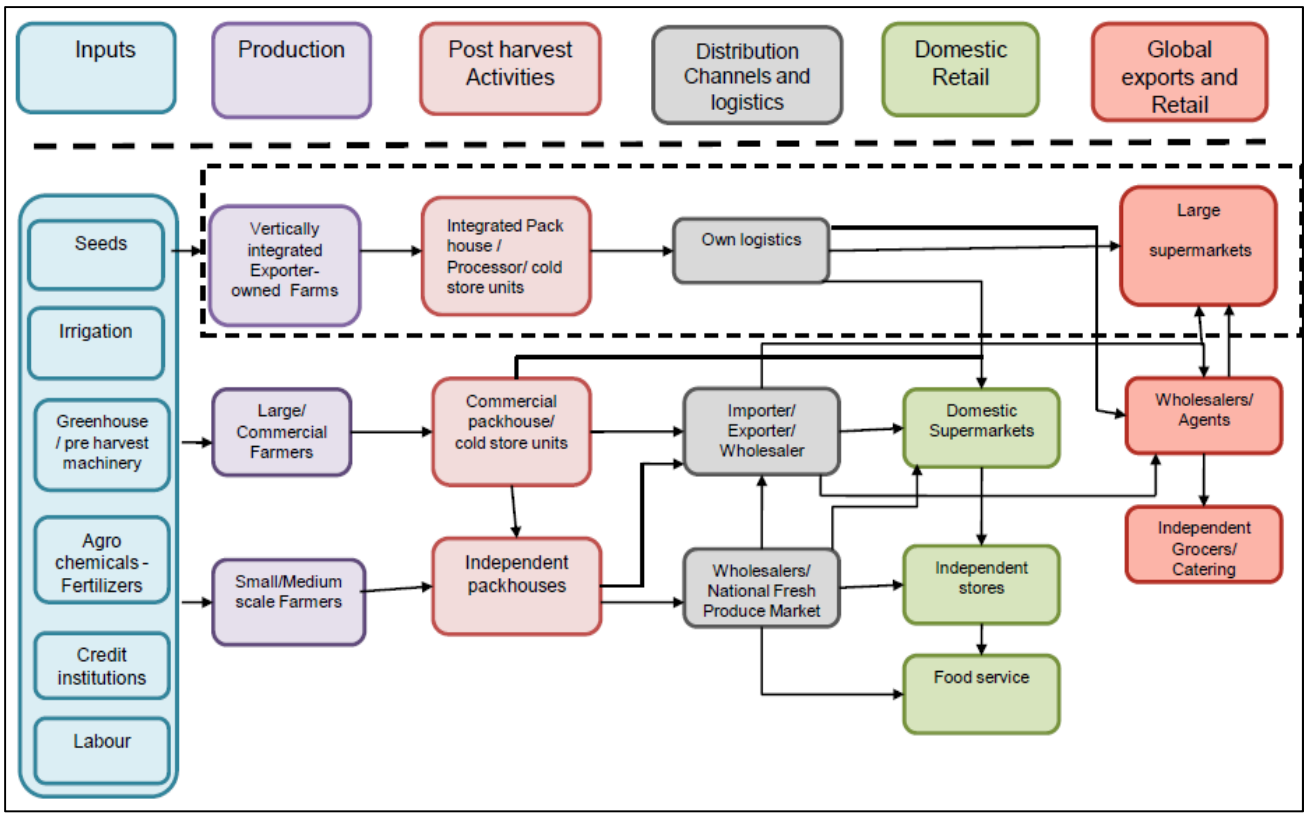


Figure 3.9: Agro-processing value-chain in South Africa

Source: Barrientos & Kritzinger, 2012

Deregulation of the industry by the South African government has increased competition between growers and exporters. At the same time, consolidation of supermarket chains in the leading export destination of Europe has meant that fragmented growers now face a more powerful group of supermarket buyers (Barrientos & Visser, 2012). Table 3.4 presents the South African supermarkets that controlled 66% of the retail food market in 2006.

Table 3.4: Supermarket Dominance

	Turnover (R million)	% market share
Pick 'n Pay	39 337	36%
Spar	21 704	28%
Shoprite	38 949	27%
Woolworths	8 718	9%

Source: Barrientos & Kritzinger, 2012

If the supermarket dominance over the agro-value chain persists, the structural causes of chronic poverty will continue and then it is unlikely that the skill level of the farm-workers will improve.

3.7.8. Diamond Mining Value Chain

In this section, the importance of mapping the entire value chain of any sector, process, or product will be discussed. The importance of understanding the detail, history and linkages that exist within the value-chain will also be researched as a guide to the REIPPPP. Finally, a perspective will be provided as to the best way to penetrate, compete with, or to establish a parallel value-chain.

In 2015, Africa Foundation for Sustainable Development (AFSD) was contracted to conduct a study with the objective of assisting small-scale diamond cutters and polishers in South Africa (Africa Foundation for Sustainable Development, 2015). In responding to this study, AFSD mapped the entire global value chain to understand the flow of resources and funds and is presented in Table 3.5. The diamond industry in South Africa started in the 1850s and is characterised by generations of family-based businesses that have strong relationships with participants in the entire international diamond value-chain. Like most value-chains, access to the value-chain is governed by a visible reality *(that which can be seen)*, a watermark reality *(governed by relationships)*, and an embedded reality *(operates within an informal system of relationships)* (Africa Foundation for Sustainable Development, 2015). The central element of the diamond value-chain is the relationships of trust with which the industry operates.

Table 3.5: Diamond Production Country Comparisons

	New York	Antwerp	Tel Aviv	Dubai	Mumbai	Hong Kong	South Africa	Botswana	Namibia	London	Moscow	Toronto	Mirniy	Yakutsk
Est. Annual Turnover	$35bn - $40bn	$50bn - $55bn	$22bn - $27bn	$40bn - $45bn	$25bn - $30bn	$30bn - $35bn	$,5,5bn (diamond sales)							
Mineral Resources							✓	✓	✓			✓	✓	✓
Traditional Diamond Hub	✓	✓	✓											
Emerging Diamond Hub				✓	✓	✓								
Sight and Sorting Centre		✓	✓		✓			✓	✓	✓	✓			
Sorting Only												✓	✓	✓
Auction Site	✓					✓				✓				
Online Exchanges														
Special Economic Zones														
Favourable Financing														
Proactive Policy and Regulation														
Supportive National Strategy														
Favourable Tax Regime				✓										
Transfer Pricing Legislation				✓										
Proximity to Cutting & Polishing Centre				✓		✓								
Handles Import, more than 50% of diamond export					✓									
Focus on high-value stones	✓	✓	✓											
Zero Tax Imports, Exports				✓		✓								
Est. Jobs (cutters, polishers)					1,000,000		300	3,000						

Source: Africa Foundation for Sustainable Development, 2015b

A key finding from the value-chain analysis is that the global jewellery retail industry attracts an estimated annual turnover of US$ 232bn (Africa Foundation for Sustainable Development, 2015). While Southern Africa (Botswana, South Africa and Namibia) contributes 60% of the gem quality rough diamonds found in this global jewellery retail industry, South Africa's share of this global turnover is only 2%, which has to be shared with Botswana and Namibia (Africa Foundation for Sustainable Development, 2015). Therefore. 98% of the additional value-add takes place in the northern hemisphere. This being realised, it has to be South Africa's beneficiation objective to increase its 2% share of the global turnover (Africa Foundation for Sustainable Development, 2015). A national beneficiation strategy should address increasing this 2% share (Africa Foundation for Sustainable Development, 2015).

Figure 3.10 graphically presents the fact that South Africa contributes 60% of the global production of rough diamonds, yet only enjoys a combined 2% of the global diamond sales with Botswana and Namibia.

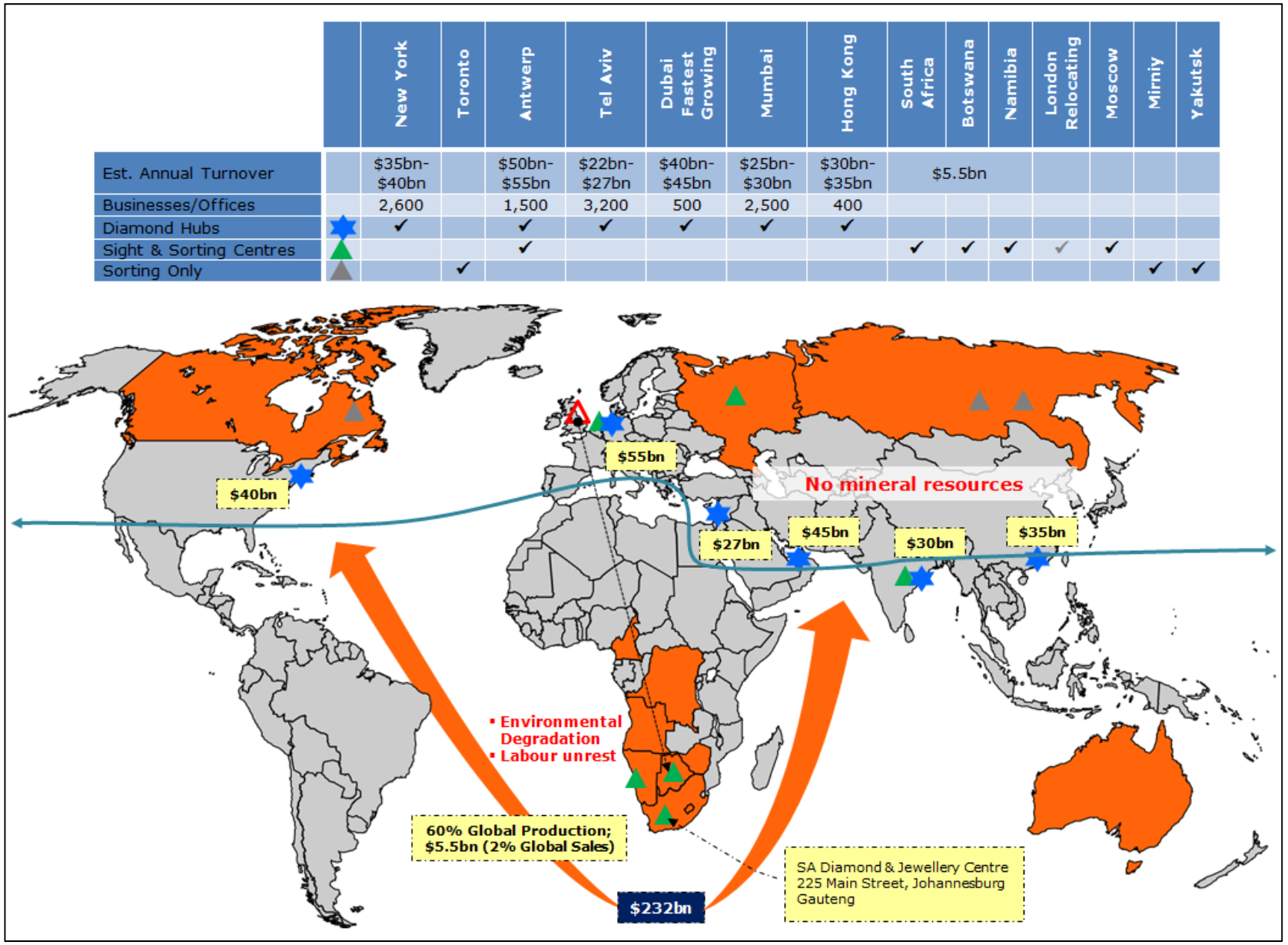


Figure 3.10: Combined International Diamond Centre Turnover

Source: Africa Foundation for Sustainable Development, 2015b

Figure 3.11 presents the full diamond value-chain and how the small-scale diamond cutters and polishers in South Africa are located within this global value-chain.

The small-scale beneficiator analysis revealed several challenges that existing small-scale diamond cutters and polishers are confronted by, as well as new entrants into the diamond value-chain. The study identified several challenges for potential small-scale diamond cutters and polishers:

- Lack of financial capacity to access rough diamonds at market-related prices;
- The current regulatory environment is perceived as over-regulated;
- Restrictive licence conditions do not support long-term sustainable business goals;
- At a regulatory level small-scale diamond cutters and polishers are not exempted from tax obligations as is the case for their competitors in India and China;
- Of the 10% run-of-mine (ROM) purchased by the State Diamond Trader (SDT) less than 10% of the purchased diamond parcel is of gem quality;
- The rough diamond does not have a single price point outcome since it can be cut and polished in various ways, some of which are dependent on access to sophisticated equipment;
- The required *"time-in-the-seat"* to acquire industry knowledge and to understand polished price points, stakeholder mapping and the countless variables linked to gem quality rough;
- The relationships within the existing value-chain are characterised by trust, credibility, congruency, consistency, and interdependency developed over generations, making it difficult for small-scale diamond cutters and polishers to enter the value-chain;
- While the stated strategy of the SDT is to be a catalyst for transformation of a sustainable diamond beneficiation industry, the SDT struggles to fulfil this mandate because simultaneously the SDT is expected to be commercially successful;

- Unlike the established beneficiators, the small-scale diamond cutters and polishers employ a limited working capital base and are thus susceptible to exploitation by local purchasers of rough and polished diamonds;
- As existing small-scale diamond cutters and polishers operate individually and generally compete for a share of a very small pool of rough, they are unable to leverage synergies which makes it likely that their operations will not survive; and
- The certification process for polished stones requires five to eight weeks and small-scale diamond cutters and polishers operate on three to five day sales turn-around time to secure a return as fast as possible.

The diamond value chain has been used to illustrate the importance of fully mapping the value-chain, as well as the challenges that incumbents that operate within a value-chain are typically faced with. Given the policy discrimination that women face in almost 150 countries, it is conceivable that women entering a value-chain will be confronted by compounded challenges that the incumbents are faced with, as well as the added gender-based discrimination. The small-scale diamond cutters and polishers in South Africa are akin to the socio-economic empowerment of women within the renewable energy sector, and as such, the gender champions should ensure that women-led companies avoid exposing themselves to similar problems as the small-scale diamond cutters and polishers in South Africa.

To conclude, the challenges that the small-scale diamond cutters and polishers have to contend with are not unique, and thus women will have to contend with similar challenges, albeit at a more intense degree of challenge.

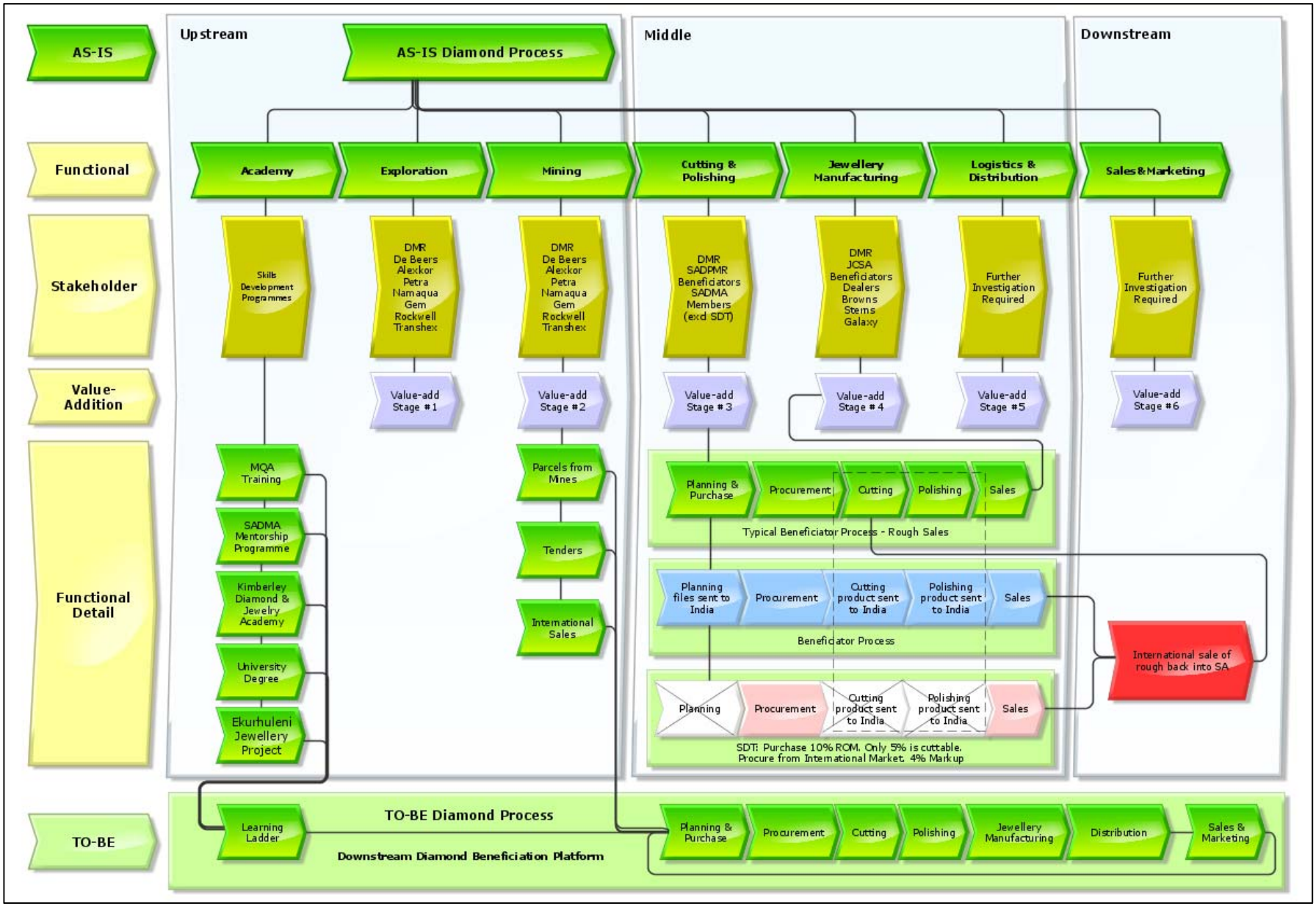


Figure 3.11: Detailed Diamond Value-Chain

Source: Africa Foundation for Sustainable Development, 2015b

This section on Structural Exclusion quoted the Nobel-prize winning economist, Amartya Sen, who is widely respected for his contribution to poverty. Sen argued against material, resource-related calculations, arguing instead that money and resources are crucial because they enable people to participate in social relationships in safety, dignity, and freedom. This study also discussed the Bengal Famine to demonstrate the implications of climate change and inadequate policy formulation that led to several million people losing their lives. Several essential conclusions can be drawn from Sen's research and an understanding of the Bengal famine:

- One of the primary tools to defeat poverty may be the development of human agency within the context of social, political, and economic freedoms;
- Agency is most probable is to emerge when people reside in communities that present the following freedoms: *"economic opportunities, political freedoms, social facilities, transparency guarantees, and protective security."*;
- Education is a form of freedom that is essential in creating agency among individuals and organisations;
- Exclusion of the indigent from such participation constitutes a primary deprivation and creates other forms of deprivations such as unemployment;
- Most basic choices and opportunities to human development, namely, to live an extended, healthy, creative life and enjoy a good standard of living, freedom, self-esteem, and the respect of others, instead of the narrow definition as the poverty of income;
- Women are discriminated against concerning productive assets, for example, the right to land and property. Consequently, only 10% - 20% of landholders in developing countries are women;
- The inadequacy of official policy to address the Bengal famine is widely noted and criticised;
- *"The present unequal distribution of wealth, risk and income in South Africa is not simply a legacy of segregation and Apartheid policies. It is the result of broader relationships between social and economic power of which the institutions of formal racial discrimination were but a part"*; and

- South Africa contributes to 60% of the global production of rough diamonds, yet only enjoys a combined 2% of the global diamond sales with Botswana and Namibia.

To conclude this section, the reality of structural exclusion should be addressed by the REIPPPP and interventions applied to avoid repeating the same errors as other sectors. Further research is required to align the REIPPPP value chain with objectives to mainstream gender, and thereby, to drive the socio-economic empowerment of women within the renewable energy sector of the RSA. Gender practitioners should also review critically the existing structures to understand where socio-economic opportunities exist within the REIPPPP value-chain.

3.8. HUMAN DEVELOPMENT

The Human Development Report published by the United Nations Development Programme states that gender inequality continues to be a significant barrier to human development, and, although women and girls have made significant strides since 1990, gender equity has still not been achieved (Jahan *et al.,* 2016). Frequently, women and girls are discriminated against in health, education, political representation, and labour markets with detrimental consequences for the advancement of their capabilities and their freedom of choice (Jahan *et al.,* 2016).

3.8.1. Human Development Index

The Human Development Index (HDI) was developed to highlight the fact that people and their capabilities ought to be the final requirements for assessing the advancement of a country, and that economic growth alone was insufficient (Jahan *et al.,* 2016). Jahan *et al.,* (2016) further states that the HDI may be utilised to challenge national policy choices by comparing the two countries with the same degree of Gross National Income (GNI) per capita, but with unequal degrees of human development. The HDI is a succinct measure of the average achievement in critical dimensions of human development, namely, a long and healthy life, being knowledgeable and also having a decent standard of living (Jahan *et al.,* 2016).

The HDI is the geometric mean of normalised indices for the following three dimensions, namely:

- **A Long and Healthy Life:** assessed by life expectancy at birth;
- **Knowledge:** measured by the mean years of schooling for adults aged 25 years and above and the expected years of schooling for children of school going age;
- **A Decent Standard of Living:** measured by gross national income per capita.

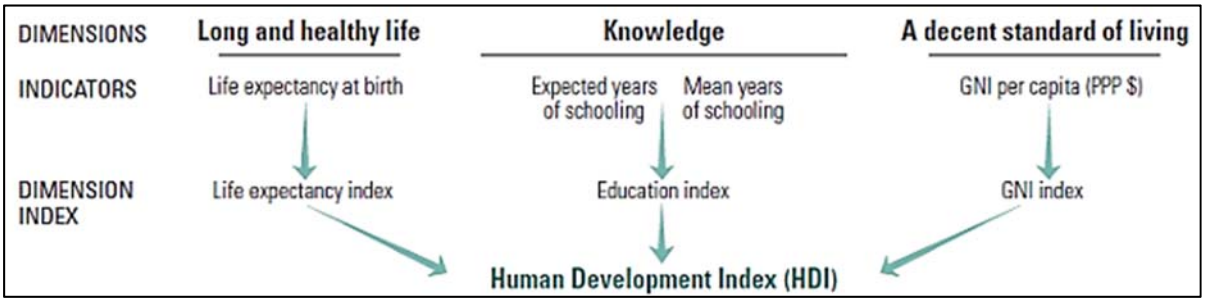


Figure 3.12: Human Development Index

Source: United Nations Development Programme, 2016

The benefit of the HDI is that tangible parameters are now being measured to gauge the gender progress. The parameters of health, knowledge, and economics start to demonstrate the socio-economic linkages with Sen, Maslow, and Senge, with regards to a Systems Thinking approach.

3.8.2. Gender Inequality Index

The Gender Inequality Index (GII) measures gender inequalities in three essential areas of human development, namely (Jahan *et al.,* 2016):

- Reproductive health, which is measured by maternal mortality ratio and adolescent birth rates;
- Empowerment, which is measured by the proportion of parliamentary seats occupied by females, and the proportion of adult females and males over and above the age of 25 years old with a minimum of secondary education; and

- The economic position, which is expressed as a function of labour market participation and measured by the labour force participation rate of female and male populations aged fifteen years and above.

The GII is developed on the same framework as the Inequality-Adjusted Human Development Index (IHDI) (Jahan *et al.,* 2016). The GII was developed to gain a greater appreciation of the variations in the distribution of achievements between women and men, and also measure the human development costs of gender inequality (Jahan *et al.,* 2016). Therefore, the higher the GII index, the higher the disparities between women and men, which leads to an even higher reduction in the human development (Jahan *et al.,* 2016). Figure 3.13 presents the framework for the determination of the GII:

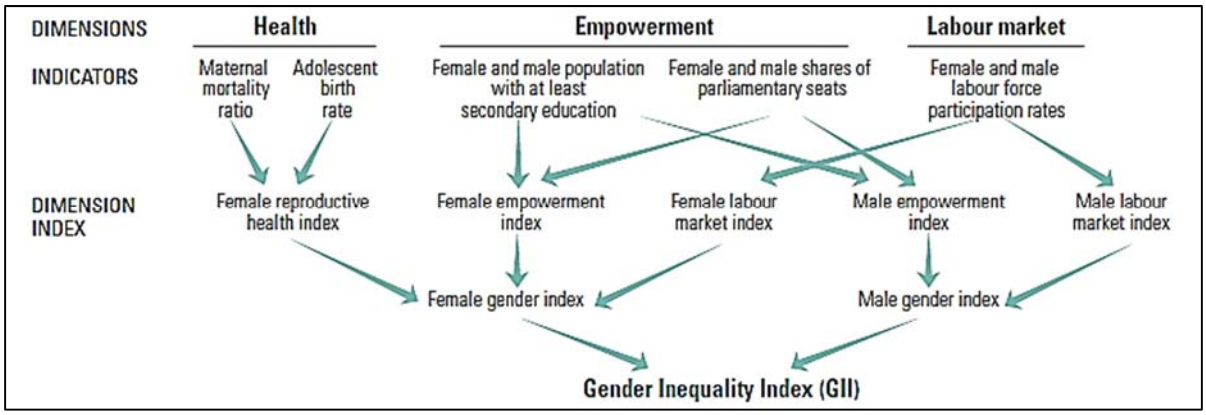


Figure 3.13: Gender Inequality Index

Source: United Nations Development Programme, 2016

The GII provides a more detailed insight into the progress of women in 159 countries by exposing gender gaps in the main areas of human development (Jahan *et al.,* 2016). The component indicators highlight areas that require critical policy intervention by stimulating proactive thinking in public policy that will overcome systematic disadvantages of women and girls (Jahan *et al.,* 2016).

Figure 3.14 presents the global GII as a composite measure reflecting inequality in achievement between women and men in three dimensions: reproductive health, empowerment, and the labour market.

Calculations are based on data from maternal mortality ratio, adolescent birth rate, the share of seats in parliament, and a population with at least some secondary education and labour force participation rate (Jahan *et al.,* 2016).

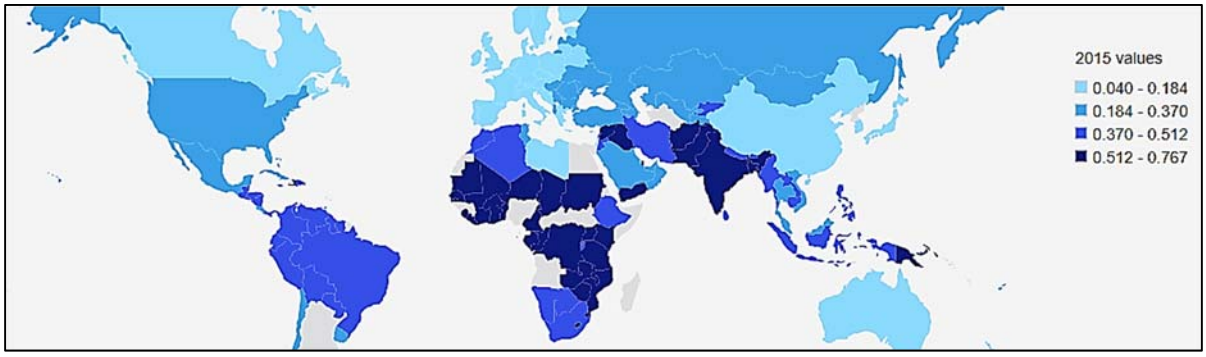


Figure 3.14: Global Gender Inequality Index
Source: United Nations Development Programme, 2016

The data for the Global Gender Inequality Index figure is derived from Table 3.6 and represented in colour coded categories. Most of the Southern African countries have a GII ranging between 0.512 and 0.767, whereas South Africa scores between 0.370 and 0.512. Table 3.6 presents the Southern African Gender Inequality Index ranked by the Human Development Index, with Botswana being the least unequal country, followed by South Africa, with Uganda being the most unequal country.

Table 3.6 Southern African Gender Inequality Index

108	Botswana	**119**	**South Africa**	125	Namibia	139	Zambia
146	Kenya	148	Swaziland	151	Tanzania	153	Cameroon
154	Zimbabwe	159	Rwanda	160	Lesotho	163	Uganda

Source: United Nations Development Programme, 2016

South Africa, despite its relative economic advancement, is not even the highest ranked African country, lagging behind Mauritius, Egypt, Tunisia, Libya and Botswana (Jahan *et al.,* 2016). Indeed, it barely ranks much higher than other countries in sub-Saharan Africa. With a GGII ranking of 108, Botswana outperforms all of the Southern African countries (Jahan *et al.,* 2016).

Figure 3.15 is a graphical representation of the Gender Inequality Index by country, where South Africa has a GII of 0.424 for 1995 and a GII of 0.394 at 2015, and South Africa's GII remains relatively flat over the measured period.

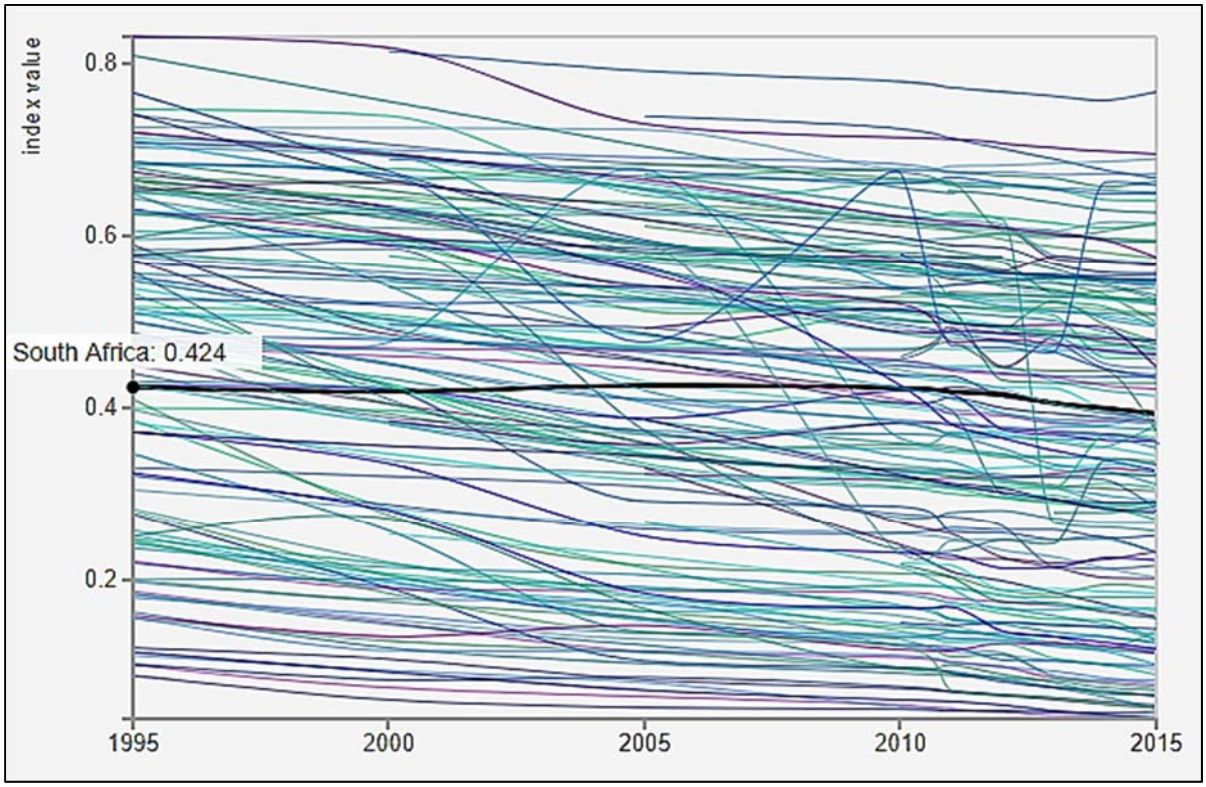


Figure 3.15: Gender Inequality Index by Country
Source: Source: United Nations Development Programme, 2016

Figure 3.15 is a complex chart and is dynamically generated based on the data stored in the database. Therefore, this chart is best viewed online by holding the control key and clicking on this map. Table 3.7 tabulates the Gender Inequality Index for 2015 ranked by Human Development Index, where Norway is ranked number 1 and South Africa is ranked number 119. It is interesting to note that counters that have experienced civil strife like, Croatia (45), Montenegro (48), Serbia (66), Bosnia and Herzegovina (81), and Macedonia (82), all score better than South Africa, and the Southern African region in general.

Table 3.7 Gender Inequality Index ranked by Human Development Index

2015 HDI Rank	Country	1995	2000	2005	2010	2011	2012	2013	2014	2015
1	Norway	0.122	0.109	0.085	0.075	0.071	0.067	0.062	0.057	0.053
2	Australia	0.180	0.160	0.139	0.138	0.133	0.131	0.124	0.123	0.120
2	Switzerland	0.117	0.094	0.073	0.062	0.060	0.056	0.049	0.045	0.040
4	Germany	0.156	0.130	0.117	0.097	0.092	0.087	0.077	0.073	0.066
5	Denmark	0.102	0.076		0.056	0.051	0.048	0.044	0.043	0.041
5	Singapore	0.252	0.272	0.167	0.099	0.102	0.091	0.082	0.069	0.068
7	Netherlands	0.113	0.096	0.082	0.054	0.050	0.049	0.047	0.044	0.044
8	Ireland	0.202	0.201	0.192	0.171	0.155	0.149	0.140	0.135	0.127
9	Iceland	0.184	0.149	0.125	0.099	0.095	0.085	0.076	0.065	0.051
10	Canada	0.184		0.132	0.127	0.118	0.113	0.108	0.102	0.098
10	United States	0.305		0.264	0.254	0.248	0.235	0.227	0.214	0.203
13	New Zealand	0.222	0.190	0.188	0.186	0.179	0.175	0.171	0.165	0.158
14	Sweden	0.090	0.062	0.053	0.051	0.049	0.049	0.048	0.047	0.048
16	United Kingdom	0.237	0.215	0.206	0.184	0.174	0.168	0.159	0.149	0.131
17	Japan	0.159	0.135	0.148	0.120	0.119	0.127	0.127	0.124	0.116
18	Korea	0.277	0.191	0.107	0.099	0.093	0.083	0.076	0.071	0.067
19	Israel	0.244	0.197	0.173	0.149	0.141	0.136	0.124	0.118	0.103
20	Luxembourg	0.200	0.175	0.156	0.132	0.112	0.114	0.088	0.081	0.075
21	France	0.220	0.192	0.156	0.125	0.123	0.108	0.107	0.103	0.102
22	Belgium	0.163	0.122	0.104	0.093	0.090	0.087	0.084	0.076	0.073
23	Finland	0.103	0.085	0.088	0.077	0.072	0.068	0.064	0.060	0.056
24	Austria	0.187	0.151	0.118	0.111	0.105	0.100	0.087	0.083	0.078
25	Slovenia	0.247		0.139	0.124	0.073	0.067	0.064	0.057	0.053
26	Italy	0.198	0.178	0.175	0.124	0.120	0.116	0.090	0.085	0.085
27	Spain	0.157	0.119	0.118	0.113	0.106	0.100	0.095	0.087	0.081
28	Czech Republic	0.252		0.153	0.135	0.132	0.131	0.135	0.134	0.129
29	Greece	0.283	0.221	0.179	0.159	0.148	0.134	0.128	0.121	0.119
30	Estonia	0.386	0.284	0.214	0.168	0.171	0.162	0.155	0.154	0.131
33	Cyprus	0.347	0.258	0.140	0.134	0.140	0.138	0.135	0.120	0.116
33	Malta	0.331	0.321	0.309	0.277	0.274	0.263	0.216	0.213	0.217
33	Qatar				0.579	0.554	0.556	0.552	0.546	0.542
36	Poland	0.258	0.205	0.164	0.170	0.155	0.152	0.150	0.146	0.137
37	Lithuania	0.325	0.281	0.185	0.168	0.169	0.141	0.135	0.128	0.121
38	Chile	0.476	0.434	0.386	0.359	0.352	0.347	0.329	0.325	0.322
38	Saudi Arabia			0.672	0.633	0.623	0.619	0.267	0.262	0.257

40	Slovakia	0.248	0.219	0.189	0.194	0.192	0.182	0.180	0.180	0.180
41	Portugal	0.243	0.208	0.182	0.141	0.128	0.127	0.110	0.103	0.091
42	United Arab Emirates	0.643	0.609	0.591	0.231	0.246	0.247	0.247	0.247	0.232
43	Hungary	0.322	0.288	0.260	0.255	0.261	0.259	0.259	0.249	0.252
44	Latvia	0.410	0.276	0.217	0.208	0.204	0.188	0.184	0.195	0.191
45	Argentina	0.431	0.422	0.374	0.370	0.367	0.366	0.364	0.364	
45	Croatia	0.280	0.206	0.164	0.146	0.142	0.135	0.128	0.120	0.141
47	Bahrain			0.331	0.241	0.225	0.225	0.220	0.224	0.233
48	Montenegro				0.218	0.203	0.175	0.174	0.163	0.156
49	Russian Federation	0.467	0.423	0.359	0.315	0.308	0.296	0.290	0.286	0.271
50	Romania	0.474		0.355	0.358	0.355	0.343	0.344	0.342	0.339
51	Kuwait	0.585	0.585	0.374	0.236	0.234	0.247	0.243	0.340	0.335
52	Belarus				0.151	0.148	0.151	0.148	0.146	0.144
52	Oman			0.387	0.323	0.311	0.302	0.294	0.284	0.281
54	Barbados	0.372	0.356	0.345	0.321	0.313	0.307	0.294	0.291	0.291
54	Uruguay	0.440	0.389	0.373	0.327	0.326	0.320	0.320	0.317	0.284
56	Bulgaria	0.373	0.336	0.251	0.232	0.229	0.214	0.215	0.226	0.223
56	Kazakhstan	0.449	0.405	0.360	0.267	0.254	0.226	0.215	0.203	0.202
58	Bahamas		0.385	0.358	0.383	0.381	0.377	0.372	0.370	0.362
59	Malaysia	0.398	0.340	0.324	0.308	0.310	0.303	0.293	0.287	0.291
60	Panama	0.517	0.507	0.472	0.515	0.517	0.512	0.507	0.458	0.457
64	Mauritius	0.479	0.452	0.369	0.382	0.370	0.369	0.361	0.355	0.380
65	Trinidad and Tobago	0.426		0.353	0.353	0.349	0.346	0.343	0.341	0.324
66	Costa Rica	0.463	0.428	0.347	0.327	0.320	0.314	0.308	0.313	0.308
66	Serbia				0.220	0.217	0.189	0.190	0.187	0.185
68	Cuba	0.428	0.393	0.343	0.328	0.322	0.317	0.311	0.307	0.304
69	Iran	0.665	0.601	0.512	0.529	0.527	0.517	0.516	0.514	0.509
70	Georgia	0.426	0.422	0.388	0.420	0.416	0.375	0.369	0.363	0.361
71	Turkey	0.631	0.589	0.564	0.426	0.381	0.365	0.351	0.340	0.328
71	Venezuela	0.547		0.470	0.469	0.468	0.466	0.466	0.463	0.461
73	Sri Lanka	0.471		0.445	0.409	0.394	0.391	0.382	0.385	0.386
75	Albania		0.381	0.332	0.273	0.279	0.281	0.272	0.267	0.267
76	Lebanon				0.404	0.398	0.393	0.387	0.386	0.381
77	Mexico	0.508	0.493	0.431	0.401	0.393	0.369	0.364	0.355	0.345
78	Azerbaijan			0.324	0.317	0.319	0.319	0.324	0.330	0.326
79	Brazil	0.509	0.503	0.469	0.454	0.448	0.448	0.431	0.420	0.414

81	Bosnia and Herzegovina				0.239	0.210	0.199	0.186		0.158
82	Macedonia									0.160
83	Algeria	0.680	0.627	0.561	0.523	0.514	0.432	0.429	0.429	0.429
84	Armenia	0.471	0.467	0.406	0.344	0.338	0.317	0.308	0.299	0.293
84	Ukraine	0.482	0.384	0.370	0.334	0.329	0.316	0.308	0.290	0.284
86	Jordan	0.674	0.632	0.557	0.488	0.489	0.487	0.484	0.480	0.478
87	Peru	0.547		0.456	0.406	0.412	0.400	0.394	0.389	0.385
87	Thailand	0.400	0.397	0.348	0.319	0.307	0.309	0.307	0.369	0.366
89	Ecuador	0.589	0.491	0.454	0.421	0.424	0.418	0.405	0.394	0.391
90	China		0.254	0.228	0.197	0.191	0.184	0.172	0.168	0.164
91	Fiji	0.499		0.409					0.369	0.358
92	Mongolia	0.500	0.450	0.410	0.406	0.397	0.300	0.292	0.283	0.278
92	Saint Lucia							0.370	0.367	0.354
94	Jamaica	0.480	0.469	0.466	0.455	0.443	0.439	0.435	0.426	0.422
95	Colombia	0.538	0.497	0.484	0.437	0.431	0.424	0.423	0.399	0.393
97	Suriname			0.492	0.514	0.498	0.495	0.496	0.493	0.448
97	Tunisia	0.532	0.427	0.336	0.309	0.301	0.297	0.299	0.288	0.289
99	Dominican Republic	0.571	0.485	0.469	0.467	0.493	0.447	0.483	0.476	0.470
101	Tonga	0.684	0.671	0.476	0.673	0.472	0.470	0.465	0.662	0.659
102	Libya			0.268	0.215		0.166	0.166	0.169	0.167
103	Belize	0.515	0.481	0.464	0.423	0.411	0.394	0.384	0.378	0.375
104	Samoa		0.496	0.493	0.456	0.491	0.485	0.478	0.445	0.439
105	Maldives	0.649	0.541	0.420	0.383	0.369	0.353	0.335	0.328	0.312
105	Uzbekistan							0.279	0.279	0.287
107	Moldova	0.486	0.425	0.292	0.286	0.257	0.255	0.247	0.250	0.232
108	**Botswana**	**0.551**	**0.521**	**0.523**	**0.496**	**0.486**	**0.478**	**0.465**	**0.445**	**0.435**
109	Gabon	0.606	0.595	0.574	0.558	0.556	0.552	0.549	0.547	0.542
110	Paraguay	0.575	0.557	0.537	0.501	0.499	0.491	0.469	0.468	0.464
111	Egypt	0.665	0.634	0.581			0.575			
111	Turkmenistan	0.369								
113	Indonesia	0.578	0.564	0.533	0.486	0.481	0.476	0.472	0.472	0.467
115	Viet Nam	0.383	0.347	0.317	0.324	0.328	0.331	0.333	0.334	0.337
116	Philippines	0.483	0.479	0.467	0.449			0.437	0.436	0.436
117	El Salvador	0.526	0.518	0.486	0.438	0.437	0.413	0.406	0.397	0.384
118	Bolivia		0.591	0.559	0.503	0.498	0.492	0.486	0.451	0.446
119	***South Africa***	***0.424***	***0.419***	***0.426***	***0.423***	***0.419***	***0.415***	***0.406***	***0.400***	***0.394***
120	Kyrgyzstan	0.510	0.476	0.677	0.365	0.372	0.373	0.378	0.380	0.394

121	Iraq	0.658	0.620		0.536	0.534	0.532	0.529	0.528	0.525
123	Morocco	0.713	0.696	0.580	0.563	0.530	0.527	0.522	0.517	0.494
124	Nicaragua	0.629	0.602	0.541	0.520	0.477	0.479	0.474	0.466	0.462
125	Guatemala	0.596	0.599	0.570	0.540	0.531	0.523	0.522	0.503	0.494
125	**Namibia**	**0.555**	**0.546**	**0.525**	**0.512**	**0.510**	**0.506**	**0.501**		**0.474**
127	Guyana		0.540	0.527	0.522	0.518	0.515	0.512	0.509	0.508
129	Tajikistan	0.558	0.410	0.345	0.330	0.328	0.323	0.321	0.324	0.322
130	Honduras		0.547	0.515	0.513	0.504	0.495		0.466	0.461
131	India	0.687		0.619	0.591	0.582	0.573	0.561	0.544	0.530
132	Bhutan						0.487	0.524	0.496	0.477
135	Congo		0.623	0.625	0.617	0.612	0.609	0.606	0.594	0.592
138	Lao		0.577	0.542	0.510	0.501	0.493	0.484	0.475	0.468
139	Bangladesh	0.656	0.630	0.591	0.559	0.549	0.542	0.535	0.527	0.520
139	Ghana	0.626		0.573	0.570	0.567		0.549	0.548	0.547
139	**Zambia**	**0.625**	**0.626**	**0.593**	**0.553**	**0.556**	**0.550**	**0.544**	**0.541**	**0.526**
142	Sao Tome and Principe				0.533	0.531	0.530	0.529	0.527	0.524
143	Cambodia	0.660	0.599	0.561	0.492	0.488	0.486	0.485	0.482	0.479
144	Nepal	0.710	0.670	0.653	0.537	0.528	0.518		0.506	0.497
145	Myanmar				0.459	0.476	0.446	0.443	0.443	0.374
146	**Kenya**	**0.708**	**0.696**	**0.654**	**0.616**	**0.613**	**0.610**	**0.573**	**0.569**	**0.565**
147	Pakistan	0.766		0.595	0.570	0.569	0.556	0.555	0.550	0.546
148	**Swaziland**	**0.652**	**0.661**	**0.619**	**0.572**	**0.565**	**0.559**	**0.576**	**0.570**	**0.566**
149	Syrian	0.569	0.550	0.540	0.539	0.542	0.547	0.551	0.553	0.554
151	**Tanzania**	**0.652**		**0.592**		**0.558**	**0.556**	**0.553**	**0.548**	**0.544**
153	**Cameroon**	**0.703**	**0.693**	**0.661**	**0.623**	**0.618**	**0.613**	**0.577**	**0.572**	**0.568**
154	Papua New Guinea	0.668	0.663	0.682	0.667	0.662	0.605	0.602	0.597	0.595
154	**Zimbabwe**	**0.598**	**0.631**	**0.589**	**0.581**	**0.575**	**0.569**	**0.532**	**0.535**	**0.540**
157	Mauritania	0.809	0.756		0.656	0.652	0.647		0.630	0.627
159	**Rwanda**	**0.583**	**0.552**	**0.484**	**0.444**	**0.433**	**0.422**	**0.405**	**0.394**	**0.383**
160	**Lesotho**	**0.577**	**0.595**	**0.585**	**0.569**	**0.563**	**0.556**	**0.553**	**0.549**	**0.549**
162	Senegal	0.628	0.632	0.629	0.575	0.567	0.539	0.532	0.525	0.521
163	Haiti			0.579		0.597	0.603	0.600	0.597	0.593
163	**Uganda**	**0.650**	**0.643**	**0.592**	**0.564**	**0.552**	**0.545**	**0.537**	**0.529**	**0.522**
165	Sudan	0.720		0.665	0.622	0.616	0.609	0.602	0.595	0.575
166	Togo	0.741	0.665	0.633	0.598	0.589	0.586	0.567	0.557	0.556
167	Benin	0.682	0.678	0.656	0.621	0.627	0.621	0.615	0.609	0.613
168	Yemen		0.814	0.791	0.779	0.772	0.767	0.762	0.757	0.767

169	Afghanistan			0.739	0.724	0.713	0.701	0.689	0.676	0.667
170	**Malawi**	**0.719**	**0.692**	**0.655**	**0.616**	**0.609**	**0.607**	**0.605**	**0.616**	**0.614**
171	Côte d'Ivoire	0.709		0.691	0.683	0.673	0.674	0.671	0.672	0.672
173	Gambia	0.747	0.739	0.647	0.662	0.659	0.657	0.654	0.642	0.641
174	Ethiopia			0.611	0.576	0.568	0.560	0.546	0.531	0.499
175	Mali	0.726	0.725	0.723	0.677	0.681	0.682		0.686	0.689
176	Congo			0.667	0.677		0.670	0.667	0.657	0.663
177	Liberia		0.689	0.676	0.661	0.668	0.660	0.654	0.649	0.649
179	Sierra Leone		0.695	0.669	0.665	0.662	0.660	0.656	0.653	0.650
181	**Mozambique**	**0.664**	**0.645**	**0.638**	**0.617**	**0.607**	**0.596**	**0.587**		**0.574**
184	Burundi		0.594	0.527	0.502	0.499	0.494	0.489	0.483	0.474
185	Burkina Faso			0.636	0.611	0.607	0.602	0.598		0.615
186	Chad									0.695
187	Niger	0.831	0.818	0.730		0.712	0.707	0.702	0.698	0.695

Source: United Nations Development Programme, 2016

It is worth noting that most of the countries at the lower end of the scale are located in Africa, and one can, therefore, deduce that as a continent, Africa has the highest Gender Inequality Index ranked by Human Development Index.

3.9. SUMMARY

Chapter Three researched the mainstreaming of gender to provide clarity to the progress thus far, the actors that occupy the gender space, the policies and regulatory environments that guide the mainstreaming of gender, and the steady progress or lack of progress. The conclusion is that mainstreaming of gender is a complex environment, with structural and systemic challenges that will require new thinking and creative solutions to ensure the sustained socio-economic empowerment of women. The contradiction within the RSA regarding the mainstreaming of gender is the juxtaposition of the forward-thinking Constitution against the barbaric violence to which women, youth, and children are subjected on a daily basis. As a result of the cabinet reshuffle on the 26th of February 2018, Minister Bathabile Dlamini was moved from the Department of Social Development to the Ministry of Women in the Presidency, and Minister Susan Shabangu was moved from the Ministry of Women in the Presidency to the Department of Social Development.

To conclude, the RSA appears to have progressed well in addressing the quotas of women in vital policy and decision-making roles. However, the real impact on the ground does not correlate with the number of women appointed to these Ministerial positions. The past and present performance of the respective South African women-led Ministries should be further researched to quantify the contribution that these Ministries and their Ministers have contributed to mainstreaming gender. The study should also investigate the contribution of male-led Ministries and their contribution to the socio-economic empowerment of women in the RSA.

CHAPTER FOUR
PROPOSED THEORETICAL MODEL

4.1. INTRODUCTION

Several factors influence the success or failure of the Socio-Economic Empowerment of Women within the Renewable Energy Sector of the RSA. The literature review in Chapters Two and Three discussed most of these factors relating to mainstreaming gender in the renewable energy sector. The process of theoretical model building is best divided into three phases: data collection, analysis, and the extrapolation of the new hypothesis (Walwyn & Buys, 2014). A review of the available literature regarding the socio-economic empowerment of women within the renewable energy sector revealed that limited progress had been achieved in relation to mainstreaming gender in the renewable energy sector of the RSA.

This chapter will discuss a conceptual model of the variables or factors that are hypothesised to influence the success of the Socio-Economic Empowerment of Women within the Renewable Energy Sector of the RSA. The independent variables (Socio-Economic Development, Stakeholder Engagement, Strategic Acumen, Strategic Planning, Broad-Based Black Economic Empowerment, Executive Leadership, Change Management, Executive Education, Fund Management, Corporate Culture), the intervening variable (Corporate Governance), and the dependent variable, (the Socio-Economic Empowerment of Women), will be discussed, as well as the relationships between these variables. The methods to determine these variables were a desktop study, face-to-face discussions with experts in the field, and personal experience. Furthermore, this study has discussed several models such as Systems Thinking, Maslow's Hierarchy of Needs, and *"What it looks like when its fixed"* and demonstrates the structural challenges that women must contend with.

4.2. PROPOSED THEORETICAL MODEL

For the model under investigation, the socio-economic empowerment of women and the perceived success of women's empowerment within the renewable energy sector of the RSA will be discussed. The intervening variable articulates the importance of Corporate Governance. The independent variables consist of the need for Socio-Economic Development, the importance of Stakeholder Engagement, the requirement of Strategic Acumen, the importance of Strategic Planning, the need for Broad-Based Black Economic Empowerment, the benefit of Executive Leadership, the advantage of Change Management, the requirement for Executive Education, the criticality of Fund Management, and the importance of Corporate Culture. The hypothesised inter-relationships are presented in Figure 4.1 which provides a graphical representation of the theoretical socio-economic model. The model shows the independent, intervening, and dependent variables that positively influence the socio-economic empowerment of women in the renewable energy sector of the RSA.

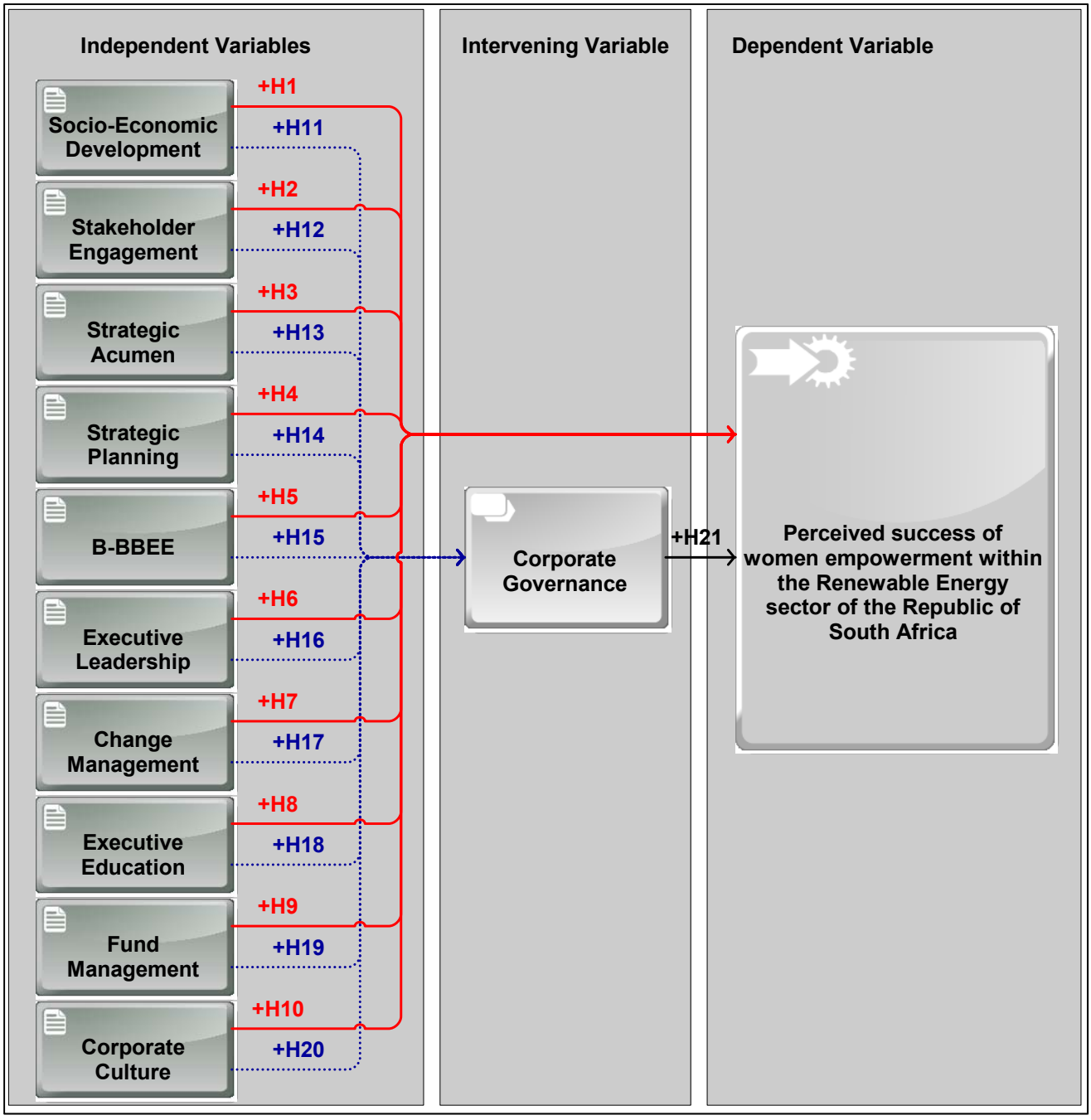


Figure 4.1: Theoretical Socio-Economic Development Model

The World Bank defines empowerment as a process of enhancing the capacity of individuals or groups in order for these individuals or groups to make choices and to convert these choices into actions and outcomes (World Bank, 2016b). Essential to the process are those actions that contribute to the acquisition of individual and collective assets, and which improve the efficiency and fairness of the organisational and institutional context which govern the use of those assets (World Bank, 2016b).

The World Bank elaborates further on empowerment by stating that empowerment is the expansion of assets and capabilities of poor people with an objective to participate, negotiate, influence, control, and hold accountable, the institutions that impact their lives (World Bank, 2016b). According to the World Bank (2016b), people that are empowered have freedom of choice and action, which creates an opportunity for them to influence the course of their lives and the decisions which affect them. Finally, the World Bank (2016b), proposes the following four essential elements of empowerment that should underpin institutional reform: access to information, inclusion and participation, accountability, and local organisational capacity.

Grant Thornton's report *"Women in business: Turning promise into practice"* revealed that women in South African corporations only occupied 23% of the senior positions, a decline from 27% of the previous year (Kilian, 2016). The same report also revealed that 39% of businesses did not have any women in leadership positions (Kilian, 2016). The JSE acknowledges that during the past decade there has been little change in the proportion of women in senior positions of listed companies. Consequently, the JSE has changed its listing requirements to encourage listed companies to disclose female representation (Kilian, 2016).

The socio-economic empowerment of women within the renewable energy sector of the RSA has a complex stakeholder domain which includes government, the private sector, organised labour, and civil society. As such, the socio-economic empowerment of women could straddle one, or any of these stakeholder domains. According to Eberhard *et al.*, (2014), the most controversy and uncertainty generated amongst the bidders of the REIPPPP was the firm reliance on the economic development requirements, designed to incentivise bidders to promote job creation, local manufacturing, community development, and black economic empowerment. The international bidders felt that the economic development obligations were too demanding, while the local bidders, who had the support of the South African trade unions, believed the economic development requirements were too lenient (Eberhard *et al.,* 2014). The frustration and uncertainty were exacerbated as there was no guidance as to how such plans should be prepared or evaluated. The problem was further compounded by the increasingly onerous economic development requirements after the three biddings rounds (Eberhard *et al.,* 2014).

For this study, Women's Empowerment can be considered as the processes of enhancing the capacity of individuals or groups, typically poor people, in order for them to make choices and implement decisions with an objective of acquiring assets. The following elements should, therefore, underpin institutional reform: access to information; inclusion and participation; accountability; and local organisational capacity.

4.3. RESEARCH HYPOTHESES

This study aims to develop a theoretical model for the socio-economic empowerment of women. The primary research question is:

What are the main contributors and variables which can positively influence the socio-economic empowerment of women initiatives in the renewable energy sector in of the Republic of South Africa?

The following research hypotheses were based on a series of positive relationships that would be tested during the research and described further in Table 4.1.

Table 4.1 outlines the different research hypotheses which contribute to the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA. These hypotheses underpin the research methodology of this thesis.

Table 4.1: Research Hypotheses

$+H^1$	**Socio-Economic Development:** There is a positive relationship between the importance of sustained Socio-Economic Development initiatives and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.
$+H^2$	**Stakeholder Engagement:** There is a positive relationship between the importance of Stakeholder Engagement and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.
$+H^3$	**Strategic Acumen:** There is a positive relationship between the importance of Strategic Acumen and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

$+H^4$	**Strategic Planning:** There is a positive relationship between the implementation of a well-developed Strategic Plan and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^5$	**Broad-Based Black Economic Empowerment:** There is a positive relationship between the importance of Broad-Based Black Economic Empowerment policy and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^6$	**Executive Leadership:** There is a positive relationship between the importance of Executive Leadership and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^7$	**Change Management:** There is a positive relationship between the importance of Change Management and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^8$	**Executive Education:** There is a positive relationship between the importance of Executive Education and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^9$	**Fund Management:** There is a positive relationship between the importance of effective Fund Management and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{10}$	**Corporate Culture:** There is a positive relationship between the importance of Corporate Culture and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{11}$	**Socio-Economic Development:** There is a positive relationship between the importance of sustained Socio-Economic Development initiatives, Corporate Governance, and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.
$+H^{12}$	**Stakeholder Engagement:** There is a positive relationship between the importance of Stakeholder Engagement, Corporate Governance, and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.
$+H^{13}$	**Strategic Acumen:** There is a positive relationship between the importance of Strategic Acumen, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{14}$	**Strategic Planning:** There is a positive relationship between the implementation of a well-developed Strategic Plan, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{15}$	**Broad-Based Black Economic Empowerment:** There is a positive relationship between the importance of Broad-Based Black Economic Empowerment policy, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

$+H^{16}$	**Executive Leadership:** There is a positive relationship between the importance of Executive Leadership, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{17}$	**Change Management:** There is a positive relationship between the importance of Change Management, Corporate Governance, and the perceived the success of socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{18}$	**Executive Education:** There is a positive relationship between the importance of Executive Education, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{19}$	**Fund Management:** There is a positive relationship between the importance of effective Fund Management, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{20}$	**Corporate Culture:** There is a positive relationship between the importance of Corporate Culture, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.
$+H^{21}$	**Corporate Governance:** There is a positive relationship between the importance of good Corporate Governance and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

The following topics have been extensively discussed in Chapters One, Two, and Three. However, the researcher felt it pertinent to provide a review of these important concepts. Before discussing in detail, the dependent, intervening and independent variables, mention should be made of the fact that this research was based on the premise that if women were economically empowered, women would be able to extricate themselves from any untoward situation.

The early stages of this research effort were premised on the supposition that, *if women were economically empowered, it would be easier to mainstream gender, drive gender equity, and eliminate gender-based violence*, because women would then have the financial resources to extricate themselves from these dire situations. However, the systemic failures that South Africa currently experiences in its political leadership, educational system, safety and security, and healthcare systems, are all impediments to mainstream gender. It is therefore important to identify the variables to will positively contribute to the socio-economic empowerment of women in the renewable energy sector and to gain a clear understanding of these variables.

The approach to target executive level leadership was discussed in Chapter One. Human and financial resources, company culture, change management, good corporate governance, executive education, all combine to ensure the sustained socio-economic empowerment of women. The funds under discussion are the Economic Development and Community Trust Funds generated through the REIPPPP by the IPPs. The target audience of the resultant survey was intended to be the Executive Leaders and their leadership teams, as well as their Boards of these IPPs. The variables and the subsequent questions were carefully selected, based on the literature reviewed, and specialist input. The variables have also been selected based on the fact that the IPPs potentially do not have the requisite experience to actually implement the complex developmental programmes that the policy has committed the IPPs to implement. IPPs are possibly even less experienced with the concepts to mainstream gender. One has to consider carefully that the expertise of the IPP is the efficient generation of energy, meant to create sustained shareholder value.

The GEFs approach to mainstream gender, as per its Policy on Gender Equality, is to transition from a gender-aware, i.e. “do no harm” approach; to a gender-responsive, “do good” approach (Global Environmental Facility, 2017). It is questionable whether the Executive Leadership or the Boards of the IPPs have the requisite experience to create a human development strategy and implement programmes that would be sustainable beyond the twenty-year IPP lifespan. It is also understandable that the IPPs would be out of their depth with complex human development initiatives when their core business is the generation of energy. Therefore, the variables, although equally pertinent to the Public Sector, are targeted at the Executive Leadership, and the Boards of these IPPs, as these individuals have direct control over the fund flow, and subsequent socio-economic empowerment of women within the renewable energy sector.

4.3.1. Dependent Variable: Perceived success of the Socio-Economic Empowerment initiatives of Women in the Renewable Energy sector of the RSA

The Renewable Energy sector’s developmental role and strategic importance with regard to the socio-economic empowerment of women was discussed in Chapter Two.

According to the literature the sector has the opportunity to impact the lives of many communities, and specifically the women, elders, youth, people with disabilities, and the children with in these communities. The primary research objective as stated in Chapter One is “to investigate the drivers and variables that can positively influence the success and the possible structural impediments that inhibit the success of women in the renewable energy sector and subsequently develop a theoretical socio-economic model for women’s empowerment in the South African renewable energy sector”. In Chapter Three the application to mainstream gender in South Africa was discussed, as well as the correlation between the REIPPPP and the socio-economic empowerment for women.

The dependent variable is the Perceived success of women empowerment within the Renewable Energy sector of the RSA. The independent variables accounted for the factors identified as Socio-Economic Development, Stakeholder Engagement, Strategic Acumen, Strategic Planning, Broad-Based Black Economic Empowerment, Executive Leadership, Change Management, Executive Education, Fund Management, and Corporate Culture. Each variable is discussed individually in the following section. The literature review also revealed the complex nature of mainstreaming gender in the RSA and the structural challenges that women have to contend with. This burden is therefore carried over into the Renewable Energy sector. The variable Corporate Governance is discussed in the next section, and will, therefore, be accounted for as the intervening variable for this study.

4.3.2. Intervening Variable: Corporate Governance

The topic of governance was extensively discussed in Chapter Two, *Failures of Good Governance and Ethical Leadership*. For this section, the researcher expands on good Corporate Governance to ensure that the REIPPPP does not repeat similar governance errors. The focus on Good Governance is also to ensure the elimination of fruitless, wasteful, and corrupt expenditure, thereby guaranteeing that the Social Investment Funds generated by the REIPPPP is disbursed to the intended beneficiaries.

The Institute of Directors of South Africa (IoD) prepared a report titled, *"Draft Code of Governance Principles for South Africa - 2009 King Committee on Governance - © 2009 Institute of Directors in Southern Africa - The Business Leaders"* (Engelbrecht, 2009). The IoD state that foreign institutional investors consider South African listed companies as one of the best-governed companies in the world's emerging economies (Engelbrecht, 2009).

There has been an extreme breakdown of *'good'* governance in both the public and private sectors, where the failings can be ascribed to the board, the regulatory bodies, and a failing of what could be considered as the ultimate oversight body, the South African Parliament. Also, the plethora of professional bodies that purport to govern their membership appeared impotent or *'complicit by the silence'* in allowing these extreme breakdowns in governance. Since most of the contraventions were financial, the professional financial bodies should also be called to account to explain how, why, and what will be done to eliminate a recurrence of the breaches of *'Good'* Governance. The Australian Stock Exchange's (ASX) Corporate Governance Council (CGC) defines corporate governance as the system by which companies are directed and managed (Karen Hamilton, 2003). Corporate Governance influences how the company determines and achieves its stated objectives, how risk is monitored and assessed, and how performance is optimised (Karen Hamilton, 2003). The ASX CGC expands on good corporate governance, stating that structures encourage companies to create value through entrepreneurship, innovation, development and exploration, provide accountability, and develop control systems commensurate with the risk (Karen Hamilton, 2003). According to the ASX CGC, good corporate governance will evolve with the changing circumstances of a company and should be refined to meet the changing circumstances (Karen Hamilton, 2003). Best practice should also evolve with developments both locally and internationally, and there is no single model of good corporate governance (Karen Hamilton, 2003).

According to the Australian Stock Exchange Corporate Governance Council (2003), there are three fundamental principles for any proper corporate governance structure:

- The roles of management and the board should be well defined;

- The Board should have the appropriate balance of skills, experience, and independence relative to the nature and extent of the company's operations; and
- There should be a fundamental requirement for integrity among those who can influence a company's strategy and financial performance, supported by responsible and ethical decision-making.

Finally, the ASX CGC (Karen Hamilton, 2003) articulates ten core principles that underpin good corporate governance, and state that a company should:

- **Lay solid foundations for management and oversight:** Recognise and publish the respective roles and responsibilities of board and management;
- **Structure the board to add value:** Have a board of an effective composition, size, and commitment to discharge its responsibilities and duties adequately;
- **Promote ethical and responsible decision-making:** Actively promote ethical and responsible decision-making;
- **Safeguard integrity in financial reporting:** Have a structure to independently verify and safeguard the integrity of the company's financial reporting;
- **Make timely and balanced disclosure:** Promote timely and balanced disclosure of all material matters concerning the company;
- **Respect the rights of shareholders:** Respect the rights of shareholders and facilitate the effective exercise of those rights;
- **Recognise and manage risk:** Establish a sound system of risk oversight and management and internal control;
- **Encourage enhanced performance:** Fairly review and actively encourage enhanced board and management effectiveness;
- **Remunerate fairly and responsibly:** Ensure that the level and composition of remuneration is sufficient and reasonable and that its relationship to corporate and individual performance is defined; and
- **Recognise the legitimate interests of stakeholders:** Recognise legal and other obligations to all legitimate stakeholders.

Mention should be made of the current situation within South Africa where bad Corporate Governance appears to have become the *de facto* standard at the State-Owned Enterprises like the South African Broadcasting Corporation (SABC), South African Airways (SAA), PetroSA, and Eskom. Extra effort has therefore been expended on the independent variable of good corporate governance as the implications are significant regarding decision making by the Shareholders, Board, IPP and Stakeholders that directly impact the socio-economic empowerment development of women in the renewable energy sector.

It is therefore hypothesised that:

+H^{21} There is a positive relationship between the importance of good Corporate Governance and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.3. Independent Variable 1: Socio-Economic Development

As previously discussed, it is most unlikely that the IPPs would have the requisite expertise and experience to design, develop, and deploy sustainable socio-economic programmes, when the IPPs core business is efficient energy generation. Fritz (2001) defines development as a *"planned and comprehensive economic, social, cultural, and political process, in a defined geographic area, that is rights-based and ecologically oriented and aims to continually improve the well-being of the entire population and all of its individuals"*. He further states that socio-economic development means professional intervention with the intent of improving socio-economic conditions on seven levels: 1) individual and group empowerment; 2) conflict resolution; 3) institution-building; 4) community-building; 5) nation-building; 6) region-building, and 7) world-building.

In this study, Socio-Economic Development is a process that seeks to identify both the social and the economic needs within a community. Capacity building leads to more significant participation, improved planning processes, greater decision-making powers, and control.

All of these factors contribute to transformative action. The process includes creating strategies and interventions that will address the socio-economic needs of communities practically to best serve the interest of the communities over the longer-term. SED is essential to ensure the sustainability of the interventions employed and to ensure that the communities concerned derive sustained benefit from these strategies. The broad objective is to develop strategies that will improve the standard of living and local economy within the immediate and surrounding communities. Socio-Economic Development typically occurs in rural, peri-urban, and urban-poor communities in rural towns, small cities, and even large metropolis.

The premise in this thesis is that the blockages that rural and urban poor women contend with are created at the highest level of decision making. Women have some access to finance, but certain obstacles prevent women from securing the finance. The REIPPPP is a significant source of development funding through the Enterprise Development and Community Trust Fund revenue streams, that will be generated over the twenty-year life of the IPP. The development funding generated by the IPP could be utilised to raise additional co-funding from institutions like the GEF, the Green Climate Fund and other DFIs, thereby mitigating climate change through practical interventions, and simultaneously expanding the capacities of the communities. These obstacles can be addressed by the establishment of a central community development fund, under the direct control of women, where the obligation is to grow the fund. A fund for women, managed by women, to deliver sustained community upliftment. This fund could fundamentally change the approach to empowering women, where the *'veggie patch'* paradigm could be changed to one where women are owners/shareholders of these renewable energy operations.

Typically, the IPPs are in rural or peri-urban areas, where the geographic location of the IPP will provide developmental opportunities that are in some respects unique. Solar parks in the arid Northern Cape, or wind farms in the Eastern Cape, will have to contend with very similar developmental needs of the communities. However, the implementation of the twenty-year Economic Development Plan, which should be informed by a rigorous Community Needs Analysis, might well be vastly different depending on the communities concerned, and the surrounding business opportunities.

Invariably, these IPPs will be in a rural setting, where the communities might be landless, where transport and logistics pose a significant challenge, and where the educational infrastructure is not conducive to developing entrepreneurs.

Funding should also not be an obstacle, as funding is available, except that the funding is squandered or misappropriated. Considering the recent financial scandal surrounding the accounting irregularities of Steinhoff International, where one of Africa's largest asset managers, the Public Investment Corporation of South Africa, has lost an approximate R24.7 billion (Presence, 2018). Of more significant concern is the fact that this is people's pensions that have been eroded, as the PIC manages assets on behalf of South Africa's GEPF (Presence, 2018). The market value of shares held by the GEPF in Steinhoff declined from March 2017 at R27.6 billion to R2.9 billion by 19th January 2018 (Presence, 2018).

There might be several reasons why the PIC or the GEPF could not invest in women-led initiatives, and this might even entail changing the fund rules. The comparison between the more than R20 billion loss on a single share investment, and investment in a South African women-led IPP initiative makes the latter a far less risky investment. In some respects, investing in a women-led IPP initiative is far less risky as the PIC/GEPF would have tangible, wealth-generating infrastructure (located in South Africa) as surety. Considering the billions of rand that has been lost to established companies, or siphoned away due to illegal transactions, this money could have been much better invested in women-led initiatives. A comparative risk analysis could be conducted to ascertain why it would be less risky to invest in women, besides the financial returns, there would also be significant social benefits. Also, the direct benefit is that the investment from the PIC/GEPF will be contributing to the human capital development of the communities and thereby directly supporting the NDP of South Africa. The investment in a woman-led IPP is a zero risk, high gain (in human development and infrastructure), sustainable approach to investment. Another consideration is the sentiment of the contributors/shareholders to the GEPF, which typically are hardworking South Africans, and their opinion would most likely be to invest with less risky women-led entities, as opposed to the traditional corporations.

Legal and General Investment Management (LGIM), one of the most significant London-based asset management companies, with $1tn of assets under its control, has vowed to vote against directors of US companies that have not appointed a woman to their Board (Marriage, 2017).

Therefore, there is already a precedent for shareholders to insist that the fund managers drive the necessary changes to mainstream gender, there is no reason why shareholders in the GEPF could not compel a similar degree of change. Further research should be conducted to establish the viability of the PIC/GEPF investing in South African women-led IPP initiatives. The power to mainstream gender resides not with the CEO of the PIC, but with the shareholders, those hardworking South Africans who contribute to the GEPF.

The following provides a brief description of possible projects that can directly support the socio-economic empowerment of the beneficiary communities:

- **Human Capital Development:** ongoing investment in the capacity building of the communities;
- **Expand the IPP:** expansion of the existing operation with solar panels and wind turbines. Their revenues would be used for the sole purpose of community development. This expansion approach is a very low-risk revenue generator as the establishment of the IPP is already a sunk cost;
- **Electric Transport:** transport is one of the most significant challenges that rural communities face daily. This could be an ideal opportunity to pilot electric transport that is powered by the (excess) power generation, as opposed to using conventional transport powered by fossil fuels;
- **Storage of Energy:** remains a challenge, but innovative technologies have been developed, and continue to mature. Surrounding communities that are typically disconnected from the electricity grid could capitalise on this business opportunity, and IPPs could also encourage the innovation within the communities;
- **Off-grid Electrification:** will provide a direct benefit to communities that are not connected to the electrical grid. Invariably, even though the communities

could be near the IPP, the cost of the transmission to connect the communities to the grid is one that Eskom, the IPP, or the local municipality would be reluctant to fund. The national electricity grid is still primarily powered by fossil fuels and thus any new connection will increase the CO_2 emissions. Off-grid solutions will therefore also contribute to the reduction of CO_2 emissions. Finally, the deaths that occur due to burning paraffin and candles can be eliminated;

- **Land Provisioning:** due to the 1913 Land Act, and for numerous other reasons, communities have been dispossessed of land, and live in informal settlements surrounding the IPP. The absence of land ownership and uncertain land tenure eliminates any form of longer-term community development, especially infrastructure development. This intervention will, therefore, see the acquisition of land for commercial agricultural ventures. The irony of the REIPPPPs community development imperatives under the Economic Development and Community Trust Funds is juxtaposed against the farmers who have been allowed to lease their land to the IPP for a twenty-year period, and in particular instances, the farmer might have negotiated the continued use of the land for grazing. There is no risk to the farmer and continues to drive the inequality. This opportunity should be investigated where communities should derive the benefit of the leased land, as opposed to the farmer enjoying the benefit of *'double dipping'*;
- **Co-operatives:** Co-operatives in South Africa have an expected 95% failure rate. Extensive research has been conducted to understand the reasons for the failures of these co-operatives, which are mainly agricultural co-operatives. The REIPPPP has an ideal opportunity to develop a range of co-operatives, especially agricultural co-operatives, because of the land that has been leased to the REIPPPP/IPP. There are successful models of co-operatives from overseas. For example, the Mondragon Corporation located in the Basque region of Spain was formed in 1956 by graduates of a local technical college (Whyte & Whyte, 1991). The initial product was paraffin heaters, and the company remains the tenth-largest Spanish business with regards to asset turnover and also the leading business group in the Basque Country (Whyte & Whyte, 1991). By the end of 2014, Mondragon Corporation employed 74,117

people in 257 companies in four functions, namely, finance, industry, retail and knowledge (Whyte & Whyte, 1991). The South African cooperatives could be based on the Mondragon Corporation, Kibbutz, or Moshav models and adapted for local conditions. There is also sufficient historical information regarding the failure of co-operatives in South Africa to avoid making the same errors of the past;

- **Offtake Agreements:** Using the Northern Cape of South Africa for illustration, women-led IPPs could generate energy that is sold to Namibia, Botswana, and Zimbabwe. The REIPPPP, therefore, creates real opportunity for women-led companies to convert the arid environment to tangible LED; and
- **Sustainable Agriculture:** Figure 4.2 and Figure 4.3 depict agrivillages that can be used as a blueprint for human settlements that surround the IPP (Food and Agriculture Organization of the United Nations, 2014). The land that has been leased from the farmers could be utilised for the benefit of expanding these agrivillages. For the communities that live around the IPP, the issue of land title inhibits attempts to develop any permanent infrastructure as these communities do not own the land.

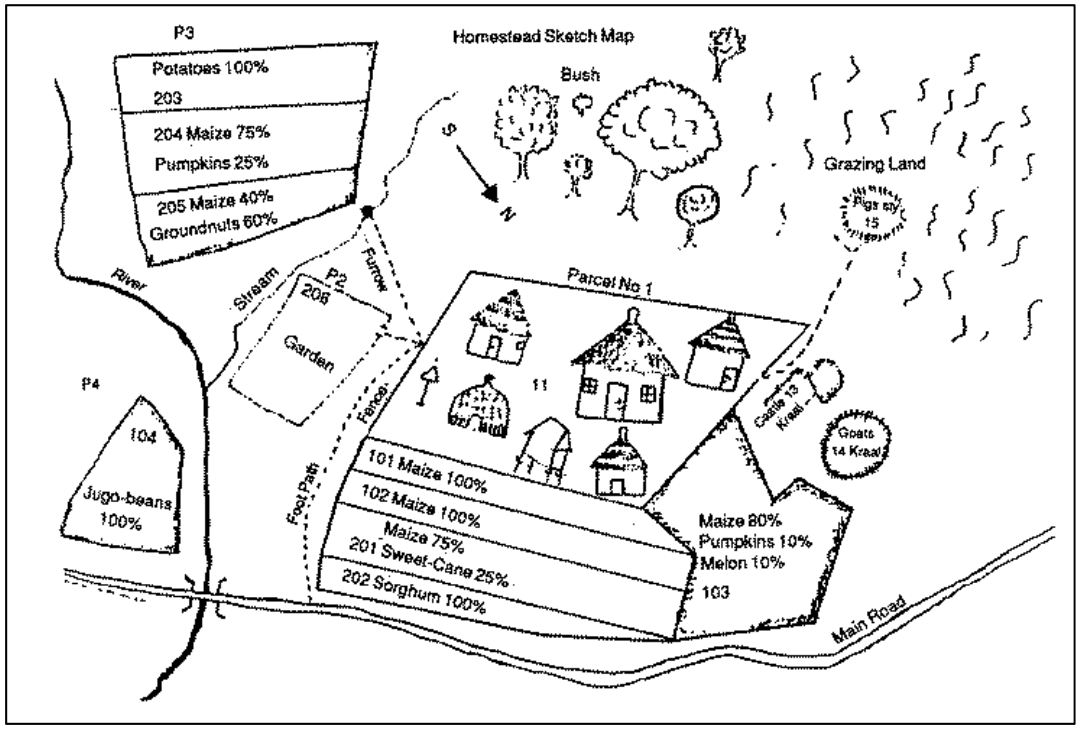


Figure 4.2: Farm sketch map, Swaziland agricultural census

Source: Food and Agriculture Organization of the United Nations, 2014

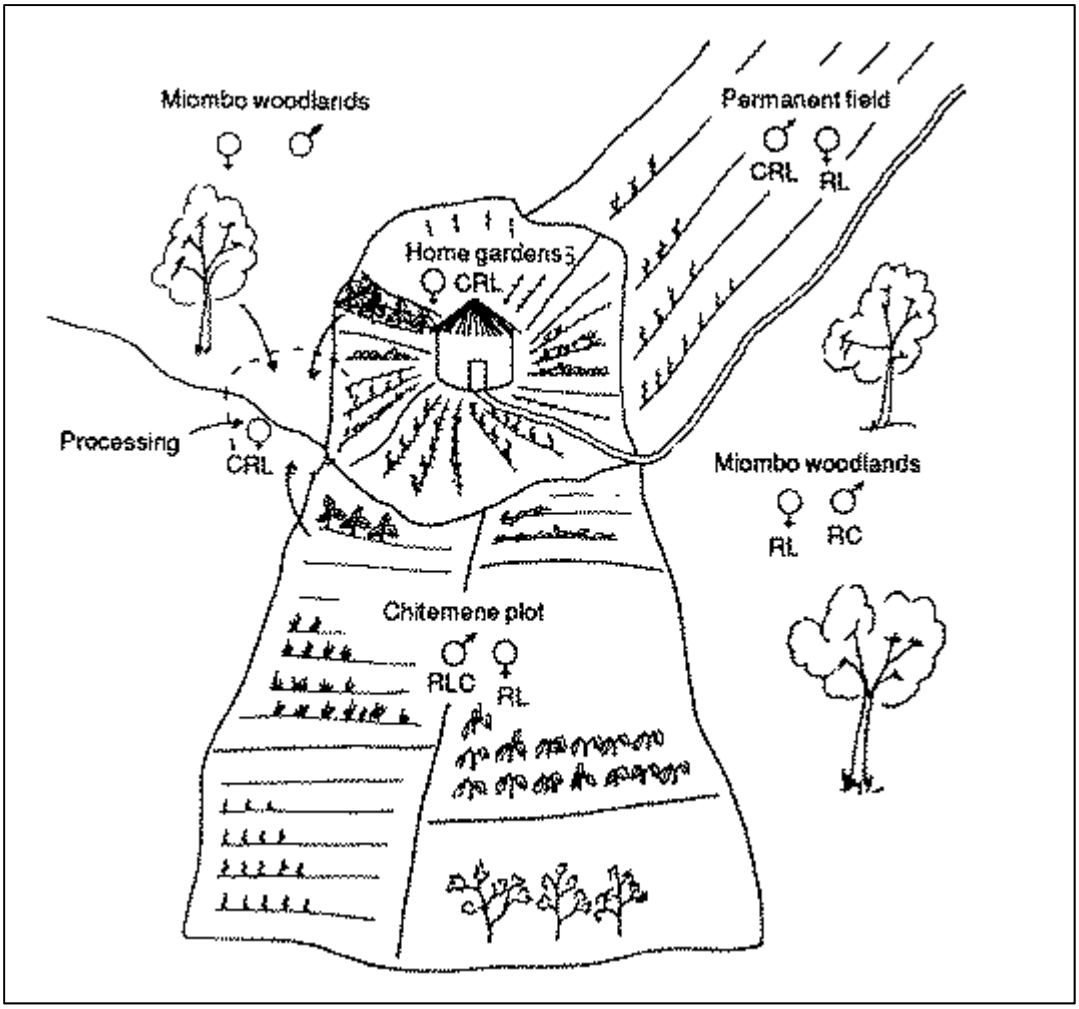


Figure 4.3: The Chitemene System, Northeast Zambia

Source: Food and Agriculture Organization of the United Nations, 2014

By applying blue-sky thinking, the possibility exists to exploit linkages with the GEF and address several focus areas, in particular, the private sector, biodiversity, climate change, chemicals and waste, land degradation, international waters, management of forest, and sustainable cities, all within single geography.

Programmes could address several of the GEF focal areas:

- **Housing Infrastructure:** this links directly with the Municipal obligations;
- **Ocean Acidification Research:** the proximity to the ocean of wind farms, encourages research linked to small-scale fishers;
- **Innovative Research:** targeted research for the communities and delivered by the communities; and

- **Relocation of Rhino:** unlike other land-locked areas where the rhino is being poached, the shoreline around South Africa eliminates direct access to the rhino. Also, the precedent has been set with the GEF already funding rhino projects.

The above is intended to provide a broad framework of projects for consideration by the REIPPPP, and it is hoped that more projects can be introduced to produce more robust community-led solutions.

It is therefore hypothesised that:

+H^{1} There is a positive relationship between the importance of sustained Socio-Economic Development initiatives and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.

+H^{11} There is a positive relationship between the importance of sustained Socio-Economic Development initiatives, Corporate Governance, and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.

4.3.4. Independent Variable 2: Stakeholder Engagement

The IPPs have to navigate a complex stakeholder ecosystem. This complexity, albeit at community level, where a *Systemic Model to Transform Fragile Social Systems* was discussed in Chapter Two. It is unlikely that the IPPs have the depth of knowledge and experience to develop stakeholder maps, communications plans, and implement a public relations program that can address these complex stakeholder regimes. The stakeholder engagement is further complicated with the engagement with the regulatory body, the local municipality, as well as political interference.

The International Finance Corporation's (IFC) handbook states that consultation activities that are mainly driven by rules and requirements invariably become a one-

time agenda of public meetings that revolve around environmental and social assessment processes (International Finance Corporation, 2007).

The IFC further states that this type of consultation normally does not progress beyond the project planning phase is seldom integrated into core business activities and lacks monitoring and evaluation of the effectiveness of developing constructive working relationships (International Finance Corporation, 2007). The emerging terminology to describe *'stakeholder engagement'* describes a broader, more inclusive, ongoing process of engagement between the company and the interested and affected parties, and spans a range of activities and approaches over the entire life of a project (International Finance Corporation, 2007).

The IFC state that the change in approach to stakeholder engagement in the business and financial sectors is due to their experiences of the negative consequences of poor stakeholder relations (International Finance Corporation, 2007). The resulting business and reputational risks are placing an increasing focus on CSR, transparency and reporting, meaning that good stakeholder relations are a prerequisite for proper risk mitigation (International Finance Corporation, 2007). Finally, the IFC defines stakeholder groups that are considered to be *'external'* to the core operation of the business (International Finance Corporation, 2007). The external stakeholder groups include affected communities, local government authorities, non-governmental organisations (NGOs), CSOs, local institutions and other interested or affected parties (International Finance Corporation, 2007). By contrast, suppliers, contractors, distributors, or customers, are considered core to the business function (International Finance Corporation, 2007).

Africa Foundation for Sustainable Development (2017) argue that the socio-economic empowerment of women within the renewable energy sector of the RSA has a complex stakeholder domain which includes government, the private sector, organised labour, and civil society (Africa Foundation for Sustainable Development, 2017).

Generally, stakeholders and beneficiaries are grouped together, however, a clear distinction should be made between stakeholder and beneficiaries (Africa Foundation for Sustainable Development, 2017). Stakeholders could be from private sector,

organised labour, and civil society, each with their own agenda (Africa Foundation for Sustainable Development, 2017). Whereas the beneficiaries will be the specific target group that should directly benefit from the developmental funding (Africa Foundation for Sustainable Development, 2017).

Yet, invariably, the beneficiary group is significantly underrepresented when projects are conceptualised and implemented (Africa Foundation for Sustainable Development, 2017). Therefore, women within the communities might be further excluded from opportunities as they are not identified, considered, or consulted from the outset of the project (Africa Foundation for Sustainable Development, 2017). This important distinction between stakeholders and beneficiaries is further discussed through instruments that have been used for past projects (Africa Foundation for Sustainable Development, 2017).

According to Africa Foundation for Sustainable Development (2017), this division of the stakeholders is vital because invariably each grouping will be driven by their own agendas and desires. There is a propensity in South Africa, when dealing with community development initiatives, to be guided by municipal management and the IDPs (Africa Foundation for Sustainable Development, 2017). The municipalities in South Africa have become an extension of the ruling party, and thus the objectives of the municipal management might not be congruent with the needs of the community (Africa Foundation for Sustainable Development, 2017). This disjuncture is clear from events during June 2017, when residents of the Gamagara Local Municipality marched to the municipal offices to hand over a memorandum, and a petition signed by 1 100 residents, to the Mayor of Gamagara Local Municipality (Residents of the Gamagara Local Municipality, 2017). The memorandum detailed the grave concerns raised by ordinary citizens regarding the approved Integrated Development Plan and general budget for the municipality (Residents of the Gamagara Local Municipality, 2017).

Figure 4.4 presents an instrument that has been used by Africa Foundation for Sustainable Development (2017) to categorises community initiatives according to stakeholders from the Public Sector, Private Sector, Organised Labour, and Civil Society. Africa Foundation for Sustainable Development (2017) point out that the Key Performance Indicators (KPIs) of the Public Sector would most likely be determined

by the objectives as articulated in the Municipal IDPs, whereas the intrinsic KPIs for any Private Sector company will be a profit motive, as, without profit, the Private Sector company would cease to exist. By contrast, the needs of the community will invariably be similar to those needs as defined by Maslow, Holtmann and Sen.

Therefore; one can infer that each category will have their own (commercial) objectives, which might be divergent from the real needs of the community (Africa Foundation for Sustainable Development, 2017).

Public Sector	Organised Labour
Private Sector	Civil Society

Figure 4.4: Stakeholder Domains
Source: Africa Foundation for Sustainable Development (2017)

Africa Foundation for Sustainable Development (2017) further argue that another subtle, but crucial point, is the fact that Stakeholders are not necessarily the Beneficiaries. However, Beneficiaries are part of the Stakeholder pool (Africa Foundation for Sustainable Development, 2017). According to Africa Foundation for Sustainable Development (2017), the distinction between Beneficiaries and Stakeholders is fundamental, as there is always a risk that the Stakeholders 'agendas' are not congruent, if not wholly divergent, from the stated objectives of the Beneficiaries.

The list of stakeholders directly involved with the community development initiatives was categorised according to the stakeholder domains (Africa Foundation for Sustainable Development, 2017). Figure 4.5 presents the results of the stakeholder instrument and demonstrates that 76% of the Stakeholders are from the Public Sector (Africa Foundation for Sustainable Development, 2017), with the direct community

beneficiaries constituting only 1% of the stakeholder ecosystem. The revised stakeholder categories for developmental projects could be Public Sector, Private Sector, Civil Society/Beneficiary Community, and Organised Labour (Africa Foundation for Sustainable Development, 2017).

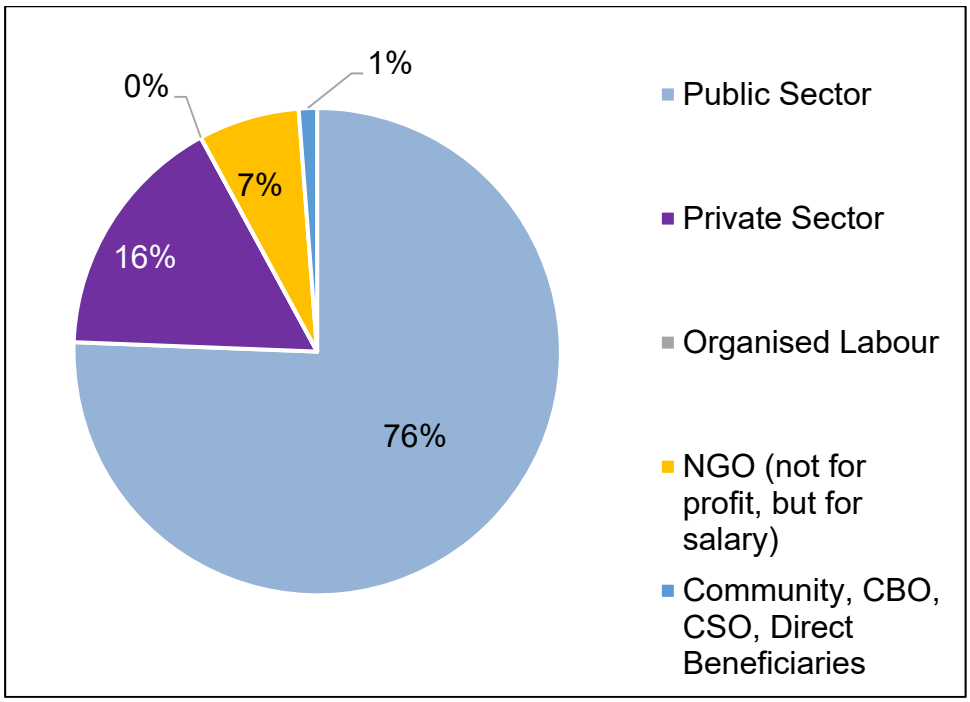


Figure 4.5: Stakeholder Segmentation

Source: Researchers construction

In Chapter Three the gender partnerships were discussed, in particular, the GEF Gender Partnership. In this section, the Stakeholders that attended the GEF, Gender Partnership Workshop at the International Monetary Fund in Washington DC during July 2017, were categorised using the Stakeholder Domains instrument. The GEF was categorised as Public Sector, while the 22 Agencies were categorised as Private Sector entities since the Agencies have to primarily first cover their overheads and salaries. The single Indigenous People representative was categorised as a CSO.

Figure 4.6 should be considered an indicator to guide the REIPPPP to increase community participation, as well as women's representation in all aspects when mainstreaming gender.

The chart indicates that only 4% of the community is represented at the GEF Gender Partnership policy formulation workshop. The REIPPPP should also bear in mind that

generally, the employees of Agencies and NGOs will enjoy a degree of job security, time to travel, and other perks. Whereas, CBOs do not enjoy the same degree of financial support or security and are competing with the well-established Agencies and commercially driven NGOs, for the same funding pool. The REIPPPP can, therefore, play an instrumental role in developing the capacities of CBOs and their access to development finance.

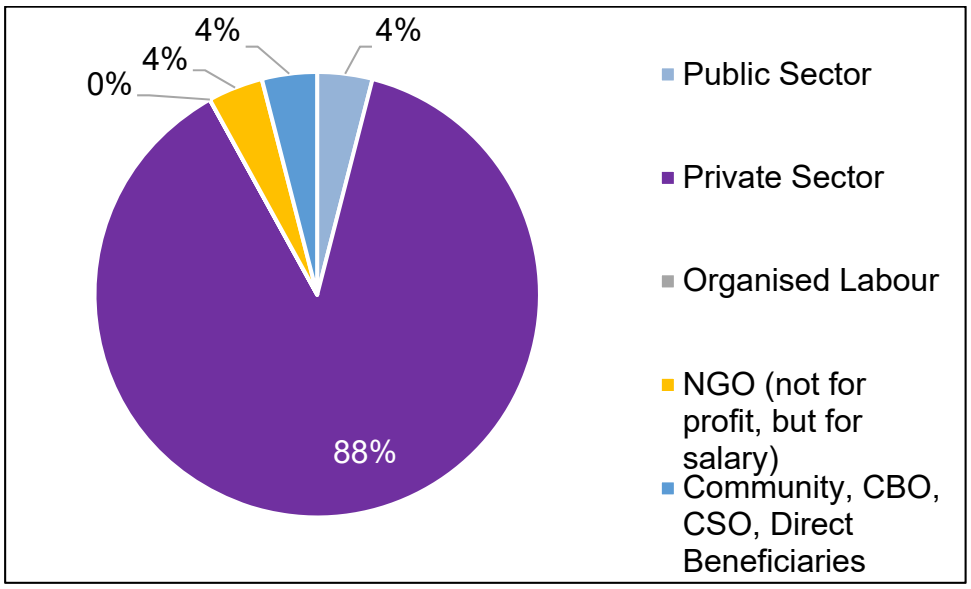


Figure 4.6: GEF Gender Partnership Workshop

Source: Researchers construction

Existing partnerships should be nurtured, and new partnerships developed. Presently, IPPs enjoy a deep relationship with all actors at local, provincial, national, regional, and international levels. The opportunity exists to partner with the mining, manufacturing, and agricultural sectors to continue building on the IPPs already established Socio-Economic Development programmes. The REIPPPP should engage these sectors to avoid reinventing the wheel and duplicating the effort that these sectors have already invested over the past decades. The anticipated R60 billion in the collective investment of the latest round of IPP projects (Creamer, 2018), could be utilised to leverage additional funding with several potential partners listed below:

- International: the GEF, the UNDP, UNWomen, World Wildlife Fund, Development Agencies;
- Regional: SADC, DBSA, the DTI;

- National: Government Departments and Agencies, Civil Society, Organised Labour, Private Sector; and
- Local: Municipalities.

Considering the current depressed global economic climate, and the implications of the downward growth forecast for South Africa by the International Monetary Fund will have consequences for South Africa's borrowings. The IMF has revised downward the South African economic growth forecast for 2018 and 2019 to a projected 0.9% growth over the course of the next two years (BusinessTech, 2018). Considering the above, building strong international linkages will further improve the desired developmental outcomes, and every attempt should be made to ensure that the developmental funding is maximised to ensure that sustainable outcomes are delivered.

It is therefore hypothesised that:

$+H^{2}$ There is a positive relationship between the importance of Stakeholder Engagement and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.

$+H^{12}$ There is a positive relationship between the importance of Stakeholder Engagement, Corporate Governance, and the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.

4.3.5. Independent Variable 3: Strategic Acumen

One could consider that in order to implement sustainable women empowerment initiatives, the Executive Leadership, their teams, and the Boards of the IPPs would require a degree of Strategic Acumen. Although the efficient generation of energy might have a small strategic nature associated with the generation thereof, the IPP is mainly a technical, operational business, that is unlikely to change over the twenty-year period of the life of the operation. By contrast, when dealing with human development, the following are defining characteristics: vision, agility, and

tenacity/staying-power/risk-taking. These characteristics are in stark contrast to the characteristics of the Executive Leadership of the IPP who is focused on generating energy, repaying loans, and creating shareholder value.

The Financial Times defines business acumen as a *"keenness and speed in understanding and deciding on a business situation"* (Financial Times, 2016). The Financial Times (2016) further states that Strategic Acumen implies having the business sense to obtain essential information about a situation. The Financial Times (2016) points out that Strategic Acumen includes the ability to focus on the key strategic objectives and to have the experience to articulate the various scenarios for a solution. Strategic Acumen requires the depth to map a course of action, and implement a project according to the plan in order to deliver the set objectives (Financial Times, 2016). Individuals that exhibit business acumen use an explicit or implicit business framework to ensure completeness and integration as they assess a business situation (Financial Times, 2016). The framework links the objectives of key stakeholders, the competitive strategies required for successful implementation, the human resources, and activities required to produce and sell products and services (Financial Times, 2016). The framework also includes the business processes that are required to support a manager to deal with the business complexity (Financial Times, 2016). According to the Financial Times (2016), business acumen also requires a thought process that ensures a focus on critical success factors, an appreciation of the future consequences of actions taken today, and an understanding that future activities require constant monitoring and adjustment when activities do not follow the set plan. These business traits are best described by the terms mindfulness, sense-making and resilience (Financial Times, 2016).

Erb (2008) argue that Strategic Acumen is intricately linked with leadership characteristics like Authenticity, Decisiveness, Vision, Humility, Talent Selection, and Coaching & Feedback, characteristics that promote trust between leadership and their management team. Erb (2008) points out that if individual team members do not feel sufficiently comfortable, it is unlikely that they will offer their opinion about what they genuinely think, and how they truly feel about a particular situation, particularly if this involves challenging the leader. Erb (2008) further states that Strategic Acumen is critical component of successful leadership, as internal and external stakeholders will

consider that accountability for the organisational strategy resides with its leader. Although the organisational strategy is closely linked associated with a single individual, its leader, an astute strategy development often entails a leader deliberately cultivating a dependency on others (Erb, 2008).

It is therefore hypothesised that:

+H^3 There is a positive relationship between the importance of Strategic Acumen and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H^{13} There is a positive relationship between the importance of Strategic Acumen, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.6. Independent Variable 4: Strategic Planning

"Strategic planning is an ongoing process and carries an intense customer/community, shareholder, and employee focus. The strategic planning process provides direction to all elements of the company and drives decisions and actions. Employees at all levels can articulate and share the company's vision and its overall strategic direction. They can also articulate their roles in the implementation and execution of the strategic plan", (Palmatier, 2013). Palmatier further defines strategic planning as a continuous process of making present entrepreneurial (risk-taking) decisions, systematically, and with the most significant knowledge of their futurity; organising systematically the efforts needed to execute these decisions; and measuring the outcome of these decisions against the expectations through organised, systematic feedback (Palmatier, 2013).

A Harvard Business Review article titled, *Strategic Plans are less important than Strategic Planning*, cites German Field Marshal Helmuth Karl Bernhard Graf von Moltke (1800 – 1891), who is credited with creating a new approach to directing armies on the battlefield (Kenny, 2016). Moltke considered that only the commencement of

any military operation was plannable, and therefore his approach entailed developing a series of options, instead of a single plan (Kenny, 2016). von Moltke also stated that “no plan of operations extends with certainty beyond the first encounter with the enemy’s main strength” (Kenny, 2016). Winston Churchill (1874 – 1965), a graduate of Britain’s elite Royal Military College at Sandhurst, shared a similar sentiment, stating that “Plans are of little importance, but planning is essential” (Kenny, 2016). Kenny (2016) argues that similar to military strategy, business strategy is developed and applied in a fluid, unpredictable environment, and that the distinction that Moltke and Churchill draw between planning and the plan is equally pertinent for senior executives who have the responsibility of crafting a company’s strategy. Kenny (2016) further states the following principles for Strategic Planning:

- View the plan as a guidance tool;
- Identify disagreements and look toward the future;
- Focus on the organisation and key stakeholders, not individual actions; and
- Assume the plan is a work in progress.

According to Kenny (2016), although Moltke was not born in the modern era, or into a business environment, he understood the concept of “disruption”, and that the world does not stand still while plans are being formulated. Moltke also appreciated the importance of planning in preparing for change, and therefore a strategic plan is an essential instrument in navigating disruptive environments (Kenny, 2016). According to di Fiore (2018), executives are cautious of planning because it feels rigid, slow, and bureaucratic. This sentiment was confirmed through a 2016 Harvard Business Review Analytics survey of 385 managers, that revealed that most executives were frustrated with planning because they believed that speed was important and that plans changed frequently in any event. di Fiore (2018) concluded that planning is essential for any company of any size and that the traditional planning approach should be revisited to better serve the purposes of the agile enterprise of the twenty-first century.

It is therefore hypothesised that:

+H^4 There is a positive relationship between the implementation of a well-developed Strategic Plan and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H^{14} There is a positive relationship between the implementation of a well-developed Strategic Plan, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.7. Independent Variable 5: Broad-Based Black Economic Empowerment

Broad-Based Black Economic Empowerment (B-BBEE) is a policy that was initiated by the South African Government to address the gross inequality that exists in South Africa (Department of Trade and Industry, 2013). The B-BBEE intended to redistribute the wealth across as broad a spectrum of previously disadvantaged South African's (Department of Trade and Industry, 2013). The B-BBEE Act (Act 53 of 2003) is premised on the fact that decades of systemic racism has contributed to the socio-economic challenges that the RSA faces (Department of Trade and Industry, 2013). The Codes of Good Practice was gazetted on the 09th of February 2007 Government Gazette 29617 (Department of Trade and Industry, 2013). The B-BBEE Codes provides a guidebook for the measurement of ownership, management control, employment, skills development, preferential procurement, enterprise development, socio-economic development, and QSEs (Department of Trade and Industry, 2013). According to (Eberhard *et al.,* 2014), the economic development requirements of the REIPPPP in the RSA has been controversial, confusing, and expensive for bidders to respond to.

The NDP of RSA (National Planning Commission, 2010), confirms the socio-economic challenges by stating that the present model of B-BBEE has not succeeded to any considerable degree in broadening the scope of ownership and control of large firms, i.e. economic transformation, citing the following difficulties:

- Lack of capital to acquire ownership or control of significant parts of the economy, resulting in debt-driven deals that are likely to work only when the economy is rapidly growing and company profitability is expanding significantly;
- There have been some positive spin-offs from procurement policy. In many instances, it has enabled fast and more visible growth of black entrepreneurs. However, this has also created perverse incentives such as causing job losses when firms import goods rather than use local producers. Also, the current processes are riddled with corruption and incompetence; and
- Misaligned targets and definitions between the B-BBEE Act (2003) and the codes and the sector charters, and the other redress legislation such as the Employment Equity Act and the Public Finance Management Act (1999).

The B-BBEE Codes of Good Practice, the Employment Equity and Skills Development Acts provide a guide for an even broader definition of economic development. The broader definition of economic development includes the development of human capital in the form of capacity development, education in the form of improving numeracy and literacy, improved health care, appropriate infrastructure development and health and safety initiatives that all contribute to the general well-being of society.

It is therefore hypothesised that:

+H^{5} There is a positive relationship between the importance of Broad-Based Black Economic Empowerment policy and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H^{15} There is a positive relationship between the importance of Broad-Based Black Economic Empowerment policy, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.8. Independent Variable 6: Executive Leadership

Stephen Drotter, the renowned human resource expert, states that to achieve full leadership performance, there should be a comprehensive definition and practical ways to measure leadership performance (Drotter, 2003). Drotter further elaborates that leadership is about establishing an enduring and flexible architecture that facilitates performance and achieves the desired results (Drotter, 2003). A good or bad strategy is based on measurable results, meaning that results are the measurement (Drotter, 2003). Finally, Drotter states that the role of leaders is to give precise definition and differentiation; to eliminate the many leadership positions that are artificially created and not needed; and to measure performance, not potential (Drotter, 2003).

Rouse (2018) argues that Executive Leadership is the ability to influence and guide individuals in an organisation that the executive leadership manages. The executive leadership typically oversee business activities like realising organisational goals, strategic planning, and overall decision making (Rouse, 2018). According to Rouse (2018), there are several types of executive leadership: servant leadership, authentic leadership, and paternalistic leadership, with strong executive leadership demonstrating the following characteristics: accountability, motivational leadership skills, problem-solving, empathy, willingness to collaborate, the ability to listen, and extensive job experience. Rouse (2018) points out that executive leadership has a mix of hard skills and soft skills that are used to inspire employees and influence their attributes to improve business processes. Executive leadership also play a significant role in developing and exemplifying the corporate culture of the organisation, as well as the emphasis placed on various defining elements such as hierarchy, innovation, collaboration, competition, community involvement and social engagement (Rouse, 2018). Rouse (2018) cites Apple CEO Tim Cook, Microsoft founder Bill Gates, Amazon CEO Jeff Bezos, Facebook co-founder and CEO Mark Zuckerberg, and Alibaba co-founder Jack Ma, as examples of high-profile, successful executive leaders in recent decades. Finally, Rouse (2018) states that a range of leadership education programs designed to promote executive management best practices is available, such as programs offered by the Massachusetts Institute of Technology Sloan School of Management, and the Yale Global Executive Leadership Program.

Finally, Appelbaum & Paese (2000) argue that there is no guarantee of success for executive leaders, based purely on past operational/functional roles that were successful. However, these operationally successful individuals are routinely promoted into these critical executive leadership roles (Appelbaum & Paese, 2000). Consequently, these senior leaders are unprepared to effectively deal with the situations and challenges they must contend with (Appelbaum & Paese, 2000). Based on more than 30 years of research and practice in the field of executive assessment, Appelbaum & Paese (2000) state that there are nine roles of strategic leadership:

- The Navigator will clearly and quickly work through the complexity of key issues, problems, and opportunities to affect actions;
- The Strategist develops a long-range course of action or set of goals aligned with the organisation's vision;
- The Entrepreneur identifies and exploits opportunities for new products, services, and markets;
- The Mobiliser will proactively build and align stakeholders, capabilities, and resources, for completing activities quickly and achieving complex objectives;
- The Talent Advocate attracts, develops, and retains talent to ensure that people with the right skills and motivations are in place to meet the business needs;
- The Captivator builds passion and commitment toward a common goal;
- The Global Thinker integrates information from all sources to develop a well-informed, diverse perspective that can be used to optimise organisational performance;
- The Change Driver will create an environment that embraces, implements, and adopts change, even if the change is radical; and
- The Enterprise Guardian will ensure shareholder value through courageous decision-making that supports the interests of the organisation.

According to Appelbaum & Paese (2000) there are several models that describe various roles performed by senior executive leaders, although none of the models appear to represent the full range of roles that have been defined through their analyses.

However, these models add further support to the relevance and "construct validity" of Development Dimensions International's (DDI's) nine roles (Appelbaum & Paese, 2000). Table 4.2 presents the elements from the DDI leadership roles and four corresponding models:

Table 4.2: Comparison to similar roles defined in Leadership Models

	DDI Roles	Covey	Belbin	Gallup	Mintzberg
1	Navigator			Formulation	Disseminator Monitor
2	Strategist	Pathfinding		Strategic Thinking	
3	Entrepreneur		Plant	Creativity	Entrepreneur
4	Mobilizer	Aligning	Company Worker, Completer-Finisher	Activator	Liaison
5	Talent Advocate	Empowering	Resource Investigator		Leader
6	Captivator	Empowering, Modeling		Stimulator, Persuasion	Spokesperson
7	Global Thinker		Chairman		
8	Change Driver		Shaper		
9	Enterprise Guardian		Monitor-Evaluator		Disturbance Handler

Source: Appelbaum & Paese (2000)

Table 4.3 summarises the nine roles of strategic leadership with this research's hypotheses:

Table 4.3: DDI's Leadership Model mapped to Research Hypotheses

	DDI Roles	Research Hypotheses
1	Navigator	▪ Executive Leadership[6] ▪ Executive Education[8]
2	Strategist	▪ Strategic Acumen[3] ▪ Strategic Planning[4]
3	Entrepreneur	Socio-Economic Development[1]
4	Mobiliser	Stakeholder Engagement[2]

5	Talent Advocate	Executive Leadership[6]
6	Captivator	Executive Leadership[6]
7	Global Thinker	Executive Education[8]
8	Change Driver	Change Management[7]
9	Enterprise Guardian	▪ Broad-Based Black Economic Empowerment[5] ▪ Fund Management[9] ▪ Corporate Culture[10] ▪ Corporate Governance[11]

Source: Researchers construction

Therefore, based on DDI's Leadership Model, it can be inferred that the research hypotheses have identified several important criteria which contribute to the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.

It is therefore hypothesised that:

+H[6] There is a positive relationship between the importance of Executive Leadership and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H[16] There is a positive relationship between the importance of Executive Leadership, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.9. Independent Variable 7: Change Management

Extensive effort has been invested in developing methodologies and approaches to apply change management concepts to managing the development and implementation of projects and programs (Harrington & Voehl, 2015). The primary focus is preparing the parties impacted by the initiatives to embrace the change that results from a project's activities (Harrington & Voehl, 2015).

Traditionally, change management was limited to project managers and used as a tool to successfully implement projects and programs that involved changing the activities and the behavioural patterns of the people within the company that would be impacted by the change (Dylan & Campbell, 2008). Since the 1980s, it has become a prerequisite that project managers have an appreciation of the technology being implemented, the processes required to implement that technology, and, most importantly, that they understand that project success depended heavily on the extent to which the recipients of the technology accepted the technology (Harrington & Voehl, 2015).

According to Dylan & Campbell (2008), the change management theories and philosophies of John Kotter, a leader in the field of change management, has both an emotional and situational component. The methods for managing each of these change management components are expressed in Kotter's eight-step model: "developing urgency, building a guiding team, creating a vision, communicating for buy-in, enabling action, creating short-term wins, don't let up, and making it stick" (Dylan & Campbell, 2008).

Kotter arranged the eight-step model into three distinct phases:

Phase I: Creating a climate for change

- Increase urgency
- Build guiding teams
- Get the vision right

Phase II: Engaging and enabling the entire organisation

- Communicate for buy-in
- Enable action
- Create short-term wins

Phase III: Implementing and sustaining the change

- Don't let up
- Make it stick

Dylan & Campbell (2008) concluded that it is essential to remain aware that change is both situational and psychological, and thus, any organisational change would impact the identities of the individuals involved in the change process. Dylan & Campbell (2008) caution that ignoring the situational and/or the psychological aspects of change could potentially doom any change implementation, without actually realising the desired results.

Harrington & Voehl (2015) argue that Culture Change Management will strengthen the overall capability of an organisation, and its willingness to accept and prosper in a rapidly changing worldwide environment. Culture Change Management will require a major change in the manner organisational change management has been structured by minimising the focus on projects and programs and maximising the focus on organisational effectiveness (Harrington & Voehl, 2015). Harrington & Voehl (2015) point out that since the 1970s Project Change Management has focused on preparing the people impacted by the change initiatives to accept the changes that result from a specific project's activities. However, Harrington & Voehl (2015) state that culture has more impact on how the organisation changes, and how the impacted personnel are prepared to accept the output from the project.

Harrington & Voehl (2015) further state that there are two components to Organisational and Project Change Management, and that Project Change Management is less important than Cultural Change Management:

- Project Change Management contributes between ten to twenty percent of the total change and implemented to assist the impacted personnel to accept the change; and
- Cultural Change Management contributes eighty to ninety percent of the total change and is driven by managing the change that result from managerial decisions, business fluctuations, external factors, and the activities that management decides need to be implemented.

Harrington & Voehl (2015) conclude that Cultural Change Management is not a quick fix program and that Cultural Change Management should be considered as a thought pattern that must be considered every time an individual makes a decision that impacts other people.

It is therefore hypothesised that:

+H^{7} There is a positive relationship between the importance of Change Management and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H^{17} There is a positive relationship between the importance of Change Management, Corporate Governance, and the perceived the success of socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.10. Independent Variable 8: Executive Education

What *education* do Executive Lederer's, and their Board's, require in order to implement Socio-Economic Development Programmes that will promote the socio-economic empowerment of women in the renewable energy sector of the RSA?

Traditional economic theories developed since the 1960s promoted the concept of human capital development where education is believed to be a path to ensure economic growth. According to Marsh (2014), in his study, *"Getting Ahead and Falling Behind: A Sociological Elaboration of Sen's Theory of Human Development"*, Marsh states that in development studies, Amartya Sen's *'capabilities approach'* is a widely accepted paradigm. Sen argued that the measurement of *'development'* should consider the traditional economic criterion of Gross Domestic Product (GDP) per capita and the inclusion of *'human development'*, namely the capabilities and the enlargement of people's choices (Marsh, 2014). Basing his arguments on the "Human Development Approach", Burchi (2006) examined the theoretical and empirical causalities between education and food security variables. Burchi (2006) concluded

that more than 800 million people are impacted by food insecurity and illiteracy and that education is a fundamental factor in achieving food security for rural populations in developing countries.

“The Pope tells CEOs: If you want to help the poor, empower them!” (Martín, 2016). This was the message that Pope Francis delivered to participants of the Fortune+Time forum at the Vatican (Martín, 2016). Pope Francis appealed to CEOs to actively participate in efforts to build a more equitable economy, *"those whom you seek to help; give them a voice, listen to their stories, learn from their experiences and understand their needs."*, (Martín, 2016). According to Boehme (2013), CEOs can learn the following from Pope Francis, *“speak softly, but walk loudly”*; sometimes small gestures have a significant impact; live the rules you want others to follow; symbolism matters; be consistent, and be mindful of being watched.

A study published in the Harvard Business Review, *Women and the Vision Thing*, analysed the data from 360-degree evaluations of 2,816 executives from 149 countries, who were enrolled in executive education courses at Insead Business School (Ibarra & Obodaru, 2009). For the 360-degree exercises, managers completed their self-assessment and invited subordinates, peers, supervisors, and other professionals with whom they engaged, evaluated them on a set of leadership dimensions (Ibarra & Obodaru, 2009). The researchers were trying to identify patterns within the data set and therefore focused on differences between the male and female leaders, in relation to how they saw themselves and in terms of how the observers evaluated them (Ibarra & Obodaru, 2009). Of the sample population, 20% of the executives assessed were women, 27% of the evaluating observers were women, with a total of 22,244 observers participating in the research (Ibarra & Obodaru, 2009). The research revealed that there was no evidence of a female “modesty effect”, instead, women rated themselves significantly higher than men rated themselves (Ibarra & Obodaru, 2009). The research did, however, reveal one dimension that defied the trend, where the male observers rated their female leaders lower on their capabilities in *envisioning* (Ibarra & Obodaru, 2009). Ibarra & Obodaru (2009) concluded that women should make vision a defining attribute, as in a senior leadership role it’s a set of competencies that can be developed, and also the only leadership dimension where women scored lower than their male counterparts.

The 360-degree assessments of participants in Insead's executive education program measured the following dimensions: Envisioning, Empowering, Energising, Designing and Aligning, Rewarding and Feedback, Team Building, Outside orientation, Global Mind-set, Tenacity, and Emotional Intelligence (Ibarra & Obodaru, 2009). These criteria were similar to the DDI's Leadership Model, and therefore also reinforces the research hypotheses that contribute to the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA.

It is therefore hypothesised that:

+H^{8} There is a positive relationship between the importance of Executive Education and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H^{18} There is a positive relationship between the importance of Executive Education, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.11. Independent Variable 9: Fund Management

Socio-Economic Development, Enterprise Development, Economic Development, Corporate Social Investment, Corporate Social Responsibility, and Economic Empowerment contributions can all be collectively considered as a Socio-Economic Development Fund. These developmental contributions can contribute to a collection of programmes, projects, or interventions that uplift the social and economic position of beneficiaries, where this process provides access to the economy for the target beneficiaries.

Fund Management refers to the sound financial management and disbursement of these socio-economic development funds, where the fund manager, or budget holder within a company, is responsible for administering a quantity of money, namely the socio-economic development proceeds, which have been generated by the IPP.

According to Paramasivan & Subramanian (2009), Financial (Fund) Management is an essential component of the economic and non-economic activities which determine the efficient procurement and utilisation of a company's finance with a profit motive. In the past, the subject of Financial Management was included in accountancy with traditional approaches, whereas current accountancy practices have extended to include innovative and multi-dimensional functions, developing as corporate finance, business finance, financial economics, financial mathematics, and financial engineering (Paramasivan & Subramanian, 2009).

Paramasivan & Subramanian (2009) point out that Financial Management:

- Is concerned with the efficient investment of an essential economic resource, i.e. capital funds;
- Deals with the procurement of funds and their efficient utilisation in the business;
- Is the application of general managerial principles to the area of financial decision-making;
- Is the area of financial decision-making, harmonising individual motives and enterprise goals; and
- Is the operational activity of a business that is responsible for obtaining and effectively utilising the funds necessary for efficient operations?

The European Commission had developed a Financial Management Toolkit for recipients of EU funds for external actions (European Commission, 2018). The purpose of this toolkit is to assist recipients of EU funds to comply with the conditions for financial management as determined in the contracts for EU-financed external actions. The objectives of this toolkit is to: provide basic, practical guidance in a user-friendly format; identify important risk areas; and to provide best practices, tools and templates (European Commission, 2018). This toolkit covers the following Financial Management Areas:

- Internal Controls;
- Documentation, Filing and Record Keeping;

- Procurement;
- Asset Management;
- Payroll and Time Management;
- Cash and Bank Management;
- Accounting; and
- Financial Reporting.

This toolkit of the European Commission also includes several checklists to assist the recipients with the management of the grant funds (European Commission, 2018).

According to Humentum (2018), NGOs receive funds from donors which the NGOs will invest, or on occasion the funds to transferred other organisations. As an example, a government department could fund an international NGO, which inturn funds a local NGO that funds grass-roots community organisations (Humentum, 2018). Humentum (2018) point out that donors face a difficult task as they have to use their funds in a responsible manner to achieve their goals and at the same time avoid fraud. Humentum (2018) state that the donor and the NGO/recipient should ensure that basic financial controls are in place, and also support effective local responses and help NGOs grow by encouraging flexibility and learning.

Humentum (2018) consider the following to be the responsibilities of the donors:

- Assessing capacity;
- Signing agreements/contracts;
- Providing funds or other assistance;
- Reviewing progress; and
- Building capacity.

Although most IPPs might have an in-house, or an outsourced financial function, it is unlikely that the financial function is geared for the financial management associated with donor funding.

It is therefore hypothesised that:

+H^{9} There is a positive relationship between the importance of effective Fund Management and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H^{19} There is a positive relationship between the importance of effective Fund Management, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.3.12. Independent Variable 10: Corporate Culture

Michael Watkins (2013) facilitated a discussion on LinkedIn to determine a perspective of corporate culture. Several of the more than 300 responses are listed below:

- *"Culture is how organizations 'do things'"*, Robbie Katanga;
- *"In large part, culture is a product of compensation"*, Alec Haverstick;
- *"Organizational culture defines a jointly shared description of an organization from within"*, Bruce Perron; and
- *"Organizational culture is civilization in the workplace"*, Alan Adler.

Watkins (2013) quotes Aristotle, *"We are what we repeatedly do."*, and continues by reinforcing the perspective that *"repeated behaviour or habits"* is at the core of culture and reduces the notion of what people feel, think, or believe. Cultures are dynamic, shifting incrementally and continuously in response to external and internal changes, which implies that assessing corporate culture is complicated because it is continually changing (Watkins, 2013). According to Teasley (2016), the Ancient Greeks held a perspective that only those who spoke their language could understand their behaviours, values, and social systems, and as such felt that their culture was what defined them as a people, and had to be learnt by being a part of the Greek society.

Cultural determinism proposes an opposing view, by supporting the notion that emotional and behavioural patterns are formed and moulded by the culture that one is raised in and that this theory can also be applied to economic and political systems (Teasly, 2016). Several theories aim to differentiate the most influential element that shapes human behaviour and social interaction, while cultural determinism theory postulates that humans essentially are what they learn by interacting with society (Teasly, 2016). According to Teasley (2016), some social scientists argue that cultural determinism is engrained in how governments are structured and how humans interact with each other. According to Teasley (2016), cultural determinism states that behaviours are learned and enforced by culture.

To illustrate the importance of corporate culture, Harrington explains his own experience of the cultural change within the International Business Machines Corporation (IBM), which is considered to be one of the great North American companies (Harrington & Voehl, 2015). In the 1930s, IBM was an very family focused organisation, where their recruiting preference was a white Methodist American with a Western European heritage; having a relative already working at IBM; and marriage between employees was encouraged, except as soon as a woman got married they were forced to retire (Harrington & Voehl, 2015). During the 1940s, the policy was relaxed, and a married woman was entitled to work until she fell pregnant, but then was required to retire (Harrington & Voehl, 2015). IBM provided a country club for their employees and encouraged the children of the employees to participate in the activities at the country club, which included swimming, golf, bowling, billiards, dancing, and a pistol range (Harrington & Voehl, 2015). The importance of corporate culture is further reinforced where Harrington reports that he rejected several employment opportunities, at double his salary, because he believed that IBM had invested so much in him, and he felt that he owed IBM his loyalty (Harrington & Voehl, 2015). Finally, IBMs corporate culture was transformed during the 1930s due to management decisions, not projects, and a significant cultural change being the decision to eliminate lifetime employment (Harrington & Voehl, 2015).

It is therefore hypothesised that:

+H^{10} There is a positive relationship between the importance of Corporate Culture and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

+H^{20} There is a positive relationship between the importance of Corporate Culture, Corporate Governance, and the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA.

4.4. SUMMARY

Chapter Four discussed the proposed theoretical model and dealt with the process of theoretical model building. This chapter also discussed the development of a graphical representation of the theoretical socio-economic model and detailed the factors that positively influence the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector of the RSA. The positive relationship between the independent variables and intervening variable of Good Governance, which are conjectured to positively influence the dependent variable, the socio-economic empowerment of women in the renewable energy sector of the RSA has also been defined.

The next section deals with the development of the MailChimp campaign that disseminated the contact databases and provided the wrapper for the online survey. The online questionnaire that was developed on the Nelson Mandela Metropolitan University (NMMU) online survey platform was also expanded on and described in detail. Finally, the campaign reports from the Mailchimp platform were also analysed and presented.

Chapter Five, *Research Design and Methodology* will elaborate on the methodology that was employed for this study.

CHAPTER FIVE
RESEARCH DESIGN AND METHODOLOGY

5.1. INTRODUCTION

Chapter One outlined the primary objective of this study to investigate and empirically test the influence of various factors on the perceived success of the socio-economic empowerment of women within the renewable energy sector of the RSA. Research into renewable energy has already been extensively covered, to the best of the researcher's knowledge, research into a model for mainstreaming gender within the renewable energy sector of the RSA does not existent. This study, therefore, addresses the limitation of available research that categorises variables that might influence a theoretical model of the perceived success of the socio-economic empowerment of women within the renewable energy sector of the RSA. This chapter will describe the research design and methodology that was utilised, explain the data collection and sampling method employed, and discuss the research instrument that was developed. The data collection instrument and the methods implemented to maintain validity and reliability of the instrument are also expanded on. The operationalisation of the independent, intervening, and dependent variables, as well as the administration of the questionnaire, will then be discussed. Finally, the data analysis method and the statistical analysis will be discussed, and a description of the SEM technique which was utilised to verify the proposed conceptual model will also be presented.

5.2. RESEARCH DESIGN

The primary objective of this research design is to provide a deeper understanding of mainstreaming gender in the renewable energy sector. The research design stage provided the researcher with the opportunity to anticipate the appropriate research decisions, and to maximise the validity of the eventual results. The design of the conceptual structure for this research, constituted the blueprint for the collection, measurement, and analysis of data. As such, the design includes an outline of what the researcher will do from writing the hypotheses and their operational implications to the final analysis of data (Kothari, 2004).

This study revolved around a self-administered, online survey, which was considered the most appropriate to garner international opinions relating to mainstreaming gender, as well as international perspective regarding the renewable energy sector. These international perspectives further contributed to the local body of knowledge, but more importantly, provide international best practices to mainstream gender. According to Kothari (2004) research refers to a search for knowledge, and can also be defined as a scientific and systematic search for relevant information on a particular topic. Kothari (2004) continues by stating that research could be considered an art of scientific investigation, and yet a further definition by the Advanced Learner's Dictionary of Current English considers the meaning of research as *"a careful investigation or inquiry specially through search for new facts in any branch of knowledge."* Kothari (2004) further states that research can be defined as a *"systematised effort to gain new knowledge"*. Research could also be considered as a movement from the known to the unknown. Therefore, research is in effect a voyage of discovery. In her research, Farrington (2009) postulates that data which is derived from professionally conducted practices and standards of a scientific method will produce valid research results. Farrington (2009) points out that research revolves around a systematic process of thorough and rigorous enquiry and investigation, which is methodical, and with an objective of fulfilling the need for knowledge.

Quantitative research can also be defined as a formal, objective, systematic process (Burns & Grove, 1993). The objective of the research is to describe, test relationships, examine cause and effect interactions between variables where surveys are used for descriptive, explanatory, and exploratory research (Burns & Grove, 1993). According to Burns & Grove (1993), a survey is used in the instance when a population is too large to be directly observed, and in this instance, a survey will be employed to collect proposed data for describing the population. Through this process, the survey will obtain information from a sample of people using a series of questions Burns & Grove (1993). The information for this study was collected through a self-administered, online survey, disseminated via an online platform by the researcher to the subjects. The theoretical model in this study was based on prior research relevant to mainstreaming gender, the renewable energy sector, business management principles, and organisational behaviour.

5.2.1. Rationale

The proposed research hypotheses were based on a series of positive relationships that were tested during the research and further described in Table 1.11. During the questionnaire design stage, specific variables were added, amended, or deleted. The process of identifying and selecting the target population was very involved, mainly because the study had two distinct population groups. One group that had deep expertise about mainstreaming gender and potentially little, or no exposure, to the relatively new renewable energy sector. The other population group that had intimate knowledge and understanding of the renewable energy sector, but little to no appreciation for mainstreaming of gender.

Within these population groups, there were further sub-groups: stakeholders, influencers, interested and affected parties, that positively and negatively influence the socio-economic empowerment of women within the renewable energy sector in the RSA. Ultimately, the research focused on those women, and men, at the executive level, who play a significant role in ensuring that the necessary funding streams reach the women beneficiaries in the target communities, rather than the beneficiaries themselves.

The rationale to focus on women in critical decision-making positions, for example, serving on the Boards of companies, or at executive/senior management level, was that the top-down flow of funding and support is crucial for the successful socio-economic empowerment of women. Without this financial and decision support, the women within the communities tend to have no voice at the decision-making level. Due to the stark difference between women at the executive level, as opposed to women in rural, peri-urban, and urban settings, one might hypothesise that the questionnaire would vary significantly between the different survey population groups. Also, it would have been necessary to use a different methodology for women in rural settings: paper-based questionnaires, and face-to-face interviews. Therefore, this study was confined to women at the executive level and would exclude women at the community level to avoid skewing the results.

During the initial proposal development and literature review stages, it became apparent that the survey population group had an appreciation of the renewable energy sector in the RSA. Yet, by contrast, an international audience seemed to have a much better appreciation for the mainstreaming of gender than their South African counterparts. This approach necessitated the international inclusion of the population group to ensure an international and balanced perspective of mainstreaming gender would be included in this study.

The questionnaire determined if the respondents had a formal knowledge of mainstreaming of gender and a formal understanding of the renewable energy sector and if the respondents resided in South Africa. This information was included in the questionnaire to assist with the data analysis, filtering, and categorisation of the data. Another critical consideration that emerged through dialogue sessions and the literature review stage was that the number of women in key executive positions was below expectation. These statistics were further supported by international studies. Due to the lack of female representation at the executive level, male respondents were encouraged to also participate in this survey, as these male executives would invariably be the same executives making the decisions on behalf of the women in the communities.

5.2.2. Exclusions

This study focused on women in key decision-making and influencing positions and, therefore, excluded women from the communities. This study also encouraged men to participate and contribute their expertise and knowledge from gender, executive management, and renewable energy perspectives.

5.2.3. Online Survey

The researcher opted to utilise the *“My World @ NMMU Web Survey”* platform, the primary consideration being the added credibility that the NMMU brand would contribute to the survey when soliciting responses from respondents.

In addition, the need to define an international benchmark to mainstream gender within the renewable energy sector necessitated the use of an online survey in order to reach an international survey population. A survey and a questionnaire are methods used to gather primary data, whether it is for the marketing of a product or collecting information from people on social issues (Surbhi, 2015). The difference is that surveys are the conventional way of conducting research, whereas questionnaires is an instrument for acquiring data on a particular topic (Surbhi, 2015). A survey is a comprehensive research process, used for the orderly collection and analysis of information from a group of people, to measure their opinions, thoughts and experiences (Surbhi, 2015).

According to Surbhi (2015), there are several modes of conducting surveys, namely:

- Face to face interviews;
- Questionnaires;
- Telephonic surveys;
- Postal or mail surveys;
- Internet-based surveys;
    - Email survey; and
    - Web-based survey.

A survey can be considered as an umbrella term which includes a questionnaire, interview, an observation method as an instrument for collecting information (Surbhi, 2015). Whereas the best, quickest and least expensive manner of conducting a survey is by utilising a questionnaire (Surbhi, 2015). Surveys are conducted for research or studies, while a questionnaire is used to collect information such as a job application or patient background form (Surbhi, 2015). By comparison to other online survey platforms like Survey Monkey and MailChimp, the NMMU survey platform is considered quite basic in its functionality. As an example, the NMMU survey platform does not have any skip logic that allows the respondent to be ejected if they do not meet certain criteria; the question builder functionality is quite rudimentary; and there is no bulk mechanism to disseminate and manage the questionnaire, especially the mailing list.

After investigating several products and online services, the decision was made to use MailChimp to manage the cover letter and the mailing list, and the NMMU survey platform for the questionnaire. Besides managing the mailing list, MailChimp also provides a rich set of reports and analysis on about the respondents.

5.3. RESEARCH METHODOLOGY

This section provides information on how the research design was implemented, with Figure 5.1 presenting a detailed guide for this research process. This section also outlines the researcher's approach and research methodology to executing this research project. At this stage of the process, the researcher was designing the methodology to investigate the research a problem, which enabled the researcher to continue building on the assumptions and to further explore and justify these assumptions where appropriate. According to Babbie (2010), epistemology is the science of knowing, i.e. systems of knowledge, and methodology which could be considered a subfield of epistemology is the science of finding out, i.e. procedures for scientific investigation. A research methodology is a method to systematically solve the research problem (Kothari, 2004). Kothari (2004) states that the research methodology could be understood as a science of studying how research is scientifically conducted. The methodology can be considered a study of the steps that are usually adopted by a researcher in studying his research problem combined with the logic associated with the problem. Figure 5.1 depicts a graphical representation of the research process, where the research process includes a series of actions or steps that are essential to efficiently conduct the research and the required sequencing of the steps (Kothari, 2004).

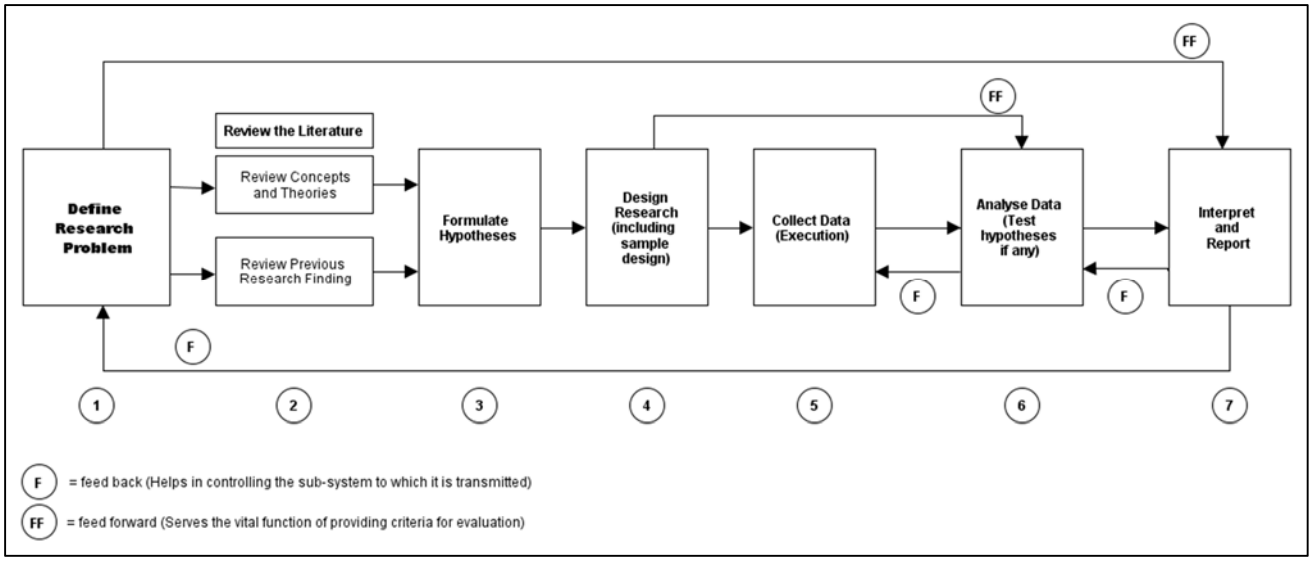


Figure 5.1: Research Process

Source: Kothari, 2004

Kothari (2004) points out that the steps associated with a research process are not mutually exclusive, nor are the steps independent and distinct. The steps do not necessarily follow one another in any specific order, and the researcher needs to continuously anticipate the requirements of the subsequent steps in each step of the research process (Kothari, 2004).

Kothari (2004) proposes the following steps that provide useful guidance regarding the research processes:

- Formulating the research problem;
- Comprehensive literature survey;
- Developing the hypothesis;
- Preparing the research design;
- Determining sample design;
- Collecting the data;
- Execution of the project;
- Analysis of data;
- Hypothesis testing;
- Generalisations and interpretation; and
- Preparation of the report or presentation of the results.

The final step involves the researcher compiling the report of what has been accomplished (Kothari, 2004). The end of the report should include the appendices in respect of all technical data, and also the Bibliography regarding the list of books, journals, and reports that were consulted (Kothari, 2004).

5.4. METHOD OF DATA COLLECTION

5.4.1. Data Collection Instrument

Once ethical clearance to conduct the data collection was provided by the Ethics Committee of NMMU, the researcher proceeded to collect data from twenty-five respondents. A sample of the covering letter and questionnaire for the research instrument is included in the Appendices. The decision to use an online survey for this research is further supported by Zikmund (2002) who states that the most frequent method of producing primary data is through surveys, a research technique where information is collected from a sample of individuals by utilising a questionnaire (Zikmund, 2002). Burns & Grove (1993) state that information obtained through an interview process is like information obtained via a questionnaire, except that the questions tend to have less depth. According to Burns & Grove (1993), a questionnaire is a printed self-report form, designed to elicit information that can be obtained through the written responses of the subjects. Burns & Grove (1993) further contend that questionnaires have their weaknesses regarding the validity and accuracy of the topics which might not reflect their actual opinions but might answer what they think will please the researcher, and valuable information may be lost as answers are usually brief.

The data collection methodology selected for this study was based on both qualitative and quantitative data collection methods. Through the literature review process, and face-to-face discussions, the qualitative data were collected. This data was then analysed, and the findings used to design the data collection instrument to collect the quantitative data. The quantitative data was then collected with the data collection instrument. This process is referred to as sequential data collection. SEM was then used to statistically analyses the results obtained from the questionnaires that were completed.

The survey technique was utilised for this study to gather the data on the factors that positively influence the perceived success of socio-economic empowerment of women in the renewable energy sector of the RSA. The questionnaire was personally administered by the researcher and distributed to respondents via the online MailChimp email dissemination platform. This survey technique is further supported by Collis & Hussey who argue that self-administered questionnaires are a conventional method to a positivistic research paradigm (Collis & Hussey, 2003).

5.4.2. Data Collection Procedure

The researcher uploaded the respondents' database into the MailChimp platform and disseminated the questionnaire via bulk email to the broader population. Utilising the MailChimp platform, a reminder email was sent to those respondents that *"did not open"* the email or *"did not click"* to begin the questionnaire. The researcher also followed up with telephonic calls to respondents requesting their cooperation to complete the survey. Text messages were also sent via WhatsApp requesting respondents to complete the questionnaire. A second database of approximately one thousand contacts was also sourced; these contacts were also uploaded into the MailChimp platform and then disseminated via MailChimp. The benefit of bulk dissemination by email should be considered as regards the time, effort, cost of setup, and dissemination. There is also a risk of being black-listed by internet service providers if their filtering rules regard the questionnaire as spam email. There is also a possibility, mainly due to the ease with which electronic surveys can now be developed and disseminated, that respondents are suffering from *'survey fatigue'* and would not, therefore, respond to the survey.

To further increase the response rate, additional research was conducted into the methodology employed using LinkedIn. The findings indicated that the covering letter should create a sense of personalisation, as well as joining LinkedIn Groups where the questionnaire could be further disseminated. Therefore, this researcher refined the covering letter and joined several LinkedIn Groups. A third respondent database was also developed during the ongoing literature review and research process and afterwards uploaded to MailChimp. The detailed MailChimp reports and charts of the campaign is included in the Appendices.

5.5. SAMPLE POPULATION

The sample population for this study was deemed to be gender practitioners, individuals from the renewable energy sector, the regulators and policy makers for the renewable energy and gender sectors, governmental institutions, non-governmental institutions, gender and renewable energy researchers, community development experts and academics, and respondents with executive management expertise. The renewable energy population in the RSA is still maturing, and the same applies to the gender practitioners, with the Department of Women in the Office of the Presidency only being established in 2009. This population was supported by Burns & Grove (1993) who define a population as all elements consisting of individuals, objects, and events, which meet the sample criteria for inclusion in a study. According to Burns & Grove (1993), a sample is elements that have been selected with the intention of establishing something about the total population from which the sample was taken. Farrington (2009) states that a universe or population identifies any complete group or body of individuals or any type of collection of products under consideration intended for the research purpose. Extensive time and debate were invested in determining the study population, and the decision was taken to focus on women that have executive decision-making or influencing power, as opposed to women at the level of community development. Consequently, the sampling unit contained several elements, namely, the IPPs that generated the CSI proceeds, the decision-makers, both male and female, at the executive level, and the socio-economic development experience of the decision-makers at the executive level who would be ultimately responsible for disbursing funding to the women in the beneficiary communities.

The following section will describe several key stakeholders within the target population of the online survey:

- **Gender practitioners** that are mandated to mainstream gender within their organisations;
- The **Department of Energy** which is responsible for the setting and implementation of the energy policy of the RSA. The DoE is mandated to ensure the secure and sustainable provision of energy. The DoE also promotes the

diverse mix of electricity supply technologies to include renewable energy (wind, solar, hydro, and biogas) in order to meet the RSA's future electricity needs and reduce carbon emissions;

- The **Independent Power Producers Office (IPP Office)** that was established in November 2010, when the DoE, National Treasury, and the Development Bank of Southern Africa (DBSA) signed a memorandum of agreement to facilitate the implementation of the REIPPPP. The formation of the IPP Office was intended to assist the DoE in its role as procurer of IPPs;
- The **South African Wind Energy Association** (SAWEA) which is a not-for-profit association that represents the wind industry in the RSA. SAWEAs objective is to promote and to remove impediments to wind energy activities in the RSA;
- The **South African Photovoltaic Industry Association** (SAPVIA) is a not-for-profit body which promotes the growth of the RSAs solar photovoltaic (PV) electricity sector; and
- **Subject Matter Industry Experts and Renewable Energy Researchers** include economic development practitioners, community liaison officers, community project managers, research analysts, community development officers, local economic development officers, and several interested and affected parties. These stakeholders are directly or indirectly linked to renewable energy or the beneficiary communities.

By virtue of the Snowball sampling method, and several gender and renewable energy contact databases, respondents from the private sector, public sector, organised labour and civil society were also requested to complete the online survey.

5.6. SAMPLING METHOD

The Snowball sampling method, which is generally used in social sciences, was used for this study. The Snowball sampling method is particularly applicable with groups that are difficult to access. Existing subjects are requested to nominate further subjects, thereby increasing the sample size, much like a rolling snowball.

According to Farrington (2009), a sample is a subset of a group or population of individuals carefully chosen to represent the population, and while the sampling unit or unit of evaluation is the situation that the variables under study and the study problem refer, and about which data is collected and analysed. Sampling methods can also be split into two main categories, probability and non-probability samples (Farrington, 2009). Probability sampling occurs when every known person in the population has a known-in-advance, nonzero probability of selection (Farrington, 2009). Non-probability sampling that occurs when units of the sample are selected based on personal wisdom or convenience (Farrington, 2009). During this process, several databases were also received from interested parties and uploaded into MailChimp. Once the database had increased to a reasonable number of potential respondents, a MailChimp campaign was then circulated, and the potential respondents invited to participate in this study. The participants were requested to forward the questionnaire to other respondents whom they deemed might be suitable respondents. A dedicated email address, research@af-sd.com was created for the study to ensure that the data and feedback could be captured accurately, and a database of respondents could be maintained.

5.7. DEVELOPMENT OF RESEARCH INSTRUMENT

Chapter Four, presented a detailed description of the proposed conceptual model of the independent, intervening, and dependent variables that positively influence the socio-economic empowerment of women in the renewable energy sector of the RSA. For the data collection process, an online survey in the form of a questionnaire was employed. The survey is best applied in circumstances where the individual people are primarily the units of analysis. Considering the size, as well as the geographic dispersion of the population, an online survey was the preferred data collection method for this study. A structured questionnaire, based on the literature review, was developed to source the primary data in order to test the hypothesised relationships as presented in the theoretical model. Figure 4.1 provided a graphical representation of the proposed theoretical model. For this study, an intensive process developed the questionnaire from the conceptual model.

The final measuring instrument consisted of a covering letter that provided details concerning the purpose of this study, the type of information being solicited, assurances of confidentiality, and finally, how to respond to the questionnaire. This study was conducted under the supervision of the Department of Developmental Studies at the NMMU, an acknowledged research centre.

5.7.1. Conceptual Model

The conceptual model was developed with the oversight of the supervisor and co-supervisor. Each variable was considered from the point of view of its relevance and its supporting definition. The next step was to develop the draft questionnaire and develop a minimum of five questions for each of the independent, intervening, and dependent variables.

5.7.2. Ethical Considerations

The researcher had to comply with the rigorous NMMU ethical process. Although this research did not engage at the community level, and thus was not bound by one of the NMMU ethical requirements, every attempt was made to ensure the anonymity and confidentiality of the respondents. Kaiser, (2009) states that conducting research requires diligence, expertise, honesty and integrity, mainly to protect the rights of the respondent and to render the study ethical by respecting the rights to self-determination, anonymity and confidentiality. Burns & Grove (1993) define informed consent as the potential subject's agreement to participate voluntarily in a study, which is reached after assimilation of essential information about the study. When respondents are promised confidentiality, this means that the information that they provide will never be publicly disseminated in a manner that identifies the respondents (Kaiser, 2009). Confidentiality is maintained by keeping the gathered data confidential, and by not divulging the respondent's identities when reporting or publishing the study (Kaiser, 2009).

For this study, no identifying information was entered into the questionnaire. Scientific honesty is undoubtedly an essential ethical responsibility when conducting research, dishonest conduct such as retention or manipulation of data should be avoided, and the researcher should avoid any form of dishonesty (National Research Council, 2002). Manipulation of the data for this study was eliminated as the data was uploaded the exported directly into the statistical analysis program.

5.7.3. Measurement Scale

The final questionnaire comprised sixty statements, and the respondents were requested to indicate the extent to which they agreed or disagreed with a series of statements. A 7-point Likert interval scale was employed, where 1 was equivalent to *'strongly disagree'*, and 7 was equivalent to *'strongly agree'* with a defining statement. Even though Likert-type scales are widely used for survey instruments, there is a degree of controversy that exists, and this fact was borne in mind by the researcher. According to Farrington (2009), utilising an interval scale for the measuring instrument enables the necessary inferential statistical data analysis to be performed. Respondents were requested to indicate their degree of agreement in relation to each statement. This interval measurement scale enabled the utilisation of more complex statistical techniques such as product moment correlation, t-tests, F-tests and other parametric assessments (Farrington, 2009) to evaluate the factors influencing the perceived success of women's empowerment within the renewable energy sector of the RSA.

5.7.4. Missing Data

In order to eliminate the possibility of missing data, the sixty questions were all set to mandatory.

5.7.5. Demographic Information

Demographic information regarding the respondent was requested as part of the questionnaire.

The demographic information included gender, ethnicity, age, qualification, managerial experience, leadership, community development, experience in the renewable energy sector, and formal involvement with mainstreaming gender. Demographic data, therefore, provided a better understanding of population size, distribution, and composition. To ensure that the respondents were suitably experienced to participate in this study, several qualifying questions were posed to potential respondents when answering the online questionnaire, and the respondents were requested to complete the following:

- Are you based in South Africa?
- What is your gender?
- What is your age?
- What is your ethnicity?
- What is your highest qualification?
- Do you serve on a Board of Directors?
- What is your level of your organisation?
- Are you formally involved in the Renewable Energy sector?
- Are you formally involved in Community Development?
- Are you formally involved with Mainstreaming Gender?

The NMMU survey platform did not have the skip-logic to exit the questionnaire, and thus respondents could not be ejected based on their response. For the following section, the researcher will analyse and present the demographic information.

5.7.5.1. Respondents by Gender

As depicted in Figure 5.2, of the 243 respondents surveyed, 63% (152) were male, and 37% (91) were female respondents. The researcher was not anticipating such a significant response rate from the male population. However, the theme of the male respondents demonstrating such an interest to mainstreaming gender is a recurring one throughout the demographic data analysis. One could, therefore, infer that males demonstrated a keener interest to mainstream gender, whereas females were rather pedestrian in their response rate, and overall interest to this research.

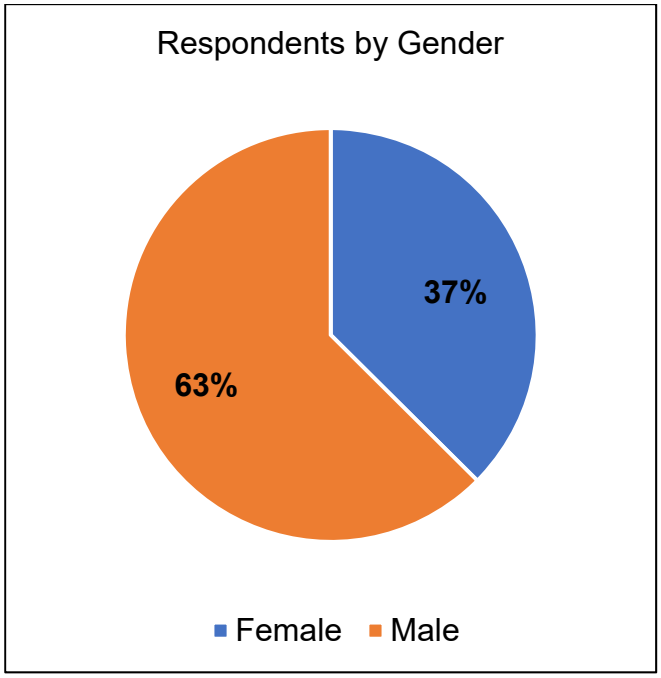


Figure 5.2: Respondents by Gender

5.7.5.2. Respondents requesting a copy of this Study

81% (197) of the respondents requested a copy of this study and is presented in Figure 5.3. Of the 81% of the respondents requesting a copy of this study, only 37% (73) of the respondents were female. Figure 5.4 presents the 63% male respondents that requested a copy of this study.

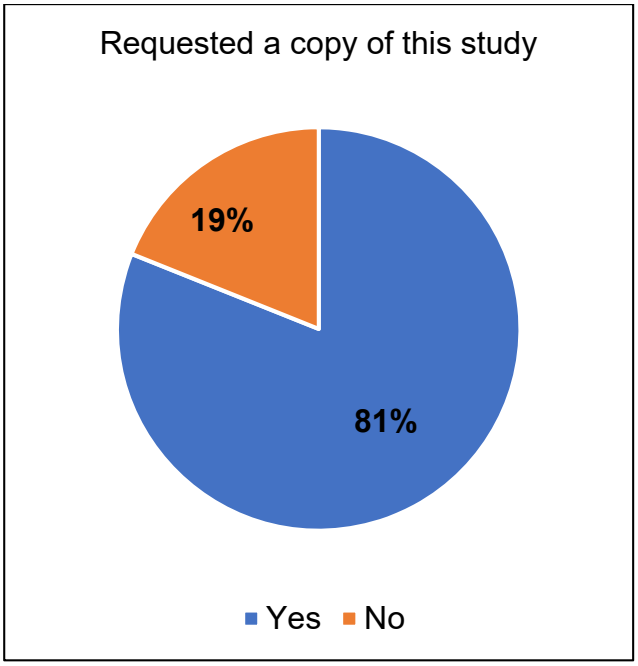


Figure 5.3: Respondents requesting a copy of this study

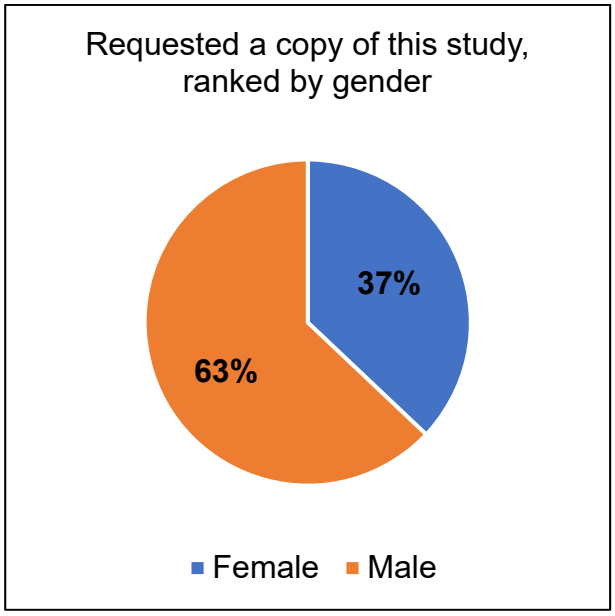


Figure 5.4: Respondents by gender requesting a copy of this study

5.7.5.3. Respondents based in the RSA

Figure 5.5 presents the 65% (158) respondents that are based in the RSA, with the remaining 35% (85) respondents residing outside of the RSA. In order to ensure relevance to the RSA, hereafter, all demographic data analysis was confined to respondents that reside in the RSA.

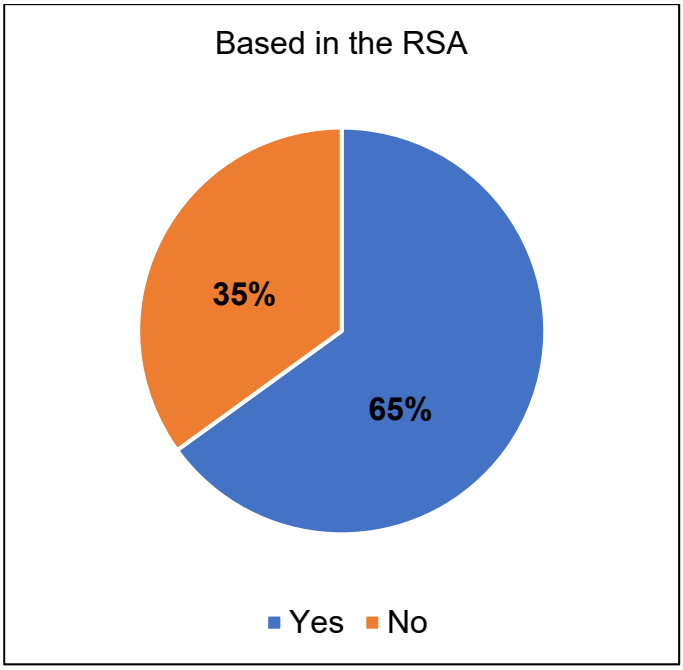


Figure 5.5: Respondents based in the RSA

5.7.5.4. Respondents ranked by Age

Figure 5.6 presents the respondents that are based in the RSA and ranked by age. Most of the respondents were in the forty-five (45) to fifty-four age (64) category, followed by the thirty-five (35) to forty-four (44), fifty-five (55) to sixty-four (64) age categories. Understandably, the eighteen (18) to twenty-four (24) and seventy (70) and above age categories ranked the worst in this survey. From this analysis, one can infer that the age range, thirty-five (35) to sixty-four (64) demonstrated the most interest in this study.

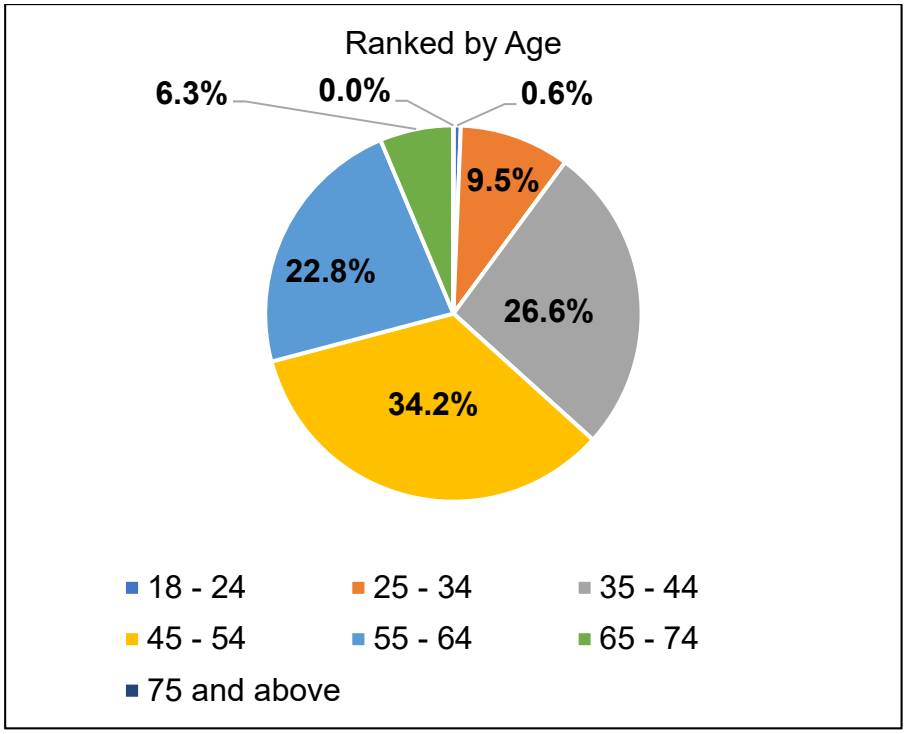


Figure 5.6: Respondents ranked by Age

Figure 5.7 presents the age categories that have been further disaggregated by gender. In this instance, the male respondents consistently out-numbered their female counterparts across every age category. Most of the male respondents were in the forty-five (45) to fifty-four age category (54), followed by the thirty-five (35) to forty-four (44) age category. It is concerning that the female respondents consistently lagged the male respondents.

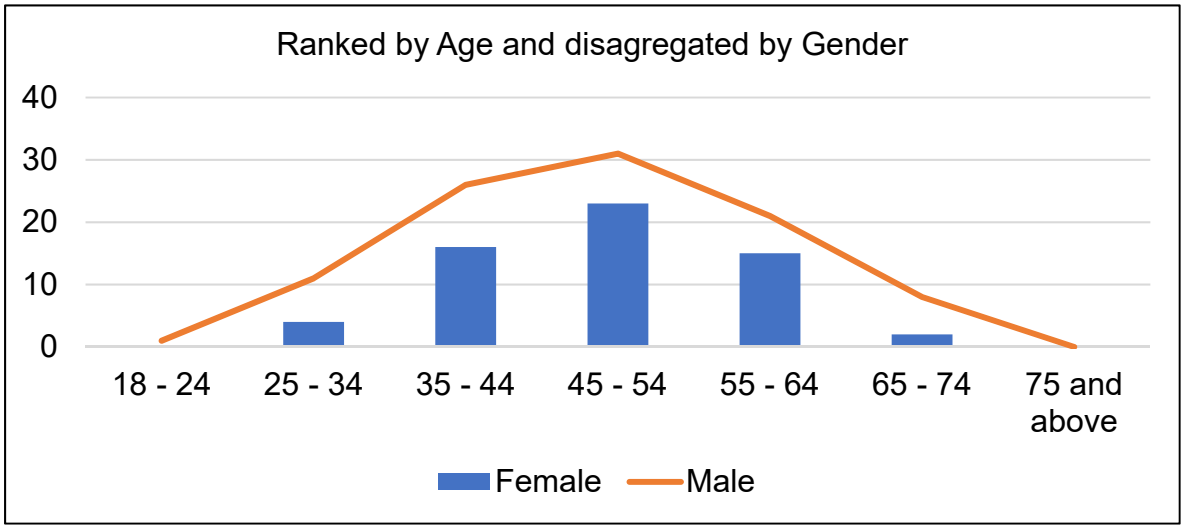


Figure 5.7: Respondents ranked by Gender and Age

5.7.5.5. Respondents ranked by Ethnicity

Figure 5.8 presents the respondents that are based in the RSA and ranked by gender and ethnicity. In all categories, the male respondents out-performed their female counterparts, with White Males demonstrating the most interests in mainstreaming gender, followed by the African Black, and Coloured male respondents. There was no response from the Asian population, with four female and two male respondents categorised as Other. From this analysis, one can infer that male respondents considered this study sufficiently important to invest their time and effort in completing this questionnaire.

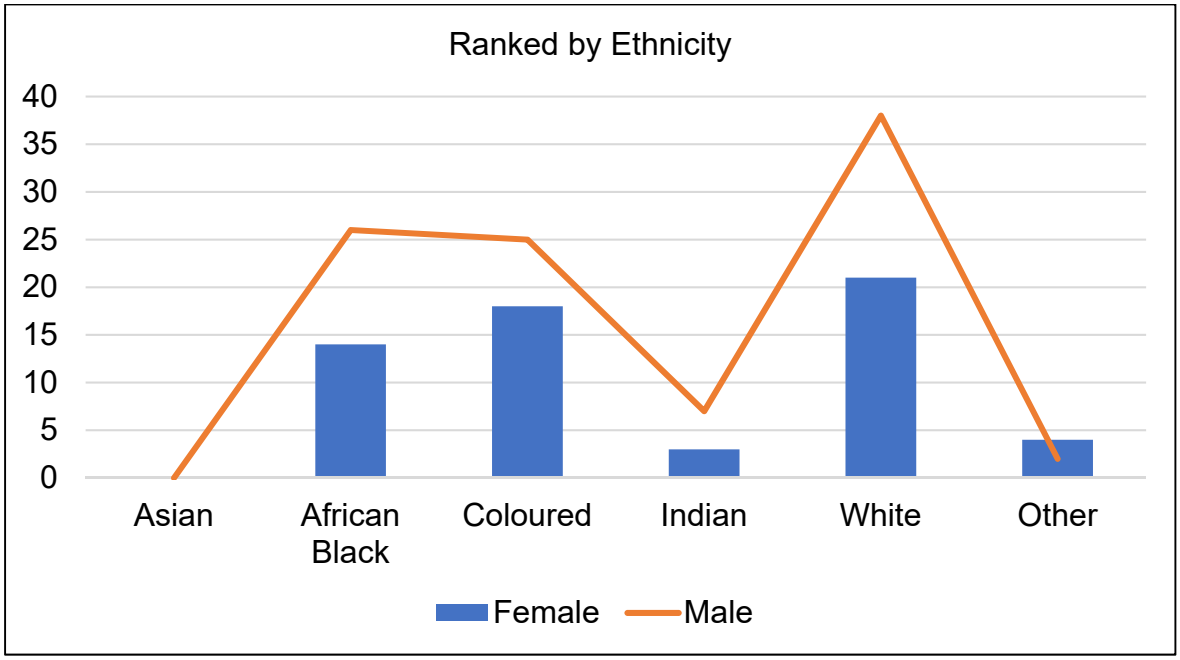


Figure 5.8: Respondents ranked by Gender and Ethnicity

5.7.5.6. Respondents ranked by Highest Qualification

Figure 5.9 presents the respondents that are based in the RSA and ranked by gender and highest qualification. Most of the respondents had some form of a degree, with most of the male respondents having a master's degree, followed by a bachelor's degree. As has been the trend, the female respondents tended to lag their male counterparts in most of the qualification categories.

This could indicate more opportunity for females within these qualification categories, especially at the level of a master's degree. Considering that this survey was targeted at the executive and management level, it is therefore not surprising that there were no respondents with artisan qualifications.

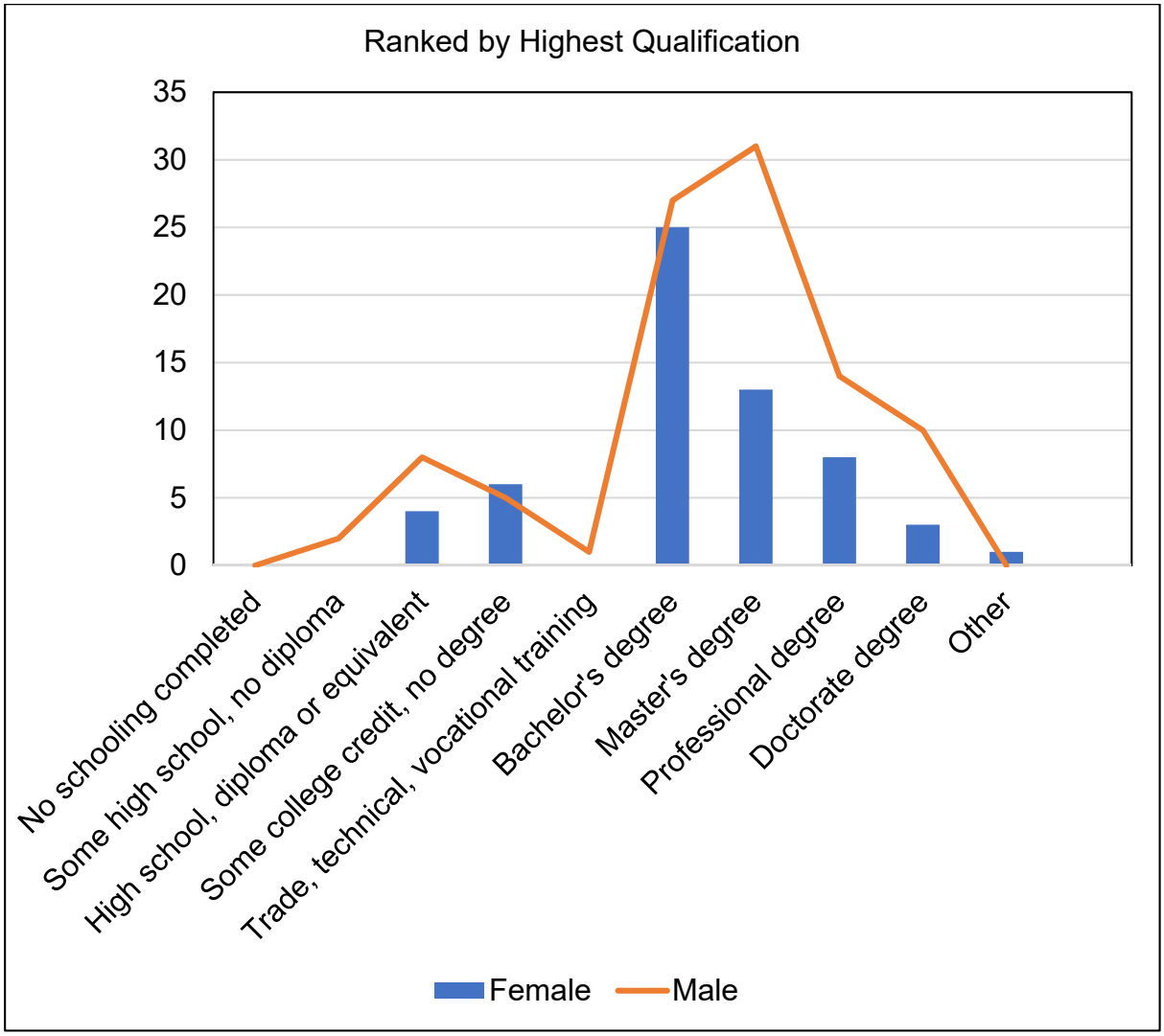


Figure 5.9: Respondents ranked by Gender and Highest Qualification

5.7.5.7. Respondents ranked by Organisational Position

Of the respondents based in the RSA, 46% had a Board affiliation. Figure 5.10 presents the Board Affiliation, disaggregated by sex, with 58% of the male respondents serving on a Board, and 42% of female respondents having a Board affiliation. One could consider this to be a reasonable gender balance, with an opportunity for women to progress further at Board level.

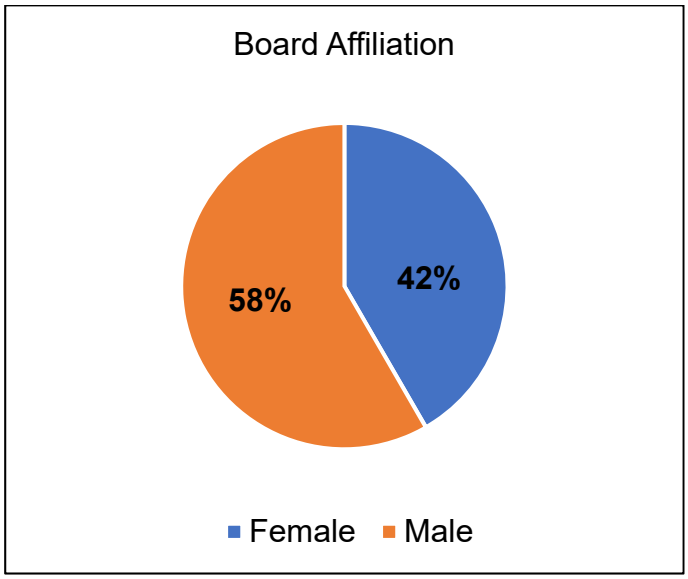


Figure 5.10: Respondents ranked by Gender and Board Affiliation

Figure 5.11 presents the respondents that are based in the RSA, ranked by gender and their position within their organisation. The male respondents consistently out-numbered their female counterparts, with most of the male respondents occupying thirty-four (34) senior management roles, followed by twenty-two (22) Executive positions, and fifteen (15) Board positions. Cognisance should be taken of the low female response rate to this online survey, and therefore this analysis does not necessarily indicate an overabundance of male respondents occupying executive level positions. However, from this analysis, the biggest deviation between female and male respondents is at the Senior Management level. This could be an indicator as to further opportunity to empower women.

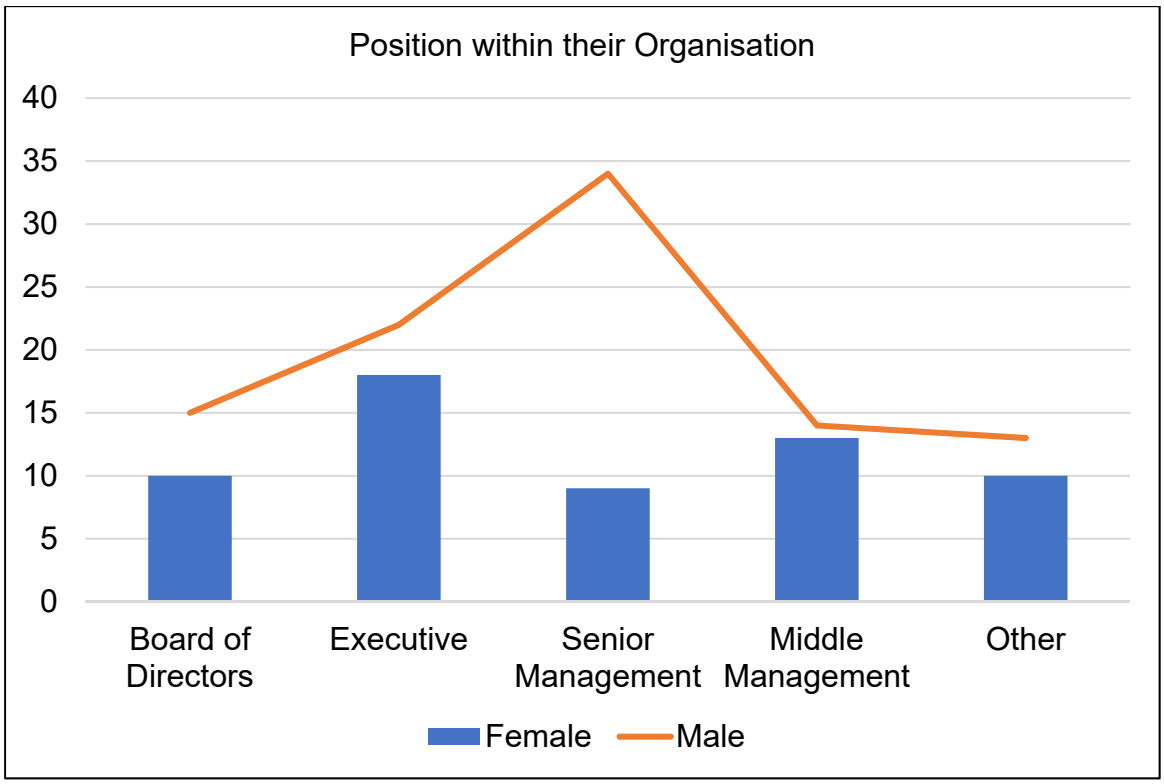


Figure 5.11: Respondents ranked by Gender and Level within the Organisation

5.7.5.8. Renewable Energy, Community, and Gender involvement

The following section will analyse the respondent's involvement with mainstreaming gender, community development, and the renewable energy sector. Figure 5.12 presents the respondents that are based in the RSA, ranked by gender and their involvement in the renewable energy sector. 42% of the respondents were involved in the renewable energy sector, with 65% of the male respondents, and only 35% of the female respondents being involved in the renewable energy sector. This disproportionate split between female and male respondents could be due to the relative infancy of the renewable energy sector.

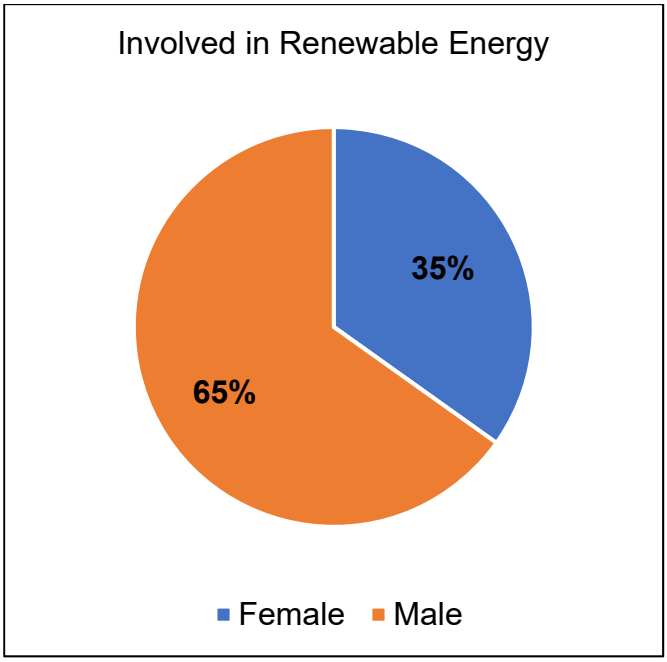


Figure 5.12: Respondents involvement in the Renewable Energy sector

Figure 5.13 presents the 58% of respondents that are based in the RSA, ranked by gender and involved in community development. 42% of the female respondents and 58% of the male respondents are involved with community development.

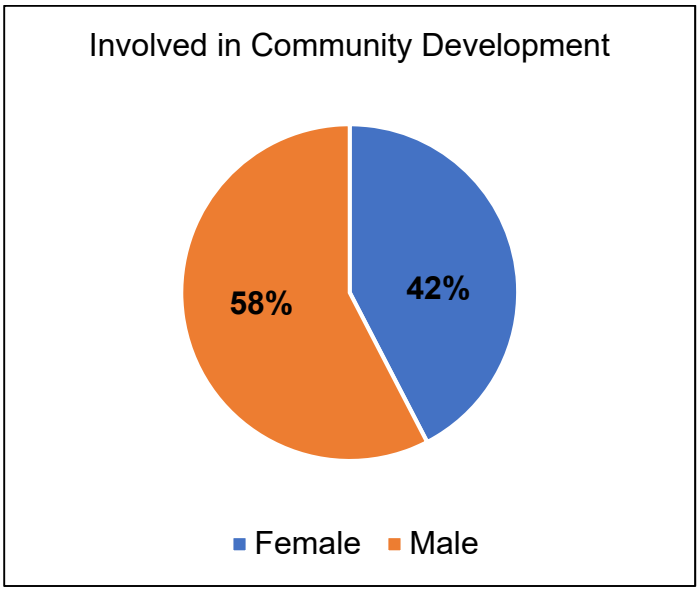


Figure 5.13: Respondents involvement in Community Development

Figure 5.14 presents the 29% of respondents that are based in the RSA, ranked by gender and committed to mainstreaming gender. 41% of the male respondents and 59% of the female respondents were involved with mainstreaming gender. This is the only dimension where the female respondents out-numbered their male counterparts.

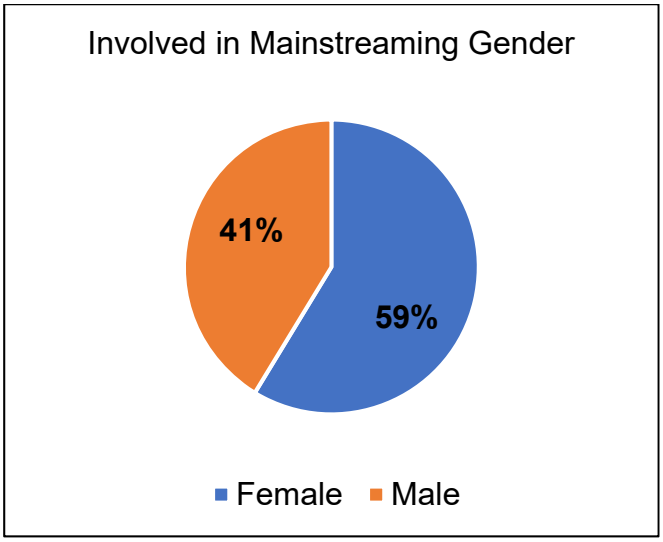


Figure 5.14: Respondents involved in Mainstreaming Gender

Figure 5.15 presents the 27% of respondents that are based in the RSA, ranked by gender, involved in the Renewable Energy sector, and committed to mainstreaming gender. 65% of the male respondents and 35% of the female respondents were involved in the renewable energy sector and committed to mainstream gender.

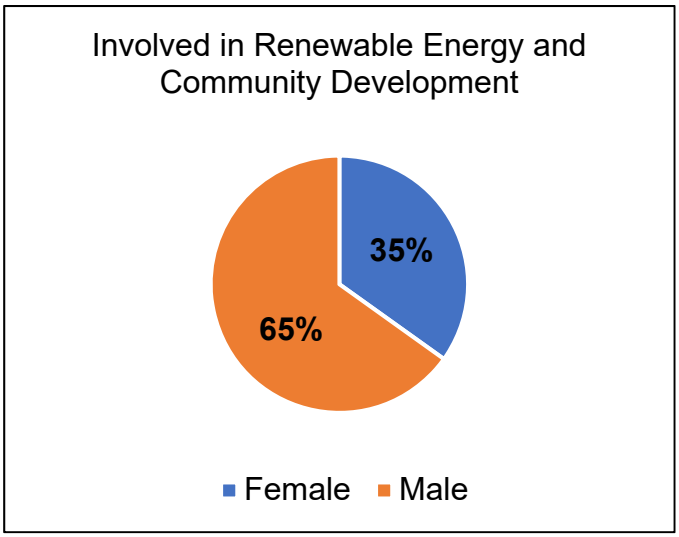


Figure 5.15: Respondents involved in the Renewable Energy sector and Community Development

Figure 5.16 presents the 18% of respondents that are based in the RSA, ranked by gender, involved in the Renewable Energy sector, and committed to mainstreaming gender. 54% of the female respondents, and 46% of the male respondents were involved in the renewable energy sector and committed to mainstream gender.

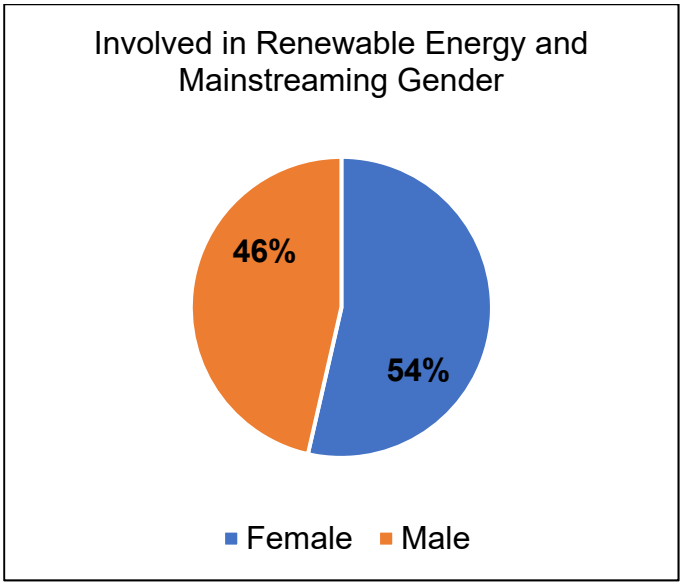


Figure 5.16: Respondents involved in the Renewable Energy sector and Mainstreaming Gender

Figure 5.17 presents the 16% of respondents that are based in the RSA, ranked by gender, involved in the Renewable Energy sector, committed to mainstreaming gender, and involved in community development. 48% of the female respondents, and 52% of the male respondents were involved in the renewable energy sector, committed to mainstream gender, and involved in community development.

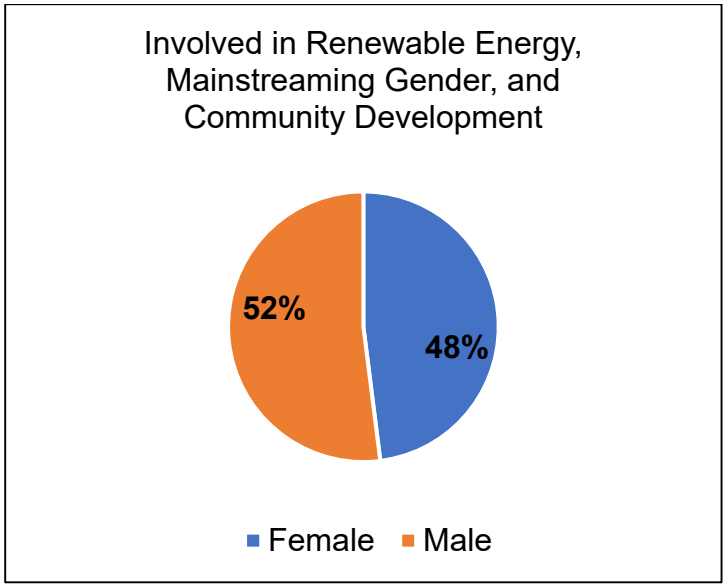


Figure 5.17: Respondents involved in the Renewable Energy sector, Mainstreaming Gender, and Community Development

In concluding this section of the analysis and presentation of the demographic data, several observations can be made, namely, that the male respondents demonstrated more interest in this study, that the male population should be more actively engaged as they have demonstrated a keen interest in this subject matter, and that opportunity does exist for women to further develop within the Renewable Energy sector. Of concern, is the missed opportunity due to the limited contribution to this online survey by female respondents.

5.7.6. Structural Equation Modelling

SEM, which is a multivariate statistical analysis technique, was selected for this study. The SEM technique is a combination of factor analysis and multiple regression analysis, thereby analysing the structural relationship between measured variables and latent constructs. The advantage of using SEM for this study is its ability to analyse multiple interrelated relationships in a single analysis. According to Farrington (2009), there are five considerations that influence the required SEM sample size, namely, the multivariate distribution of the data, the estimation technique, the model complexity, the quantity of missing data, and the volume of average error variance involving the reflective indicators.

The requirement for SEM analysis is that the sample size should be sufficiently large as SEM depends on tests that are sensitive to sample size, as well as to the magnitude of variations in covariance matrices (Farrington, 2009). The sample sizes vary between 200 and 400 samples for models with 10 to 15 indicators (Farrington, 2009). Although there is no correct sample size, suggestions range between 100 to 200, with 200 being a critical sample size, mainly because SEM requires a more substantial sample by other multivariate techniques (Farrington, 2009).

5.7.7. Operationalisation of the Variables

The operationalisation of the variables for this study was based on business and gender terminology. According to Farrington (2009) research involves the measurement of constructs and principles which requires more rigorous definitions than are commonly found in dictionaries. This is referred to as operational definitions and are mentioned regarding specific criteria for measurement or testing (Farrington, 2009). These definitions should also identify the characteristics that may be assessed or counted, and how they should be observed (Farrington, 2009). The specification and methods should be explicit enough for anybody using these principles to classify the objects in the same manner, in order to eliminate misunderstanding about the meaning of the principles, which could reduce the value of the study (Farrington, 2009). The procedure then determines the constructs to select individual indicator items, and finally, the constructs are then operationalised by selecting the correct measurement scale and measurement type (Farrington, 2009).

Chapter Four discusses the final operational definitions of the independent, intervening, and dependent variables. These definitions were derived from an interpretation of resources as well as existing empirical studies, and explanations were provided as to the way these scales were developed to gauge the selected variables. Table 1.11 in Chapter One, presented the proposed assumptions and variables relating to the dependent variable, namely the perceived success of women's empowerment within the renewable energy sector of the RSA. Table 4.1 referred to the revised assumptions and variables relating to the dependent variable. The process entailed assessing the independent variables and the intervening variable, then confirming the relevance of each variable to the stated objective.

Each variable was individually analysed, and a supporting definition of each variable drafted. A minimum of five supporting questions per variable was developed, and, in particular instances, questions might appear repetitive. Respondents were informed about the repetitive nature of the questions in the questionnaire, for example, if the variable in question measured importance, the supporting questions would include words such as *'should'*, *'is important'*, *'is essential'* in the questionnaire items. If the variable in question measured implementation, then the supporting questions would include words such as *'have'*, *'has implemented'* in the questionnaire items. Double-barrelled questions were revised, and variables that did not support the dependent variable were eliminated. The draft Microsoft Word format questionnaire was finally reviewed to ensure grammatical correctness.

5.7.8. Anticipated Respondent Concerns

Various factors were identified during the early stages of this study which might raise respondent concerns:

- **Theoretical Model Building:** The concept of the theoretical model building might appear too abstract for respondents when confronted by the questionnaire. Additional explanations were added to the introductory section of the questionnaire. However, based on feedback from the initial trial survey, the additional information was later removed from the questionnaire. The feedback indicated that there was too much information in the questionnaire, and consequently, the informational section was removed from the questionnaire;
- **Number of Questions per variable:** Even though the proposed theoretical model was revised to contain more pertinent questions, to clarify the variables further, and to reduce the number of questions, the statistical analysis tool required a minimum of sixty questions;
- **Perceived repetition of questions:** Each variable required a minimum of five questions as per the requirements of the statistical analysis tool. Respondents were informed beforehand that, although the questions might appear repetitive, they were required for the statistical analysis;

- **Structure of questions:** Respondents might consider the questions too general, or that the questions provoked leading responses. For example, *"in the renewable energy sector, good executive leadership is essential"*, or *"in the renewable energy sector, companies with good executive leadership increase sustainability"*. The was that the questions were developed to support the objective and that the questions were developed under the supervision and guidance of the statistician;
- **The generality of questions:** Respondents could consider the questions applicable to any sector and not necessarily limited to the renewable energy sector. They might feel obliged to respond by strongly agreeing. The response was that, if these management practices were followed, there would be visible instances of socio-economic empowerment of women in the renewable energy sector of the RSA. The theoretical model building would, therefore, prove or disprove the stated hypothesis stated in Chapter One, "*What are the main contributors and variables which can positively influence the economic empowerment of women initiatives in the renewable energy sector in the Republic of South Africa?";*
- **Mainstreaming Gender:** There was a concern that the South African respondents would only have a vague idea of the concept of mainstreaming gender and thus the data would not be sufficiently rich. This risk was mitigated by expanding the survey population to include an international audience. International respondents were encouraged to contribute their expertise by completing this questionnaire;
- **Broad-Based Black Economic Empowerment:** This variable was identified as crucial to the theoretical model, mainly because of the regulatory impact that it had in compelling companies to comply with the B-BBEE Codes of Good Practice. This legislation is understandably controversial, and it was anticipated that, depending on the historical and cultural background of the respondent, i.e. if the respondent was from the category of a Historically Disadvantaged South African (HDSA), or a white South African, that the responses could be polarised. During the pre-testing phase, this behaviour was noticed by the increased standard deviation for this variable. Also, there were divergent opinions at the corporate level

towards the approach to B-BBEE where compliance is approached as a *'grudge purchase'* to do business. There could also be companies that will go beyond compliance to support the intent behind the B-BBEE. At a policy level, the originators of this policy might well laud the B-BBEE Codes of Good Practice a resounding success, yet the NDP of South Africa considers that B-BBEE Codes of Good Practice has not achieved its set objectives. Also, international respondents would not necessarily be familiar with the B-BBEE Codes of Good Practice, and an internet link was included in the questionnaire for respondents to obtain further information;

- **Gender Bias:** Every attempt was made to eliminate possible gender bias, and male respondents were also encouraged to contribute their expertise by completing this questionnaire. Based on the initial literature review the male contribution was considered an essential aspect of this survey. The initial research revealed that there was a below than anticipated number of women at the executive level. The literature review indicated that males still dominated the decision-making process and thus their opinions would be critical to this study; and
- **Snowball or Chain Sampling Method:** Respondents were encouraged to circulate this questionnaire to their networks to increase the sample population.

These concerns were debated and tabulated in preparation for any possible queries raised by the respondents.

5.8. OPERATIONALISATION OF VARIABLES

The following section deals with the operationalisation of the independent, intervening, and dependent variables relating to the perceived success of women's empowerment within the renewable energy sector of the RSA. The process of operationalising the variables includes: defining the variables of interest operationally and to develop valid and reliable scales of measurement. The questions were framed in such a manner that each latent variable in the measuring instrument, comprised of five questions.

The definitions of each of the variables in the conceptual model, namely the independent, intervening, and dependent variables are further described below. Research involves the measurement of concepts and constructs, which requires more rigorous definitions than, for example, those found in a dictionary (Farrington, 2009). Such definitions are known as operational definitions, which are stated in terms of specific criteria for testing or measurement (Farrington, 2009). The definition of operationalisation is to define specific testing or measurement criteria, the purpose of which is to provide a way of understanding and measuring concepts (Blumberg, Cooper, & Schindler, 2005). The process of defining the constructs and their relationships must precede their empirical testing (Welman & Kruger, 2001). The specifications and procedures must be clear enough for anyone using these concepts to classify the object in the same way, as confusion about the meaning of concepts can destroy the value of a research study (Blumberg *et al.,* 2005). Questionnaires represent a common and concrete illustration of the operationalisation process, and the questions themselves serve as the operationalisation of variables (Babbie, 2010). Although the definitions do not guarantee accuracy, they assist the researcher to comprehend an abstract construct by means of concrete variables (Babbie, 2010).

5.8.1. Socio-Economic Development

Socio-Economic Development can be considered as a process that seeks to identify the social and the economic needs within a community, as well as encouraging capacity building for more significant participation, improved planning processes, greater decision-making power, and control of all contributing trans-formative actions. The process includes creating strategies and interventions to address the socio-economic needs of communities practically to best serve the interest of the communities over the longer-term. Socio-Economic Development is essential to ensure the sustainability of the interventions employed and to ensure that the communities derive sustained benefit from these strategies. The broad objective is to develop strategies that will improve the standard of living and local economy within the immediate and surrounding communities. Socio-Economic Development typically occurs in rural, peri-urban, and urban-poor communities in rural towns, small cities, and even large metropolis.

Table 5.1 presents the questions relating to Socio-Economic Development, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.1: Operationalisation of Socio-Economic Development

	Question	Code
1.	Women in the renewable energy sector that have decision-making power deliver better outcomes.	SED1
2.	It is important to have well-funded initiatives in the renewable energy sector.	SED2
3.	Longer-term initiatives in the renewable energy sector deliver more sustainable results.	SED3
4.	Renewable energy sector initiatives that have good policy frameworks deliver better results.	SED4
5.	Capacity development of women is a critical success factor in the renewable energy sector.	SED5

5.8.2. Stakeholder Engagement

Stakeholder Engagement refers to the internal and external stakeholders that have an influence on the economic empowerment of women within the renewable energy sector of the RSA. A stakeholder can be further defined as a party that has an interest in a company, the community, the economic empowerment of women in these communities, representing the government, or any other interested party. A company can have a diverse set of stakeholders, both internal and external. The internal stakeholders of the company are its investors, employees, service providers, and customers. The external stakeholders of the company are civil society (community), government, organised labour, or service providers of non-core initiatives. Therefore, different stakeholders have differing levels of engagement, decision-making power, and influence, at differing stages of the project lifecycle. Table 5.2 presents the questions relating to Stakeholder Engagement, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.2: Operationalisation of Stakeholder Engagement

	Question	Code
1.	In the renewable energy sector, the consultation that spans the entire project life-cycle increases sustainability.	SE1
2.	In the renewable energy sector, it is important to engage all affected parties.	SE2
3.	Companies in the renewable energy sector understand the importance of engaging communities in a meaningful manner.	SE3
4.	Companies in the renewable energy sector understand the importance of engaging stakeholders to reduce business and reputational risk.	SE4
5.	Executive leadership in the renewable energy sector are willing to engage a diverse range of stakeholders.	SE5

5.8.3. Strategic Acumen

Strategic Acumen can be considered as a process in which people think about, consider, and create the future for themselves and others. Strategic Acumen includes the ability to come up with practical plans and interventions that are aligned with the strategic objectives of the company within a socio-economic situation. Strategic Acumen assists decision makers review policy issues, perform long-term planning, set goals, and determine priorities and identify potential risks and opportunities. Table 5.3 presents the questions relating to Stakeholder Acumen, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.3: Operationalisation of Strategic Acumen

	Question	Code
1.	Initiatives in the renewable energy sector that have well developed strategic objectives increases sustainability.	SA1
2.	In the renewable energy sector, it is important to have well-developed plans aligned with the strategic objectives.	SA2
3.	For the renewable energy sector, being able to visualise the future for others is a critical success factor.	SA3
4.	Decision makers in the renewable energy sector have the experience to develop long-term socio-economic plans.	SA4
5.	Executive leadership in the renewable energy sector have an appreciation for the socio-economic challenges of others.	SA5

5.8.4. Strategic Planning

Strategic Planning is a process where companies determine their vision for the future, identify their goals and objectives, outline the activities that will achieve the stated objectives, are prepared to take calculated risks, and most importantly, put in place the monitoring and evaluation plan that will guide the achievement of their objectives. Strategic Planning will also consider the human, financial and any additional resource requirements to achieve the strategic direction. Table 5.4 presents the questions relating to Strategic Planning, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.4: Operationalisation of Strategic Planning

	Question	**Code**
1.	In the renewable energy sector, companies that have a clear vision of their future increases sustainability.	SP1
2.	Executive leadership in the renewable energy sector clearly define their strategic objectives.	SP2
3.	In the renewable energy sector, executive leadership are prepared to take calculated risks.	SP3
4.	Employees at all levels in the renewable energy sector can participate in the implementation of the strategic plan.	SP4
5.	Companies in the renewable energy sector have well-defined monitoring plans.	SP5

5.8.5. Broad-Based Black Economic Empowerment

B-BBEE is regarded as a policy to address the gross inequality of previously disadvantaged South African's caused by decades of systemic racism, resulting in the current socio-economic challenges facing the RSA. Executive leaders that are visionary and have an appreciation of the business and reputational risks to their companies and shareholders, if they do not comply with the B-BBEE Codes of Good Conduct, tend to go beyond compliance when implementing socio-economic development initiatives. This visionary approach by these executive leaders tends to avoid a compliance-driven *'tick-box'* exercise.

Table 5.5 presents the questions relating to Broad-Based Black Economic Empowerment, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.5: Operationalisation of Broad-Based Black Economic Empowerment

	Question	Code
1.	In the renewable energy sector, the B-BBEE code of conduct is an important policy to address the inequality of the past.	BE1
2.	Shareholders in the renewable energy sector should have a clear understanding of the intent of the B-BBEE code of conduct.	BE2
3.	In the renewable energy sector, the B-BBEE code of conduct encourages executive leadership to go beyond compliance.	BE3
4.	In the renewable energy sector, it is important that the B-BBEE code of conduct ensure sustainable outcomes.	BE4
5.	Executive leadership in the renewable energy sector should adopt a long-term approach when applying the policies of the B-BBEE code of conduct.	BE5

5.8.6. Executive Leadership

Executive Leadership is defined as the leadership of a company with the expertise to define the company's strategic objectives and to articulate practical ways to measure leadership performance. Executive Leadership also includes the ability to eliminate unnecessary leadership positions, the experience to establish flexible and enduring systems to facilitate performance, and the depth to have a precise definition of the leadership role. Table 5.6 presents the questions relating to Executive Leadership, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.6: Operationalisation of Executive Leadership

	Question	Code
1.	In the renewable energy sector, good executive leadership is essential.	EL1
2.	In the renewable energy sector companies with good executive leadership increases sustainability.	EL2
3.	In the renewable energy sector, it is essential that executive leadership can formulate appropriate strategic objectives.	EL3
4.	In the renewable energy sector, it is important to develop good systems to measure leadership performance.	EL4
5.	In the renewable energy sector, it is important for executive leadership to view results as a measure of performance.	EL5

5.8.7. Change Management

Change Management refers to an approach to transition individuals, teams, and companies by preparing these parties to embrace the change that results from a project's implementation. Change management is equally applicable to beneficiary communities and will improve the socio-economic circumstances of the broader community. Change management is intended to guide or significantly reshape a company or community by using change management methods to re-direct the use of human and financial resources, processes, or other operating modes. Change management spans several disciplines from behavioural and social sciences, information technology and business solutions. Table 5.7 presents the questions relating to Change Management, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.7: Operationalisation of Change Management

	Question	Code
1.	In the renewable energy sector, companies should have effective change management strategies.	CM1
2.	Executive leadership in the renewable energy sector should have a clear understanding of the benefits of change management.	CM2
3.	In the renewable energy sector, it is important that executive leadership manage the redirection of financial resources to the intended beneficiary communities.	CM3

4.	The renewable energy sector should develop effective systems to manage change introduced by their initiatives	CM4
5.	In the renewable energy sector, executive leadership should understand change management practices.	CM5

5.8.8. Executive Education

Executive Education refers to the importance of the *'education'* of executives and decision makers and how their perspectives influence their decision-making as it relates to the non-core business activities linked to the community and socio-economic development initiatives. The premise is that socio-economic development is non-core, misunderstood, and creates a significant degree of discomfort for Executive Management. The consequence is that Executive Management invariably makes decisions based on their belief systems, their current frame of reference (informed by their learnt background), and a "least risk" approach. This, therefore, can create a negative bias towards socio-economic development based on their paradigms. Table 5.8 presents the questions relating to Executive Education, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.8: Operationalisation of Executive Education

	Question	**Code**
1.	In the renewable energy sector, executive leadership should understand how to build a more equitable society.	EE1
2.	Executive leaders in the renewable energy sector should consider socio-economic development a core business goal.	EE2
3.	Executive leadership in the renewable energy sector should have a clear understanding of community development.	EE3
4.	In the renewable energy sector, executive leadership should have the experience to undertake community development initiatives.	EE4
5.	Executive leadership in the renewable energy sector should be prepared to take calculated risks when dealing with community development.	EE5

5.8.9. Fund Management

Fund Management refers to the active financial management, investment, and disbursement of the socio-economic development funds. As per regulatory requirements, these socio-economic development funds should be invested in economic development activities to promote quality job creation, local manufacturing, investment in community development, and black economic empowerment as defined under the REIPPPPs Implementation Agreement. There are several key factors that also positively influence effective Fund Management activities, namely, effective corporate governance, sound financial planning, proper budgeting, appropriate financial controls, efficient support systems, and unbiased investment in the target beneficiaries. Table 5.9 presents the questions relating to Fund Management, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.9: Operationalisation of Fund Management

	Question	**Code**
1.	In the renewable energy sector, it is important for executive leadership to have a clear understanding of the role of funding economic development activities.	FM1
2.	The renewable energy sector should manage its funds to create new jobs.	FM2
3.	Executive leadership in the renewable energy sector should willingly fund the target beneficiaries.	FM3
4.	In the renewable energy sector, executive leadership should promote black economic empowerment.	FM4
5.	It is important that companies in the renewable energy sector contribute to local manufacturing.	FM5

5.8.10. Corporate Culture

Corporate Culture refers to the prevailing culture within a company towards the socio-economic development of the intended beneficiaries. To further elaborate, there could be a very proactive, long-term approach to socio-economic development, or there could be a very narrow, short-term compliance approach.

Longer-term approaches tend to deliver more sustainable outcomes. Also, companies that have recognised that they did not have the necessary socio-economic development expertise in-house and engaged outside advice, potentially deliver much more impact through their socio-economic investment.

According to the theory of cultural determinism, human nature is determined by the ideas, beliefs, values, and meanings that people acquire as members of society, *"we are what we learn"*. An optimistic approach to cultural determinism imposes no limits on the abilities of human beings to achieve their objectives, with some anthropologists suggesting that there is no defined way of being human. Therefore, the assertion is that the prevailing company culture is critical to achieving a sustainable socio-economic outcome. Table 5.10 presents the questions relating to Corporate Culture, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.10: Operationalisation of Corporate Culture

	Question	**Code**
1.	It is important that companies in the renewable energy sector have a corporate culture that embraces socio-economic development.	CC1
2.	Executive leadership in the renewable energy sector should adopt a long-term approach toward investment in socio-economic development.	CC2
3.	Executive leadership in the renewable energy sector, should not limit the abilities of subordinates.	CC3
4.	It is important that the renewable energy sector develop a culture of continuous learning.	CC4
5.	The corporate culture of companies in the renewable energy sector should be conducive to new ideas.	CC5

5.8.11. Corporate Governance

Good Corporate Governance can be considered as the processes to make and implement decisions, with an emphasis on the best possible process for making those decisions. Governance can apply to a company, government, community, governing body, or any entity that manages an outcome.

Specifically, the good Corporate Governance and the integrity of the IPP, its Executive Leadership, and its Shareholders, as it relates to decision-making regarding the obligatory socio-economic development initiatives in the renewable energy sector. Table 5.11 presents the questions relating to Corporate Governance, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.11: Operationalisation of Corporate Governance

	Question	**Code**
1.	Board members of companies in the renewable energy sector should demonstrate a high level of integrity.	CG1
2.	Executive Leadership of companies in the renewable energy sector should demonstrate a wide variety of skills.	CG2
3.	In the renewable energy sector, it is important that companies effectively communicate the responsibilities of their executive leadership.	CG3
4.	In the renewable energy sector, executive leadership should make decisions based on ethical principles.	CG4
5.	In the renewable energy sector, it is important that companies have effective risk management systems.	CG5

5.8.12. Women's Empowerment

The topic of Women's Empowerment has been previously discussed in Chapter Four, where empowerment is defined as a process of enhancing the capacity of individuals or groups in order for these individuals or groups to make choices and convert these choices into actions and outcomes (World Bank, 2016b). In addition, a report by Grant Thornton revealed that only 23% of the senior positions in South African corporations were occupied by women and that 39% of businesses did not have any women in leadership positions (Kilian, 2016). The socio-economic empowerment of women within the renewable energy sectors of the RSA also has a complex stakeholder domain which includes government, the private sector, organised labour, and civil society. This complexity was also confirmed by Eberhard *et al.,* (2014), stating that the most controversy and uncertainty generated amongst the bidders of the REIPPPP was the reliance on the Economic Development requirements.

For this study, Women's Empowerment can be considered as the processes of enhancing the capacity of individuals or groups, typically indigent groups, for them to make choices and implement decisions with an objective of acquiring assets. The following elements should underpin institutional reform, namely, access to information; inclusion and participation; accountability; and local organisational capacity. Table 5.12 presents the questions relating to Women's Empowerment, and the corresponding unique code that will be used to identify the response to each question. A sample of the covering letter and the questionnaire for this research instrument is included in the Appendix.

Table 5.12: Operationalisation of Women's Empowerment

	Question	Code
1.	Executive leadership of companies in the renewable energy sector should develop the capacities of women.	WE1
2.	It is important that companies in the renewable energy sector have well-defined processes to promote women's empowerment.	WE2
3.	In the renewable energy sector, companies should be held accountable for women's empowerment.	WE3
4.	In the renewable energy sector, companies should embrace women's empowerment.	WE4
5.	Executive Leadership of companies in the renewable energy sector should support women to acquire assets.	WE5

5.9. ADMINISTRATION OF THE QUESTIONNAIRE

5.9.1. Pre-testing the Questionnaire

For the pre-testing stage of this process, the questionnaire was developed on the NMMU survey platform. The process included the development of the covering page and the compilation of the mailing list on the MailChimp system. As part of the proofing of the questionnaire, a test population was created to test the questionnaire and determine that the responses were within the acceptable standard deviation. A subset of twenty-five respondents was selected from the researcher's database, uploaded into the MailChimp mailing list, and disseminated to the twenty-five respondents.

After analysing the test survey results, the questionnaire was approved. The online questionnaire was subjected to a final review for linguistic correctness, and the final approved version of the questionnaire disseminated.

According to Polit & Beck (2003), a pre-test refers to a trial administration of an instrument to identify flaws, because whenever a questionnaire is utilised as a data collection instrument, it is essential to ascertain whether questions and directions are apparent to the respondents and if the respondents understand what is required of them. This process is known as the pre-testing of the questionnaire process (Polit & Beck, 2003). Preliminary tests, or pilot tests, are trial runs with a mixed group of real respondents for the intended purpose of detecting problems in the questionnaire's design or instructions (Zikmund, 2002). The pilot process may also involve testing the questionnaire with other research experts such as co-workers, respondents and friends to evaluate and refine the instrument (Zikmund, 2002).

A questionnaire was distributed to professionals and senior executives in the renewable energy sector to guide the development of the model for the socio-economic empowerment of women in the renewable energy sector of the RSA. The study comprised several national and international entities and was conducted under the supervision of the supervisor and co-supervisor. Respondents were invited to participate anonymously and voluntarily in completing the ten-minute electronic survey by following a web link to the Nelson Mandela Metropolitan University website. Both female and male, local, and international respondents were encouraged to contribute their expertise via the questionnaire, respondents were requested to disseminate the questionnaire via their networks, and to utilise the research findings within their own companies. Respondents were advised to adopt a perspective that they were at the executive level when responding to the questionnaire. In the case of parastatals, the functions would be as Director Generals, Deputy Director Generals and Senior Managers. Typically, these positions would serve on the board of companies, are part of the executive team, or form part of senior management. At this level within the organisation, these functions have direct decision making and influencing power to disburse funds to women-led renewable energy initiatives. Respondents were requested to consider what positive factors they would consider contributing to the success of this initiative.

5.9.2. Validity and Reliability of the Data

To achieve content validity the empirical data were subjected to a several statistical analyses to assess the validity and reliability of the measuring instrument (see Polit & Beck 2003). Polit & Beck (2003) refers to reliability as the amount of uniformity with which an instrument measures the attribute it was created to measure. Reliability may also be ensured by minimising sources of measurement mistake like data collector bias, which can be minimised by the researcher (Polit & Beck, 2003). Collector bias can be further minimised with the researcher being the only person managing the questionnaires, and by standardising conditions such as exhibiting similar personal characteristics to all or any respondents, for example, support and friendliness (Polit & Beck, 2003).

5.9.3. Validity of the Research Instrument

Polit & Beck (2003) states that the validity of an instrument is the degree to which the instrument measures that which it is intended to measure, and that content validity refers to the extent to which factors are represented by an instrument under study. To achieve content validity the questionnaire included several questions on the knowledge of the respondent's executive management experience, their familiarity with mainstreaming gender, and the renewable energy sector. Prior knowledge of the renewable energy sector was not a prerequisite as the questions, although targeted at executive management within the renewable sector, was equally applicable in the mining, manufacturing, and agricultural sectors. Questions were based on experience, in-depth discussions, and information gathered during the literature review. The intent was to ensure that the questions reflected the objectives of the socio-economic empowerment of women in the renewable energy sector of the RSA. Content validity was ensured through the consistent administration of the questionnaire, through clear and unambiguous questions, and through clear instructions.

5.10. METHOD OF DATA ANALYSIS

After confirming the reliability of the measuring instrument, the subsequent step in this process is to statistically test the theoretical model. This allowed the researcher to make inferences about whether the observed relationships in the sample were likely to occur in the wider population from which the sample was drawn. According to Farrington (2009), an excellent measurement tool has three characteristics, namely, reliability, validity, and practicality. Reliability identifies the precision of the measurement process; validity is the degree to which a test measures what it is likely to measure, and practicality refers to factors such as the economy, convenience, and interpretability (Farrington, 2009). Reliability and validity of the measuring instrument have to be evaluated before proceeding to evaluate the effectiveness of relationships in an empirical model (Farrington, 2009). Following the questionnaire dissemination process, the data was collected, organised, analysed, and exported into Excel. The scientific statistical analysis program, LISREAL was utilised for the data analysis. Further detailed presentation and analysis of this study are presented in Chapter Six, *Presentation and Analysis of Data*.

Although SEM is discussed earlier in this chapter, this section will discuss SEM within the context of the data analysis. According to Hair *et al.,* (2009), SEM is a group of statistical models that seek to clarify the relationships among multiple variables by examining the structure of interrelationships expressed in a series of equations. Hair *et al.*, (2009) further state that this is like a series of multiple regression equations where these equations depict the relationships among constructs, namely, the dependent and independent variables that are involved in the analysis. Constructs are unobservable or latent factors represented by multiple variables, similar to variables representing a factor analysis (Hair *et al.,* 2009). In general, each multivariate technique has been classified either as dependence or as an interdependence technique, whereas SEM can be regarded as a unique mixture of both types of techniques (Hair *et al.,* 2009). Hair *et al.,* (2009) state that SEM's foundation lies in two standard techniques: factor analysis and multiple regression analysis. Hair et al. (2009) point out that SEM is a multivariate statistical technique employed for building and testing statistical models.

According to Hair *et al.,* (2009), this hybrid technique includes aspects of confirmatory factor analysis, path analysis and Multiple Regression to estimate a series of interrelated dependence relationships concurrently. Hair *et al.,* (2009) state that SEM is an extension of the general linear model of which Multiple Regression is a part and is also a more powerful alternative to other multivariate techniques.

According to Wothke (2010), SEM has its origins in the following areas:

- Psychology – Factor Analysis: Spearman (1904), Thurstone (1935, 1947);
- Human Genetics – Regression Analysis: Galton (1889);
- Biology – Path Modelling: S. Wright (1934);
- Economics – Simultaneous Equation Modelling: Haavelmo (1943), Koopmans (1953), Wold (1954);
- Statistics – Method of Maximum Likelihood Estimation: R.A. Fisher (1921), Lawley (1940); and
- Synthesis of Modern SEM and Factor Analysis: Jöreskog (1970), Lawley & Maxwell (1971), Goldberger & Duncan (1973).

SEM suggests a structure for the covariances between observed variables, and accordingly, it may also be called covariance structure modelling, but more commonly referred to as Linear Structural Relations (LISREL) (Hair *et al.,* 2009). SEM is also widely and increasingly being utilised as an evaluation technique in most areas of research and is considered the dominant multivariate technique (Hair *et al.,* 2009). Although SEM models can be tested in various ways, all structural equation models are distinguished by three characteristics (Hair *et al.,* 2009):

- Estimation of multiple and interrelated dependence relationships;
- An ability to represent unobserved concepts in these relationships and account for measurement error in the estimation process; and
- Defining a model to describe the entire set of relationships.

The SEM process centres around two steps, namely, validating the measurement model and fitting the structural model (Hair *et al.,* 2009).

The former is accomplished primarily through confirmatory factor analysis, while the latter is accomplished mainly through path analysis with latent variables (Hair *et al.,* 2009). However, in reality, a typical model in SEM comprises of two models, the measurement model, and the structural model, where the measurement model represents how measured variables come together to represent constructs, and the structural model shows how constructs are associated with one another (Farrington, 2009). According to Hair *et al.,* (2009), a model is a representation of the theory, where a theory can be considered as a systematic set of relationships providing a consistent and comprehensive description of phenomena. This implies that theory is not the exclusive domain of academia, but can be rooted in experience and practice obtained by observation of real-world behaviour (Hair *et al.,* 2009). A typical model in SEM terminology consists of two models, the measurement model, which represents how measured variables come together to represents constructs, and the structural model that presents how the constructs are associated with one another (Hair *et al.,* 2009). Hair *et al.,* (2009) points out that a seven-stage process can be adopted in the implementation of SEM, and these steps are listed below:

- Developing a theoretical model predicated on the literature review;
- Constructing the path diagram of causal relationships;
- Converting the path diagram into structural and measurement models;
- Choosing the input matrix type and estimating the proposed model;
- Assessing the identification of the structural model;
- Evaluating the goodness-of-fit results; and
- Producing the theoretically justified adjustments to the model.

The steps of structural equation modelling are briefly summarised in the paragraphs below and are discussed further in Chapter Six.

5.10.1. Step One: Develop a Theoretical Model

In Chapter Four, a theoretical model which was based on the findings of the literature reviews in Chapter Two and Three, was presented for testing.

Several factors that could influence the perceived success of women's empowerment within the renewable energy sector of the RSA, were presented and linkages hypothesised between several factors. A convenient way of portraying a model in a visual form is to present the theoretical model under investigation in a path diagram of dependence relationships, which includes the constructs contained in the theoretical models to be investigated and the hypothesised relationships (Farrington, 2009). In this context, constructs are referred to as latent variables in SEM, or are also known as unobserved variables or factors, where latent variables are measured by their respective indicators or observed variables and include independent, intervening, and dependent variables (Farrington, 2009). When the model is portrayed, ellipses represent latent variables, and rectangles represent observed variables (Farrington, 2009). Latent constructs are related to measured variables by a measurement relationship, where this type of dependence relationship is depicted by a straight arrow between the measured variables and the constructs (Farrington, 2009). The arrow is drawn from the latent construct to the variables that are associated with the construct, and these variables are referred to as indicators because no single variable can completely represent a construct, but can be used as an indication of the construct (Hair *et al.,* 2009).

The principles to construct a path diagram of a measurement model is listed below (Hair *et al.,* 2009) and examples are represented graphically in Figure 5.18 and Figure 5.19:

- Ovals or circles typically represent constructs, and squares or rectangles represent measured variables;
- Measured variables, the indicators, for exogenous constructs are referred to as X variables, and endogenous construct indicators are referred to as Y variables;
- The X and Y measured variables are associated with their respective construct(s) by a straight arrow from the construct(s) to the measured variable; and
- A structural relationship between latent constructs is represented by an arrow if the relationship exists, there are two types of relationship, namely a dependence relationship or a correlation or covariance relationship.

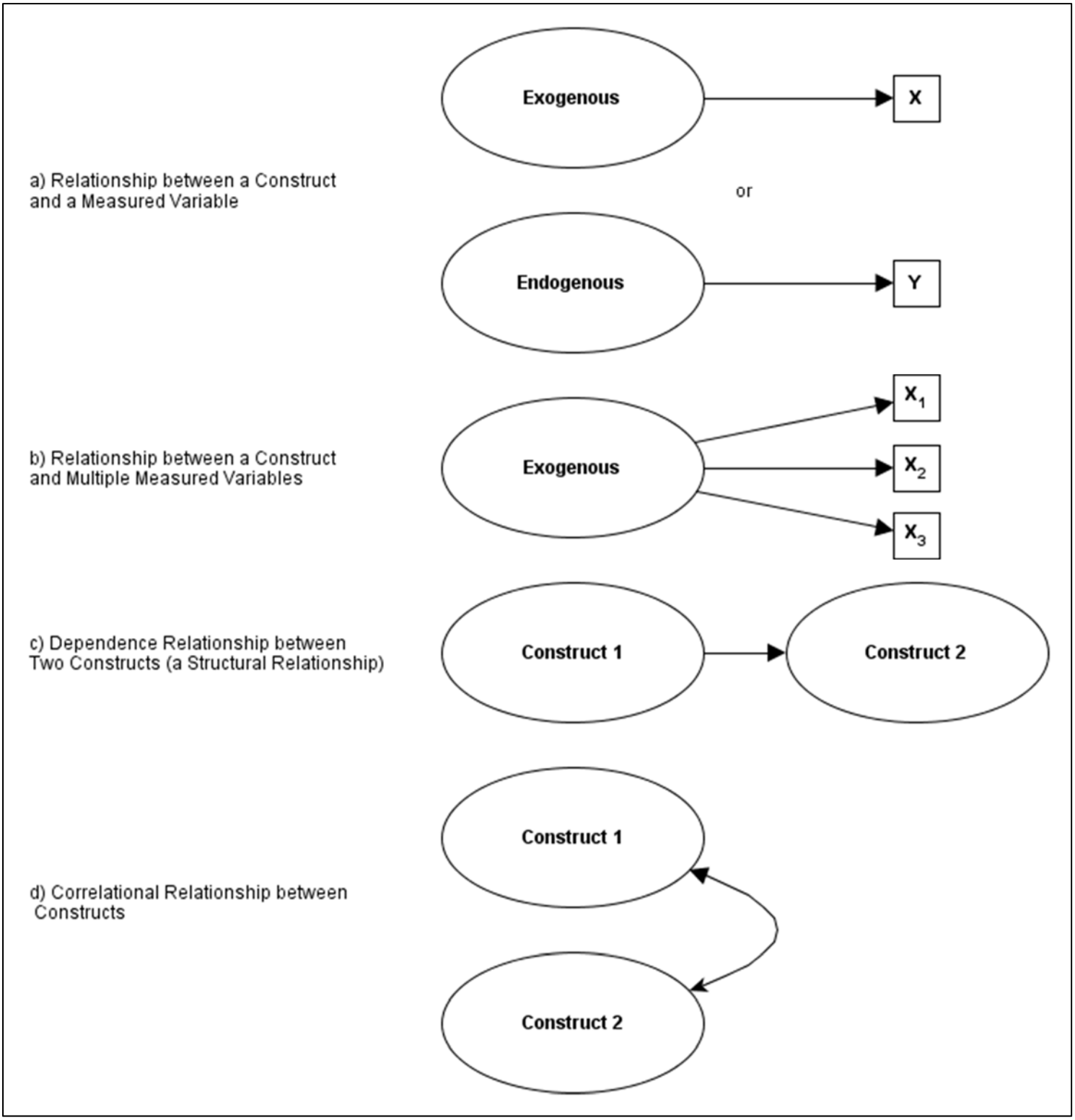


Figure 5.18: Theoretical Relationship

Source: Hair *et al.,* 2009

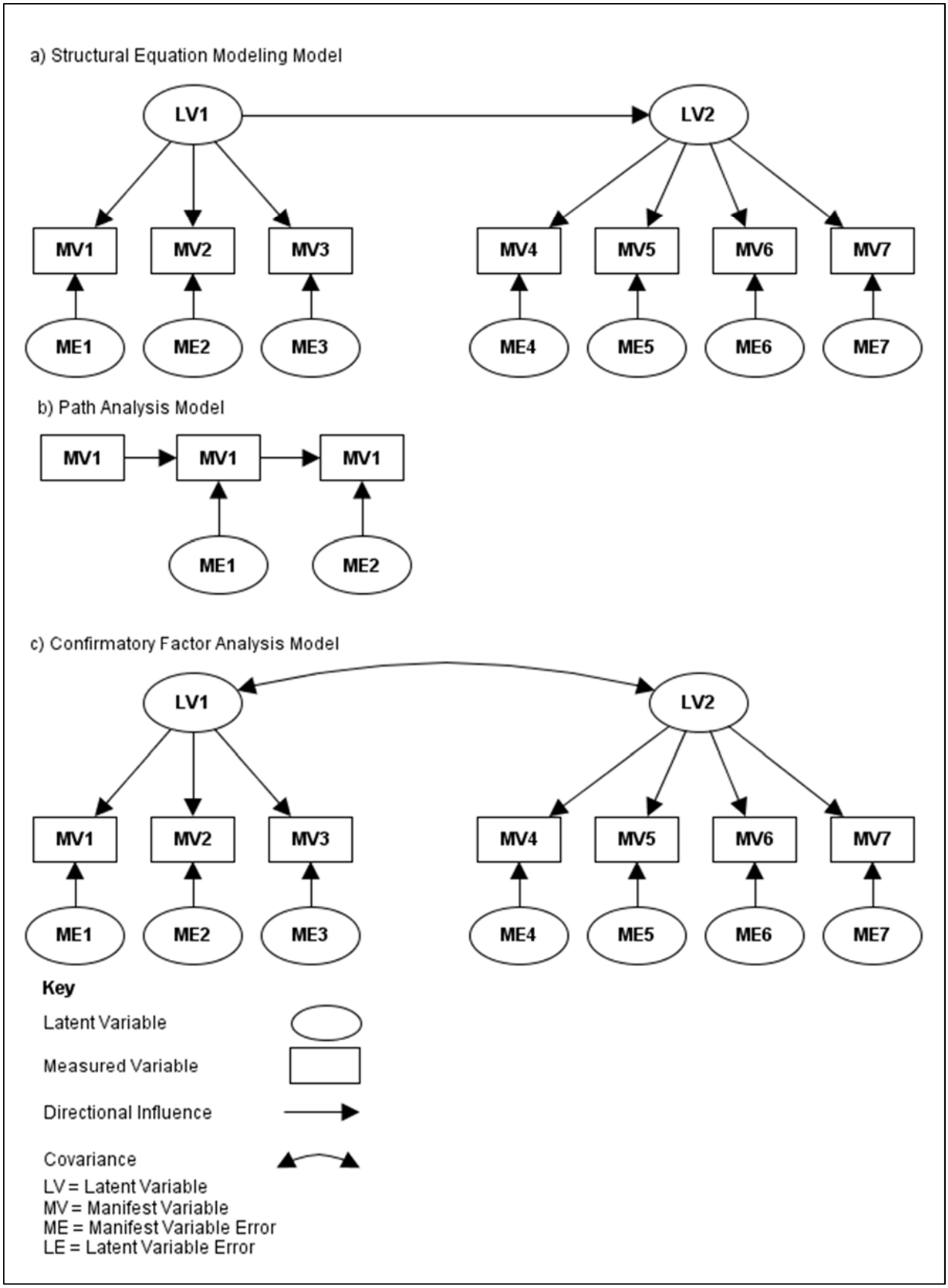


Figure 5.19: Illustrations of PA, CFA, and SEM models

Shah & Goldstein, 2006

The process of SEM starts by specifying a model based on theory where each variable in the model is conceptualised as a latent variable and measured by multiple indicators (Farrington, 2009). According to Hair *et al.*, (2009), SEM is based on the dependence relationships, where the change in a single variable is assumed to result in a change in another variable. Furthermore, the strength and conviction with which causation between two variables can be assumed are based on the theoretical justification to support the analysis, rather than in the analytical methods chosen (Hair *et al.,* 2009). Hair *et al.,* (2009) argue that the theoretical justification or rationale of the model to be investigated is thus the basis that underpins the technique of SEM.

In Chapter Four, a theoretical model of variables that positively influence the perceived success of socio-economic empowerment initiatives of women in the renewable energy sector of the RSA was presented for empirical assessment. This model was predicated on an in-depth literature review and existing empirical findings. Relationships or linkages between several variables or constructs in this model and their possible influence on the perceived success of the socio-economic empowerment of women was hypothesised.

5.10.2. Step Two: Construct a Path Diagram of Casual Relationships

The path diagram allowed the researcher to represent the dependence relationships between two constructs in the theoretical model under investigation, thereby understanding the effect that one construct has on another. The path diagram was, therefore, a convenient manner to describe the model in a visual format. Path diagrams permit the researcher to visually depict the predictive relationships amongst constructs, i.e. the independent-dependent variable relationships, as well as the associative relationships or correlations between constructs and even indicators (Hair *et al.,* 2009).

Hair *et al.,* (2009) describe the associative relationships between constructs as follows:

- A straight arrow depicts a direct dependence relationship between one construct and another;

- A curved arrow denotes a correlation between constructs;
- A straight arrow with two heads (one head on either side) indicates a reciprocal relationship between constructs;
- A variable that is not predicted or *'caused'* by another variable in the model is referred to as an exogenous construct, or also known as source independent or predictor variables; and
- No arrows will indicate that these constructs are from other constructs.

Alternatively, a variable that is predicted or *'caused'* by any other construct in the model is called an endogenous or dependent construct and will have several arrows pointing to these constructs (Hair *et al.,* 2009). Endogenous variables are both intervening variables, that is variables which are effects of other exogenous or intervening variables, and are causes of other intervening and dependent variables, and pure dependent variables (Hair *et al.,* 2009).

Swain & Wallentin (2014), Department of Economics, Uppsala University and Södertörn University, Stockholm (with Fan Yang-Wallentin, Department of Statistics, Uppsala University), conducted a study titled, *"The Impact of Microfinance on Factors Empowering Women: Regional and Delivery Mechanisms in India's Self-Help Group Programme"*, (Swain & Wallentin, 2014). The indicators for the self-help groups are presented in Table 5.13.

Table 5.13: Descriptive Indicators for Self-Help Groups

	South Mean (S.D.) (1)	Other states Mean (S.D.) (2)	Linkage model 2 Mean (S.D.) (3)
N	279	380	475
Average Age of Respondent	34 (8.4)	35.9 (8.3)	35 (8.4)
Proportion with some			
Primary education	14.3%	20.3%	16.4%
Secondary education	27.2%	11.3%	20.4%
Post-Secondary education	4.3%	2.6%	3.4%
Dependency ratio	0.6 (0.3)	0.7 (0.2)	0.7 (0.2)
Average number of workers in the household	2.4 (1.2)	2.6 (1.3)	2.5 (1.2)

Average number of workers engaged in primary activity	2.1 (1.2)	2.8 (1.4)	2.4 (1.3)
Mean size of owned land in 2003 (in acres)	1.04 (2.5)	0.81 (1.41)	0.93 (2.12)
Total assets (in Rupees)	111.156	110.318	104.492
	-133.294	-147.746	-136.475
Distance to Bank (km)	7.3 (6.9)	6.4 (4.3)	5.4 (4.0)
Distance to Health Care (km)	3.6 (2.8)	3.6 (2.5)	3.6 (2.7)
Distance to Market (km)	5.4 (4.0)	5.3 (3.7)	5.2 (4.1)
Distance to Paved Road (km)	3.1 (3.3)	2.3 (2)	2.8 (2.6)
Distance to Bus Stop (km)	3.8 (3.6)	2.8 (2.3)	3.5 (3.1)
Lack of cash/food in 2000	43.7%	43.7%	43.2%

Source: Swain & Wallentin, 2014

A further example of a path diagram is extracted from Farrington (2009) and presented with the supporting structural equations. Figure 5.20 depicts the independent variables X_1 and X_2 that influences the dependent variable Y_1, and that provision is made for the specification and measurement error $\in_1$ of magnitude b_1 and b_2. The dependent variable Y_2 is usually influenced by (coefficients, b_3, b_4 and b_5) the independent variables X_2 and X_3 as well as dependent variable Y_1, with provision for measurement and specification error $\in_2$. The dependent variable Y_3 is influenced by two independent variables Y_1 and Y_2 to the degree of b_6 and b_7 with an error term $\in_3$. The model includes both cause and effect relationships between independent and dependent constructs and between dependent and dependent constructs (Farrington, 2009). Correlations among indicators of constructs are often avoided, except in particular circumstances where the results of measurement or data collection methods are known or when the same indicator is utilised in two time-intervals in a longitudinal study (Farrington, 2009).

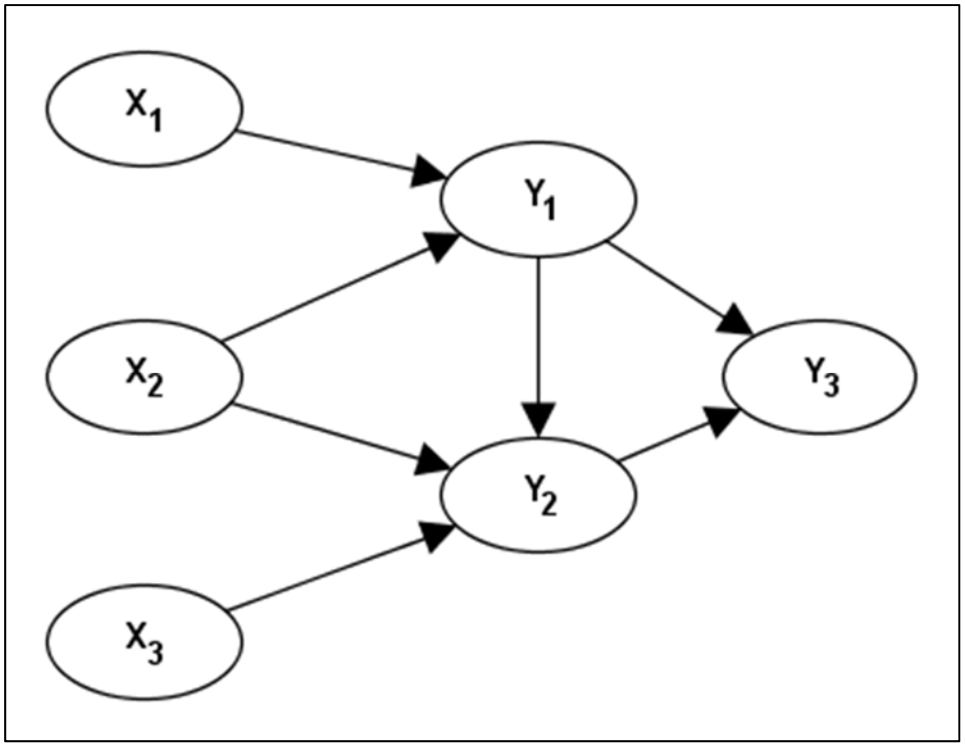


Figure 5.20: Path Diagram with Structural Relationships

Source: Farrington, 2009

Table 5.14: Sample Structural Equations

Endogenous variable	=	Exogenous variable	+	Endogenous variable	+	Error
Y_1	=	$b_1X_1+b_2X_2$			+	$\in_1$
Y_2	=	$b_3X_2+b_4X_3$	+	b_5Y_1	+	$\in_2$
Y_3	=			$b_6Y_1+b_7Y_2$	+	$\in_3$

Source: Farrington, 2009

According to Farrington (2009), the measurement model specifies the rules of correspondence between measured and latent variables and allows an assessment of construct validity. Figure 5.21 presents the measurement model that can be depicted by a series of regression-like equations, mathematically relating one factor to the measured variables (Farrington, 2009). For this study, the software program LISREL 8.8 (Jöreskog & Sörbom 2006) was utilised to convert the path diagrams into structural equations or structural models and measurement models.

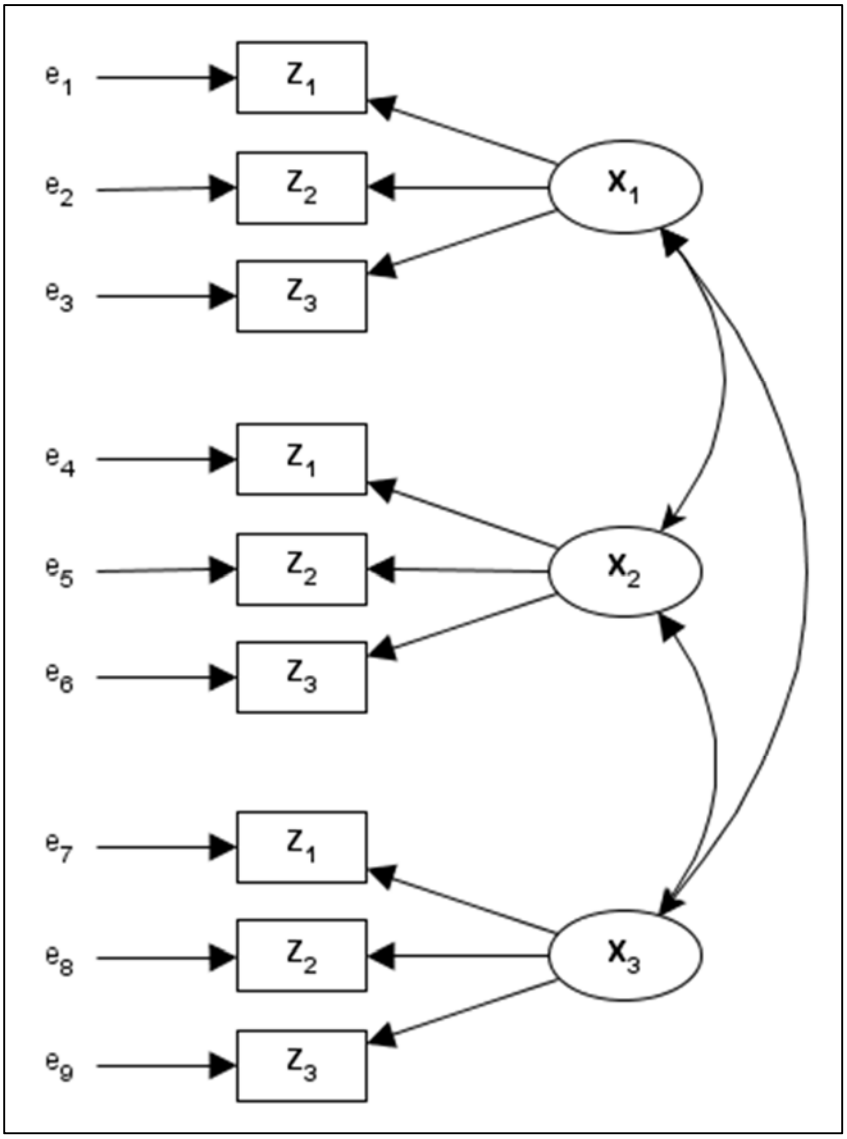


Figure 5.21: Measurement Model

Source: Farrington, 2009

The path diagrams proposed for this study will be presented in detail in Chapter Six, *Presentation and Analysis of Data*.

5.10.3. Step Three: Convert Path Diagram into a set of Structural Equations

At this stage of the process, the model is specified in formal terms through sets of equations which define the structural equations linking constructs. The measurement model specifies which variable measures which construct, and a set of matrices that indicate the hypothesised correlations between the variables or constructs.

Farrington (2009) points out that the objective of linking operational definitions of constructs to theory is to allow for the appropriate empirical testing. According to Farrington (2009), a conventional model in SEM terminology contains two models, a measurement model and the structural model. Whereas the measurement model is defined by determining the indicator variables to the constructs they represent (Farrington, 2009). The structural model is defined by determining the relationships between constructs that have been structured on the suggested theoretical model (Farrington, 2009).

Once a theory has been suggested the SEM model is typically developed which entails specifying the measurement theory and validating it using confirmatory factor analysis (Farrington, 2009). Once the measurement model is considered adequately valid, the researcher can proceed to test the structural model (Farrington, 2009). Farrington (2009) further states that a structural theory is a conceptual representation of the relationships between constructs and can be expressed with regards to a structural model that signify the theory with a set of structural equations, generally depicted with a visual diagram. Farrington (2009), points out that the structural model is usually expressed as an equation for each hypothesised impact of an independent construct on a dependent construct or a dependent construct on another dependent construct. Each equation a structural coefficient (b) is usually estimated, and an error term ($\in$) is usually included to provide for the sum of the effects of the specification and random measurement error (Farrington, 2009).

5.10.4. Step Four: Choose the Input Matrix

Once the structural and measurement models had been specified, and the input data selected, the computer programme programme Linear Structural Relations (LISREL) version 8.54 was used for this study. The measurement model allowed the researcher to specify which manifest variables corresponded with each latent construct and, and thereby determining the structural co-efficient that estimated the relationships between the latent variables. A fundamental task in many statistical analyses is to characterise the variability and location of a data set, which is further characterised by skewness and kurtosis (Engineering Statistics Handbook, 2012).

Skewness is a measure of symmetry, or more precisely, the absence of symmetry (Engineering Statistics Handbook, 2012). Kurtosis is a measure of whether the data is light-tailed or heavy-tailed relative to a normal distribution (Engineering Statistics Handbook, 2012). Data sets with high kurtosis tend to possess heavy tails, or outliers, whereas data sets with low kurtosis tend to have light tails, or lack of outliers, whereas a uniform distribution would be the extreme case (Engineering Statistics Handbook, 2012).

According to Farrington (2009), the variables should still be assessed for their distributional characteristics, particularly normality and kurtosis, and if no variable is found to have a significant departure from normality or pronounced kurtosis, then all variables are deemed suitable for use. Farrington (2009) also states that normality is the most fundamental assumption in multivariate analysis and that Structural Equation Modelling is particularly sensitive to the distributional nature of the data, notably the departure from multivariate normality or a robust kurtosis (skewness) in the data. A lack of multivariate normality is particularly troublesome because it substantially inflates the chi-square statistic and creates an upward bias in critical values for determining coefficient significance (Farrington, 2009). Structural equation analysis uses either the variance-covariance or the correlation matrix as its input data type.

A covariance matrix of all the signals in the model was utilised due to the data insight type as covariance matrices contain more information content and therefore provide more flexibility. The measurement model specifies which manifest variables correspond to each latent construct and the construct ratings are applied to the structural model, the structural coefficients are approximated for the relationships between the latent variables (Farrington, 2009). According to Farrington (2009), once the structural and measurement models have been designed and the input data type selected, estimates of free parameters from the observed data should be obtained through a software program like LISREL to generate the parameter estimations. The comparison of the data is achieved by comparing the actual covariance matrices which represent the associations between variables, and the estimated covariance matrices of the best-fitting model (Farrington, 2009).

Table 5.15 has been included as a sample for illustration purposes as regards the latent factors, and in this instance, the example relates to the women's empowerment of self-help groups in India (Swain & Wallentin, 2014).

Table 5.15: Latent Factors, Women's Empowerment Self-Help Groups

Latent Factors of women's empowerment	South (1)	Other States (2)	Linkage model 2 (3)
	Coefficients (standard errors)	Coefficients (standard errors)	Coefficients (standard errors,
Economic	0.70 (0.32) ***	0.74 (0.85)	0.50 (0.38)
Autonomy	-0.22 (0.13) *	0.047 (0.05)	-0.095 (0.075)
Network, Communication, and Political participation	-0.14 (0.13)	0.031 (0.085)	0.017 (0.048)
Social Attitudes	-0.83 (0.51)	-1.16 (0.75)	-2 (2.34)
Education	0.044 (0.04)	0.032	0.021 (0.026)
		-0.027	
Model Fit			
Satorra-Bentler scaled Chi-Square	57937	590.64	499.64
Root Mean Square Error of Approximation	0.081	0.069	0.058
Normed Fit Index	0.73	0.7	0.75
Sample Size	279	380	475

Source: Swain & Wallentin, 2014

Note: ***, ** and * implies significant at the 1%, 5% and 10% level respectively

5.10.5. Step Five: Assess the Identification of the Structural Model

At this stage of the process, the output of the software program was assessed by the researcher in order to check for any meaningless or illogical outcomes in the identification of the structural model. Any shortcoming of the proposed model to create unique estimates was addressed by interrogating the identification of the structural model. Farrington (2009) further states that no single rule is present that establishes the identity of a model, and that several recommendations are obtainable.

The easiest may be the three-measure rule which claims that any construct with three or even more indicators shall always be identified, and therefore any construct that has more than three indicators reduces the risk of model identification issues Farrington (2009).

5.10.6. Step Six: Evaluate results for Goodness-of-Fit

At this stage, the researcher evaluated the goodness-of-fit results, which is an assessment of the extent to which the data and the theoretical models meet the SEM assumptions. Once the model was determined to deliver acceptable estimates, the goodness-of-fit was established for the overall model, and then separately for the measurement, and the structural models. According to Oberholster (2014), one method to establishing both measurement and structural model validity is by the goodness of fit, meaning that the closer the structural model's goodness of fit matches the measurement model the better the structural model fit. The chi-squared test, the Goodness of Fit Index (GFI), Adapted Goodness of Fit Index (AGFI), and the Root Mean Square Residual (RMR) criteria are frequently used for model fit (Oberholster, 2014). Farrington (2009) further states that the assessment of the goodness-of-fit results can be an indicator of the extent to which the data and the theoretical models compare with the assumptions of SEM. The goodness-of-fit tests are steps of how *'good'* the actual or observed correlation or covariance matrix fits (*c*) the matrix that's predicted by the theoretical model (Farrington, 2009). Alternatively, the GFI determines the extent that the structural equation model fits the sample data, or how well the concept fits the reality as represented by the data (Farrington, 2009). Table 5.16 has been included as a sample for illustration purposes as regards the covariance matrix of independent variables (Swain & Wallentin, 2014).

Table 5.16: Covariance Matrix of Independent Variables

Latent Factors of women's empowerment	South	Other States	Linkage model 2
	Coefficients (standard errors)	Coefficients (standard errors)	Coefficients (standard errors)
Economic	0.04 (0.02) **	0 (0)	0 (0.01)
Autonomy	-0.06 (0.02) ***	0.04 (0.02) *	-0.01 (0.02)

Network, Communication, and Political Participation	-0.10 (0.04) *"	0.04 (0.02) •	-0.01(0.02)
Social Attitudes	0 (0.01)	-0.01(0.01) *	0 (0)
Education	-0.05 (0.04)	-0.01 (0.03)	-0.02 (0.03)

Source: Swain & Wallentin, 2014

Note: ***, ** and * implies significant at the 1%, 5% and 10% level respectively

5.10.7. Step Seven: Modifications to the Model

At this stage of the process, and depending on the and interpretation of the results, modifications were made to the model if theoretically justified. The final step in the process was to modify the model by searching for a better fit and a better interpretation of the results. Invariably model re-specification follows after the estimation of a model with indications of poor model fit; this is done to be able to maximise the fit by estimating the most likely relationships between variables (Farrington, 2009). Farrington (2009) further states that re-specifying the model requires the researcher to fix parameters which were formerly free, or free parameters which were formerly fixed, added or deleted from the initial model. However, caution should be exercised as modifications should be made after theoretical justification has been confirmed for what is deemed empirically significant (Farrington, 2009).

During the development process of the questionnaire, the variables and the supporting descriptions were streamlined to focus on the most essential perceived variables that would positively influence the socio-economic empowerment of women in the renewable energy sector of South Africa. The process of developing the online survey entailed several components:

- Obtaining approval from the Ethics Committee of NMMU;
- The development of the paper-based draft questionnaire (word document format) that would be used as a working draft;
- The development of the online questionnaire using the NMMU questionnaire platform;
- The development of the electronic mail distribution using the MailChimp platform; and

- The MailChimp platform was used due to the limitations of the NMMU questionnaire platform, which does not have the functionality to manage the bulk distribution of emails or the functionality to manage the mailing campaign.

Snowball or chain sampling, which is a non-probability sampling methodology, was employed to increase the number and reach of respondents, and to ensure that there were international respondents, especially those concerned with mainstreaming gender. The survey development process entailed several stages that included the questionnaire development: operationalisation of each variable and its associated questions, proof reading, review of questionnaire, dissemination of pilot survey, and final sign-off of the questionnaire and survey.

Once a paper-based questionnaire development process was concluded, the online questionnaire was developed on the NMMU online survey platform and the mail distribution developed on the MailChimp mail distribution platform. An initial pilot survey requiring 25 respondents was conducted. The results were analysed, and based on the standard deviation of each variable, the associated questions were reviewed and further analysed. The review process was again followed as above, and after final sign-off, the survey was disseminated using the MailChimp platform. Table 4.1 represents the variables and their descriptions.

5.11. SUMMARY

Chapter Five described the comprehensive research methodology, including the population sample, data collection instruments as well as strategies used to guarantee the ethical standards, reliability, and validity of this study. Chapter Five also provided an overview of the activities undertaken to pre-test the proposed conceptual model, the population under scrutiny, the sampling and unit technique employed, the variables that had been operationalised with supporting definitions, and an explanation how the measuring instrument was developed and administered.

This chapter also addressed demographic information regarding respondents and described the statistical analysis necessary to guarantee the validity and dependability of the results.

This chapter also provided information on the statistical methods necessary to measure the impact of demographic variables on the intervening and dependent variables, and an explanation of the SEM technique utilised to verify the proposed conceptual model was also provided. Chapter Six, *Presentation and Analysis of Data*, will elaborate further on the detailed statistical analyses that were performed.

CHAPTER SIX
PRESENTATION AND ANALYSIS OF DATA

6.1. INTRODUCTION

Chapter Five provided a synopsis of the research design and methodology used to investigate the factors influencing the perceived success of women's empowerment in the renewable energy sector of South Africa. Chapter Six will report the empirical results from the online survey and analyse the collected data. The quality of the measuring instruments used in this study will also be evaluated. For this purpose, the empirical data was subjected to several statistical analyses to evaluate the reliability and validity of the measuring instrument used in this study. The proposed theoretical model was also empirically tested through Structural Equation Modelling.

6.2. VALIDITY OF THE MEASURING INSTRUMENT

For this study, the IBM Statistical Package for Social Sciences 23 (SPSS 23) statistical application for Windows was employed for the Exploratory Factor Analysis (EFA) to evaluate the discriminant validity of the instrument used to measure the constructs in the proposed theoretical model. Validity is the degree a set of measures or a single measure correctly represents the concept of study. For the purpose of validating the constructs, convergent and discriminant validity tests were conducted. Validity, according to Hair *et al.,* (2009) refers to the extent to which an instrument accurately represents that which is to be measured. The EFA was a precursor to the implementation of SEM. For this study data was collected from a sample size of 243 respondents, and the measuring instrument contained 60 questionnaire items.

According to Hair *et al.,* (2009), convergent validity is analysed to determine if the indicators of a particular construct should converge or share a higher proportion of variance in common. Convergent validity is necessary when data is gathered and synthesised from several sources, and the lack of a standardised approach implies that the statistics may reflect different definitions, methodologies and techniques (Food and Agriculture Organization of the United Nations, 2014).

If the data points collected are close (convergent) or the theory can explain the variations, this implies that the calculations based on that data have a higher degree of convergent validity (Food and Agriculture Organization of the United Nations, 2014). The concept of discriminant validity was first introduced by Campbell and Fiske in 1959 in their conversations on evaluating test validity (Campbell & Fiske, 1959). Campbell & Fiske (1959) highlighted the need for both discriminant and convergent validation techniques when assessing new tests.

For the EFA, Principal Axis Factoring was utilised as the factor extraction method using an Oblique Rotation. The comparison of the observed correlation matrix to the identity matrix was subjected to Bartlett's Test of Sphericity to evaluate the factor-analysability of the data. The process of identifying the factors to extract for this model was based on Eigenvalues, the Percentage of Variance, and the individual factor loadings. The statistical program, IBM SPSS 23, which also reports Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO), was used to analyse the data in accord with the factors. As the KMO approaches one, the greater the factor-analysable of the data; also, a KMO that approximates one permits a factor analysis; whereas any value less than 0.5 will not permit a factor analysis. KMO values within the 0.70 range are considered as "middling"; and values below 0.70 are considered as *"mediocre"*, *"miserable"* or *"unacceptable"* (Hair *et al.,* 2009). For this study, data with KMO values greater than 0.70 ($p<0.00$) are considered factor-analysable. Eigenvalues describe the variance captured by the factor; Eigenvalues greater than one are considered significant, and Eigenvalues less than one are considered insignificant and should be discarded (Hair *et al.,* 2009). For this study factors with Eigenvalues, less than one were retained on the proviso that the factors and items could be interpreted.

Factor loadings indicate the correlation between the original variables and the factors. They are essential to understanding the nature of a factor. According to Hair *et al.*, (2009), the data items measuring a similar aspect or factor should have high factor loadings on a specific factor and low loadings preferably below 0.25 on another factor. The squared factor loadings indicate the percentage of variance within an original variable explained by the factor. Factor loadings of 0.40 are considered significant for sample sizes of 200 respectively.

In this study, the extraction and rotation technique, in addition to the KMO and Bartlett's Test of Sphericity results are reported, as well as the Eigenvalues and the Percentage of Variance.

6.3. RELIABILITY OF THE MEASURING INSTRUMENT

Reliability is the extent to which a group of indicators of a latent construct are internally consistent (Hair *et al.,* 2009). In other words, highly reliable constructs are strongly inter-related, indicating that each of these indicators or items measure the same factor or latent variable. For this reason, the software program SPSS 23 for Windows was used to compute the Cronbach's alpha coefficient for the factors identified using the exploratory factor analysis. In accordance with Hair's findings (Hair *et al.,* 2009), a Cronbach's alpha coefficient more than 0.70 was used in this study to indicate the reliability of a factor is reliable. The intervening variables (Corporate Governance and the dependent variable, the perceived success of empowering women in the renewable energy sector of South Africa), were assessed for discriminant validity using the Principal Axis Factoring extraction method with a Direct Oblimin rotation. The loadings in bold in Table 6.2 represent significant loadings ($p \geq 0.35$). These demonstrate sufficient evidence of discriminant validity.

6.4. FACTORS INFLUENCING THE PERCEIVED SUCCESS OF WOMEN'S EMPOWERMENT

This section discusses the factor analysis results to assess the discriminant validity of the model. For the Exploratory Factor Analysis, a total of 243 cases were analysed, no cases were discarded. The Pattern Matrix is presented in Table 6.2. According to Abdi (2003), there are several oblique rotation factor analysis methods available to extract set factors from a data set. These factors are orthogonal and are ordered based on the proportion of the variance of the initial data that these factors account for. Only a small subset of factors is retained for additional consideration, subsequent analyses, and the remainder of the factors are considered as either irrelevant or non-existent, meaning that these factors are considered to reflect measurement error or noise (Abdi, 2003).

To interpret the factors that are relevant, the initial selection process was accompanied by a rotation of the retained factors. Two primary types of rotation were utilised: orthogonal when there is no correlation between the new axes, and oblique when the new axes are not necessarily orthogonal (Fabrigar & Wegener, 2011). In other words, they are to some extent correlated. The rotations are performed in a subspace, i.e. the factor space (Kothari, 2004). The new axes will explain less variance compared to the proposed factors, which are computed to be optimum (Kothari, 2004). The component of variance described by the full total subspace after rotation is equivalent to it before rotation, with only changes to the partition of the variance (Kothari, 2004).

According to Kothari (2004), the rotated axes are not defined relating to a statistical criterion. Their purpose usually is to facilitate the interpretation (Kothari, 2004). It is important to note that since the rotations always happen in a subspace, i.e. the space of the retained factors, the choice of the subspace will strongly influence the result of the rotation (Kothari, 2004). Consequently, in using rotation in factor analysis, it is recommended to try several sizes for the subspace of the retained factors to evaluate the robustness of the interpretation of the rotation (Kothari, 2004).

All the variables in the theoretical model were assessed for discriminant validity using exploratory factor analysis using the Principal Axis Factoring extraction technique with Direct Quartimin Oblique rotation specified as the rotation method. The results of the factor analysis for this model is presented in Table 6.1. Seven factors with Eigenvalues greater than 1.0 were extracted explaining 69.09% of the variance in the data.

Table 6.1: Exploratory Factor Analysis, variance explained by extracted factors

Total Variance				
Factor	**Total**	**Initial Eigenvalues % of Variance**	**Cumulative %**	**Rotation Sums of Squared Loadings Total**
1	17.490	40.674	40.674	7.491
2	3.966	9.224	49.898	5.854
3	2.875	6.685	56.583	7.544
4	1.660	3.860	60.444	6.881

5	1.456	3.387	63.831	12.753
6	1.242	2.889	66.719	3.640
7	1.019	2.369	69.088	11.219

The number of factors to be extracted had not been specified initially. However, the Eigenvalues indicated that seven factors should be extracted. This model was refined using an iterative process of deleting items that did not demonstrate adequate discriminant validity (low loading and cross-loading on more than one factor) and re-executing the exploratory factor analysis until all the remaining items loaded to a significant extent ($p \geq 0.350$) without cross-loadings. Table 6.2 presents the most interpretable factor structure, where all items with loadings < 0.350 were deleted. Table 6.2 demonstrates that a total of 43 items were loaded onto seven factors.

Table 6.2: Rotated Factor Loadings

Pattern Matrix – Rotated Factor Loadings								
		Factor						
		1	**2**	**3**	**4**	**5**	**6**	**7**
	Item	**Social Investment**	**Stakeholder Engagement**	**Sustainable Programmes**	**Broad-Based Black Economic Empowerment**	**Corporate Governance**	**Executive Leadership**	**Women Empowerment**
		SI	**SE**	**SP**	**BE**	**CG**	**EL**	**WE**
1	SED2	**0.553**	0.003	-0.174	-0.023	-0.131	0.052	0.227
2	CC1	**0.545**	0.039	-0.093	0.055	-0.266	-0.025	0.144
3	SA2	**0.543**	0.059	-0.047	-0.003	-0.087	0.150	0.225
4	EE2	**0.519**	0.018	-0.048	0.210	0.046	0.112	0.187
5	FM1	**0.443**	0.044	-0.097	0.113	-0.169	0.013	0.250
6	SA5	0.211	**0.838**	0.042	-0.032	0.053	-0.091	-0.037
7	SP5	0.011	**0.796**	0.082	0.026	-0.031	-0.238	0.062
8	SE5	-0.045	**0.771**	-0.040	0.018	-0.100	-0.027	-0.006
9	SA4	0.020	**0.727**	0.025	0.152	0.087	0.153	-0.078
10	SE3	0.100	**0.678**	-0.014	0.011	0.070	0.247	-0.092
11	SE4	-0.127	**0.661**	-0.065	-0.111	-0.118	-0.007	0.117
12	SP3	-0.167	**0.607**	-0.244	0.022	-0.027	0.231	0.000
13	SA1	-0.040	0.009	**-0.994**	0.072	0.075	-0.003	0.049
14	SE1	-0.067	-0.033	**-0.712**	0.103	-0.075	0.016	0.088

15	SP1	0.197	0.097	**-0.558**	-0.005	-0.128	0.063	-0.083
16	EL 1	0.203	0.041	**-0.461**	-0.037	-0.273	-0.135	0.010
17	BE1	0.091	-0.008	-0.227	**0.736**	0.137	0.003	0.059
18	BE5	-0.058	-0.069	-0.073	**0.677**	-0.297	-0.002	0.080
19	BE2	0.190	-0.049	-0.081	**0.588**	-0.129	0.048	0.131
20	BE4	-0.102	0.140	0.051	**0.580**	-0.273	-0.015	0.176
21	BE3	0.020	0.305	0.147	**0.448**	-0.003	0.123	0.196
22	CM5	-0.003	0.040	-0.040	0.114	**-0.756**	0.036	0.006
23	CG5	0.073	0.017	-0.103	0.038	**-0.702**	-0.073	0.058
24	CG3	-0.106	0.020	-0.135	0.180	**-0.684**	0.083	-0.025
25	CM2	0.207	0.055	-0.008	0.018	**-0.657**	-0.122	0.128
26	EL5	0.155	0.110	-0.011	0.215	**-0.640**	-0.201	-0.117
27	CC5	0.078	-0.060	-0.013	-0.052	**-0.625**	0.117	0.108
28	CG2	0.033	0.079	-0.021	0.019	**-0.587**	0.148	0.024
29	CC4	-0.059	-0.027	-0.021	-0.066	**-0.579**	0.229	0.251
30	CG4	-0.015	-0.015	-0.075	0.048	**-0.526**	0.165	0.036
31	CG1	0.172	-0.012	-0.227	-0.138	**-0.493**	-0.106	0.084
32	SED4	-0.032	0.112	-0.151	0.010	**-0.483**	0.030	0.098
33	CM1	0.262	0.041	-0.165	0.043	**-0.481**	0.033	-0.022
34	SA3	0.087	0.107	-0.068	0.053	-0.278	**0.495**	0.015
35	CM3	0.204	0.061	-0.070	0.096	-0.117	**0.408**	0.217
36	EE3	0.272	0.096	0.055	-0.023	-0.268	**0.373**	0.275
37	EE4	0.081	0.042	0.082	0.152	-0.215	**0.353**	0.310
38	WE3	-0.026	0.020	0.003	-0.021	-0.015	-0.062	**0.837**
39	WE4	-0.040	-0.038	-0.055	0.058	-0.009	0.089	**0.833**
40	WE2	0.147	0.025	-0.011	0.050	0.015	0.071	**0.783**
41	WE5	0.095	0.046	-0.012	0.047	0.000	0.028	**0.672**
42	WE1	0.148	-0.078	-0.205	-0.013	-0.065	-0.038	**0.661**
43	SED5	0.043	-0.005	0.051	0.268	0.018	-0.034	**0.590**

Notes:

- Rotation converged in 19 iterations.
- Loadings in **bold** represent significant loadings (p≥0.350)

From the Exploratory Factor Analysis, based on Hair's recommendations, there is sufficient evidence of discriminant validity among seven of the factors that were analysed.

6.5. PROPOSED THEORETICAL MODEL

The assumptions for the proposed theoretical model were based on twelve variables (see Table 6.3). After the Exploratory Factor Analysis, the variables were either deleted, renamed, or new variables added based on the factor loadings and their Eigenvalues. The results of the Exploratory Factor Analysis changed some of these variables, and they are described in more detail in the following section.

Table 6.3: Model Variables and Codes for the original theoretical model

	Variable	Code
1	Socio-Economic Development	SED
2	Stakeholder Engagement	SE
3	Strategic Acumen	SA
4	Strategic Planning	SP
5	Broad-Based Black Economic Empowerment	BE
6	Executive Leadership	EL
7	Change Management	CM
8	Executive Education	EE
9	Fund Management	FM
10	Corporate Culture	CC
11	Corporate Governance	CG
12	Women's Empowerment	WE

6.6. NAMING NEW FACTORS

The results of the Exploratory Factor Analysis were clustered by factor and item to determine a suitable name for the new factor. A coding system was developed to assist with the formulation of a factor name. The items were grouped numerically. The new factor names are indicated in Table 6.4 and detailed in Table 6.5.

Table 6.4: New Factor Naming and Codes

Factor 1	Social Investment	SI
Factor 2*	Stakeholder Engagement	SE
Factor 3	Sustainable Programmes	SP
Factor 4*	Broad-Based Black Economic Empowerment	BE
Factor 5*	Corporate Governance	CG

Factor 6*	Executive Leadership	EL
Factor 7*	Women's Empowerment	WE

Note: *indicates variables retained from the original theoretical model.

Table 6.5: Factor Naming

Social Investment	**SED2**	**Q13:** It is important to have **well-funded** socio-economic initiatives in the renewable energy sector.
	CC1	**Q10:** It is important that companies in the renewable energy sector have a **corporate culture** that embraces socio-economic development.
	SA2	**Q15:** In the renewable energy sector, it is important to have well developed socio-economic development plans **aligned to the strategic business objectives.**
	EE2	**Q20:** Executive leaders in the renewable energy sector should consider socio-economic development a **core business goal**.
	FM1	**Q8:** In the renewable energy sector, executive leadership should understand how to **build a more equitable society**.
Stakeholder Engagement	**SA5**[3]	**Q51:** Executive leadership in the renewable energy sector **have an appreciation** for the socio-economic challenges of others.
	SP5[2]	**Q52:** Companies in the renewable energy sector have **well-defined socio-economic monitoring plans**.
	SE5[1]	**Q50:** Executive leadership in the renewable energy sector are **willing to engage a diverse range of stakeholders**.
	SA4[3]	**Q39:** Decision makers in the renewable energy sector have the **experience to develop long-term socio-economic plans**.
	SE3[1]	**Q26:** Companies in the renewable energy sector understand the importance of **engaging communities in a meaningful manner**.
	SE4[1]	**Q38:** Companies in the renewable energy sector understand the **importance of engaging stakeholders to reduce reputational risk**.
	SP3[2]	**Q28:** In the renewable energy sector, **executive leadership are prepared to take calculated risks**.
Sustainable Programmes	**SA1**	**Q3:** Initiatives in the renewable energy sector that have **well developed strategic objectives increase sustainability**.
	SE1	**Q2:** In the renewable energy sector, the consultation that spans the entire project life-cycle increases **sustainability**.
	SP1	**Q4:** In the renewable energy sector, companies that have a clear vision of their future increase **sustainability**.
	EL1	**Q6:** In the renewable energy sector, **good executive leadership is essential**.

Broad-Based Black Economic Empowerment	**BE1**[1]	**Q5:** In the renewable energy sector, the **B-BBEE code of conduct** is an important policy to **address the inequality of the past**.
	BE5[1]	**Q53:** Executive leadership in the renewable energy sector should adopt a long-term approach when applying the policies of the **B-BBEE code of conduct**.
	BE2[1]	**Q17:** Shareholders in the renewable energy sector should have a clear understanding of the **intent of the B-BBEE code of conduct**.
	BE4[1]	**Q41:** In the renewable energy sector, it is important that the **B-BBEE code of conduct** ensures sustainable outcomes.
	BE3[1]	**Q29:** In the renewable energy sector, the **B-BBEE code of conduct** encourages executive leadership to go beyond compliance.
Corporate Governance	**CM5**[2]	**Q55:** In the renewable energy sector, executive leadership **should understand change management practices**.
	CG5[1]	**Q59:** In the renewable energy sector, it is important that companies have **effective risk management systems**.
	CG3[1]	**Q35:** In the renewable energy sector, it is important that companies **effectively communicate the responsibilities of their executive leadership**.
	CM2[2]	**Q19:** Executive leadership in the renewable energy sector should have a clear understanding of the benefits of **change management**.
	EL5	**Q54:** In the renewable energy sector, it is important for executive leadership to view results as a **measure of performance**.
	CC5[3]	**Q58:** The **corporate culture** of companies in the renewable energy sector should be **conducive to new ideas**.
	CG2[1]	**Q23:** Executive leadership of companies in the renewable energy sector **should demonstrate a wide variety of skills**.
	CC4[3]	**Q46:** It is important that the renewable energy sector develop a **culture of continuous learning**.
	CG4[1]	**Q47:** In the renewable energy sector, executive leadership should make **decisions based on ethical principles**.
	CG1[1]	**Q11:** Board members of companies in the renewable energy sector should demonstrate a **high level of integrity**.
	SED4	**Q37:** Renewable energy sector initiatives that have **good policy frameworks deliver better results**.
	CM1[2]	**Q7:** In the renewable energy sector, companies should have **effective change management strategies**.

Executive	**SA3**	**Q27:** For the renewable energy sector, being able to **visualise the future for others is a critical success factor**.
	CM3	**Q31:** In the renewable energy sector, it is important that executive leadership manage the **redirection of financial resources to the intended beneficiary communities**.
	EE3[1]	**Q32: Executive leadership** in the renewable energy sector should have a **clear understanding of community development**.
	EE4[1]	**Q44:** In the renewable energy sector, **executive leadership** should have the **experience to undertake community development initiatives**.
Women's Empowerment	**WE3**[1]	**Q36:** In the renewable energy sector, companies should be **held accountable for women's empowerment**.
	WE4[1]	**Q48:** In the renewable energy sector, companies should **embrace women's empowerment**.
	WE2[1]	**Q24:** It is important that companies in the renewable energy sector have well-defined processes to **promote women's empowerment**.
	WE5[1]	**Q60:** Executive leadership of companies in the renewable energy sector should **support women to acquire assets**.
	WE1[1]	**Q12:** Executive leadership of companies in the renewable energy sector should **develop the capacities of women**.
	SED5	**Q49: Capacity development of women is a critical success factor** in the renewable energy sector.

6.6.1. Factor 1: Social Investment

Five separate items loaded together on Factor 1, explaining 40.67% of the variance in the data with an Eigenvalue of 17.49 as reported in Table 6.1. Several items intended to measure Socio-Economic Development (1), Corporate Culture (1), Strategic Acumen (1), Fund Management (1) and Executive Education (1) all loaded on Factor 1 which was labelled Social Investment. Social Investment has a direct influence on the economic empowerment of women in the renewable energy sector of the RSA.

Social Investment can be considered in the broader context of socio-economic developmental that funds interventions to improve the socio-economic conditions on seven levels:

- Individual and group empowerment;

- Conflict resolution;
- Institution-building;
- Community-building; and
- Nation-building, region-building, and world-building which typically occurs in rural, peri-urban, and urban-poor communities in rural towns, small cities, and even large metropolis.

Social Investment was, therefore, considered to be the most appropriate label to describe Factor 1. All the items with factor loadings greater than or equal to 0.350 were regarded as significant, thereby, providing some evidence of the convergent validity of this construct. The Cronbach's alpha coefficient of 0.900 for Social Investment further indicates that the instrument used to measure this construct was reliable. Further measurement details for Factor 1 are presented in Table 6.6:

Table 6.6: Factor Structure for Social Investment

Eigenvalue: 17.49 **% of Variance Explained: 40.67%**			**Cronbach's Alpha: 0.90**		
	Item	**Question**	**Factor Loading**	**Item-Total Correlation**	**Cronbach's Alpha if Item**
1	**SED2**	**Q13:** It is important to have **well-funded** socio-economic initiatives in the renewable energy sector.	**0.553**	0.804	0.866
2	**CC1**	**Q10:** It is important that companies in the renewable energy sector have a **corporate culture** that embraces socio-economic development.	**0.545**	0.808	0.867
3	**SA2**	**Q15:** In the renewable energy sector, it is important to have well developed socio-economic development plans **aligned to the strategic business objectives**.	**0.543**	0.756	0.877
4	**FM1**	**Q20:** Executive leaders in the renewable energy sector should consider socio-economic development a **core business goal**.	**0.519**	0.769	0.875
5	**EE2**	**Q8:** In the renewable energy sector, executive leadership should understand how to **build a more equitable society**.	**0.443**	0.648	0.905

Note: Loadings in **bold** represent significant loadings (p≥0.350)

6.6.2. Factor 2: Stakeholder Engagement

Seven items loaded on Factor 2 to measure the construct Stakeholder Engagement, explaining 9.22% of the variance in the data with an Eigenvalue of 5.85 as reported in Table 6.1. Three items intended to measure Stakeholder Engagement (3), two items intended to measure Strategic Acumen (2), and two items intended to measure Strategic Planning (2) loaded onto Factor 2. Although only two items initially expected to measure the factor Stakeholder Engagement loaded on Factor 2. The operationalisation of Stakeholder Engagement, as described in the theoretical model, was retained.

Stakeholder Engagement (see chapter 4.3) was considered the most appropriate label to describe Factor 2. All the items loading greater than or equal to 0.35 were regarded as significant, thereby, providing sufficient evidence of the convergent validity of this construct. The Cronbach's alpha coefficient of 0.89 for Stakeholder Engagement further indicates that the instrument used to measure this construct was reliable. Further measurement details for Factor 2 is presented in Table 6.7:

Table 6.7: Factor Structure for Stakeholder Engagement

Eigenvalue: 3.97 **% of Variance Explained: 9.22%**			**Cronbach's Alpha: 0.89**		
	Item	**Question**	**Factor Loading**	**Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
1	**SA5**	**Q51:** Executive leadership in the renewable energy sector **have an appreciation** for the socio-economic challenges of others.	**0.838**	0.747	0.872
2	**SP5**	**Q52:** Companies in the renewable energy sector have **well-defined socio-economic monitoring plans**.	**0.796**	0.688	0.879
3	**SE5**	**Q50:** Executive leadership in the renewable energy sector are **willing to engage a diverse range of stakeholders**.	**0.771**	0.755	0.871

4	**SA4**	**Q39:** Decision makers in the renewable energy sector have the **experience to develop long-term socio-economic plans**.	**0.727**	0.710	0.877
5	**SE3**	**Q26:** Companies in the renewable energy sector understand the importance of **engaging communities in a meaningful manner**.	**0.678**	0.675	0.881
6	**SE4**	**Q38:** Companies in the renewable energy sector understand the **importance of engaging stakeholders to reduce reputational risk**.	**0.661**	0.634	0.885
7	**SP3**	**Q28:** In the renewable energy sector, **executive leadership are prepared to take calculated risks**.	**0.607**	0.649	0.884

Note: Loadings in **bold** represent significant loadings (p≥0.350)

6.6.3. Factor 3: Sustainable Programmes

Four items loaded on Factor 3 to measure the construct Sustainable Programmes, explaining 6.69% of the variance in the data with an Eigenvalue of 2.88 as reported in Table 6.1. One item was intended to measure Strategic Acumen (1), another to measure Stakeholder Engagement (1), the third to measure Strategic Planning (1) and the last to measure Executive Leadership (1).

In accordance with the definition provided in chapter 4.3, Sustainable Programmes was considered the most appropriate label to describe Factor 3. All the factor loadings greater than, or equal to, 0.35 were regarded as significant, thereby, providing sufficient evidence of the convergent validity of this construct. The Cronbach's alpha coefficient of 0.86 for Sustainable Programmes further indicates that the instrument used to measure this construct was reliable. Further measurement details for Factor 2 is presented in Table 6.8:

Table 6.8: Factor Structure for Sustainable Programmes

Eigenvalue: 2.88 % of Variance Explained: 6.69%			Cronbach's Alpha: 0.86		
	Item	**Question**	**Factor Loading**	**Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
1	**SA1**	**Q3:** Initiatives in the renewable energy sector that have **well developed strategic objectives increase sustainability**.	**-0.994**	0.840	0.764
2	**SE1**	**Q2:** In the renewable energy sector, the consultation that spans the entire project life-cycle increases **sustainability**.	**-0.712**	0.698	0.826
3	**SP1**	**Q4:** In the renewable energy sector, companies that have a clear vision of their future increase **sustainability**.	**-0.558**	0.664	0.838
4	**EL 1**	**Q6:** In the renewable energy sector, **good executive leadership is essential**.	**-0.461**	0.631	0.851

Note: Loadings in **bold** represent significant loadings (p≥0.350)

6.6.4. Factor 4: Broad-Based Black Economic Empowerment

Five items loaded on Factor 4 to measure Broad-Based Black Economic Empowerment, explaining 3.86% of the variance in the data with an Eigenvalue of 1.66 as reported in Table 6.1. The operationalisation of Broad-Based Black Economic Empowerment as described in the proposed theoretical model was thus retained.

Based on the definition from chapter 4.3, Broad-Based Black Economic Empowerment was considered the most appropriate label to describe Factor 4. All the factor loadings greater than or equal to 0.350 were regarded as significant, thereby providing sufficient evidence of the convergent validity of this construct. The Cronbach's alpha coefficient of 0.88 for Broad-Based Black Economic Empowerment further indicates that the instrument used to measure this construct was reliable. Further measurement details for Factor 4 is presented in Table 6.9:

Table 6.9: Factor Structure for Broad-Based Black Economic Empowerment

Eigenvalue: 1.66 % of Variance Explained: 3.86%			Cronbach's Alpha: 0.88		
	Item	**Question**	**Factor Loading**	**Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
1	**BE1**	**Q5:** In the renewable energy sector, the **B-BBEE code of conduct** is an important policy to **address the inequality of the past**.	**0.736**	0.723	0.845
2	**BE5**	**Q53:** Executive leadership in the renewable energy sector should adopt a long-term approach when applying the policies of the **B-BBEE code of conduct**.	**0.677**	0.752	0.837
3	**BE2**	**Q17:** Shareholders in the renewable energy sector should have a clear understanding of the **intent of the B-BBEE code of conduct**.	**0.588**	0.762	0.836
4	**BE4**	**Q41:** In the renewable energy sector, it is important that the **B-BBEE code of conduct** ensures sustainable outcomes.	**0.580**	0.721	0.845
5	**BE3**	**Q29:** In the renewable energy sector, the **B-BBEE code of conduct** encourages executive leadership to go beyond compliance.	**0.448**	0.591	0.877

Note: Loadings in **bold** represent significant loadings (p≥0.350)

6.6.5. Factor 5: Corporate Governance

Twelve items loaded on Factor 5 to measure the construct, Corporate Governance. These explain 2.89% of the variance in the data, with an Eigenvalue of 1.24 (see Table 6.1).

There were five items intended to measure Corporate Governance (5), three items intended to measure Change Management (3), two items intended to measure Corporate Culture (2), and one item respectively intended to measure Executive Leadership (1), and Socio-Economic Development (1). The operationalisation of Corporate Governance as described in the proposed theoretical model was retained. Based on the definition in chapter 4.3, Corporate Governance was considered the most appropriate label to describe Factor 5. All the factor loadings greater than or equal to 0.35 were regarded as significant, thereby providing sufficient evidence of the convergent validity of this construct. The Cronbach's alpha coefficient of 0.93 for Corporate Governance further indicates that the instrument used to measure this construct was reliable. Further measurement details for Factor 5 is presented in Table 6.10:

Table 6.10: Factor Structure for Corporate Governance

Eigenvalue: 1.24 **% of Variance Explained: 2.89%**			**Cronbach's Alpha: 0.93**		
	Item	**Question**	**Factor Loading**	**Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
1	**CM5**	**Q55:** In the renewable energy sector, executive leadership **should understand change management practices**.	**-0.756**	0.812	0.923
2	**CG5**	**Q59:** In the renewable energy sector, it is important that companies have **effective risk management systems**.	**-0.702**	0.796	0.924
3	**CG3**	**Q35:** In the renewable energy sector, it is important that companies **effectively communicate the responsibilities of their executive leadership**.	**-0.684**	0.760	0.925

4	**CM2**	**Q19:** Executive leadership in the renewable energy sector should have a clear understanding of the benefits of **change management**.	**-0.657**	0.793	0.924
5	**EL5**	**Q54:** In the renewable energy sector, it is important for executive leadership to view results as a **measure of performance**.	**-0.640**	0.662	0.929
6	**CC5**	**Q58:** The **corporate culture** of companies in the renewable energy sector should be **conducive to new ideas**.	**-0.625**	0.693	0.928
7	**CG2**	**Q23:** Executive leadership of companies in the renewable energy sector **should demonstrate a wide variety of skills**.	**-0.587**	0.665	0.929
8	**CC4**	**Q46:** It is important that the renewable energy sector develop a **culture of continuous learning**.	**-0.579**	0.696	0.928
9	**CG4**	**Q47:** In the renewable energy sector, executive leadership should make **decisions based on ethical principles**.	**-0.526**	0.627	0.930
10	**CG1**	**Q11:** Board members of companies in the renewable energy sector should demonstrate a **high level of integrity**.	**-0.493**	0.646	0.930
11	**SED4**	**Q37:** Renewable energy sector initiatives that have **good policy frameworks deliver better results**.	**-0.483**	0.645	0.930
12	**CM1**	**Q7:** In the renewable energy sector, companies should have **effective change management strategies**.	**-0.481**	0.706	0.927

Note: Loadings in **bold** represent significant loadings (p≥0.350)

6.6.6. Factor 6: Executive Leadership

Four items loaded together on Factor 6 to measure the construct Executive Leadership, explaining 2.89% of the variance in the data with an Eigenvalue of 1.24 as reported in Table 6.1. There were two items intended to measure Executive Education (2), and one item respectively intended to measure Strategic Acumen (1) and Change Management (1). Although the two items loaded onto the factor Executive Education, the operationalisation of Executive Leadership as described in the theoretical model was retained.

In accordance with the definition above (see chapter 4.3), Executive Leadership was, therefore, considered the most appropriate label to describe Factor 6. All the factor loadings greater than or equal to 0.350 were regarded as significant, thereby providing sufficient evidence of the convergent validity of this construct. The Cronbach's alpha coefficient of 0.836 for Executive Leadership further indicates that the instrument used to measure this construct was reliable. Further measurement details for Factor 6 are presented in Table 6.11:

Table 6.11: Factor Structure for Executive Leadership

Eigenvalue: 1.24 **% of Variance: 2.89%**			**Cronbach's Alpha: 0.84**		
	Item	**Question**	**Factor Loading**	**Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
1	**SA3**	**Q27:** For the renewable energy sector, being able to **visualise the future for others is a critical success factor**.	**0.495**	0.603	0.820
2	**CM3**	**Q31:** In the renewable energy sector, it is important that executive leadership manage the **redirection of financial resources to the intended beneficiary communities**.	**0.408**	0.685	0.784

3	**EE3**	**Q32: Executive leadership** in the renewable energy sector should have a **clear understanding of community development**.	**0.373**	0.746	0.767
4	**EE4**	**Q44:** In the renewable energy sector, **executive leadership** should have the **experience to undertake community development initiatives**.	**0.353**	0.662	0.800

Note: Loadings in **bold** represent significant loadings (p≥0.350)

6.6.7. Factor 7: Women's Empowerment

Six items loaded on Factor 7 to measure the construct Women's Empowerment, explaining 2.37% of the variance in the data with an Eigenvalue of 1.02, as reported in Table 6.1. There were five items intended to measure Women's Empowerment's (5) and one item intended to measure Socio-Economic Development (1). The operationalisation of Women's Empowerment, as described in the theoretical model, was retained.

In accordance with the definition in chapter 4.3, Women's Empowerment was, therefore, considered the most appropriate label to describe Factor 7. All the factor loadings greater than or equal to 0.35 were regarded as significant, thereby, providing sufficient evidence of the convergent validity of this construct. The Cronbach's alpha coefficient of 0.916 for Women's Empowerment further indicates that the instrument used to measure this construct was reliable. Further measurement details for Factor 7 is presented in Table 6.12:

Table 6.12: Factor Structure for Women's Empowerment

Eigenvalue: 1.02 **% of Variance Explained: 2.37%**			**Cronbach's Alpha: 0.92**		
	Item	**Question**	**Factor Loading**	**Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**

1	**WE3**	**Q36:** In the renewable energy sector, companies should be **held accountable for women's empowerment**.	**0.837**	0.765	0.900
2	**WE4**	**Q48:** In the renewable energy sector, companies should **embrace women's empowerment**.	**0.833**	0.838	0.891
3	**WE2**	**Q24:** It is important that companies in the renewable energy sector have well-defined processes to **promote women's empowerment**.	**0.783**	0.851	0.889
4	**WE5**	**Q60:** Executive leadership of companies in the renewable energy sector should **support women to acquire assets**.	**0.672**	0.727	0.906
5	**WE1**	**Q12:** Executive leadership of companies in the renewable energy sector should **develop the capacities of women**.	**0.661**	0.757	0.902
6	**SED5**	**Q49: Capacity development of women is a critical success factor** in the renewable energy sector.	**0.590**	0.674	0.916

Note: Loadings in **bold** represent significant loadings (p≥0.350)

6.7. PROPOSED THEORETICAL MODEL REVISED

Chapter Four discussed the proposed theoretical model. Following the evaluation of the discriminant validity, convergence, and reliability of the items used to measure the different constructs in the proposed theoretical model, several of the variables were retained: Stakeholder Engagement, Broad-Based Black Economic Empowerment, and Executive Leadership. Several of the other variables were renamed: Socio-Economic Development became Social Investment, Strategic Planning became Sustainable Programmes, Corporate Governance became Good Governance, and Women's Empowerment was renamed to Successful Women's Empowerment. Several of the renamed items loaded on the new factors in the exploratory factor analysis. The variables from the proposed theoretical model and the revised factors are presented in Table 6.13:

Table 6.13: Proposed Theoretical and Revised Models

	Proposed Model	Code	Revised Model	Code
1	~~Socio-Economic Development~~	~~SED~~	Social Investment	SI
2	Stakeholder Engagement	SE	Stakeholder Engagement	SE
3	~~Strategic Acumen~~	~~SA~~	-	
4	~~Strategic Planning~~	~~SP~~	Sustainable Programmes	SP
5	Broad-Based Black Economic Empowerment	BE	Broad-Based Black Economic Empowerment	BE
6	Executive Leadership	EL	Executive Leadership	EL
7	~~Change Management~~	~~CM~~	-	
8	~~Executive Education~~	~~EE~~	-	
9	~~Fund Management~~	~~FM~~	-	
10	~~Corporate Culture~~	~~CC~~	-	
11	Corporate Governance	CG	Good Governance	GG
12	Women's Empowerment	WE	Successful Women's Empowerment	WE

The ~~deletions~~ in the table represent the variables from the proposed theoretical model that were discarded (Socio-Economic Development, Strategic Acumen, Strategic Planning, Change Management, Executive Education, Fund Management, and Corporate Culture).

6.8. REFORMULATION OF THE HYPOTHESES

Several items in the theoretical model expected to measure Socio-Economic Development, Corporate Culture, Strategic Acumen, Executive Education, and Fund Management loaded collectively to form the new factor, Social Investment. In addition to the Social Investment factor, another factor, Sustainable Programmes was formed. This was because items expected to measure Strategic Acumen, Stakeholder Engagement, Strategic Planning, and Executive Leadership loaded onto the new factor. The variables Socio-Economic Development, Strategic Acumen, Strategic Planning, Change Management, Executive Education, Fund Management, and Corporate Culture were removed from the proposed theoretical model as the exploratory factor analysis process could not verify their discriminant validity. The following are the revised hypotheses that will be discussed during the rest of this study.

Table 6.14: Reformulated Hypotheses

H^1	**Social Investment:** There is a positive relationship between the importance of sustained Social Investment and Good Governance.
H^2	**Stakeholder Engagement:** There is a positive relationship between the importance of ongoing Stakeholder Engagement and Good Governance.
H^3	**Sustainable Programmes:** There is a positive relationship between the importance of Sustainable Programmes and Good Governance.
H^4	**Broad-Based Black Economic Empowerment:** There is a positive relationship between the importance of B-BBEE policy and Good Governance.
H^5	**Executive Leadership:** There is a positive relationship between the importance of Executive Leadership and Good Governance.
H^6	**Social Investment:** There is a positive relationship between the importance of sustained Social Investment and Successful Women's Empowerment.
H^7	**Stakeholder Engagement:** There is a positive relationship between the importance of ongoing Stakeholder Engagement and Successful Women's Empowerment.
H^8	**Sustainable Programmes:** There is a positive relationship between the importance of Sustainable Programmes and Successful Women's Empowerment.
H^9	**Broad-Based Black Economic Empowerment:** There is a positive relationship between the importance of B-BBEE policy and Successful Women's Empowerment.
H^{10}	**Executive Leadership:** There is a positive relationship between the importance of Executive Leadership and Successful Women's Empowerment.
H^{11}	**Good Governance:** There is a positive relationship between the importance of Good Governance and Successful Women's Empowerment.

6.9. STRUCTURAL EQUATION MODELLING ANALYSIS

Following the confirmation of the reliability and discriminant validity of all variables that remained in the empirical model, SEM was used to statistically assess the group of relationships of the revised structural model presented in Figure 6.1. The seven-stage SEM process was previously discussed (see chapter 5.10). These seven steps are now discussed as applied to this study:

6.9.1. Step 1: Design of the Proposed Theoretical Model

The design of the proposed theoretical model was outlined in Chapter Four. The same approach was used to finalise the revised model using an exploratory factor analysis procedure. The remainder of the steps will be elaborated further in this chapter.

6.9.2. Step 2: Construction of the Path Diagram

Hair *et al.,* (2009) demonstrate that a path diagram is a graphical representation of the proposed theoretical model and depicts all the relationships between the theoretical model's constructs. The construction of the Path Diagram of relationships is defined by a set of hypotheses as presented in Figure 6.1. The independent variables are depicted as oval shapes, the intervening variable as a rectangular shape, and the dependent variable as a circular shape (Hair *et al.,* 2009). The single-headed arrows indicate the dependent relationships between the independent, intervening, and dependent variables and the perceived success of the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the RSA. The exogenous variables, i.e. the independent variables, are the constructs without arrows pointing to them (Hair *et al.,* 2009). The constructs with arrows pointing to them, are known as endogenous variables, i.e. dependent variables, and can predict additional endogenous constructs. However, an exogenous construct can only be causally linked to endogenous constructs (Hair *et al.,* 2009). Social Investment is an example of an exogenous variable in the path diagram as it is causally related to the endogenous variable, namely (the dependent variable) the perceived success of Women's Empowerment.

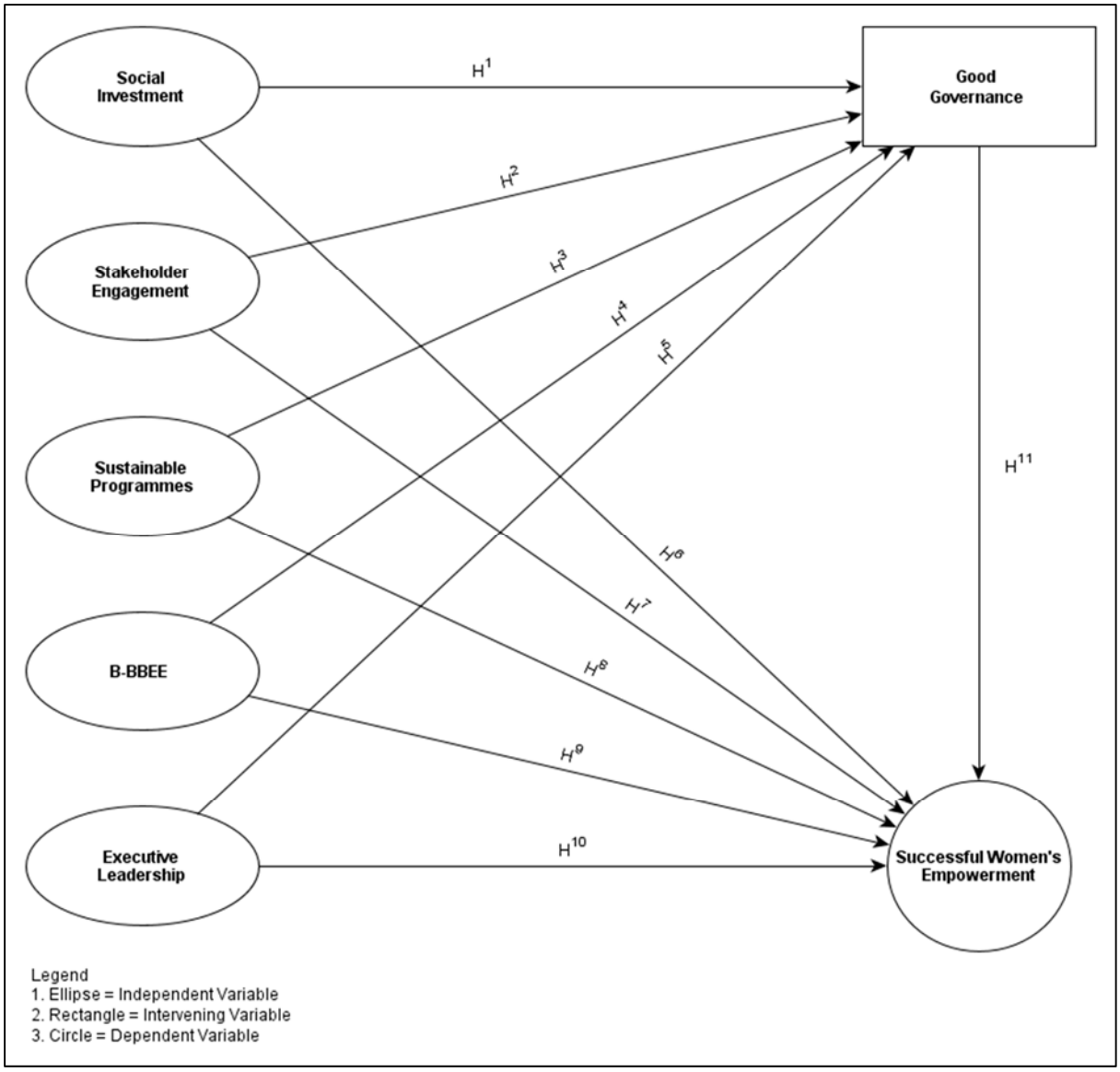


Figure 6.1: Path Diagram of Causal Relationships: Revised Theoretical Model

6.9.3. Step 3: Conversion of Path Diagram

Step 3 involves the conversion of the path diagram of causal relationships in the revised theoretical model, with several structural equations linking the constructs of the measurement model. The model should be specified by indicating which item measured which construct, and relationships in the path diagram need to be converted into structural equations. For every equation, a structural coefficient (b) was approximated, and an error term (E) was included to provide for the sum of the effects of the specification and random selection errors.

A good example of a structural equation is offered below for the endogenous construct, the perceived success of the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the RSA.

The perceived success of the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the RSA	=	b_1 * Social Investment + B_2 * Stakeholder Engagement + E_1

The program LISREL 8.8 developed by Karl G. Jöreskog and Dag Sörbom was used to subject the model identified above, to an empirical assessment using SEM. The various actions involved with performing SEM were previously explained in Chapter Five. The implementation in this study is expanded on further below. Table 6.15 summarises the endogenous and exogenous variables and their associated manifest variables, i.e. the structural equations used as inputs for the LISREL program.

Table 6.15: The Measurement, Structural Models

	Measurement Model	
	Independent (latent) Variables	**Manifest Variables**
1	Social Investment	SED2, CC1, SA2, EE2, FM1
2	Stakeholder Engagement	SA5, SP5, SE5, SA4, SE3, SE4, SP3
3	Sustainable Programmes	SA1, SE1, SP1, EL 1
4	Broad-Based Black Economic Empowerment	BE1, BE5, BE2, BE4, BE3
5	Executive Leadership	SA3, CM3, EE3, EE4
	Intervening Variable	**Manifest Variables**
5	Corporate Governance	CM5, CG5, CG3, CM2, EL5, CC5, CG2, CC4, CG4, CG1, SED4, CM1
	Dependent Variable	**Manifest Variables**
7	Women's Empowerment	WE3, WE4, WE2, WE5, WE1, SED5
	Structural Model	
	Dependent Variables	**Latent (independent) Variables**
8	The perceived success of the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the RSA	▪ Social Investment (SI) ▪ Stakeholder Engagement (SE) ▪ Sustainable Programmes (SP)

		▪ Broad-Based Black Economic Empowerment (B-BBEE) ▪ Executive Leadership (EL)

When developing the specifications for the structural model, Hair *et al.,* (2009) state that the transition from factor analysis, where there is no control over which variable defines one factor, should be designed to a more confirmatory mode where variables define every construct factor as specified by the analyst. To indicate and measure the latent constructs, and the manifest variables, i.e. the questionnaire items in the structural model, are used. These manifest variables are collected from the respondents by completing a questionnaire and are termed indicators or manifest variables in the measurement model, as these indicators are utilised to measure or indicate the latent constructs, i.e. factors (Shah & Goldstein, 2006).

According to Hair *et al.,* (2009), to confirm the reliability of the indicators, an empirical estimation strategy can be used which specifies the loading matrix with an error term for each indicator, i.e. variable. Through the measurement model estimation procedure the loading co-efficient offer an estimation of the reliability of the indicators of the over-all construct (Oberholzer, Cullen, & Adendorff, 2014). With this process, researchers do not influence the reliability value of the estimation procedure, except through the inclusion of the group of indicators (Hair *et al.,* 2009). The specification of the measurement model is comparable to an exploratory factor analysis but differs for the reason that the number of factors and items loading onto each factor should be known and specified before the analysis being conducted (Oberholzer *et al.,* 2014). The measurement model is represented by a series of regression-like equations mathematically relating each factor to the measurement variables (Hair *et al.,* 2009). For this study, all the specifications of the structural model have been tabulated and contain seven constructs, identified through the exploratory factor analysis.

6.9.4. Step 4: Input Matrix and Model Estimation

Step 4 of the Structural Equation Modelling involves selecting the input matrix type and estimating the proposed model, and the resultant co-variance matrix is then used as the input data (Hair *et al.,* 2009).

The objective of the structural equation analysis is to analyse the pattern of associations across the respondents, and not as individual observations (Hair *et al.,* 2009). The measurement model specifies which manifest variables, i.e. indicators, correspond with each latent construct, and the structural coefficients are then estimated for the associations with the latent variables (Hair *et al.,* 2009).

6.9.4.1. Multivariate Normality Assessment

An assessment of the multivariate normality of the data was conducted before the SEM analysis. The following hypotheses were addressed:

H^0: The data is normally distributed
H^a: The data is not normally distributed

The null hypothesis and the alternative hypothesis were evaluated by assessing the skewness and the kurtosis of the data, while the chi-square (χ^2) value was utilised to determine the associated p-value (Hair *et al.,* 2009). The results of the test for multivariate normality produced a chi-square of 5 891.166 and a resulting p-value of 0.000. Based on the chi-square value the conclusion was that the data was not multivariate normally distributed, and consequently, the Robust Maximum Likelihood method of estimation for all the subsequent SEM analyses was employed. For this study, any t-value greater than 1.96 was considered statistically significant ($p<0.05$).

6.9.4.2. Measurement Model Assessment

The measurement model represents the degree of success with which the measured variables, i.e. the manifest variables, represent the latent constructs. It also represents the extent to which the structural model demonstrates how the constructs are associated with each other (Hair *et al.,* 2009). According to Shah & Goldstein (2006), the specification of the measurement model indicates how conclusively the variables that measure the specified constructs in the structural model using fit indices. The assessment of the measurement model is then followed by a similar assessment of the structural model.

6.9.4.3. Measurement Model Fit Indices

To assess the extent that the proposed model represents a satisfactory approximation of the data, several fit indices were considered for this model. Table 6.16 presents the criteria for the fit indices for this study's measurement model:

Table 6.16: Criteria for Goodness-of-Fit Indices

	Goodness-of-fit Measure	**Values**	**Indicators**
1	χ^2 /degrees of freedom	<2	Good fit
2	Root Mean Square Error of Approximation	<0.05	Close fit
		0.05 – 0.08	Reasonable fit
		>0.08 – <0.10	Poor fit
		≥ 0.10 – <0.10	Unacceptable
3	90% confidence interval for Root Mean Square Error of Approximation	<0.08	Upper limit of confidence level/good fit
		>0.08 – 0.10	Poor fit

Table 6.17 presents the fit indices for the measurement model:

Table 6.17: Fit indices for the Measurement Model

1	Sample Size	243
2	Degrees of Freedom	839
3	Satorra-Bentler Scaled Chi-Square	1 515.566 (p = 0.0)
4	SBx^2/Degrees of Freedom	1 515.566/839 = 1.806
5	Root Mean Square Error of Approximation (RMSEA)	0.0577
6	Expected Cross-Validation Index (ECVI)	7.147
7	Comparative Fit Index (CFI)	0.981
8	Standardised RMR	0.631

The Satorra-Bentler x^2 value divided by the degrees of freedom is 1.806 and is an indicator of a good fit. The RMSEA of 0.0577 is also regarded as a good fit. The fit indices all provide evidence of a model with a good fit. However, the null hypothesis that the data fits the model perfectly should be rejected.

Table 6.18 reports the loadings of individual items (manifest variables) on their associated latent variables (both exogenous and endogenous). All the loadings are statistically significant and provide evidence of convergent validity.

Table 6.18: LISREL Estimates (Robust Maximum Likelihood) - Factor Loadings

	Good Governance		Stakeholder Engagement		Successful Women Empowerment		Social Investment		B-BBEE		Sustainable Programmes		Executive Leadership	
path co-efficient	**CM1**	0.866	**SE3**	1.096	**WE1**	0.964	**FM1**	0.931	**BE1**	1.283	**SE1**	1.052	**SA3**	0.799
t-value				12.433				8.623		13.694		9.220		7.202
path co-efficient	**CG1**	0.628	**SP3**	0.973	**WE2**	1.090	**CC1**	0.970	**BE2**	1.161	**SA1**	1.099	**CM3**	0.933
t-value		6.882		11.503		15.908		9.254		10.987		12.338		9.943
path co-efficient	**CM2**	0.893	**SE4**	0.933	**WE3**	1.021	**SED2**	1.054	**BE3**	1.010	**SP1**	0.883	**EE3**	0.891
t-value		17.196		10.175		14.922		10.613		10.789		8.142		8.807
path co-efficient	**CG2**	0.787	**SA4**	1.211	**WE4**	1.035	**SA2**	0.962	**BE4**	1.090	**EL1**	0.785	**EE4**	1.034
t-value		12.336		14.784		15.639		9.064		10.725		5.905		10.447
path co-efficient	**CG3**	0.887	**SE5**	1.214	**SED5**	1.026	**EE2**	0.933	**BE5**	1.182				
t-value		18.723		15.707		12.447		8.415		12.316				
path co-efficient	**SED4**	0.797	**SA5**	1.164	**WE5**	1.029								
t-value		11.001		12.389		14.998								
path co-efficient	**CC4**	0.730	**SP5**	1.143										
t-value		10.489		11.087										
path co-efficient	**CG4**	0.726												
t-value		9.670												
path co-efficient	**EL5**	0.795												
t-value		13.309												
path co-efficient	**CM5**	0.892												
t-value		17.780												
path co-efficient	**CC5**	0.742												
t-value		11.738												
path co-efficient	**CG5**	0.829												
t-value		13.564												

6.9.5. Step 5: Assessing the Structural Model

Step 5 of the SEM process is to evaluate the structural model and ensure that LISREL has produced meaningful results, i.e. an identification problem may be the inability of the proposed model to produce unique estimates (Hair *et al.,* 2009). According to Hair *et al.*, (2009), in order to evaluate the identification of the structural model, the size of the covariance matrix relative to the number of estimated coefficient usually is of concern. The difference between the number of covariances and the actual number of the coefficient in the proposed model is generally termed as the *"degrees of freedom"* (Hair *et al.,* 2009).

Hair *et al.,* (2009) further state that there is usually no single guideline that confirms the identification of a model but proposes two dependable indicators to rank and order conditions; and indicate that with regards to the order condition, the model's degree of freedom should be equal to or greater than zero. A just-identified model has precisely zero degrees of freedom, whereas an over-identified model has a positive number of degrees of freedom (Hair *et al.,* 2009). An over-identified model may be the goal of most structural equation models, and these over-identified models should have details in the data matrix that the number of parameters to be estimated, implying that the larger the degrees of freedom, the higher the identified the model would become (Hair *et al.,* 2009). The degrees of freedom for the revised empirical model was 36,434.920 and considering that the degrees of freedom are considerably higher than zero, indicates that this model demonstrates no risk. Therefore, the proposed theoretical model would generate meaningless or illogical results when generating independent estimates.

The rank condition should be fulfilled by the proposed theoretical model where specific existing heuristics are used to test (Hair *et al.,* 2009). Hair *et al.*, (2009) state further that the three-measure rule which proclaims that any constructs with three or more indicators will always be identified may be the easiest. The present study has no single construct significantly less than three indicators which signify a reduced risk of model identification problems.

6.9.6. Step 6: Evaluating Structural Model's Goodness-of-Fit

Step 6 of the SEM process is to evaluate the goodness-of-fit of the structural model, where the initial evaluation for the goodness-of-fit should be done for the entire model. The use of several assessments for the goodness-of-fit helps to assess the proximity of fit between the data and the model (Hair *et al.,* 2009). Hair *et al.*, (2009) further state that the degree to which the structural equation model fits the sample data is usually evaluated by the goodness-of-fit. The chi-square (χ^2) is typically used for the model-fit criteria, GFI, AGFI, and RMR (Hair *et al.,* 2009).

For this study, the evidence indicates that the data was not multi-variate normally distributed, and therefore the Robust Maximum Likelihood Estimation method was utilised. Several of the fit indices evaluate different facets of fit and is essential to evaluate fit predicated on multiple fit statistics for avoiding judgments being an artefact of analytic choice (Hair *et al.,* 2009). The chi-square value (χ^2) is used as the initial step for evaluating model acceptance or rejection. However, the model fit provided by the χ^2 statistic in isolation is not a meaningful statistic, and the degrees of freedom of a model should also be evaluated (Shah & Goldstein, 2006). A significant χ^2 value relative to the degrees of freedom signifies that the observed and estimated matrices differ. The statistical significance indicates the probability that the difference is because of sampling variation, where a non-significant χ^2 value indicates that the two matrices are not statistically different.

The criterion χ^2 can be sensitive to sample size and if the sample size increases, generally above 200, the test tends to indicate a substantial probability level, and it could result in a rejection of a model differing to a slight extent from the data for large sample sizes. Consequently, it is important to also examine other measures of fit (Shah & Goldstein, 2006). Therefore, an evaluation of the GFI, AGFI, and RMR measures which are independent of sample size should be used to evaluate the model's fit (Hair *et al.,* 2009).

The measure that also endeavours to adjust for the inclination of the chi-square statistic, to reject any specified model with sufficiently large sample size, is the RMSEA which expresses the difference between the observed and approximated covariance matrices with regards to the degrees of freedom of the model. According to Hair *et al.*, (2009), an empirical study of several methods has found that the RMSEA was most suited to make use of a confirmatory technique with larger samples.

RMSEA values below 0.01 would indicate a model that fits the data exceptionally well since values approaching zero are desired. However, this occurrence is rarely encountered, and a range of RMSEA cut-off values for consideration could be below 0.05 which points to a close fit (Hair *et al.,* 2009). Values between 0.05 and 0.08 are reflective of reasonable fit, and an RMSEA of greater than 0.08 is regarded as a poorly fitting model (Hair *et al.,* 2009). A path estimate with a 90% confidence interval is quite useful for model fit assessment as the confidence interval has an explicit indication of the degree of parameter estimate precision (Shah & Goldstein, 2006). Shah & Goldstein (2006) further state that the statistical significance of path estimates could be inferred from the 90% confidence interval. If the 90% confidence interval contains zero, then the path estimate is not significantly different from zero. However, if the 90% confidence interval is <0.08 it is in the upper limit of the confidence level (Shah & Goldstein, 2006).

After the model has been confirmed with acceptable estimates the goodness-of-fit may then be assessed (Hair *et al.,* 2009). The indices for the goodness-of-fit for the structural model is presented in Table 6.19. The study intended to use SEM to empirically assess the effectiveness of the relationships between the latent variables in the proposed theoretical model, as opposed to determining a well-fitting model. The Robust Maximum Likelihood Estimated method was utilised as the estimation process since the data in this study was not normally distributed. In the case of the non-normality distribution of the data, the adjusted goodness-of-fit index, and the goodness-of-fit index should not be used to evaluate this model fit. This approach signifies that the goal of the statistical analysis was focused on measuring relationships instead of pursuing good model fit.

Table 6.19: Goodness-of-Fit Indices for Structural Model

	Goodness-Of-Fit Statistics	
1	Sample Size	243
2	Degrees of Freedom	839
3	Satorra-Bentler Scaled Chi-Square	1 515.566 (p = 0.0)
4	SBx^2/Degrees of Freedom	1 515.566/839 = 1.806
5	Root Mean Square Error of Approximation	0.0577
6	Expected Cross-Validation Index (ECVI)	7.147
7	Comparative Fit Index (CFI)	0.981
8	Standardised RMR	0.631
10	90% Confidence Interval RMSEA	0.0531; 0.0624

The Satorra-Bentler x^2 divided by the degrees of freedom ratio is 1.806, an acceptable value is lower than 2 and can be an indicator of a good fit (Hair *et al.,* 2009). The RMSEA 0.0577 indicates a comparatively close fit, whereas the upper limit of the 90% confidence interval for RMSEA of 0.0662 is less than 0.08, and these fit indices provide proof of a model with a good fit. Consequently, the null hypothesis that the data fits the model perfectly should be rejected. Although the model does not fit the data perfectly, there is a reasonable fit of the model to the data.

6.9.7. Step 7: Model Amendments

The final step in the SEM analysis process is to interpret and modify the proposed theoretical model. According to Hair *et al.,* (2009) once the model is considered acceptable the results ought to be compared to the proposed theoretical model. Based on the observations and the empirical outcomes of this research, it can be confirmed that not all of the principal relationships in the theoretical model are supported and statistically significant. Hair *et al.,* (2009) further recommend that after the model interpretations are concluded, there are approaches to improve model fit.

Model re-specification is the process of adding, deleting or amending approximate parameters to the proposed theoretical model to establish an improved goodness-of-fit value. These can only be implemented based on substantiated theoretical justification when they are deemed empirically significant (Hair *et al.,* 2009).

This step of the data analysis process was to check all the hypotheses and predicated on the empirical results of the path coefficient, the hypotheses which have been defined could be considered as supported or not supported. Further, in this chapter, Table 6.20 presents the summary of the tested hypotheses.

6.10. EMPIRICAL RESULTS

In this section, several SEM steps are applied to this model to evaluate whether the various hypotheses associated with model ought to be accepted or rejected.

6.10.1. Social Investment

There is a positive relationship between the importance of sustained Social Investment and Good Governance

H^1 The empirical results of this study indicate that Social Investment is not statistically significant in relation to the perceived success of Good Governance with a path coefficient = 0.214; t-value = 1.532; $p < 0.001$.

Hypothesis 1 should, therefore, be rejected.

6.10.2. Stakeholder Engagement

There is a positive relationship between the importance of ongoing Stakeholder Engagement and Good Governance

H^2 The empirical results of this study indicate that Stakeholder Engagement does not influence the perceived success of Good Governance with a path coefficient = 0.330; t-value = 0.717; $p < 0.001$.

Hypothesis 2 should, therefore, be rejected.

6.10.3. Sustainable Programmes

There is a positive relationship between the importance of Sustainable Programmes and Good Governance

H^3 The empirical results of this study indicate that the importance of Sustainable Programmes is positively related to the intervening variable of Good Governance with a path coefficient = 0.332; t-value = 3.606; $p < 0.001$.

Hypothesis 3 should, therefore, be accepted.

6.10.4. Broad-Based Black Economic Empowerment

There is a positive relationship between the importance of Broad-Based Black Economic Empowerment policy and Good Governance

H^4 The empirical results of this study indicate that the importance of Broad-Based Black Economic Empowerment is not statistically significant in relation to the perceived success of Good Governance with a path coefficient = 0.113; t-value = 1.280; $p < 0.001$.

Hypothesis 4 should, therefore, be rejected.

6.10.5. Executive Leadership

There is a positive relationship between the importance of Executive Leadership and Good Governance

H^5 The empirical results of this study indicate that Executive Leadership is positively related to the intervening variable of Good Governance with a path coefficient = 0.351; t-value = 2.497; $p < 0.05$.

Hypothesis 5 should, therefore, be accepted.

6.10.6. Social Investment

There is a positive relationship between the importance of sustained Social Investment and Successful Women's Empowerment

H^6 The empirical results of this study indicate that Social Investment is positively related to the dependent variable of Successful Women's Empowerment with a path coefficient = 0.382; t-value = 3.156; $p < 0.01$.

Hypothesis 6 should, therefore, be accepted.

6.10.7. Stakeholder Engagement

There is a positive relationship between the importance of ongoing Stakeholder Engagement and Successful Women's Empowerment

H^7 The empirical results of this study indicate that Stakeholder Engagement is negatively related to the dependent variable of Successful Women's Empowerment with a path coefficient = -0.188; t-value = -3.726; $p < 0.001$.

Hypothesis 7 should, therefore, be rejected.

6.10.8. Sustainable Programmes

There is a positive relationship between the importance of Sustainable Programmes and Successful Women's Empowerment

H^8 The empirical results of this study indicate that Sustainable Programmes are not statistically significant in relation to the dependent variable of Successful Women's Empowerment with a path coefficient = -0.032; t-value = -0.500; $p < 0.001$.

Hypothesis 8 should, therefore, be rejected.

6.10.9. Broad-Based Black Economic Empowerment

There is a positive relationship between the importance of B-BBEE policy and Successful Women's Empowerment.

H^9 The empirical results of this study indicate that B-BBEE policy is positively related to the dependent variable of Successful Women's Empowerment with a path coefficient = 0.326; t-value = 3.357; $p < 0.001$.

Hypothesis 9 should, therefore, be accepted.

6.10.10. Executive Leadership

There is a positive relationship between the importance of Executive Leadership and Successful Women's Empowerment

H^{10} The empirical results of this study indicate that Executive Leadership is positively related to the dependent variable of Successful Women's Empowerment with a path coefficient = 0.468; t-value = 3.415; $p < 0.001$.

Hypothesis 10 should, therefore, be accepted.

6.10.11. Good Governance

The hypothesis for Good Governance states that there is a positive relationship between the importance of Good Governance and Successful Women's Empowerment

H^{11} The empirical results of this study indicate that Good Governance is not statistically significant in relation to the perceived success of Successful Women's Empowerment with a path coefficient = 0.143; t-value = -1.322; $p < 0.001$.

Hypothesis 11 should, therefore, be rejected.

Figure 6.2 graphically presents the final model with the hypotheses, path coefficients and t-values:

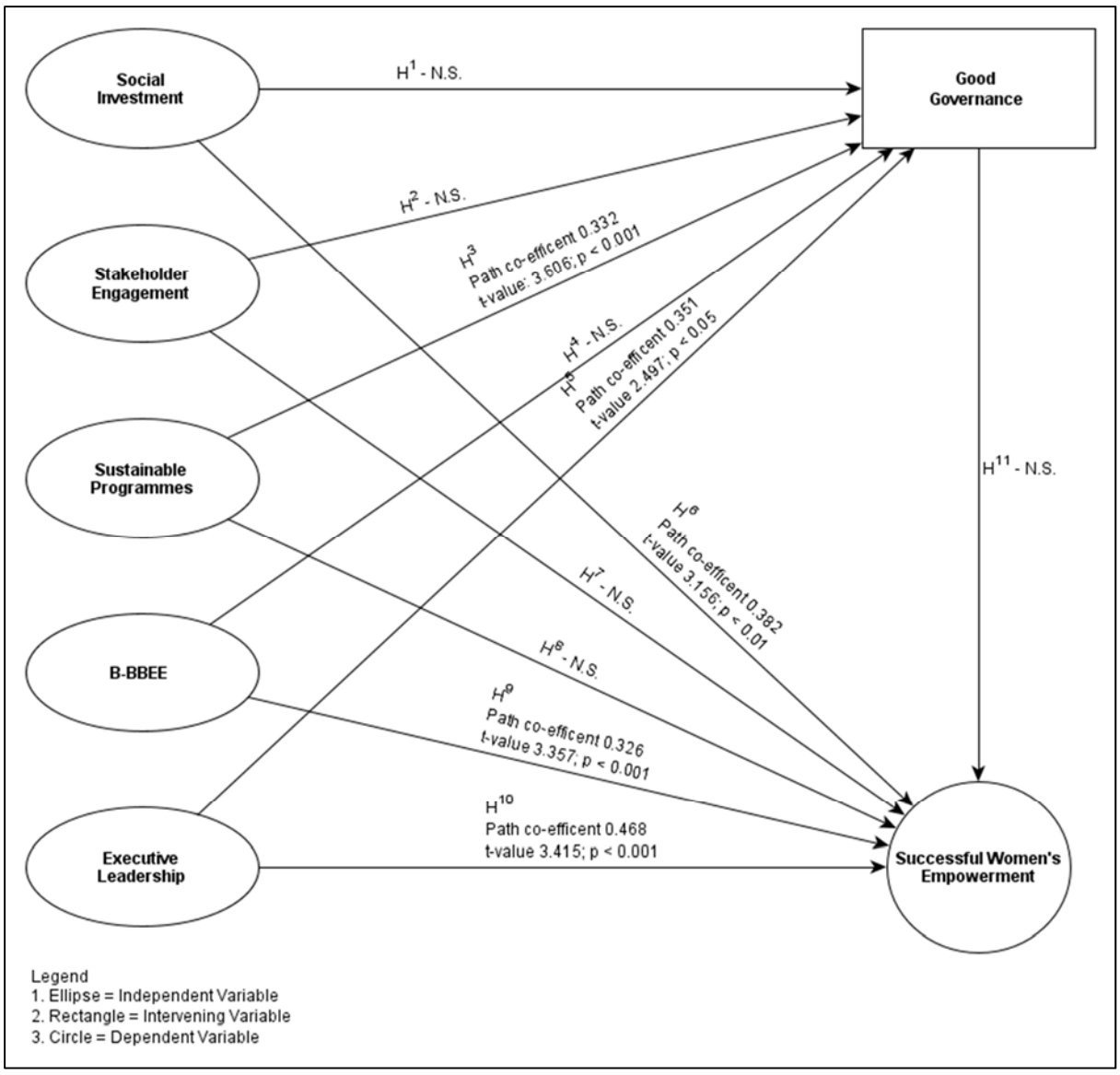


Figure 6.2: Path Diagram of Causal Relationships: Final Model

Table 6.20 presents the summary of the tested hypotheses based on the empirical results.

Table 6.20: Summary of Hypotheses

H^1	**Social Investment:** There is a positive relationship between the importance of sustained Social Investment and Good Governance	Not supported
H^2	**Stakeholder Engagement:** There is a positive relationship between the importance of ongoing Stakeholder Engagement and Good Governance	Not supported
H^3	**Sustainable Programmes:** There is a positive relationship between the importance of Sustainable Programmes and Good Governance	Supported
H^4	**Broad-Based Black Economic Empowerment:** There is a positive relationship between the importance of B-BBEE policy and Good Governance	Not supported
H^5	**Executive Leadership:** There is a positive relationship between the importance of Executive Leadership and Good Governance	Supported
H^6	**Social Investment:** There is a positive relationship between the importance of sustained Social Investment and Successful Women's Empowerment	Supported
H^7	**Stakeholder Engagement:** There is a positive relationship between the ongoing Stakeholder Engagement and Successful Women's Empowerment	Not Supported
H^8	**Sustainable Programmes:** There is a positive relationship between the importance of Sustainable Programmes and Successful Women's Empowerment	Not supported
H^9	**Broad-Based Black Economic Empowerment:** There is a positive relationship between the importance of B-BBEE policy and Successful Women's Empowerment	Supported
H^{10}	**Executive Leadership:** There is a positive relationship between the importance of Executive Leadership and Successful Women's Empowerment	Supported
H^{11}	**Corporate Governance:** There is a positive relationship between the importance of good Corporate Governance and Successful Women's Empowerment	Not supported

6.11. SUMMARY

The empirical results of this study were presented in Chapter Six and the proposed theoretical model of the factors influencing the perceived success of women's empowerment within the renewable energy sector of South Africa.

The impact of identified factors was examined empirically to determine the impact on the dependent variable of the perceived success of women's empowerment, which included the following factors:

- Social Investment;
- Stakeholder Engagement;
- Sustainable Programmes;
- Broad-Based Black Economic Empowerment;
- Executive Leadership;
- Good Governance; and
- Successful Women's Empowerment.

Initially, the focus was on the descriptive statistics, followed by a focus on the results of the exploratory factor analysis. Thereafter, the empirical analysis confirmed that the successful women's empowerment scale used in this study was valid and reliable. Chapter Six dealt with the empirical evidence to prove or disprove the proposed theoretical model. Chapter Seven will address the recommendations and conclude this study.

CHAPTER SEVEN
SUMMARY, RECOMMENDATIONS AND CONCLUSION

7.1. INTRODUCTION

Chapter Seven will summarise this study and provide recommendations, limitations, and a conclusion to this study. Also, the significant findings predicated on the literature review in Chapter Two and Chapter Three, and the empirical results presented in Chapter Six will be discussed. The empirical results are discussed against the insights obtained during this study, which is further augmented by several years of professional working experience gained in the areas of mining, renewable energy, agriculture, mainstreaming gender, entrepreneurship, and socio-economic development in Southern Africa. This chapter will conclude with specific recommendations that will ensure the effective implementation of women-led economic empowerment initiatives in the renewable energy sector of the RSA. The recommendations are based on the literature review, the survey, the results that surfaced from the data analysis, the empirical results from the Structural Equation Modelling, research interviews, and informal dialogue sessions.

The recommendations in this section address the structural challenges that the renewable energy faces, the compliance issues that might constraint the socio-economic development of women-led initiatives, and the opportunities that exist to eliminate duplication and dilution of the developmental funds available. The recommendations will also offer possible solutions to assist the REIPPPP, IPPs and their Shareholders to ensure the sustainability and longevity of their socio-economic development initiatives.

7.2. SYNOPSIS OF THIS RESEARCH

This study was predicated on a scenario that if women (especially women within rural communities) were to be economically empowered, they would be able to have greater social status and would be less prone to the acts of violence which characterise South African society.

This study argued that several factors would positively influence the perceived success of the sustainable socio-economic empowerment of women in the renewable energy sector of the RSA. The positive relationship between the independent variables, and the intervening variable of Good Governance, should positively influence the dependent variable, the socio-economic empowerment of women in the renewable energy sector of the RSA. However, this argument adopts a very narrow approach to achieving the socio-economic empowerment of women. In this chapter, a broader approach is conjectured.

Chapter Seven will first provide context to the study from the literature review. The empirical results will then be discussed within the context of the literature review. This section will also discuss the rationale for researching mainstreaming gender in relation to the environment, renewable energy, food security, human capacity development, and socio-economic development. This study has also revealed the complexity associated with mainstreaming gender generally and, in particular, with mainstreaming gender in the renewable energy sector. The situation is even more complex, however, because of the structural challenges that should first be addressed and remedied.

This study developed a theoretical model of the perceived success of the socio-economic empowerment initiatives of women in the renewable energy sector in the RSA. Predicated on this literature review, the factors that influence the success of the socio-economic empowerment initiatives of women in the renewable energy sector of the RSA were selected. Arising from this process was a graphical representation of the proposed theoretical model of independent, intervening, and dependent variables. Each of the variables in the proposed theoretical model was operationalised, based on the literature, and the perspectives of subject matter experts. All the variables were operationalised by developing items which were contained within the measuring instrument.

Based on previous research, opinions from subject matter experts, the literature review and the researcher's own experience, the items were formulated for this research instrument. Positive relationships were hypothesised between the independent variables and the intervening variable of Good Governance.

Also, positive relationships were hypothesised between the independent variables and the dependent variable of Women's Empowerment. A positive relationship was also conjectured between the intervening variable of Good Governance and the dependent variable of Women's Empowerment. The proposed theoretical model was subjected to initial testing by engaging subject matter experts, academia, civil society, private, and public sector. Based on their feedback, amendments were made to the proposed theoretical model. The questionnaire was pre-tested with 25 respondents from the renewable energy sector, gender practitioners, and executive management, in order to ensure understanding and timely completion of the instrument. The feedback from the respondents was used to make amendments to the instrument and some of the items on the questionnaire. The MailChimp campaign platform was used to disseminate the covering letter to the contacts database. The covering letter also included the web link to the Nelson Mandela University (NMU) survey platform that hosted the questionnaire. Electronic invitations were distributed to academia, public and private sector, and civil society, locally and internationally.

In Chapter One, the primary research problem of this study was articulated as follows:

To investigate the drivers and variables that can positively influence the success and the possible structural impediments that inhibit the success of women in the renewable energy sector and subsequently develop a theoretical socio-economic model for women's empowerment in the South African renewable energy sector.

The desired outcome of this study was to develop a model that would ensure the sustainable socio-economic empowerment of women in the renewable energy sector of the RSA. Areas of research interest were identified in order to respond to the research question. These research areas included the renewable energy sector, and mainstreaming gender within the renewable energy sector. The GEFs approach to mainstreaming gender was researched to develop a baseline for policy and practices relating to mainstreaming gender. This approach ensured that international best practices formed the foundation of the mainstreaming gender body of knowledge.

The findings of the literature review were analysed and discussed in Chapters Two and Three. Chapter Four discussed the development of the proposed theoretical model. In Chapter Two, the researcher investigated the REIPPPP in South Africa from inception to implementation. The objective was to better understand the policy, process, stakeholders, challenges, and the opportunities, but most importantly, to understand how the REIPPPP had mainstreamed gender. Also, the possible funding opportunities to mainstream gender due to the Economic Development Funds and the Community Trust Funds. Chapter Two was not intended to research the technical aspects of the REIPPPP but attempted to unveil the approach to mainstreaming gender that the REIPPPP could have instituted from the outset of the REIPPPP.

In Chapter Three, the researcher investigated international best practices to mainstream gender. The research focused on the journey that the GEF has followed and the status quo of the GEFs approach to mainstreaming gender. The EU's approach to gender was also researched to have a degree of comparison between the international centres of gender policy formulation. The research also investigated the monitoring and evaluation aspects of mainstreaming gender to ascertain the impact that different projects and programmes have been able to achieve. Finally, the researcher investigated the status and progress of mainstreaming gender in South Africa. The literature review resulted in the development of a theoretical model that established the positive factors that influence the socio-economic empowerment of women in the renewable energy sector in the RSA.

Subsequent to the literature review, several constructs influencing the perceived success of the socio-economic empowerment of women in the renewable energy sector in the RSA were identified and discussed in Chapter Four. The relationships between the independent, intervening, and dependent variables were then empirically tested by applying the proposed theoretical model. The principal objective was to build a model for the successful socio-economic empowerment of women in the renewable energy sector in the RSA.

For the purpose of this study, the following primary research design objectives were identified:

- To research and analyse the REIPPPP and renewable energy sector in the RSA;
- To research and analyse the prevailing international best practices governing mainstreaming gender;
- To evaluate the synergies between existing theoretical guidelines, and practical procedures linked to modelling the socio-economic empowerment of women in the renewable energy sector in the RSA;
- To identify the factors (variables) that will support the successful socio-economic empowerment of women in the renewable energy sector in the RSA; and
- To build a theoretical model, propose suitable hypotheses, and construct a path diagram of relationships between the independent variables, the intervening variable, and the dependent variable.

A set of secondary research design objectives were then developed:

- To build a theoretical model to describe the hypothesised relationships between the latent variables;
- To build a measuring instrument to evaluate the relationships defined in the theoretical model empirically;
- To empirically check the theoretical model and proposed hypotheses by sourcing essential data from subject matter experts in the gender domain, the renewable energy sector, the public and private sectors, CSOs and the broader community practitioners. The data was sourced internationally and nationally, and then the data was statistically analysed; and
- To interpret and discuss the results of this study and to make suitable recommendations based on the results of the statistical analysis.

For the theoretical model, the dependent variable was the perceived success of the socio-economic empowerment of women in the renewable energy sector in the RSA, and the intervening variable was Corporate Governance. Corporate governance is mainly about protecting a corporate and refers to the policies and procedures that have been instituted to ensure that the corporate operates within the law.

However, with globalisation and the subsequent rate of change, governance theory is becoming the dominant political theory in response to the change. Good Governance can, therefore, be considered to be governance practices that are equally applicable to corporates and public administration. The empirical results of this study indicated that Good Governance is not statistically significant in relation to the perceived success of Successful Women's Empowerment and thus the hypothesis was rejected.

A total of ten independent variables were defined: Socio-Economic Development, Stakeholder Engagement, Strategic Acumen, Strategic Planning, Broad-Based Black Economic Empowerment, Executive Leadership, Change Management, Executive Education, Fund Management, and Corporate Culture were defined.

In Chapter Four, the theoretical model represented the positive relationship between the independent variables, and each relationship was associated with a hypothesis. Each of the latent variables was operationalised, and the scale development and operationalisation of the latent variables was then explained. In general, the operational definitions usually do not guarantee the precision of the proposed model, but instead assists with the analysis of the results.

7.3. CONCLUSIONS FROM THIS STUDY

For this study, a positivistic research paradigm was used to develop, and test the theoretical model. Due to the complexity of the research problem, the research objectives, and the current socio-economic challenges that influenced the research question, a positivistic research paradigm was proposed. Auguste Comte is regarded as one of the founders of sociology and also a representative of positivism (Levine & Lenzer, 1977). Comte is considered as one of the first philosophers of science that observed both the circular dependence of theory and observation in science (Levine & Lenzer, 1977). Collis & Hussey (2003) further describes a positivistic research paradigm as a quantitative, objectivist, scientific, experimentalist or traditionalist research paradigm. A positivistic paradigm process could be the literature study to establish a theoretical model and to construct and test a hypothesis (Levine & Lenzer, 1977).

The measuring instrument was adjusted after a pilot survey was conducted after that structured questionnaires were distributed to respondents identified through the snowball sampling technique. A total of 243 cases were analysed, and no cases were excluded. The responses from the respondents were downloaded from the NMU online survey system and loaded into a Microsoft Excel spreadsheet for further scrutiny and analysis. An exploratory factor analysis was conducted to assess the discriminant validity of the research instrument. The unique factors present in the data that supported the perceived success of the socio-economic empowerment of women in the renewable energy sector in the RSA was then further analysed. Of the original ten independent variables proposed in the theoretical model, five of the independent variables were deleted, two of the independent variables were renamed, and three of the independent variables were retained.

The Cronbach's alpha coefficient was used to confirm the reliability of the measuring instrument; this was accomplished by individually calculating the Cronbach's alpha coefficient for every factor (latent variable). Seven factors were identified through the exploratory factor analysis. The Structural Equation Modelling statistical technique was then used to test the significance of the relationships hypothesised between variables/factors that influence Good Governance. Figure 7.1 presents the significant relationships identified in this study. In the next section, the recommendations about how these determinants can be presented will be discussed to ensure the successful socio-economic empowerment of women in the renewable energy sector in the RSA.

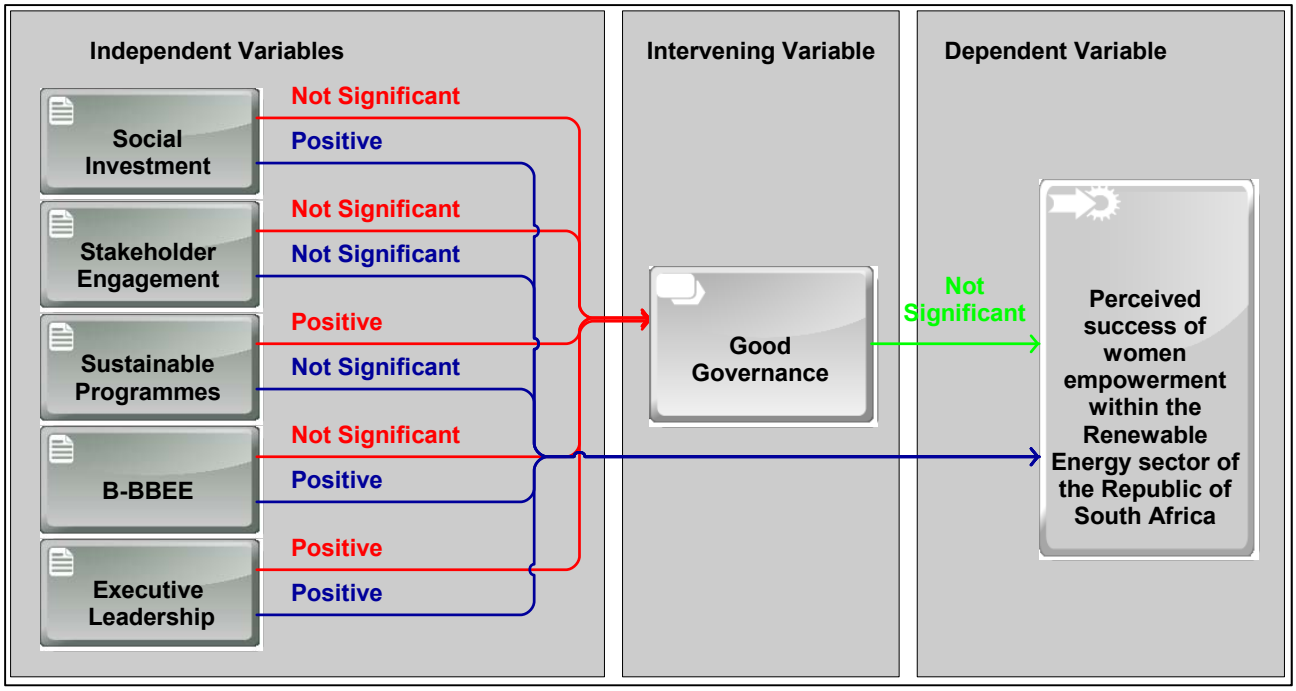


Figure 7.1: Revised Theoretical Model

7.4. INTERPRETATIONS OF THE EMPIRICAL RESULTS

This section contains interpretations predicated on the factors that have a significant influence on the dependent variable, namely, the perceived success of the socio-economic empowerment of women in the renewable energy sector in the RSA. Table 7.1 presents the factors that are statistically significant in relation to Good Governance and Successful Women's Empowerment. From the empirical results, the inference can be made that the respondents deemed Executive Leadership to be a primary contributing factor to both Good Governance and Successful Women's Empowerment. According to the empirical results the following factors, namely, Social Investment and B-BBEE are considered to positively influence Successful Women's Empowerment. Finally, the empirical results indicate that Sustainable Programmes are a positive contributing factor to Good Governance. Of concern is the fact that the respondents do not consider Stakeholder Engagement statistically significant in relation to Good Governance or Successful Women's Empowerment. This could be a case of misinterpretation, or lack of experience regarding Stakeholder Engagement.

However, the literature indicates the criticality of Stakeholder Engagement, as well as Change Management. Further research should be conducted to establish the lack of appreciation by respondents for the importance of Stakeholder Engagement and Change Management.

Table 7.1: Factors that are statistically significant

	Factors	Good Governance	Successful Women's Empowerment
1	Social Investment	✗	✓
2	Stakeholder Engagement	✗	✗
3	Sustainable Programmes	✓	✗
4	B-BBEE	✗	✓
5	Executive Leadership	✓	✓
6	Good Governance	-	✗
7	Successful Women's Empowerment	-	-

7.4.1. Social Investment

The operationalisation of Social Investment can be considered in the broader context of socio-economic development where the funds are deployed for interventions to improve the socio-economic conditions on seven levels: individual and group empowerment, conflict resolution, institution-building, community-building, and nation-building. Nation-building typically occurs in rural, peri-urban, and urban-poor communities in rural towns, small cities, and even large metropolis, and, in the broader context, includes region-building and world-building.

The empirical results of this study demonstrate that Social Investment is not statistically significant in relation to Good Governance and that Social Investment is statistically significant in relation to Successful Women's Empowerment.

There is, however, sufficient positive evidence from the literature review to indicate positive linkages between Social Investment to Good Governance, and positive linkages to Successful Women's Empowerment.

According to Fritz (2001), development is a planned and comprehensive economic, social, cultural, and political process, in a defined geographic area, that is rights-based and ecologically oriented. The objective of development is to continually improve the well-being of the entire population and all of its citizens (Fritz, 2001). Referring to the private sector, Crowther & Aras (2008) state that when a corporation acts responsibly, ethically, and socially, in its business decisions, it is most likely that the corporation could be more sustainable. Socio-Economic Development, Enterprise Development, Economic Development, Corporate Social Investment, Corporate Social Responsibility, and Economic Empowerment can be considered as a collection of programmes, projects or interventions that uplifts the social and economic position of beneficiaries, and through this process provides access to the economy for the target beneficiaries. Social Investment, therefore, can be considered the umbrella for all forms of investment that positively contributes to the upliftment of communities.

7.4.2. Stakeholder Engagement

For this study, the operationalisation of Stakeholder Engagement can be considered as the internal and external stakeholders that have a positive influence on the socio-economic empowerment of women in the renewable energy sector of the RSA. A stakeholder can be described as a party that has an interest in a private company, the community, the economic empowerment of women in these communities. The stakeholder could also be representing a collection of constituents, a private company, government, or just an interested or affected party. A private company can have a diverse set of internal stakeholders, namely, its investors, employees, service providers and customers. The private company's external stakeholders could be CSOs, NGOs, government, organised labour, and service providers for non-core initiatives.

The empirical results of this study demonstrate that Stakeholder Engagement is not statistically significant in relation to Good Governance and that Stakeholder Engagement is not statistically significant in relation to Successful Women's Empowerment. There is, however, sufficient positive evidence from the literature review to indicate positive linkages between Stakeholder Engagement and Good Governance, and positive linkages between Stakeholder Engagement and Successful Women's Empowerment.

For the REIPPPP, stakeholders are defined as persons, groups or organisations within the 50 km radius of the IPP that have a primary or secondary interest in the renewable energy facility. Amansure (2016) emphasises the importance of Stakeholder Engagement, stating that the Stakeholder Engagement Strategy should outline the entire approach for engaging stakeholders and should include a Stakeholder Engagement Plan. The stakeholder engagement plan should contain a detailed list of stakeholders with particular interaction methodologies (Amansure, 2016). Amansure (2016) further states that methodologies should include listening, information sharing, engaging, and communicating with all stakeholders. From experience, the consequence of not following a formal Stakeholder Engagement process is that interested and affected parties that have been excluded, intentionally or unintentionally, have the power to derail a project or process and, potentially to stop the project, process, or operation. There are sufficient case studies of stoppages in the mining sector that can be drawn on to avoid repeating the errors of the past. A case in point, was the Marikana tragedy of August 2012 where the South African Police killed and injured striking mineworkers, and the breakdown in the relationship between mining sector and development was brought into sharp focus (Harvey, 2014). An estimated 45 people lost their lives during this tragic event (Harvey, 2014).

7.4.3. Sustainable Programmes

The operationalisation of Sustainable Programmes can be considered as the process where private companies or public entities determine their vision for the future, identify their goals and objectives, and outline the activities that will assist to achieve the stated objectives.

The private companies or public entities are then prepared to take calculated risks, and most importantly, put in place the monitoring and evaluation plan that will guide the attainment of their objectives. By following this process, public entities or private companies can positively influence the socio-economic empowerment of women in the renewable energy sector of the RSA.

The empirical results of this study demonstrate that Sustainable Programmes are statistically significant for Good Governance but not statistically significant with regard to Successful Women's Empowerment. There is, however, sufficient positive evidence from the literature review to indicate positive linkages between Sustainable Programmes and Good Governance, and positive linkages between Sustainable Programmes and Successful Women's Empowerment.

According to Amansure (2016), socio-economic development, enterprise development and community trust revenues have the potential to transform beneficiary communities radically. Amansure (2016) points out that social challenges such as poverty, unemployment, housing, food security, and access to the (mainstream) economy could be considerably improved through well-planned, well-constructed, and sustainable initiatives. Social evils, namely, teenage pregnancy, alcoholism, substance abuse and domestic violence could all be addressed, and eventually eradicated through sustained intervention programmes funded by renewable energy revenue for SED (Amansure, 2016).

7.4.4. Broad-Based Black Economic Empowerment

The operationalisation of Broad-Based Black Economic Empowerment was previously discussed (see chapter 5.8) and can be considered as a policy to address the gross inequality of previously disadvantaged South African's, caused by decades of systemic racism which has resulted in the current socio-economic challenges facing the RSA.

The empirical results of this study demonstrate that Broad-Based Black Economic Empowerment is not statistically significant in relation to Good Governance and that Broad-Based Black Economic Empowerment is statistically significant in relation to Successful Women's Empowerment. There is, however, sufficient positive evidence from the literature review to indicate positive linkages between Broad-Based Black Economic Empowerment and Good Governance, and positive linkages between Broad-Based Black Economic Empowerment and Successful Women's Empowerment.

Zinn (2017) points out that much still has to be done to address the stubbornly high poverty, unemployment, and inequality in South Africa. Notwithstanding enabling legislation like the BEE codes, Employment Equity Act, Skills Development Act, and several Enterprise Development, initiatives have not been able to make a dent in addressing the economic inequality. According to Engelbrecht (2009), state legislation has a central function in the development of the RSA's CSR agenda. Amansure (2016) states further that the Broad-Based Black Economic Empowerment Act of 2003 is possibly one of the most crucial documents that have influenced and motivated CSR in South Africa.

Within the context of the B-BBEE Act, "black people" means people that have been historically disadvantaged, namely, Africans, Coloureds, and Indian South African citizens. The definition includes women, workers, youth, people with disabilities and people living in rural areas through diverse but integrated socio-economic conditions (Amansure, 2016). As anticipated, there are vehemently opposing views regarding B-BBEE. The NDP of the RSA (National Planning Commission, 2011) also confirms that the present model of Broad-Based Black Economic Empowerment (B-BBEE) has not succeeded to any considerable degree in broadening the scope of ownership and control of large firms. However, in the absence of B-BBEE, the economic transformation of South Africa would probably have been a trickle at best.

Thus, the envisaged intent underpinning B-BBEE has been key to driving the envisaged economic transformation, albeit the implementation of B-BBEE has not matched its expectations.

However, against the backdrop of *'State Capture'*, the real intent behind Broad-Based Black Economic Empowerment could now be challenged. Within the broader context of the South African Constitution, the question then arises as to whether all South African citizens that have been disadvantaged due to *'State Capture'*. Like the exclusionary nature of gender policy, the initial requirement for Broad-Based Black Economic Empowerment legislation was required to drive the intended economic transformation. However, more than two decades later, Broad-Based Black Economic Empowerment legislation has not achieved its intended objectives.

The Apartheid system attempted to *"engineer a particular social and economic outcome for South Africa"*, and the Apartheid system proved to be unsustainable. The Broad-Based Black Economic Empowerment then tried to redress the errors of the previous Apartheid system by trying to *"engineer a particular social and economic outcome for South Africa"*. It is unlikely that the Broad-Based Black Economic Empowerment in its current guise will be sustainable, much like its predecessor. There is a need for an alternative policy to address the gross inequalities that currently exist within the RSA. Policy formulators have nothing to lose, as an inclusive approach cannot be any worse than the past exclusionary Apartheid system or the current exclusionary Broad-Based Black Economic Empowerment system.

The term *'Radical Economic Transformation'* has also been proposed as a mechanism to transform the South African economy. However, there appears to be limited, support for the implementation of *"Radical Economic Transformation"*. The unintended consequences of these *"throw away statements"* that lack the necessary supporting empirical research could be even more devastating than the previous Apartheid system. To conclude this section, the gender policy and the Broad-Based Black Economic Empowerment legislation are divisive by their very design, as it categorises people along particular criteria.

7.4.5. Executive Leadership

The operationalisation of Executive Leadership can be considered as the leadership of a company with the expertise to define the company's strategic objectives, and the experience to articulate practical ways to measure leadership performance.

Executive Leadership can also be considered to include the ability to eliminate unnecessary leadership positions, the expertise to establish flexible and enduring systems to facilitate performance and has a precise definition of leadership. Thereby, Executive Leadership can positively influence the socio-economic empowerment of women in the renewable energy sector of the RSA.

The empirical results of this study demonstrate that Executive Leadership is statistically significant in relation to Good Governance and that Executive Leadership is statistically significant in relation to Successful Women's Empowerment. There is also sufficient positive evidence from the literature review to indicate positive linkages between Executive Leadership and Good Governance, and positive linkages between Executive Leadership and Successful Women's Empowerment.

The King III Report states that Good Governance is actually about effective leadership, and leaders have to rise to the challenges to achieve an effective outcome (Engelbrecht, 2009). According to Reuel Khoza, aspirant African leaders are more inclined to creating a future than watching the future unfold, and that these aspirant African leaders consider maintenance of the status quo an abomination (Zinn, 2017). Khosa continues by stating that all South Africans ought to be able to imagine a future facilitated by changes in technology, global geopolitics, international economic trends, lifestyle and workstyles (Zinn, 2017). Khoza cautioned that the inability to develop and unleash a vibrant leadership pipeline could doom South African advancement due to a scarcity of transformational leadership (Zinn, 2017). According to Khoza the defining features of leadership are humility, integrity, compassion, humanity, demonstrated competence, tenacity and efficacy (Zinn, 2017).

These defining leadership traits are supported by leadership that practices introspection, self-renewal, will not avoid unpopular decisions, and engenders trust, goodwill, and confidence (Zinn, 2017). Zinn (2017) points out that the challenges are inherently unsustainable and threaten the social and economic stability of South Africa, and states further that *"We ignore these (leadership) principles at our peril"*. These Executive Leadership traits are equally applicable in the Public Sector, Organised Labour, and Civil Society.

7.4.6. Good Governance

The operationalisation of Good Governance can be considered as the processes to make and implement decisions. The emphasis is on the best possible processes for making decisions, thereby positively influencing the socio-economic empowerment of women in the renewable energy sector of the RSA. Governance can apply to a company, government, community, governing body, or any entity that manages an outcome. An example of a governance framework, the King III Report, was discussed extensively in chapter 2.12 under *Failures of Good Governance, Ethical Leadership*. The empirical results of this study demonstrate that Good Governance is not statistically significant in relation to Successful Women's Empowerment. There is, however, sufficient positive evidence from the literature review to indicate positive linkages between Good Governance and Successful Women's Empowerment.

The topic of Good Governance was discussed in Chapter Four, *Intervening Variable 11: Corporate Governance*. There is sufficient evidence from the literature review to demonstrate that the presence of *'Good'* Governance does not ensure ethical decisions and behaviour. However, the outcomes might be a lot worse in the absence of Good Governance structures. The Constitution of South Africa and the Constitutional Court could be considered as the ultimate Good Governance system. The outcome of *'State Capture'* would potentially have been a lot worse in the absence of a robust constitution and an ethical judiciary. The conclusion, therefore, is that it is better to have Good Governance structures in place, but these governance structures should be augmented with ethical leadership.

7.4.7. Successful Women's Empowerment

Successful Women's Empowerment refers to the processes of enhancing the capacity of individuals or groups, typically the indigent in rural, peri-urban and urban-poor communities. Successful empowerment initiatives will provide an environment for individuals or groups to make choices and implement decisions with an objective of acquiring assets, thereby positively influencing the socio-economic empowerment of women within the renewable energy sector of the RSA.

The empirical results of this study revealed six primary determinants of the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA. The intervening variable, Good Governance, is linked to all the positive determinants to ensure Successful Women's Empowerment. The outcome of Good Governance item in the measuring instrument could also substantially improve the Successful Women's Empowerment by ensuring that ethical leadership is appointed to the Boards of Companies, Public Institutions, and CSOs. The need for ethical leadership within CSOs can be directly linked to the trustees that are appointed to the Community Development Trusts, where they hold an office as custodians of the community that they serve. This paradigm could be equally applied to municipalities.

7.5. THE PERCEIVED SUCCESS OF THE SOCIO-ECONOMIC EMPOWERMENT OF WOMEN IN THE RENEWABLE ENERGY SECTOR OF THE RSA

The six primary determinants that contribute to the perceived success of the socio-economic empowerment of women in the renewable energy sector of the RSA have been discussed. For this study, the literature review, and survey, focused on the executive level leadership, the decision makers, and the influencers within institutions. In order to provide a holistic perspective of the entire stakeholder ecosystem of the renewable energy sector, this section will also provide several models to assist the IPPs to implement sustainable socio-economic initiatives in collaboration with the beneficiary communities.

The intervening variable, Good Governance is linked to all the positive determinants to ensure the success of the socio-economic empowerment of women in the renewable energy sector of the RSA. This study has established that, by integrating Good Governance policies, processes, and systems into the socio-economic empowerment of women, the outcomes should be more sustainable. However, to achieve any meaningful and sustained socio-economic empowerment of women and the beneficiary communities, the IPPs will require a holistic strategy that will deliver the desired impact, and also ensure that the IPPs remains compliant as per the Implementation Agreement.

Figure 7.2 proposes a socio-economic development strategy for the IPPs. One of the key performance areas will be to mainstream gender within the renewable energy sector, through women-led IPPs. This strategy must also be guided by a detailed community needs analysis, that should be conducted at the outset of the project. Visionary IPPs might well elect to invest in the community needs analysis as an integral part of the initial bid process.

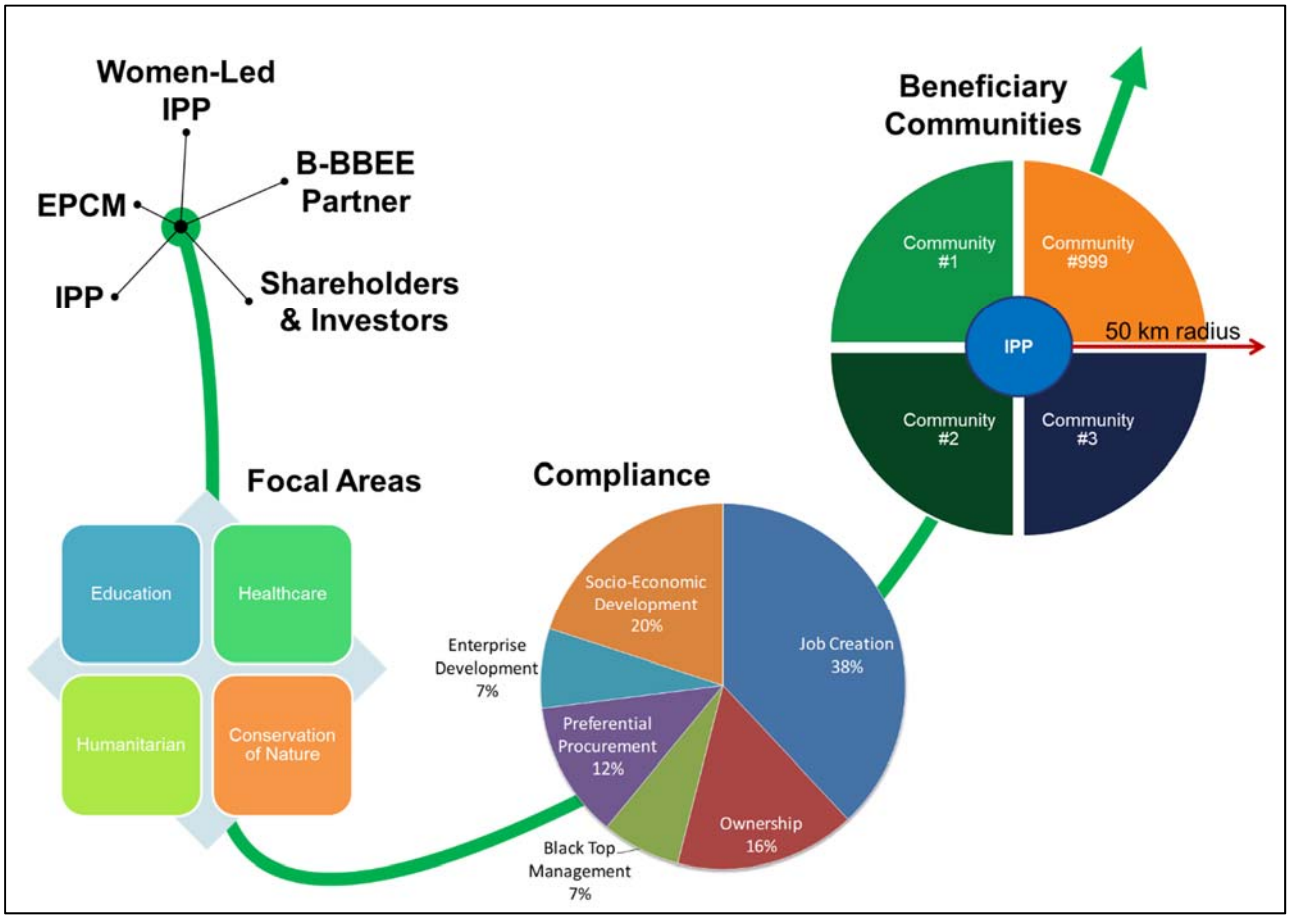


Figure 7.2: Holistic Socio-Economic Strategy

Source: Researchers construction

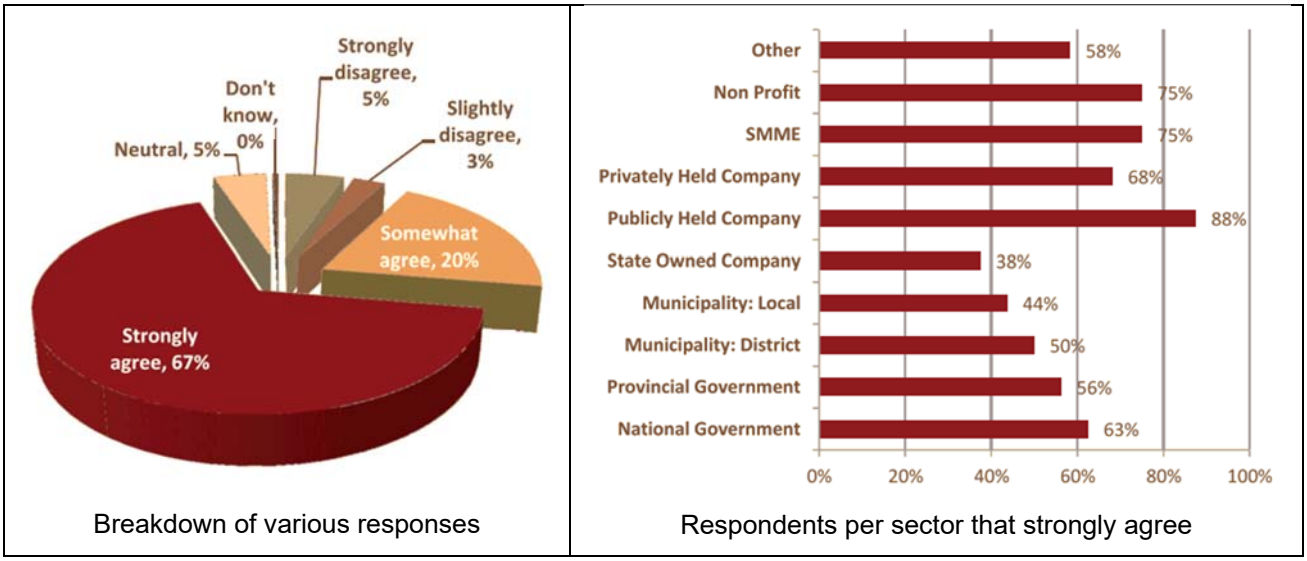
7.5.1. Good Governance

The outcome of the Good Governance item may also improve the socio-economic empowerment of women by complying with the King III Report, and by focusing on the following aspects that contribute to Good Governance of an organisation/IPP.

- **Board Selection:** Selecting and appointing Board members that are committed, engaged, and have a demonstrated track record of ethical decision making. A possible board membership prerequisite could be that board members contribute several hours to community development and institutional development activities;
- **Board Composition:** The composition of the Board should be critically reviewed to ensure that the members make the highest quality contributions to the organisation. Board members availability should also be critically reviewed, as Board members typically occupy several Board positions. Board composition should also attempt to provide the necessary balance, motivation, and diversity. Clearly prescribed processes to address conflict resolution, conflict of interest, and unethical behaviour, as well as the consequences associated with any transgression, should be stipulated from the outset of the membership term;
- **Board Accountability:** Ensuring that the Board hold themselves to a higher standard of performance and develop benchmarks that demonstrate progress. This is important to ensure that institutional improvements are measured, monitored, and reported on. Performance metrics should also be developed for the Board to evaluate their personal performance and take corrective action where necessary;
- **Review of Executive Leadership:** Conducting regular reviews of the Executive Leadership of the organisation. This is important to provide honest feedback to the executive leadership of the organisation, and through this process, the executive leadership is held accountable for the daily operation of the organisation;
- **Auditability:** Typically, the function of transparency and accountability resides with the Company Secretary. Therefore, the minutes of meetings should be meticulously recorded and made available for public scrutiny within the organisation; and
- **Checks and Balances:** The possibility always exists that Board members might influence decisions for their own personal benefit. This could even extend to securing of contracts for family, friends, and associates. Processes should be in place to confirm that Board members are not able to influence decisions

for their personal benefit, or to the benefit of the Board members extended network.

A study conducted by the Institute of Internal Auditors of South Africa (2013), titled *"Corporate Governance and the Risk Management Index: An Internal Audit Perspective"*, revealed that approximately 67% of respondents strongly believed that the Board sets a tone of zero tolerance towards unethical behaviour. Figure 7.3 presents further details of the responses to the survey question: *"The Oversight body (such as the Board or Council), sets a clear tone of zero tolerance toward unethical behaviour, fraud and corruption in our organisation and acts accordingly"*. The study indicated that Public companies appear to have the most influential oversight bodies as regards establishing the proper tone towards Good Governance (Institute of Internal Auditors of South Africa, 2013). This approach of zero tolerance toward unethical behaviour adopted by Public companies could be due to the JSE and regulatory requirements for professional companies.



Breakdown of various responses

Respondents per sector that strongly agree

Figure 7.3: Responses to Ethical Executive Leadership

Source: The Institute of Internal Auditors of South Africa, 2015

Good Governance within communities is equally important when implementing initiatives, especially with regards to the Community Development Trusts. Figure 7.4 presents a proposed community structure to facilitate the implementation of community-led projects.

The benefit of this approach is that through a capacitation process, the communities would acquire the project management skills to implement their own projects, within their own communities.

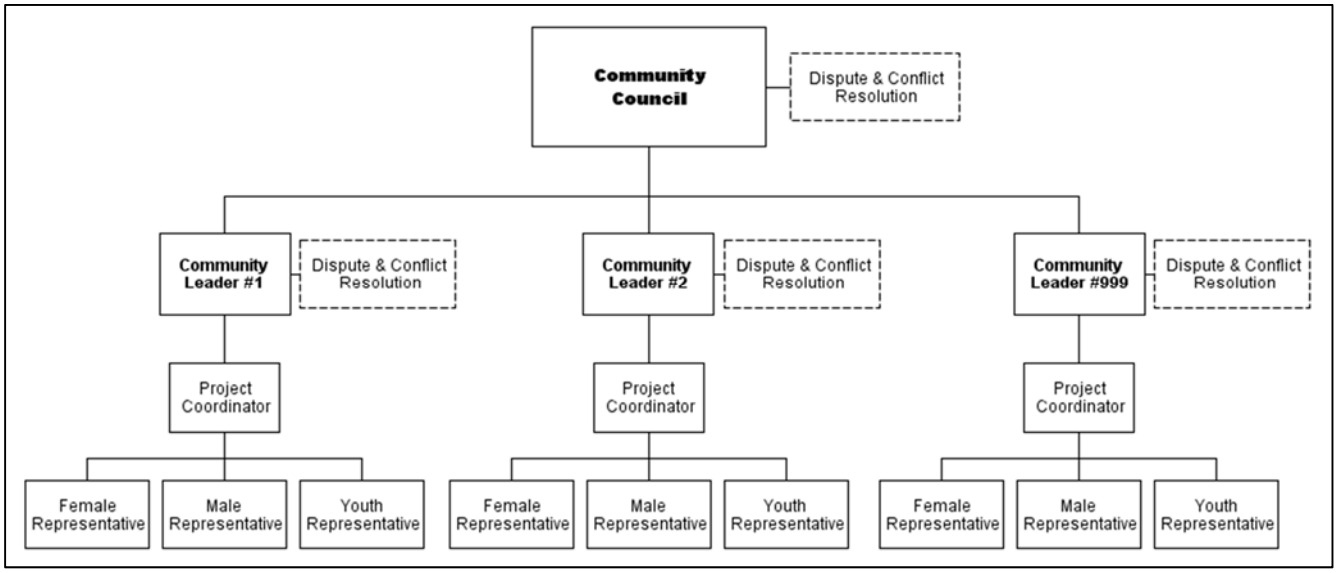


Figure 7.4: Community Governance Structure

Source: Researchers construction

As the levels of expertise increase within the community project teams, the communities would be able to bid for municipal projects, submit proposals to surrounding businesses, and farmers. The IPPs could also be a source of opportunity by linking the communities with their network and supply chain.

7.5.2. Social Investment

This study has established that the REIPPPP community development funds could be pooled to maximise the benefit for the intended beneficiaries. The literature review has also revealed the current state of education within the RSA. The necessity for adequate and sustained Social Investment has also been one of several key themes that have guided this study. The quantum of the projected ED, SED, and the dividends from the Community Trust Funds, over the 20-year lifespan of the IPP, can be considered substantial. This combined ED, SED and dividend flow from the Trust Funds could be pooled and used to leverage additional grant funding.

The Trust Funds can be considered as yet another source of funding that can be contributed to the overall funding pool. The funds could be ring-fenced to focus on educational initiatives such as bursaries, scholarships, and exchange programs. This approach will also provide some respite to the student demonstrations under #FeesMustFall. Therefore, collective Social Investment will require visionary and ethical Executive Leadership, as well as Good Governance policies, processes, and systems.

Figure 7.5 presents a proposed Community Development Fund that aggregates all the ED, SED, and Trust Fund dividends under a single Community Development Fund. This pooling of funds will eliminate the dilution associated with each induvial IPP allocating the Economic Development to internal developmental projects. The aggregation of the developmental funds will enable the development of *“massively impactful flagship projects”* that could be replicated and scaled. The pooling of the funds will also enable the Community Development Fund to secure additional grant funding and be in a much stronger negotiating position by representing all the IPPs, as opposed to IPPs negotiating individually. Other funding opportunities from stokvels, angel funders, and crowdfunding modalities could all be incorporated into the funding pool.

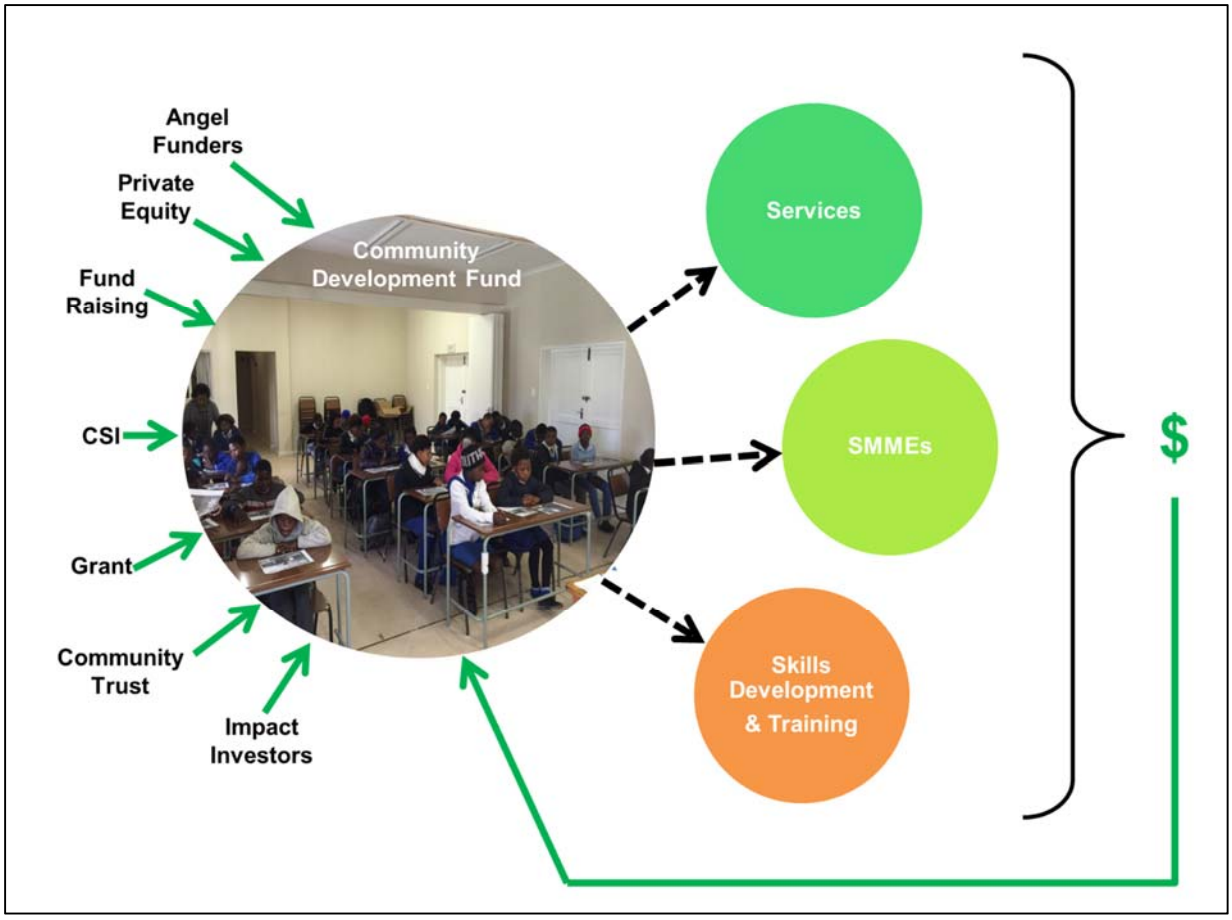


Figure 7.5: Community Development Fund

Source: Researchers construction

7.5.3. Stakeholder Engagement

Through the literature review, this study has established the importance of Stakeholder Engagement and the critical need to include the beneficiary communities within the stakeholder ecosystem. Traditionally, the municipalities and politicians tend to dominate the stakeholder ecosystem. They have, therefore, driven mainly infrastructural projects as opposed to delivering on the needs of the communities. Regarding the 50 km radius stipulation for beneficiary communities, the IPPs might have to contend with the challenge of demarcating the eligible communities that fall within the 50 km radius. The challenge is that communities are not a neatly demarcated, homogenous group that can be clearly identified, defined, and compartmentalised. Stakeholder Engagement is further complicated by the constantly changing demographics of the communities, compounded by human migration.

As economic activity increases, there will be an increased influx to these prosperous communities, further complicating decisions that might already have been made.

Figure 7.6 proposes that the IPPs develop a central contact database of the beneficiary and non-beneficiary communities. The contacts database could become a valuable source of information as the developmental projects evolve and the capacities of the communities are developed. Several PPPs could be developed around the central data repository, as an example, community members in the rural areas might not have something as basic as an identification document which almost automatically excludes these community members from entering the formal economy. Similar challenges face new-born babies that might not have birth certificates or families of the deceased that might not have death certificates. The central data repository will also provide a global view of the skills development and training that is required, as well as the skills that are available for projects or business ventures.

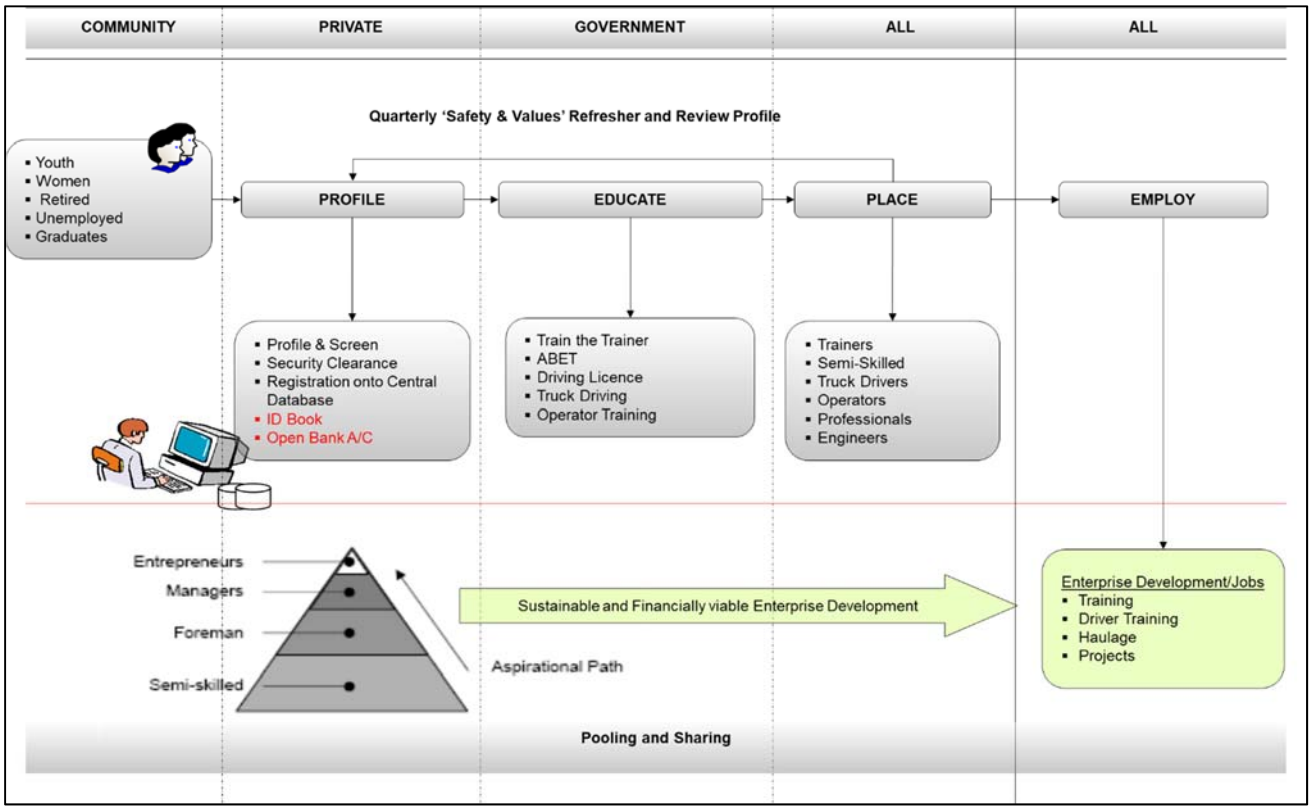


Figure 7.6: Database of Community Members

Source: Researchers construction

The development of a central data repository of rural communities by the REIPPPP/IPPs will invariably lead to better-informed decision making. Finally, the continued updating of the data repository will provide the necessary information to facilitate longitudinal studies of the performance of the REIPPPP, the IPPs, and the beneficiary communities.

7.5.4. Sustainable Programmes

The need for Sustainable Programmes has been evidenced in the literature review and is further supported by the research associated with Maslow's Hierarchy of Needs, and Holtmann's (2011) *"what it looks like when it's fixed"*. The empirical results of this study have also confirmed the importance of implementing Sustainable Programmes. To ensure that the most appropriate projects are selected, the IPPs should articulate 1) a holistic developmental strategy with the requisite key focal areas 2) a robust project methodology and 3) a transparent funding strategy. Figure 7.7 proposes a detailed project methodology to the IPPs, that spans the initial conceptualisation of a project, through the selection, implementation and sustaining of developmental projects.

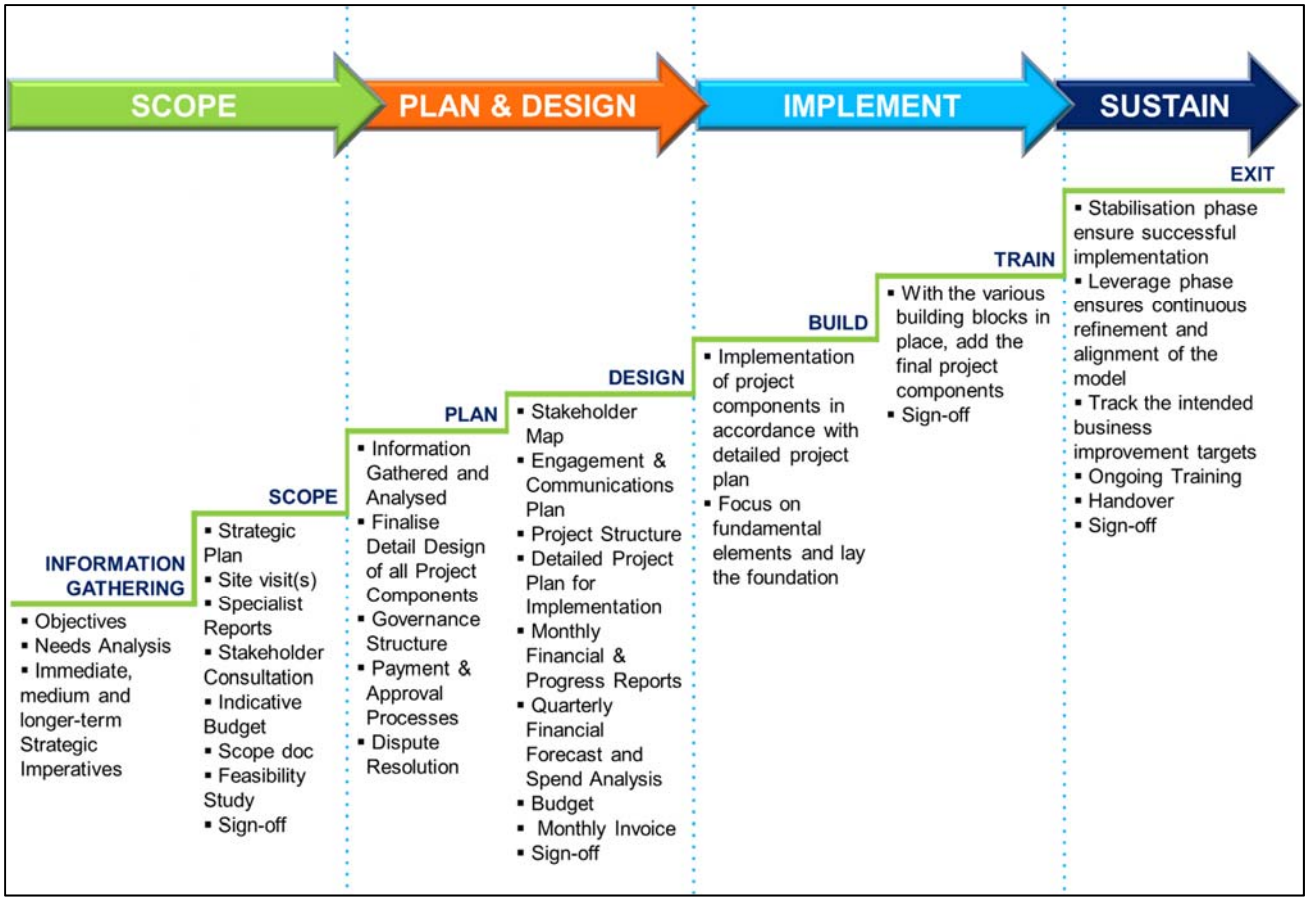


Figure 7.7: Robust Project Methodology

Source: Researchers construction

A possible portfolio of projects could include the following broad categories of:

- Sustainable Agriculture;
- Waste and Water Management;
- Off-grid, Community Based Solar Energy;
- Rehabilitation and Land Management;
- Reduction of Carbon Footprint;
- Preferential Procurement; and
- Fund Raising.

From the evidence of this study, it is critical to acknowledge the structural challenges that confront beneficiary communities to drive the selection and structure of the projects.

This approach is also essential to ensure the sustainability of the projects. IPPs are therefore urged to consider with great foresight the projects that are to be implemented in the beneficiary communities, as failed developmental projects tend to leave deep scars within the beneficiary communities.

7.5.5. Broad-Based Black Economic Empowerment

The rationale behind the Broad-Based Black Economic Empowerment Act was to redress the past inequalities caused by the previous apartheid system. The desired outcomes were then quantified through the B-BBEE Codes of Good Practice scorecard. However, the failures of B-BBEE is evidenced in the NDP of South Africa. According to the NDP, the present model of B-BBEE has not succeeded in the economic transformation of South Africa. Also, an unintended consequence of a scorecard approach is that projects are implemented in order to comply with scorecard stipulation, and in this manner projects of a siloed nature developed. However, developmental projects require a holistic approach that invariably cut-across several focal and functional areas. Another unintended consequence is that the projects merely become a *'tick-box'* exercise as the IPPs attempt to remain compliant with the least amount of risk to the business.

Ultimately, beneficiary communities are all striving for a better life, the acquisition of skills, the opportunity for quality jobs, and the hope of a better life for themselves and their children. In order to achieve this economic transformation, and, simultaneously, to address the disparity in South Africa, the IPPs should consider that only *'sustainable businesses'* can create jobs and create a platform for skills development and training. Within the context of the beneficiary communities, Community Development, Local Economic Development, Socio-Economic Development, Economic Development, Enterprise Development, SMME Incubation, Skills Development, could all be collectively referred to as Socio-Economic Development. Socio-Economic Development can, therefore, be considered as a collection of programmes, projects or interventions that uplifts the social and/or economic position of the beneficiary communities and through this process provides access to the formal economy for these beneficiaries.

The analogy of *"teaching communities to fish"* could assist in focusing the efforts of the IPPs on imparting skills and developing access to markets and the workplace for the beneficiary communities. When these aspects are met, the outcomes are potentially sustainable and financially viable businesses.

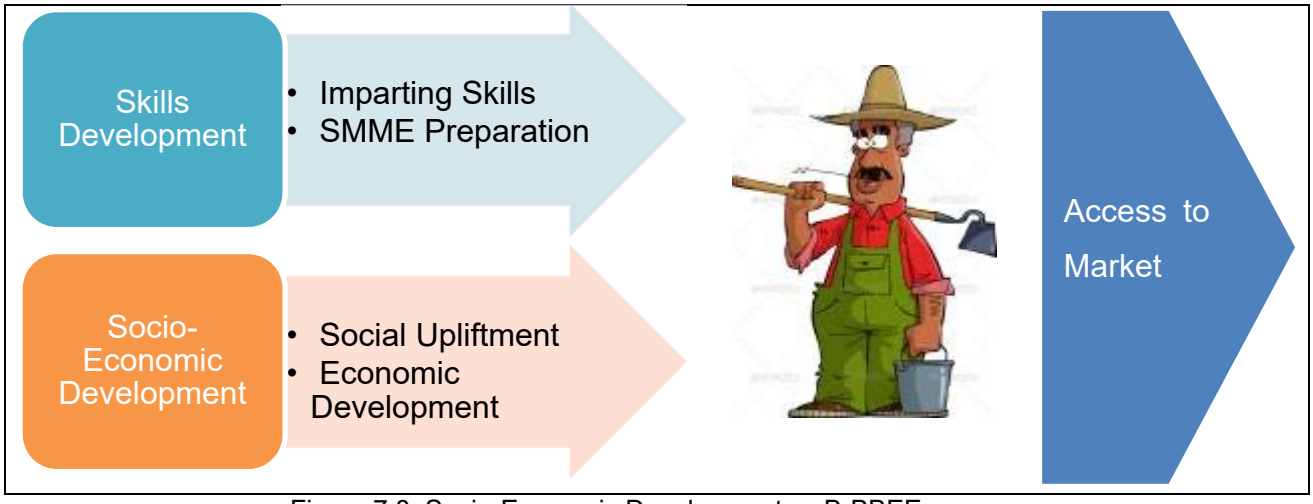


Figure 7.8: Socio-Economic Development vs B-BBEE

Source: Researchers construction

The importance of sustainable economic transformation has prevailed throughout this study and is supported by the empirical results that demonstrate that Broad-Based Black Economic Empowerment is statistically significant in relation to Successful Women's Empowerment. Figure 7.8 presents the IPPs with a perspective to approach the sustained economic transformation of the beneficiary communities. The acquisition of start-up funding, the skills deficit, the channels to market, the lack of land as surety, poor infrastructure, logistics and transport complexities, are all challenges with which the beneficiary communities have to contend with. The IPPs could play an instrumental role in supporting the beneficiary communities to address these issues.

Within a South African professional context, there appears to be an obsession to understand the *'model'*, and the *'structure'* of the community entity. Yet, by contrast, businesses in the rural areas typically function on an informal basis, where the business rules have evolved over time and typically accommodate the general community and business environment. The following section will attempt to provide some context to the legal constructs that exist in South Africa to assist the IPPs in selecting an appropriate legal structure for community-based projects.

NPOs that would like to apply for government funding must be registered in terms of the NPO Act. According to the Government of South Africa (2017) in order to register a Non-Profit Organisation (NPO), the entity must be one of the following registered legal structures:

- Non-Governmental Organisation;
- Community-Based Organisation; and
- Faith-Based Organisation.

The process to follow is outlined below, and the associated supporting documentation:

- An NPO application form accompanied by two copies of the organisation's founding documents has to be submitted to the nearest provincial Social Development Office, The Directorate, Non-profit Organisations, Department of Social Development;
- In the case of a Trust – Deeds of the Trust and a letter of authorisation from the courts;
- For a Section 21 – Certificate of Incorporation and Memorandum and Articles of Association; and
- For a Voluntary Association, a Constitution.

According to Wyngaard (2012), the NPO Act of 1997 allows for three legal entities when starting an NPO, namely, voluntary association, a non-profit trust, and non-profit company.

- **Voluntary Association:** This is the most popular legal entity because it is quick, inexpensive, and easy to register. The NPO Directorate has reported that voluntary associations represent 95% of the organisations that are registered in terms of the NPO Act and is also the perfect legal vehicle for CBOs. The limitation, however, is that a voluntary association can only open a bank account once it is registered in terms of the NPO Act. The Financial Intelligence Centre Act (FICA) had made NPO registration a condition for financial institutions to open a banking account in the name of such organisations, the

consequence is that a voluntary association will not be able to receive funds while it awaits its NPO certificate, nor can it apply for approval as a public benefit organisation (PBO);

- **Non-Profit Trust:** These are registered in terms of the Trust Property Control Act and the Master of the High Court is responsible for the registration of trusts; and
- **Non-Profit Company:** The Companies and Intellectual Property Commission (CIPC) is responsible for the incorporation of non-profit companies.

The following topics have been included to offer further clarity on the regulatory aspects that the legal entities have to comply with.

- **Tax Exempt Organisations:** The South African Revenue Services (SARS) states that *"Not for profit organisations play a significant role in society as they take a shared responsibility with Government for the social and development needs of the country. Preferential tax treatment is designed to assist non-profit organisations by augmenting their financial resources"*, (South African Revenue Services, 2017). The preferential tax treatment is not automatic, and the requirements set out in the Income Tax Act of 1962 must be met before the exemption can be applied. Once the NPO or Non-Profit Company (NPC) exemption application has been approved by SARS, the organisation is registered as a Public Benefit Organisation (PBO) and allocated a unique PBO reference number;
- **Public Benefit Organisation:** PBOs have the responsibility and privilege of spending public funds in the public interest on a tax-free basis. The funds are generally derived from donations or grants, either from the public or directly/indirectly from the State. Therefore, it is essential to ensure that exempt organisations use their funds responsibly and solely for their stated objectives, without any personal gain being enjoyed by any person including the founders and the fiduciaries;
- **Companies and Intellectual Property Commission:** The CIPC is a member of the Department of Trade and Industry (the DTi) which manages the registration of all businesses in South Africa, including non-profit companies

(NPC). A Section 21 Company is registered to provide services and does not intend to make a profit and would prefer not to be assessed based on the profits that they generate. They are often funded by donations and foreign funding and generally provide services to various communities;

- **Financial Intelligence Centre Act:** South Africa introduced the Financial Intelligence Centre Act in 2001 to help fight financial crimes, the financing of terrorist activities, and to protect banking clients from fraud and other similar crimes. The following is an extract from the Financial Intelligence Centre of South Africa, *"To establish and maintain an effective policy and compliance framework and operational capacity to oversee compliance and to provide high quality, timeous financial intelligence for use in the fight against crime, money laundering and terror financing in order for South Africa to protect the integrity and stability of its financial system, develop economically and be a responsible global citizen"*;
- **Regulation of Interception of Communications and Provision of Communication - Information Act:** The Regulation of Interception of Communications and Provision of Communication-Related Information Act (RICA) is a law that makes it compulsory for everyone in South Africa to register their mobile phone number. The intent behind this law is one of the South African government's key crime prevention initiatives towards ensuring a safer South Africa; and
- **Protection of Personal Information Act:** The Protection of Personal Information Act (POPI) was signed into law on the 27th November 2013. The purpose of the POPI Act is to ensure that all South African institutions conduct themselves in a responsible manner when collecting, processing, storing, and sharing another entity's personal information. The institutions will be held to account should there be abuse or compromise personal information. The POPI legislation considers personal information to be *'of value'* and therefore tries to secure the information owner certain rights of protection.

IPPs, therefore, need to be sensitive to the relevant regulatory practices.

Although the fiduciary duties might seem onerous, they have been instituted to ensure the good governance of the legal entity. A Board of Directors will add yet another layer of governance to ensure the smooth functioning of the legal entity.

7.5.6. Executive Leadership

Finally, the critical need for visionary and ethical Executive Leadership has to be reemphasised. This study demonstrates the importance of Executive Leadership especially in relation to Good Governance and to Successful Women's Empowerment. There is also sufficient positive evidence from the literature review that indicates the positive linkages between Executive Leadership, Good Governance, and Successful Women's Empowerment.

South Africa's democracy is only two decades young, and has had, and continues to have, several challenges regarding the country's administration. The extreme case of *'State Capture'* could be considered one of the significant actions that have stunted South Africa's societal growth and divides the nation along racial and economic lines. Executive Leadership that has sufficient experience of operating in such challenging socio-political environments are constantly evaluating the threats to the business, identifying the potential risks, and putting in place the mitigating action plan. Figure 7.9 presents the potential threats to the rule of law in South African.

This section, as well as Figure 7.9, has been included to assist the REIPPPP/IPPs to formulate strategies that will acknowledge these threats and eliminate the identified risks to society, and ultimately the threats to a sustained democracy.

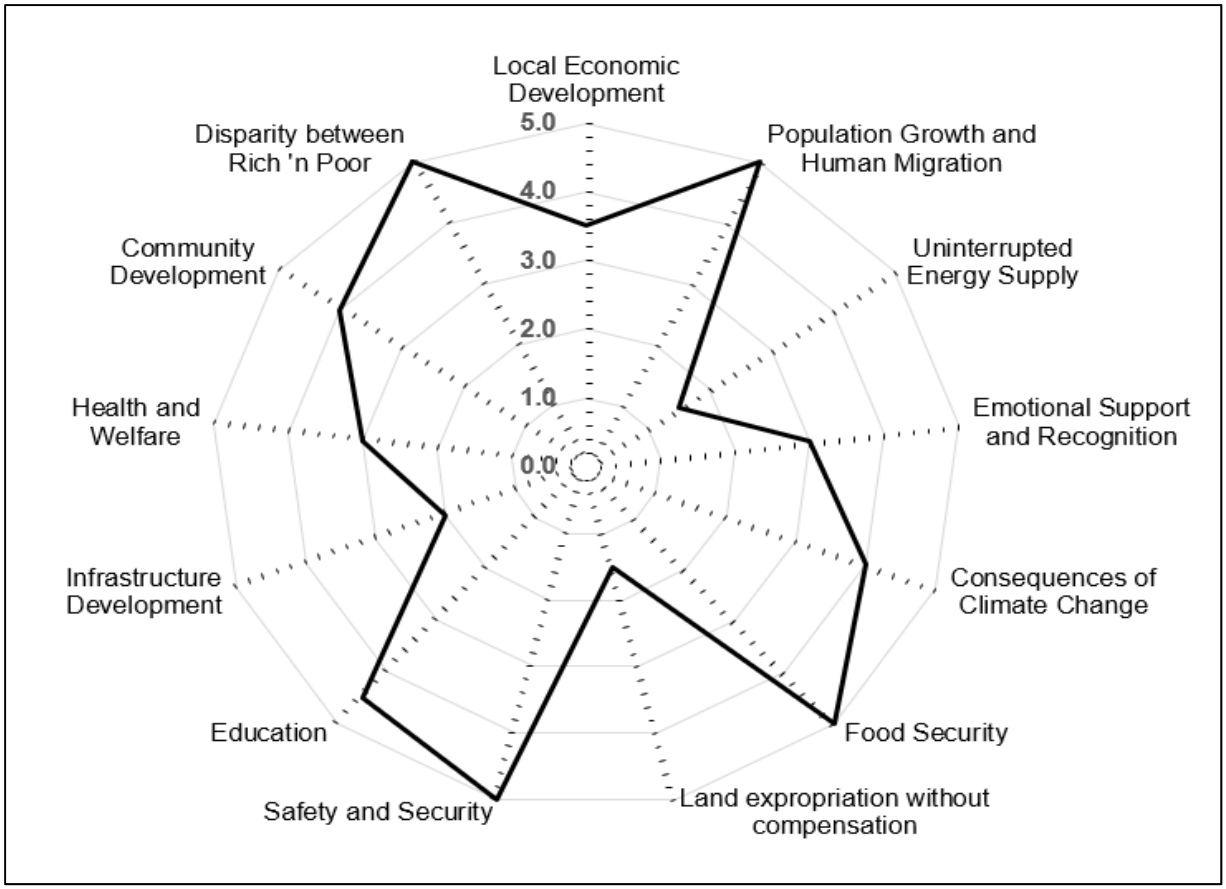


Figure 7.9: Threats to Society/Rule of Law

Source: Researchers construction

Figure 7.10 presents the IPPs with a possible Community-Based Entity that could facilitate the desired economic transformation at the community level. For this model to be effective, the commitment from the IPP to assist and support the beneficiary communities will be a key success factor. By implementing this proposed model, the beneficiary communities will start to transition from merely implementing projects to developing sustainable businesses, with the potential to also establish community-based manufacturing facilities.

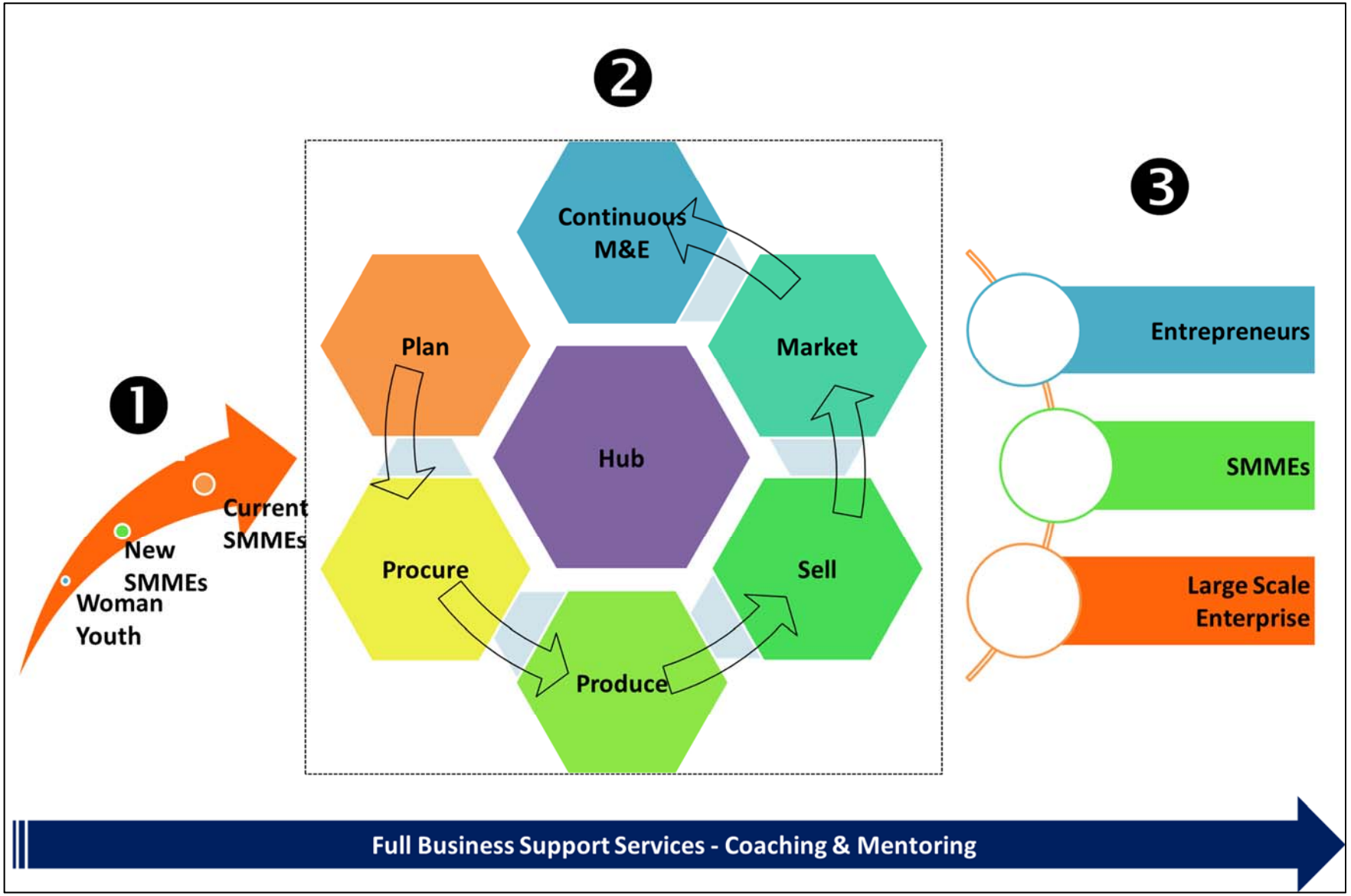


Figure 7.10: Community Based Entity to facilitate Economic Transformation

Source: Researchers construction

To conclude this section, the literature review highlighted the structural challenges that confront women, both at the executive and beneficiary community level. The empirical results of this study have also identified the need for ethical Executive Leadership, B-BBEE and Social Investment. The models that have been presented offer the IPPs a possible approach to achieve the sustained socio-economic transformation that the beneficiary communities and the broader South Africa desire.

7.6. LIMITATIONS OF THE STUDY

The objective of this study was to make a practical contribution to the success of the socio-economic empowerment of women in the renewable energy sector of the RSA. However, as is the case with any empirical study, certain limitations should be considered when interpreting and analysing the findings, recommendations, and conclusion of this study. As with any research, specific areas have previously been explored and a better understanding attained. Through the research process, new avenues for research have also been exposed. The following limitations and recommendations are proposed for consideration in future research relating to the socio-economic empowerment of women in the renewable energy, mining, and agricultural sectors of the RSA.

This study used an online questionnaire that was disseminated via a bulk email distribution platform. Although the perception might be that a much more comprehensive audience can be reached through an online questionnaire platform, the response rates are quite low, as evidenced by this study. Based on feedback from several respondents, due to the ease with which these email campaigns can be created, respondents are possibly suffering from *'survey fatigue'* and are thus reluctant to respond to online surveys. If the low response rate can be overcome, the challenge still exists that the respondent might not have in-depth experience with mainstreaming gender and the renewable energy sector. Future research should consider the conventional survey technique of face to face interviews to ensure the quality of the data collection. Also, the snowball-sampling technique is limited since it does not necessarily result in a representative sample of the population.

At the beginning of this study, the implementation of the snowball sampling was especially challenging as there were two distinct population groups, namely the renewable energy sector and the gender practitioners. The chasm between the renewable energy sector and the gender practitioners was identified as a risk during the early conceptualisation stage of this study. The added complexity was that within these two primary groups there were multiple sub-groups, all with differing degrees of experience, expertise, and exposure to their population groups. Via the feedback gain from the survey, the chasm that exists between the renewable energy sector and the gender practitioners became more evident.

One of the many benefits from this study is that the chasm has been identified which suggests opportunities for collaboration between the two population groups. During the discussion with subject matter experts, the target audience of the survey became a critical topic of ongoing conversation. The decision was to define the target population group as *"those individuals that had sufficient influence or decision-making power about allocating funds to socio-economic development initiatives, and more precisely to women's empowerment initiatives"*. Also, respondents may not be familiar with the unique criteria for the socio-economic empowerment of women within the renewable energy sector, which is a further compound as non-probability sampling introduces an element of bias into the research. However, the study did offer insights into the socio-economic empowerment of women in the renewable energy sector of the RSA.

Another challenge that confronted this study was the relatively young renewable energy sector in the RSA. Thus, by comparison to the broad expertise, understanding, and mature policy regime associated with mainstreaming gender, the same depth does not yet exist within the renewable energy sector. Future research should also include qualitative data that can be collected through in-depth discussions with representatives from both the renewable energy sector and the gender practitioners. This future research could bridge the gap between perception and fact and may well further support or refute the factors influencing the success of the socio-economic empowerment of women within the renewable energy sector of the RSA as determined by this empirical study.

The literature review of this study has also discussed the nexus of climate change, the socio-economic empowerment of women, the renewable energy sector, and the deep-rooted structural challenges that South Africa is confronted with as a legacy of Apartheid. The dysfunctional educational system that potentially will commit South African youth to being *'cheap labour'*, and the prospect of another wave of self-inflicted *'economic slavery'*, all leads to the structural and systemic challenges that South Africa faces, and will continue to face. It is these structural challenges that will require further study, and outcomes from different initiatives that will drive the necessary change.

This study should be used as an indicator of the status quo to mainstream gender in the renewable energy sector of the RSA. Due to the depth, breadth and cross-cutting nature of this study, this research is equally applicable to the mining, manufacturing and agricultural sectors.

7.7. CONTRIBUTIONS OF THIS STUDY, RECOMMENDATIONS FOR FUTURE RESEARCH

The objective of this study was to contribute to the socio-economic empowerment of women in the renewable energy sector of the RSA. The most important contributions of the study were discussed in the findings in Sections 7.3. 7.4 and 7.5. This study has therefore contributed to the body of knowledge about Successful Women's Empowerment by investigating the available literature relating to the renewable energy sector in the RSA and investigating international best practices as it pertains to mainstreaming gender. Structural Equation Modelling, a sophisticated statistical technique, in addition to empirical sample size, all contributed to this study to determine the factors that positively influence the Successful Empowerment of Women.

The benefit of conceptualising, designing, and developing conceptual models that define the most critical factors that positively influence the success of the socio-economic empowerment of women, is the contribution towards better understanding the implications of specific factors that positively impact the socio-economic empowerment of women in the renewable energy sector of the RSA.

The outcomes of this study thus offer recommendations and suggestions to the REIPPPP to empower women within the renewable energy sector. The added benefit to the development of the measuring instrument for the factors that influence the success of socio-economic empowerment of women in the renewable energy sector of the RSA is that the measuring instrument is equally applicable to the mining, manufacturing, and agricultural sectors. Also, several effective instruments have been included to assist the Successful Women's Empowerment, most of these instruments have been derived from the mining sector, and as such the synergies and knowledge sharing can be exploited to avoid *"reinventing the wheel"*.

The recommendations are summarised below:

- **Research Authenticity:** To the best of the researcher's knowledge, no similar research has been conducted either nationally or internationally to ascertain the factors that positively influence the success of the socio-economic empowerment of women in the renewable energy sector of the RSA. This study has, therefore, unveiled perspectives on mainstreaming gender in the renewable energy sector of the RSA, both at the executive level and at the beneficiary community level. The constructs included in the empirical research, namely, the factors that influence the perceived success of the socio-economic empowerment of women in the renewable energy sector in RSA, were not previously explored prior to this study. This research effort to mainstream gender in the renewable energy sector of the RSA, through the socio-economic empowerment of women, presents a credible model which can be implemented by the broader international renewable energy sector;
- **Research Methodology:** The research methodology that was developed for the variables in the theoretical model was unique to this study, and the reliability and validity of several of the variables proposed in the model has been substantiated by this study. For this research instrument, the high Cronbach's alpha coefficient demonstrated significant reliability and validity and can, therefore, be used in future studies;

- **Mining Sector:** This study drew on the community development experiences from the mining sector with a view to researching the past as a predictor of the future renewable energy sector. Therefore, comparative research could possibly be conducted in other sectors and industries to further augment the current research. Several of the regulatory obligations are similar to most industries as they are overarching Acts, such as the B-BBEE Act, and the Labour Relations Act are common legislation across sectors in the RSA;
- **Mainstreaming Gender:** The study provided new insights into mainstreaming gender in the renewable energy sector of the RSA, and more specifically the factors that influence the success of socio-economic empowerment of women in the renewable energy sector of the RSA. The accelerated growth of the renewable energy sector of the RSA provides a unique opportunity to achieve the sustained objectives of the socio-economic empowerment of women. The formation of a women-led IPP could be a possible pilot project, which could be prioritised as a flagship project. The models that have been presented in this study could be used as the initial models for discussion and could be made more robust to the point where these models become blueprints for the renewable energy sector;
- **Policy, Quotas, and Activism:** The research also reveals the gap that exists between the gender practitioners and the renewable energy sector. The renewable energy sector offers substantial opportunities to mainstream gender, but the renewable energy sector will be required to actively drive the gender agenda. The onus will possibly fall on the gender practitioners to drive the desired gender change through policy, quotas, activism, and socio-economic transformation; and
- **Gender-Based Violence:** Of great concern, is the extent of the gender-based violence that is prevalent in the RSA. The disjuncture between the Constitution of the RSA, which is considered one of the best in the world for human rights; and the increase in femicides, violence against women and children, and even more barbaric acts of burning victims and cannibalism in the Eastern Cape and KwaZulu-Natal raises deep concern.

Therefore, the structural challenges that this study has surfaced should also be addressed as a matter of urgency.

This section concludes by restating the structural challenges that women face, and how these challenges must also be addressed if any lasting empowerment of women is hoped to be achieved. The importance of also developing an approach to mainstream gender in a more inclusive manner will also be paramount as women attempt to occupy positions in a male-dominated arena. The emphasis on achieving bold objectives, such as establishing women-led IPPs has to be encouraged and targets set to attain these goals within a prescribed timeframe.

7.8. OBSERVATIONS AND RECOMMENDATIONS

This section will articulate the salient points from this study and will also provide practical recommendations to mainstream gender within the renewable energy sector. The intent is to contribute to the existing body of knowledge to aid the acceleration of the implementation of policy in the RSA.

7.8.1. Observations

This study was predicated on the basis that, by economically empowering women, women would be able to extricate themselves from any adverse situation. However, through this study, the researcher has revealed the complexity associated with mainstreaming gender and has modified the argument accordingly. Mainstreaming gender is a complex exercise and will require new methodologies, for example, Systems Thinking, to design impactful and sustainable solutions. The complexity associated with mainstreaming gender is the multiple entry-points, the array of skill sets required, as well as an in-depth knowledge of policy formulation and implementation, human capacity development, education, healthcare, humanitarian challenges, local economic development, social development, infrastructure and (renewable) energy, conservation of nature, and financing instruments. Typically, each institution, whether public or private, will each endeavour to develop its own approach to mainstreaming gender, linked to their business or sector.

This approach invariably leads to siloed implementations, that fail to maximise the investment. In a worst-case scenario, the intended beneficiaries are left in a position where they are worse off than before the initiative, leading to anger and resentment in the communities towards the mining sector responsible. As an example, the mining sector has been plagued with communities that are unhappy with the implementation of the Social and Labour Plans (SLPs).

Primarily a safe and secure environment must be first created in order for women to flourish. Quotas are equally important, but the quota has to be supported by a substantive performance management criterion. South Africa certainly meets, if not exceeds, the quotas of women Ministers, but as this study has revealed, the performance of those Ministries is of concern, e.g. the Ministry of Social Development, Ministry of Basic Education, and the Ministry of Women in the Office of the Presidency. In cases of underperformance, irrespective of gender, the underperformance should be addressed, and appropriate remedial action taken.

Having access to finance is also insufficient, women must be in a position to actually secure finance. Strong policy and governance systems should also form part of this eco-system that has to be created around women. The implementation and regulation of the policy is equally important, as well as the enforcement of consequences if the policy is disregarded. Activism is another key component, and it could be argued that in the RSA, there is insufficient activism. Finally, the need for ethical leadership, with demonstrated vision, is a critical factor. The need for Ethical Leadership, Social Investment, Sustainable Programmes, and Broad-Based Black Economic Empowerment is further confirmed by the empirical results of this study. This section will also attempt to explain the challenges that women will contend with when establishing SMMEs. Although the explanations might be generic, invariably, women will encounter even more challenges than their male counterparts.

7.8.1.1. Structural/Systemic Challenges

This study has revealed the deep structural challenges that women in the RSA must contend with daily. Starfield, (2016) argued that in order to empower women, activism and quotas are required.

Maslow's 'Hierarchy of Needs', and Holtmann's 'What it looks like when it's fixed', argue that social problems are complex, and in order to address these challenges a holistic approach, which includes the broader community, should be adopted. Maslow's 'Hierarchy of Needs' proposes that the Physiological Needs, Safety Needs, Social Needs, Esteem Needs, should be addressed before the Self-Actualisation Need can be attained. Holtmann (2011) argued that more than 50% of the criteria for a sustainable community was educational in nature. She further stated that there is no definitive solution for the 'unsafety of communities' and that the problem would be best addressed by creating a workable social system.

Maslow (Management Group, 2008) and Holtmann (2011) both emphasise the importance of cohesive communities. Lehohla also stated that anger, jealousy, money and an unequal society motivate crime, and if inequality is the driver of that crime, then the drivers of crime make it impossible to reduce crime in the foreseeable future (Statistics South Africa, 2016). One can, therefore, conclude, in a South African context, to mainstream gender, one would have to acknowledge that there are systemic problems that should be addressed to achieve the set gender objectives. Therefore, the measurement of success should be elevated to the measurement of a *'community's success'*, as opposed to the success of an individual group within the community. By broadening the definition of women to include the community, this will promote inclusive behaviour, and this inclusivity will start to encourage men to collaborate in and to promote gender initiatives. The proposed alternative definition of *'women'* could be *'women-led'*, and should include men, elders, people with disabilities, LGBT groups, girls and boys, and infants. Further research is required to define more inclusive terminology.

7.8.1.2. Safety and Security of Communities/Women

Through the course of this study, the complexities that women, youth, people with disabilities and children are confronted with on a daily basis has been revealed. The extent and contradictory nature of the problem is highlighted when the South African Constitution (policy) is juxtaposed against the extent of gender-based violence, and violence in general in South Africa. (Kende, 2003) considers the South African Constitution one of the best in the world.

By contrast, a report published by the Institute for Security Studies and Africa Check (2014) estimates that for the period 2013/4 there were an estimated 62,649 rape cases, and 46,253 sexual offences in South Africa.

The grotesque nature of this violence is further underscored by a statement by the Minister in the Presidency responsible for Women, Susan Shabangu (2017), stating that during 2017 there was an increase in femicides, violence against women and children, and even more barbaric acts of burning victims and cannibalism in the Eastern Cape and KwaZulu-Natal (Shabangu, 2017). Pali Lehohla, Statistician General of South Africa, states that if anger, jealousy, money and an unequal society are the motives of crime, and if inequality is the driver of that crime, which remains highest among 90% of the population, then the drivers of crime make it impossible to reduce crime in the foreseeable future (Statistics South Africa, 2016). Lehohla further states that 71% of women were victims of sexual offences and that 35% of murder in urban metros, and 38% of murders in rural areas, are perpetrated by men between the age of 15 to 34 (Statistics South Africa, 2016). According to the South African Police Service (Institute for Security Studies and Africa Check, 2014), the real extent of rape in South Africa is unknown as no recent study has been conducted. Research estimates that only one in twenty-five women who were raped in Gauteng Province reported the case to the police (Institute for Security Studies and Africa Check, 2014). The sub-argument, therefore, is that mainstreaming gender does not exist in a vacuum and unless the systemic problems are also addressed, and remedied, mainstreaming gender will not be able to achieve the full desired potential.

The initiative by Botswana to protect their learners has to be commended, and the initiative could be easily replicated by enlisting the services of women and youth within the South African communities. Botswana became the third African country, following South Africa and Kenya to implement a sex offenders list (Waweru, 2017). The sex offenders list is meant to be supplied to companies and interested parties in order to facilitate checks (Waweru, 2017). However, Botswana intends to make the list public in order to ensure and promote public safety (Waweru, 2017). During August 2017, the Botswana Police stated that there had been 171 cases of defilement between January and May 2017 and a rise of sexual offences from 543 cases in 2015 to 617 cases in 2016 (Waweru, 2017).

Traditionally, Botswana treated sex offences as top secret, but through the community outreach and seminars, sex offences are now being reported (Waweru, 2017). The Botswana Police has also partnered with schools as the majority of the victims are school-going children and have encouraged the children to report anything to the Botswana Police in the event that any abnormality can be identified in a learners' behaviour. Initiatives like the UN Women described above creates an ideal opportunity to capacitate the women, people with disabilities and the unemployed youth to form an integral part of the initiative, and thereby simultaneously address the challenges of unemployment.

7.8.1.3. Exclusionary nature of Mainstreaming Gender

The evolutionary nature of gender policy has created a measurement framework that calls for gender disaggregated data, meaning that the data should be captured for women, men, girls, and boys. There was no evidence of this measurement framework catering for the lesbian, gay, bisexual, and transgender (LGBT) community. The disaggregation of data also has the potential to divide a community, as opposed to the desired unifying effect that is required to address complex socio-economic problems. The disaggregation of gender data can be compared to the data that is captured for the B-BBEE, and the consequential behaviour of dividing South Africans along racial and economic lines. The collection of disaggregated data provides the statistical data for analysis and reporting purposes, but also has the unintended consequences of dividing South Africa along racial lines. An example where policy has created perverse outcomes is in the NDP of RSA, where the present model of B-BBEE has not succeeded in the transformation of the economy (National Planning Commission, 2011). Instead, it has created a procurement policy that causes job losses when firms import goods rather than use local producers.

Within the context of mainstreaming gender, women are defined by sex-disaggregated data, meaning that women are identified as a specific group within prevailing policies. By contrast, the REIPPPPs Implementation Agreement is relatively silent on the issue of mainstreaming gender.

For this reason, when referring to beneficiary communities as they pertain to the renewable energy sector, women are included in these beneficiary communities. Within this context, the term community will include women, men, elders, people with disabilities, LGBT groups, girls, boys, and infants.

The process of mainstreaming gender has gone through several evolutionary phases, activism, being one. However, to deliver even more impact, an inclusive approach, where men, elders, people with disabilities, and the LGBT community is embraced should be adopted. Therefore, as gender initiatives evolve, gender policy should also evolve and become more inclusive, thereby increasing the adoption to mainstream gender by men, interested parties and LGBT groups.

The importance of converting men in the private and public sector to evangelise mainstreaming gender is emphasised in the study conducted by Strategy&, the consulting division of PricewaterhouseCoopers (PwC). The study by Strategy& researched 2,500 of the most significant global companies, and the findings indicated that of the 359 permanent or interim CEOs appointed worldwide during 2015, only ten were female (McGregor, 2016). The ten female CEOs represents 2.8% of all new CEOs and is the lowest female CEO rate since 2011 (McGregor, 2016).

A more inclusive approach to mainstream gender should be investigated. The researcher has attempted to mute the perceived ‘exclusivity’ when dealing with ‘women’s empowerment’. At this stage, the researcher does not have a definitive alternative, except to propose the term ‘women-led’ initiatives. Further research should be conducted to better understand the implications of the perceived exclusion of men from community initiatives. In extreme cases, this perceived exclusion could lead to gender-based violence due to the male partners feeling inadequate and excluded.

7.8.1.4. New entrants into well-established Value-Chains

New (women) entrants have to contend with significant challenges when they attempt to enter an established, mature value-chain. Research into the challenges faced by the small-scale diamond cutters and polishers, as well as the exclusionary nature of the agricultural value-chain was discussed earlier.

It is very difficult for women to enter these invariably male-dominated value-chains. When practitioners advocate agriculture as a mechanism for women empower, they are really talking about subsistence farming. The commercial agricultural sector is significantly more complex, risky, and challenging for women.

Ideally, women should become involved in the Renewable Energy sector while the sector is still in its infancy and embed themselves at key positions within the (renewable) energy value chain early on. Several business models can be considered for women-led IPPs. The women-led IPPs could take the form of Build-Operate-Transfer (BOT) or Build-Own-Operate-Transfer (BOOT). BOOT is a form of project financing, wherein a private entity receives a concession from the private or public sector to finance, design, construct, own, and operate a facility stated in the agreement.

7.8.1.5. The Uncertainty, Consequences of Climate Change

Women who wish to enter the commercial agricultural sector will also have to contend with the uncertainty of climate change. In the immediate term, food security should be considered one of the most significant threats to the RSA's rule of law, and therefore the implications of climate change on (rural) communities become a significant consideration. The immediate to short-term implications of climate change is possibly well understood, but the longer-term effects on communities and society at large are still busy being researched. A case in point is the situation in Cape Town, South Africa, where the city is experiencing the worst drought in 100 years. Professor Neil Armitage, Head of UCT's Urban Water Management Department, estimates that less than 5% of Cape Towns metered water is consumed by informal settlements, with formal houses responsible for consuming an estimated 66% of the water (GroundUp Staff, 2018). As of the 1st February 2018 under level 6b water restrictions, citizens would be limited to fifty litres of water per day, with the new daily consumption target for the City of Cape Town being set to a daily collective consumption target of 450-million litres per day (de Klerk, 2018). The inclusion of the Conservation of Nature into the REIPPPP Strategy should be investigated. As with gender, developmental projects are generally silent on the conservation of nature.

As with gender, there are international funding opportunities available for climate change policy, climate change mitigation, and climate smart projects. The conservation of nature is core to the sustainability of the planet, and the consequences of climate change will require climate-smart mitigation strategies. The argument can be made that the renewable energy sector exists as a direct consequence to preserve the planet. The cumulative finance under the direct control of the REIPPPP is substantial, and this funding pool should be leveraged to attract additional DFIs and private sector investors.

7.8.1.6. Mainstreaming Gender and the Environment

The GEFs approach to mainstream gender is articulated in its new Policy on Gender Equality (Global Environmental Facility, 2017). The GEFs objective is to transition from a gender-aware, i.e. “do no harm” approach; to a gender-responsive, “do good” approach by requiring robust standards in the design, implementation and evaluation of GEF activities (Global Environmental Facility, 2017). Besides the REIPPPP being a guaranteed source of developmental funding to mainstream gender, the transition of South Africa from fossil-based energy to renewable energy will contribute to the objectives to reduce the global greenhouse gasses.

Therefore, South Africa, as a signatory to the Paris Agreement, will be supporting the Paris Agreement through tangible actions (European Commission, 2016b). By linking the GEF objectives, and the South African environmental objectives to mainstream gender, further international linkages will be established, and more importantly, additional funding streams will be available from institutions like the GEF and the Green Climate Fund.

7.8.1.7. Good Governance and Ethical Leadership

This study has exposed the problems of ‘State Capture’ and the consequences of the breakdown in ‘Good’ Governance. The empirical results of this study demonstrate that Sustainable Programmes and Executive Leadership is statistically significant in relation to Good Governance.

Therefore, based on the empirical results, the short-listing, selecting, and appointment of Ethical Leadership should be considered a critical success factor. The short-listing, selection and implementation of Sustainable Programmes is equally critical and should receive a similar weighting. The governance structures and systems should ensure channels for 1) dispute resolution, 2) conflict resolution, and 3) an anonymous hotline. There should also be a zero-tolerance approach towards any breach of governance and corruption. Also, any value-destroying behaviours should be immediately eliminated. Individual agendas that are divergent from the strategic objectives should be immediately eliminated.

The empirical results of this study demonstrate that Executive Leadership is statistically significant in relation to Good Governance and Successful Women's Empowerment. This study has demonstrated that the need for Ethical Leadership is even more critical than having Good Governance systems in place. The problems of 'State Capture' also underscore the need for Ethical Leadership.

7.8.1.8. Stakeholders ≠ Beneficiaries

The socio-economic empowerment of women within the renewable energy sector of the RSA has a complex stakeholder domain which includes government, the private sector, organised labour, and civil society. Generally, stakeholders and beneficiaries are grouped together, however, a clear distinction should be made between stakeholder and beneficiaries. Stakeholders could be from private sector, organised labour, and civil society, each with their own agenda. Whereas the beneficiaries will be the specific target group that should directly benefit from the developmental funding. Yet, invariably, the beneficiary group is significantly underrepresented when projects are conceptualised and implemented. Therefore, women within the communities might be further excluded from opportunities as they are not identified, considered, or consulted from the outset of the project. This important distinction between stakeholders and beneficiaries is further discussed through instruments that have been used for past projects. This division of the stakeholders is vital because invariably each grouping will be driven by their own agendas and desires. There is a propensity in South Africa, when dealing with community development initiatives, to be guided by municipal management and the IDPs.

The municipalities in South Africa have become an extension of the ruling party, and thus the objectives of the municipal management might not be congruent with the needs of the community. This disjuncture is clear from events during June 2017, when residents of the Gamagara Local Municipality marched to the municipal offices to hand over a memorandum, and a petition signed by 1 100 residents, to the Mayor of Gamagara Local Municipality. The memorandum detailed the grave concerns raised by ordinary citizens regarding the approved Integrated Development Plan and general budget for the municipality.

To illustrate the extent of the underrepresentation of beneficiaries, Figure 7.11 presents an instrument that has been used to categorises community initiatives according to stakeholders from the Public Sector, Private Sector, Organised Labour, and Civil Society. The Key Performance Indicators (KPIs) of the Public Sector would most likely be determined by the objectives as articulated in the Municipal IDPs, whereas the intrinsic KPIs for any Private Sector company will be a profit motive, as, without profit, the Private Sector company would cease to exist. By contrast, the needs of the community will invariably be similar to those needs as defined by Maslow, Holtmann and Sen. Therefore; one can infer that each category will have their own (commercial) objectives, which might be divergent from the real needs of the community.

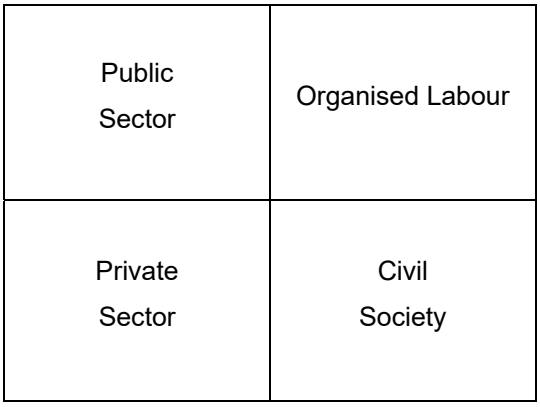


Figure 7.11: Stakeholder Domains

Source: Researchers construction

Who are the Stakeholders? Another subtle, but crucial point, is the fact that Stakeholders are not necessarily the Beneficiaries. However, Beneficiaries are part of the Stakeholder pool.

This distinction is fundamental, as there is always a risk that the Stakeholders 'agendas' are not congruent, if not wholly divergent, from the stated objectives of the Beneficiaries. The list of stakeholders directly involved with the community development initiatives was categorised according to the stakeholder domains. Figure 7.12 presents the results of the stakeholder instrument and demonstrates that 76% of the Stakeholders are from the Public Sector. The direct community beneficiaries constitute only 1% of the stakeholder ecosystem. The revised stakeholder categories for developmental projects could be Public Sector, Private Sector, Civil Society/Beneficiary Community, and Organised Labour.

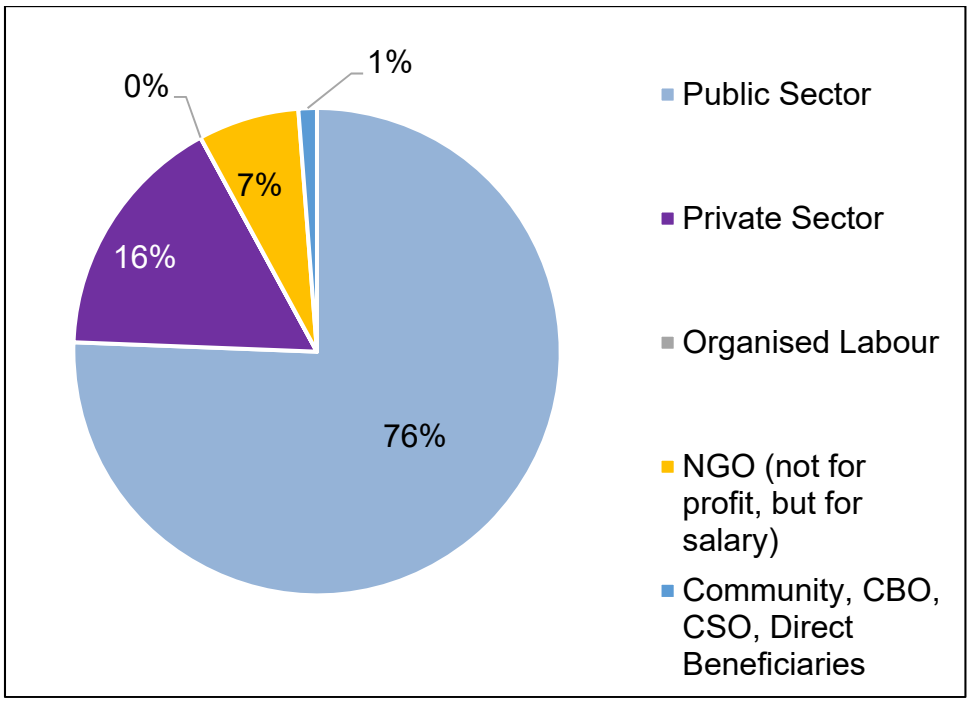


Figure 7.12: Stakeholder Segmentation

Source: Researchers construction

In Chapter Three, the gender partnerships were discussed, in particular, the GEF Gender Partnership. In this section, the Stakeholders that attended the GEF, Gender Partnership Workshop at the International Monetary Fund in Washington DC during July 2017, were categorised using the Stakeholder Domains instrument. The GEF was categorised as Public Sector, while the 22 Agencies were categorised as Private Sector entities since the Agencies have to primarily first cover their overheads and salaries. The single Indigenous People representative was categorised as a CSO.

Figure 7.13 should be considered an indicator to guide the REIPPPP to increase community participation, as well as women's representation in all aspects when mainstreaming gender. The chart indicates that only 4% of the community is represented at the GEF Gender Partnership policy formulation workshop. The REIPPPP should also bear in mind that generally, the employees of Agencies and NGOs will enjoy a degree of job security, time to travel, and other perks. Whereas, CBOs do not enjoy the same degree of financial support or security and are competing with the well-established Agencies and commercially driven NGOs, for the same funding pool. The REIPPPP can, therefore, play an instrumental role in developing the capacities of CBOs and their access to development finance.

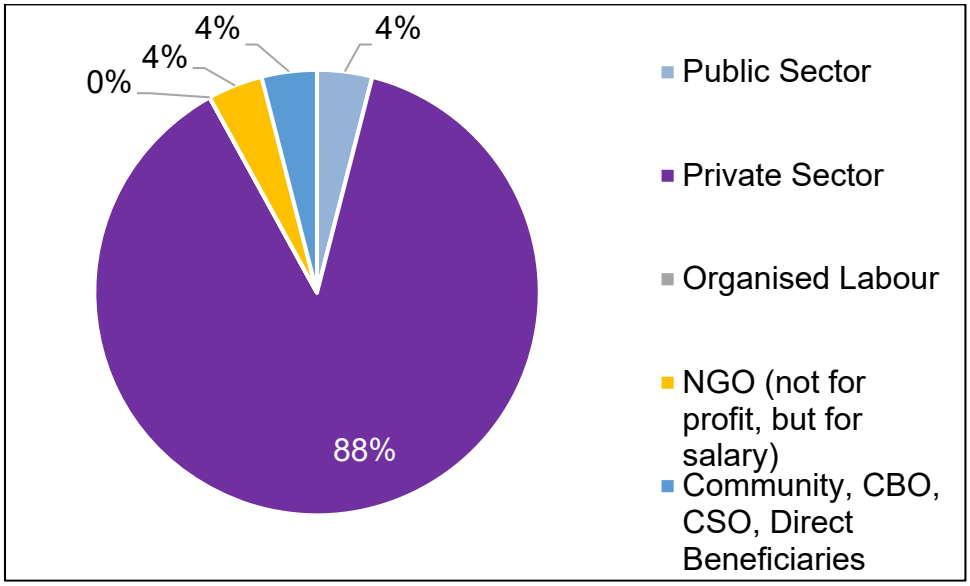


Figure 7.13: GEF Gender Partnership Workshop

Source: Researchers construction

Existing partnerships should be nurtured, and new partnerships developed. Presently, IPPs enjoy a deep relationship with all actors at local, provincial, national, regional, and international levels. The opportunity exists to partner with the mining, manufacturing, and agricultural sectors to continue building on the IPPs already established Socio-Economic Development programmes. The REIPPPP should engage these sectors to avoid reinventing the wheel and duplicating the effort that these sectors have already invested over the past decades. The anticipated R60 billion in the collective investment of the latest round of IPP projects (Creamer, 2018), could be utilised to leverage additional funding with several potential partners listed below:

- International: the GEF, the UNDP, UNWomen, World Wildlife Fund, Development Agencies;
- Regional: SADC, DBSA, the DTI;
- National: Government Departments and Agencies, Civil Society, Organised Labour, Private Sector; and
- Local: Municipalities.

Considering the current depressed global economic climate, and the implications of the downward growth forecast for South Africa by the International Monetary Fund (IMF) will have consequences for South Africa's borrowings. The IMF has revised downward the South African economic growth forecast for 2018 and 2019 to a projected 0.9% growth over the course of the next two years (BusinessTech, 2018). Considering the above, building strong international linkages will further improve the desired developmental outcomes, and every attempt should be made to ensure that the developmental funding is maximised to ensure that sustainable outcomes are delivered.

Public-Private-Community-Partnership should be investigated. There is sufficient evidence of commercially successful PPPs in action. However, rural communities typically lack any commercial experience and are coerced into arrangements with a commercially astute IPPs, who might have the support from very influential shareholders. The IPPs will typically be driven by commercial imperatives to repay loans and satisfy shareholder demands, whereas the beneficiary communities will typically be driven by all the objectives as articulated in Maslow's Hierarchy of Needs. In a worst-case scenario, beneficiary and non-beneficiary communities could halt the IPP operation, with the consequential generation losses leading to millions of ZAR per day. The IPP is a private, commercial venture and should be subject to similar regulation as any JSE listed entity. The expectation by surrounding communities to benefit directly from the IPP should be eliminated.

7.8.1.9. Socio-Economic Development

The term socioeconomics or social economics is defined as the social science that studies how economic activity impacts social processes, and how social processes shape economic activity. The social science analyses how societies progress, stagnate, or regress due to their local economy or regional economy, or the global economy. Societies are split into three groups, namely, social, cultural, and economic. The challenge is that Social and Economic Development are bundled together under Socio-Economic Development. These two groups are significantly different and require distinctly different expertise to implement projects. From the researcher's experience, the obligation to implement these Socio-Economic Development projects within a company is delegated to the Human Resource Department, Finance Department, or some other department within the company. Invariably, the company will not have the social science expertise, or the entrepreneurial expertise to implement sustainable projects. Moreover, SED is not the core business of an IPP, and, as such, should be the responsibility of recognised experts in the field of Socio-Economic Development.

When planning, designing, and implementing socio-economic programmes to empower women, special care should be taken to ensure that the appropriate skills and expertise are committed to the programme. Failing to ensure that the most appropriate subject matter experts are allocated to the programme will possibly cause more harm than good. The REIPPPP could be considered in a similar vein to the mining sector, and, thus, the REIPPPP is a critical funding stream to facilitate the socio-economic empowerment of *'women-led'* companies, programmes, and interventions.

Should the IPP be responsible for Job Creation? According to Grant (2015), the unemployment rate is estimated to be 24.3%, or 34.6% when using the expanded definition that includes people who have stopped looking for work. South Africa ranks among the ten worst countries for unemployment with an estimated 54% of South African citizens living below the poverty line of R25.50 per day (Grant, 2015). The unemployment rate is further exacerbated by a failed educational system that promotes learners that have a 20% mark in mathematics (Grant, 2015).

The IPP should remain focused on core business, which is optimised power generation, and not be distracted with creating jobs which is outside the area of expertise.

Should Economic Development be removed from the IPPs daily operational responsibility? According to Eberhard *et al.*, (2014), the most controversy and uncertainty generated among the REIPPPP bidders was due to the firm reliance on the Economic Development requirements which were designed to incentivise bidders to promote job creation, local manufacturing, community development and black economic empowerment. International bidders were of the opinion that the economic development obligations were too demanding, while the domestic bidders who had the support of the South African Trade Unions, were of the opinion that the economic development requirements were not sufficiently stringent (Eberhard *et al.,* 2014). The NDP of RSA states that the present model of B-BBEE has not succeeded in broadening the scope of ownership and control of large firms, i.e. economic transformation (National Planning Commission, 2011).

The recommendation is, therefore, to remove Economic Development from the IPP obligation, mainly because socio-economic development is not a core business function and it is unlikely that the IPP will have the requisite skills and experience to implement sustainable socio-economic development initiatives. The potential exists that the IPPs will cause more damage in already depressed and complex communities. The IPPs should be focusing on efficient power generation. The duplication of effort and duplication of resources of the IPPs can be eliminated and could be housed under a single Socio-Economic Development implementation umbrella, i.e. the SPV. Also, overlaying the duplication of effort by all these disparate entities, the layers of duplication only further contributes to diluting the developmental funds that should be directed towards uplifting the beneficiary communities.

7.8.1.10. What should be measured?

The value of collecting sex-disaggregated data has been noted, but sex-disaggregated data does not indicate the *'quality of the outcome'*.

The quantitative data should, therefore, be augmented with qualitative data to measure parameters including the sustainability, impact, effectiveness, and efficiency of interventions and programmes. Qualitative data could be considered even more important than the quantitative data as it will quantify the real extent of the Human Capital Development aspects of the REIPPPP.

The objective of the GEFs new Policy on Gender Equality is to transition from a gender-aware, i.e. *'do no harm'* approach; to a gender-responsive, *'do good'* approach by requiring robust standards in the design, implementation and evaluation of GEF activities, and by also introducing measures to allow the GEF to leverage strategic opportunities to address gender gaps (Global Environmental Facility, 2017). By contrast, in South Africa during 2017 there was an increase in femicides; violence against women and children; and even more barbaric acts of burning victims and cannibalism in the Eastern Cape and KwaZulu-Natal (Shabangu, 2017). In light of the safety, security, social, and economic challenges that South Africa currently faces, a more robust approach than *'do good'* will be required.

The importance of Monitoring, Evaluation, and Reporting (M&E) cannot be sufficiently stressed. This study has intentionally invested extra research effort in the qualitative aspects of development as argued by Maslow, Holtmann, and Sen. Therefore; the REIPPPP should consider implementing an M&E system that records qualitative and quantitative data. The Information Management System (IMS) should present the data so that the performance of all the projects can be easily visualised and analysed. Figure 7.14 presents an M&E System that analyses both qualitative and quantitative data. This visualisation is underpinned by a data model that is populated with detailed project data.

The formation of an Independent Evaluation Office, similar to the GEF IEO, should also be investigated. The example of the GEF establishing the IEO to provide an oversight function could be replicated. In some respects, the IPP Office is already providing the M&E functionality, but in some instances, the IPP Office might be conflicted by trying to ensure power generation, even though the IPP might not be compliant.

Also, the complex Economic Development reporting is mostly quantitative and lacks the more important qualitative indicators that are derived by directly engaging the beneficiary communities. This IEO would be focused on the Human Capital Development obligations and not the power generation aspect of the IPP, as well as monitoring the entire REIPPPP performance as it pertains to Human Capital Development.

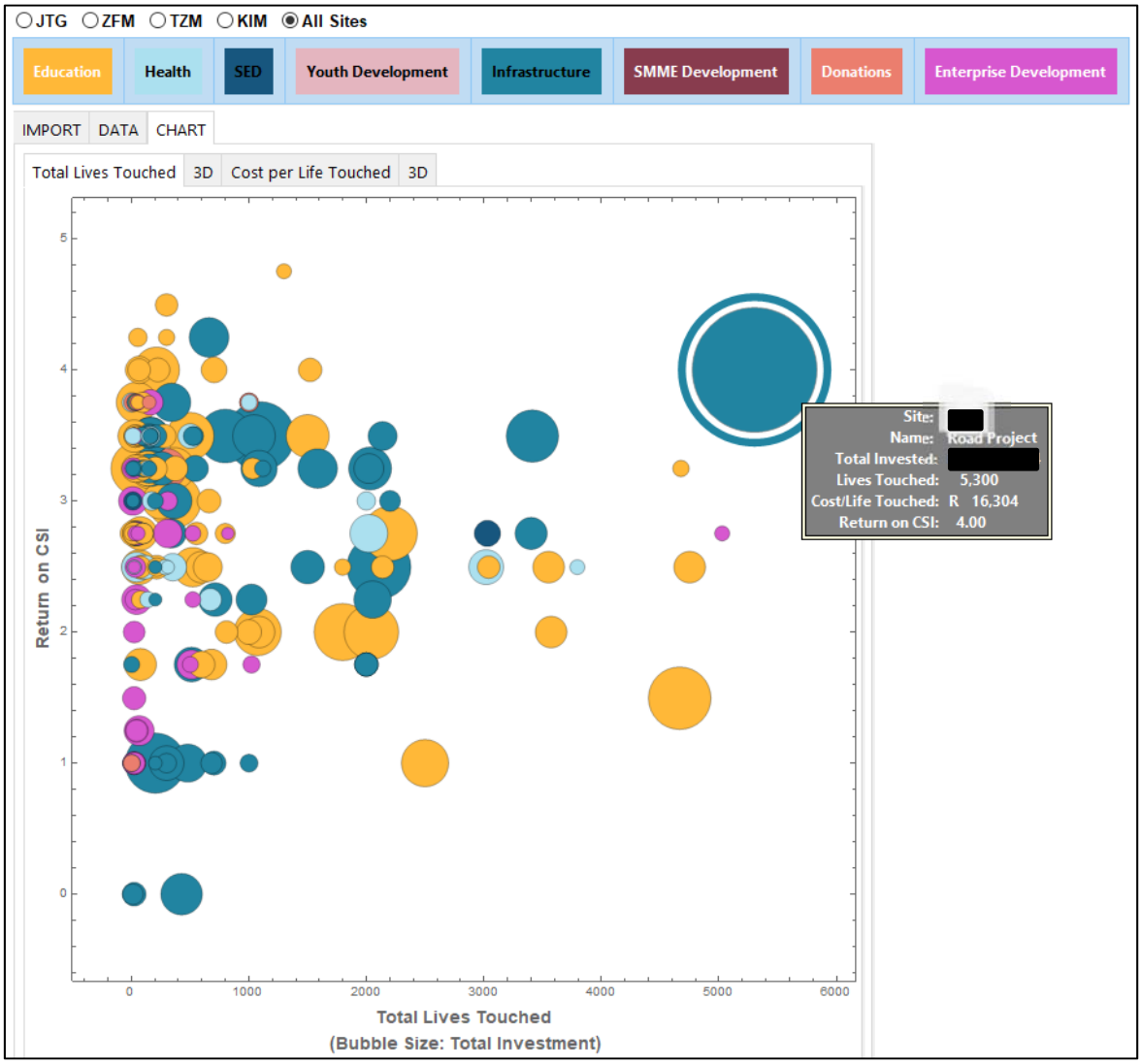


Figure 7.14: M&E System

Source: Researchers construction

Further research should be conducted to determine an appropriate approach to mainstreaming gender in South Africa, to define the quantitative and qualitative data to be collected, and to develop a strategy to implement gender-responsive programmes in the renewable energy sector.

7.8.1.11. Post-Closure Sustainability

The concept of ‘mine closure’, and the consequence of post-mine-close is a very well understood reality in the mining sector. The resulting increase in drug and alcohol abuse, the increase in depression, the increase in suicides, and the resulting ghost towns, are all well documented.

The boom, bust, and possible recovery of the iron ore companies in South Africa are good case studies that should be critically studied in order for the renewable energy sector to replicate its successes and to avoid the mistakes. The typical renewable energy plant has an operational life of 20 years, meaning that, legally, the Economic Development and Community Trust Funds will cease after the 20-year period. Beneficiary communities should, therefore, take a longer-term view of the investment and ensure that their developmental objectives are met before ‘IPP shutdown’. Research conducted by (Giddy, 2016) state that the main lessons learnt by community leaders from Costa Rica’s 20 years of wind generation, was the need to develop the capacity of communities to think beyond their basic needs and to develop and embrace long-term goals, requiring a visionary and strategic mindset to ensure long-term sustainability. IPPs should plan and implement for ‘shutdown’ from day one.

7.8.1.12. Commitment by Women to Mainstream Gender

The demographic information for this study revealed that 63% of the total sample population, which included international respondents, were male, and only 37% were female respondents. Of the 81% of the respondents that requested a copy of this study, 63% were male respondents and only 37% female. Of the sample population based in the RSA, ranked by gender and ethnicity, 62% of the male respondents out-numbered their female counterparts in all categories. 64% of the white male respondents demonstrated the most interest in mainstreaming gender, followed by 65% African black males, and then 58% coloured males. There were no responses from the Asian population. From this analysis, one can deduce that male respondents considered this study sufficiently important to invest their time and effort in completing this questionnaire.

Considering the commitment demonstrated by male respondents, males should, therefore, be encouraged by the female counterparts to actively participate in the mainstreaming of gender.

There are numerous reasons why women might not have completed the questionnaire: time pressure; relevance to their situation; diffidence; not feeling that it will make any difference. There are also several inferences that could me made from the analysis of the demographic data:

- Women have given up and have accepted the current status quo. Thereby also indicating the lack of activism;
- Women have become disillusioned by their representatives, e.g. the Ministry of Women within the Office of the Presidency;
- A degree of apathy has crept in, which further reinforces the lack of activism;
- Women are not fully aware of the opportunities that the renewable energy sector presents; and
- Finally, males are keen to mainstream gender and should be actively encouraged by their female counterparts.

The breakdown in governance, corruption, and lack of ethical leadership within the South African Social Security Agency was discussed in detail in Chapter Three. Minister Bathabile Dlamini, who headed the South African Social Security Agency during this bleak period, was moved on the 26th of February 2018 to the Ministry of Women in the Presidency. Although there was a degree of dissatisfaction voiced by Dlamini's appointment, South African Women were largely silent on the appointment. Therefore, one can conclude that women in the RSA are largely satisfied with the appointment of Minister Bathabile Dlamini to the Ministry of Women within the Office of the Presidency, and, thereby, becoming one of the most influential women to mainstream gender in the RSA. Finally, a more inclusive approach to mainstreaming gender could possibly deliver further impact. As an example, positions that might be traditionally considered the sole domain of women, such as the Minister of Women within the Office of the Presidency, could be made available to males and LGBT groups.

These exclusive positions should be assessed on performance, and not based on gender, as it might well be that a male with international relations and strong personal networks might well deliver much more value to mainstream gender.

7.8.2. Recommendations

This section will discuss the REIPPPP and the gender literature reviewed. It will also address recommendations regarding mainstreaming gender, specifically aimed at the policy makers, financiers, IPPs, beneficiary communities within the fifty-kilometre radius, and non-beneficiary communities impacted through renewable energy generation in South Africa. This section will also advocate an inclusionary approach to mainstreaming gender, as opposed to the current exclusionary approach to gender. Finally, this section also proposes possible solutions that might be further researched.

7.8.2.1. Policy Considerations

The REIPPPP should avoid repeating errors of the past and critically review the community development performance of the mining sector to gain a deeper insight into the strategies that have delivered sustained community development, thereby avoiding the repetition of value-destroying mistakes. It would be a missed opportunity if the REIPPPP were to repeat errors of the past, especially as it relates to Human Capital Development.

Currently, the non-energy compliance for the IPP is catered for under the Economic Development and Community Trust Fund obligations. The non-energy compliance requires the IPP to also implement the Economic Development Strategy through Socio-Economic Development and Enterprise Development initiatives. As mentioned before, human development is not the core or even secondary expertise of the IPP. It is, therefore, most unlikely that the IPP would have the requisite experience or expertise to implement developmental initiatives. The REIPPPP could consider redefining the Economic Development objective as the “Socio-Economic Development of Communities” with the following focal areas: Capacity Development (Education), Community Wellbeing (Healthcare), Entrepreneurship (Enterprise Development) and Conservation of Nature. Education, Healthcare, Safety and Security, and the Environment should remain the responsibility of government.

The IPPs will continue to fulfil a crucial role in nurturing existing partnerships and introducing new international financing, engineering, and development partnerships. The REIPPPP should critically review its current policies and plot a course to infuse tangible gender outcomes, and to mainstream gender practices. The gender policy should avoid a 'cut and paste' from existing gender policies, but, instead, critically review the current landscape in the RSA as it pertains to women's empowerment and craft a strategy that will see the actual empowerment of women. Figure 7.15 presents an approach where women are positioned at the centre of community development activities. The REIPPPP should develop a strategy that creates a realistic Shared Vision of the future, where communities and women feel included and linked to their own outcomes.

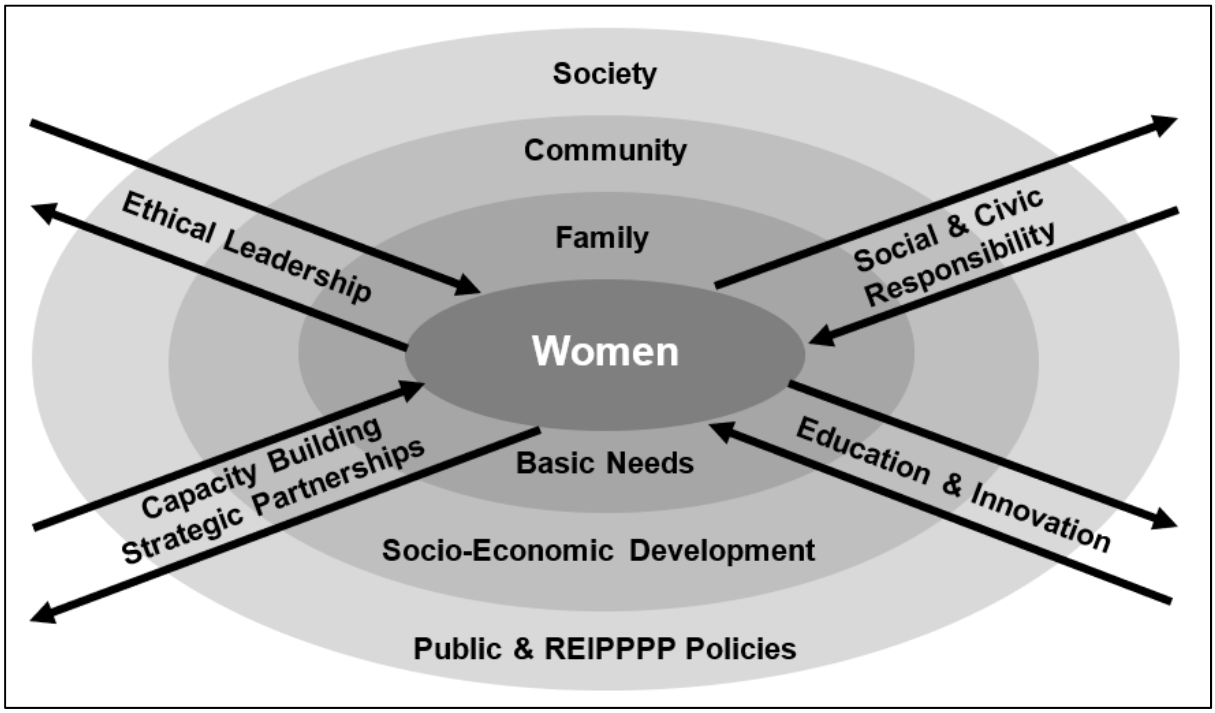


Figure 7.15: A Women-Centric Approach to Community Development

Source: Researchers construction

The principal themes presented in Figure 7.15 of Ethical Leadership, Capacity Building and Strategic Partnerships, Education and Innovation, and Social and Civic Responsibility are confirmed by this study. The empirical results of this study also reaffirm the need for Ethical Leadership.

7.8.2.2. Developmental Strategy

The REIPPPP should consider the umbrella objective to be the *Socio-Economic Development of Communities in the RSA*, with the following focal areas, namely, Education, Healthcare and Humanitarian Assistance as the core focal areas. Healthcare should be reviewed as a focal area as Healthcare will need to survive beyond the lifetime of the IPPs which are only contractually operational for twenty years. Investment Management, Entrepreneurship, Transport and Logistics, Safety and Security, Skills Development, and mainstreaming gender in the renewable energy sector can be considered cross-cutting outcomes that every initiative would have to deliver. Figure 7.16 presents the Beneficiaries, Stakeholders, Focal Areas, and the desired Cross-Cutting outcomes.

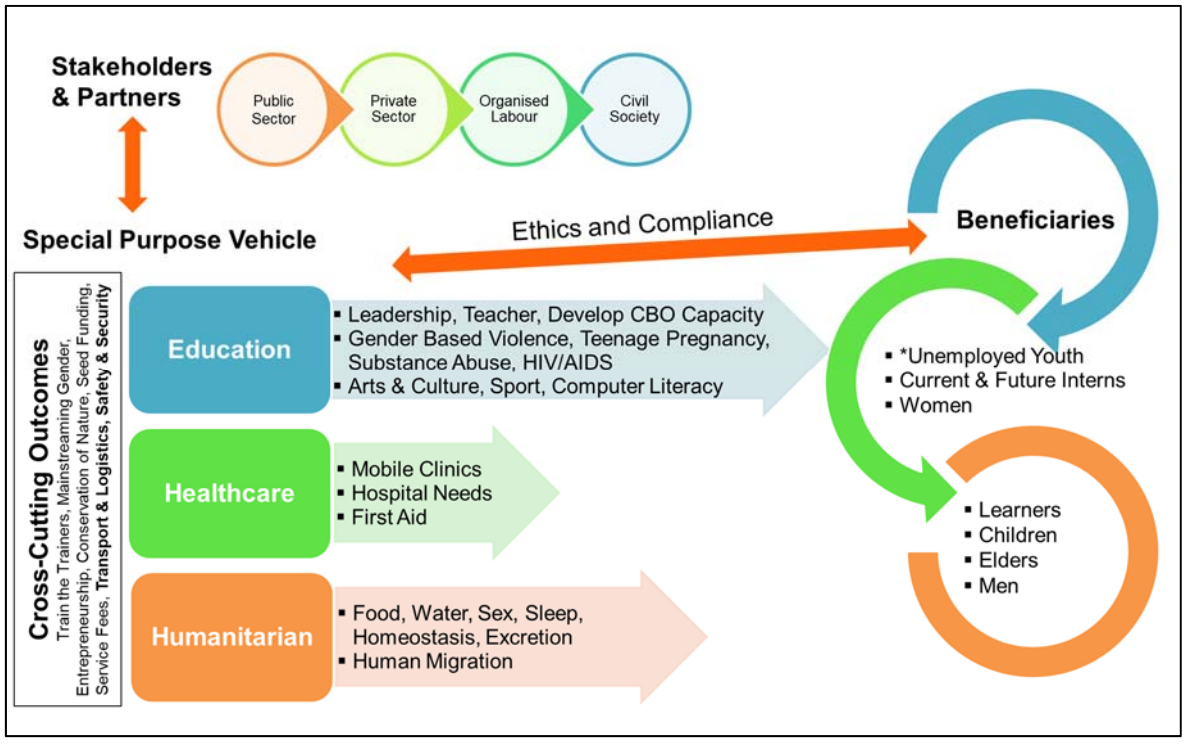


Figure 7.16: Strategy, Stakeholders, Focal Areas, and Projects

Source: Researchers construction

7.8.2.3. Dilution of Development Finance

Figure 7.17 presents the fund-flow and associated dilution of funds as it passes from one entity to another, before finally arriving at the intended beneficiaries.

The structure of the legal entity that implements these community development initiatives should be critically reviewed. An NPO, which also has a business motive, will intrinsically prioritise the needs of the NPO, namely, to pay salaries and cover overheads, before prioritising community needs. Therefore, the need to develop the capacities of the communities to implement their initiatives becomes an essential objective for the REIPPPP. The Special Purpose Vehicle to realise these objectives will be through the formation, and capacitation of Community-Based Organisations, Faith Based Organisations, Women-Led Organisations, Organisations for People with Disabilities, and Youth-Led Organisations. The term NPO should also be qualified as, “not for profit, but salary and overheads included”. Those NPOs should be considered as for-profit enterprises. Currently, the RSA does not have a legal form for a for-profit social enterprise.

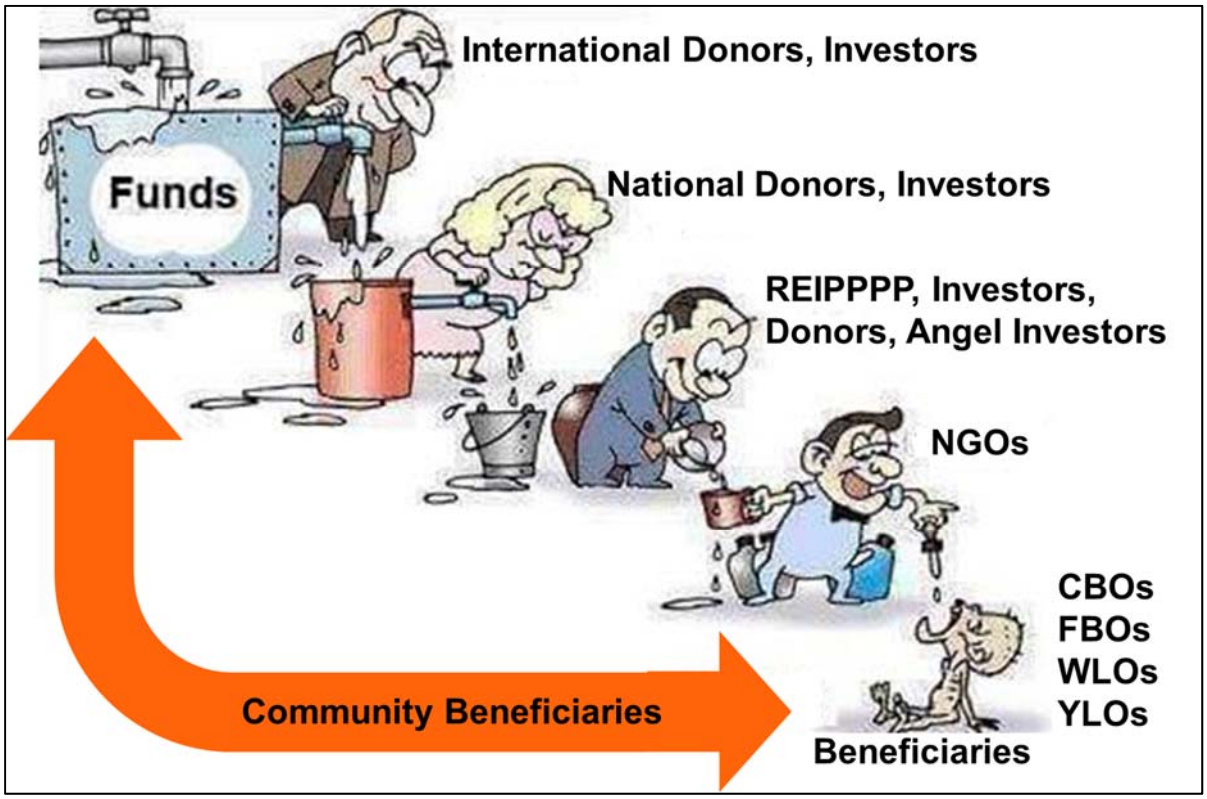


Figure 7.17: Fund-Flow to Beneficiary Communities

Source: Unknown, adapted by researcher

Further research is required to develop the business model(s) to achieve the sustained socio-economic empowerment of women in the renewable energy sector of the RSA.

Gender practitioners, Community Based Organisations, Faith Based Organisations, Women-Led Organisations, Organisations for People with Disabilities, and Youth-Led Organisations should all be actively included, especially during the conceptualisation and strategy development stages.

7.8.2.4. Develop the Capacities of Communities

The relationship with the beneficiary communities should fundamentally change to one where the communities are held accountable for their outcomes. By holding the communities accountable, the dependency on the IPPs will be eliminated. The REIPPPP could develop the capacities of the communities using a 'bottom-up developmental approach', that places the beneficiaries at the centre of the sustainable solution. The REIPPPP could also apply itself to assist the beneficiaries in accessing funding, eliminate the typical dilution and wasteful expenditure, and deliver much more impact with fewer resources. The REIPPPP should also be held ultimately responsible for developing the capacities of the beneficiary communities through the development of Community Based Organisations, Faith Based Organisations, Women-Led Organisations, Organisations for People with Disabilities, and Youth-Led Organisations.

The change in the relationship can be achieved by:

- Building capacity within the communities;
- Sourcing human resources from within the communities; and
- Developing new production and consumption revenue streams from the municipalities, surrounding mines, IPPs, and the communities themselves.

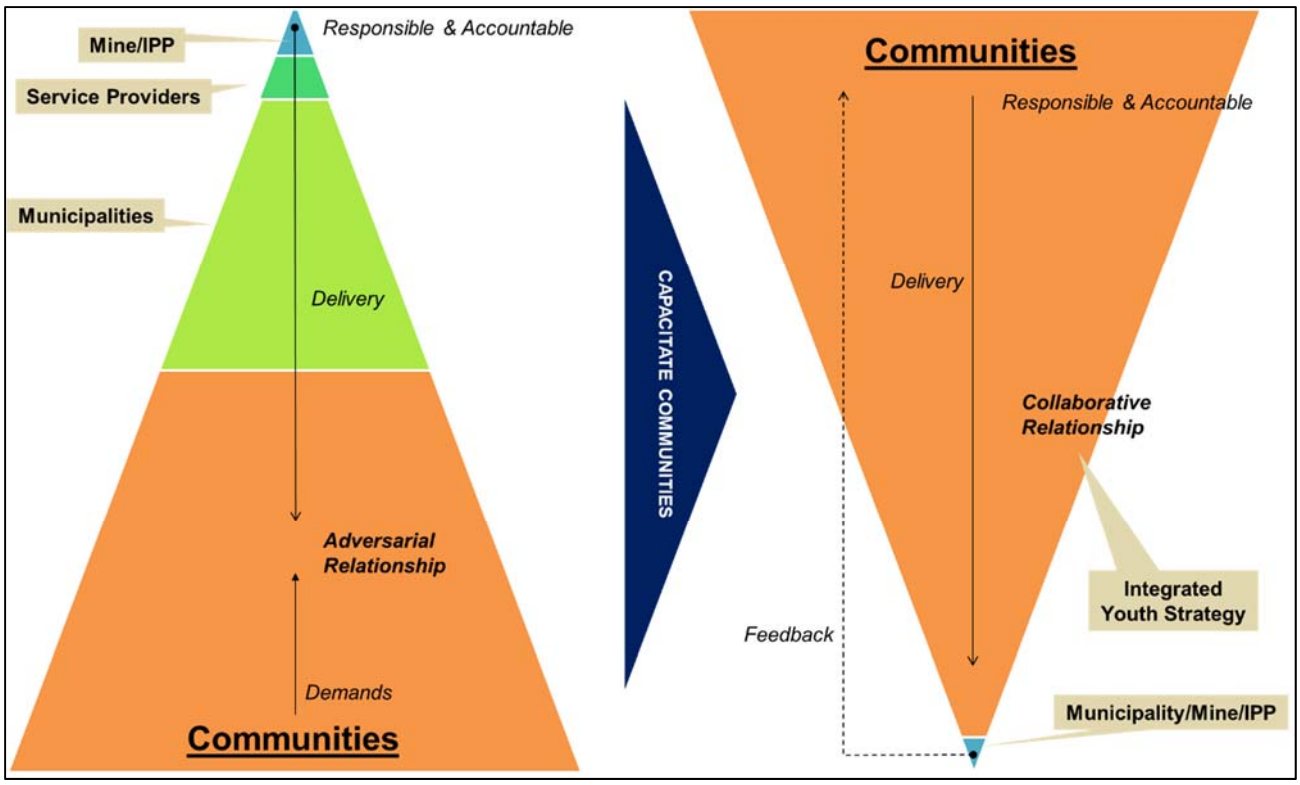


Figure 7.18: Change the nature of Community, Municipal Relationships

Source: Researchers construction

Figure 7.18 presents the 'Upside Down Pyramid', where the bulk of the population is located at the 'Base of the Pyramid'. The approach is to change the nature of the relationship with the IPP or mining company, who invariably is in the minority, to flip the pyramid and focus on the majority of the human resources. Thereby changing the nature of the relationship from one that is adversarial, to one of collaboration. The success of this approach is integrally linked to the capacity development of the communities.

The community needs should also drive the desired development outcomes. The compliance obligation of the IPP is defined in the Implementation Agreement. From the outset of the REIPPPP the Economic Development, as it relates to community development, is articulated as Socio-Economic Development and Enterprise Development. These developmental pillars were then supported by strategies that utilised the pillars of Education, Skills Development and Training, Enterprise Development, Infrastructural Development amongst others.

However, these pre-defined pillars resulted in initiatives that were compartmentalised and did not consider the need for interaction and synergy across pillars, as well as across initiatives, and IPPs. The experience gained from the mining sector demonstrates that these projects create silo's and miss the opportunity to synergise within the IPP, as well across IPPs to build sustainable legacies. The developmental needs of the communities, not the municipality needs, nor the community needs as perceived by the IPPs, should drive the developmental strategy and subsequent planning of the projects. A possible longer-term desired outcome of the communities might be articulated as follows, wanting to produce ten doctors, fifty engineers, and one hundred teachers over a five-year period from within their community. The role of the IPP will be to facilitate, as best possible, the attainment of this shared vision.

7.8.2.5. Human Capital/Community/Women Development

This section builds on the principle of 'changing the nature of the relationship with communities. The fundamental shift of this paradigm is to capacitate communities to implement their own projects, in their own communities. The REIPPPP essentially becomes a central hub that connects all the IPPs and the beneficiary communities. This following section should be read with the objective of capacitating the communities with every programme, project, or intervention. There should also be supporting revenue streams that will exist beyond the IPP shutdown, to ensure the sustainability of the programmes. Thus, the following programmes are intended to capacitate the communities to generate new revenue streams that should eventually exist independently of the IPPs developmental funds.

The failure of the public education system was discussed earlier in Chapter Two. Further research should establish the viability of externalising Education from the responsibility of the South African government through an SPV. The benefit of externalising education through an SPV would mean that the educational system is insulated from political election cycles, as well as political ideologies. By contrast, the developmental and educational needs of society require stability and time horizons lasting several decades to produce tangible benefits as an outcome of the Educational System.

The added benefit of this SPV approach is that one can immediately address the estimated 50% youth unemployment problem, by mobilising the youth to deliver after-school tuition, aftercare services, project coordination services and other services that might be required within the communities. The SPV could achieve these outputs at an accelerated delivery pace as it would be measured by improving the numeracy, literacy, and ensuring that the learners/youth are globally competitive.

Figure 7.19 presents the ‘Cradle to Grave’ approach to Capacity Development and proposes an instrument that could be used to map the educational facilities within a given radius of a selected centre point. The instrument records the educational institutions from day-care facilities through to tertiary institutions. By listing the various public, private, and informal educational institutions, the needs, opportunities, and gaps are quickly revealed. This mapping exercise provides a holistic view of the educational facilities and the opportunities that could exist for the capacity development of the surrounding communities.

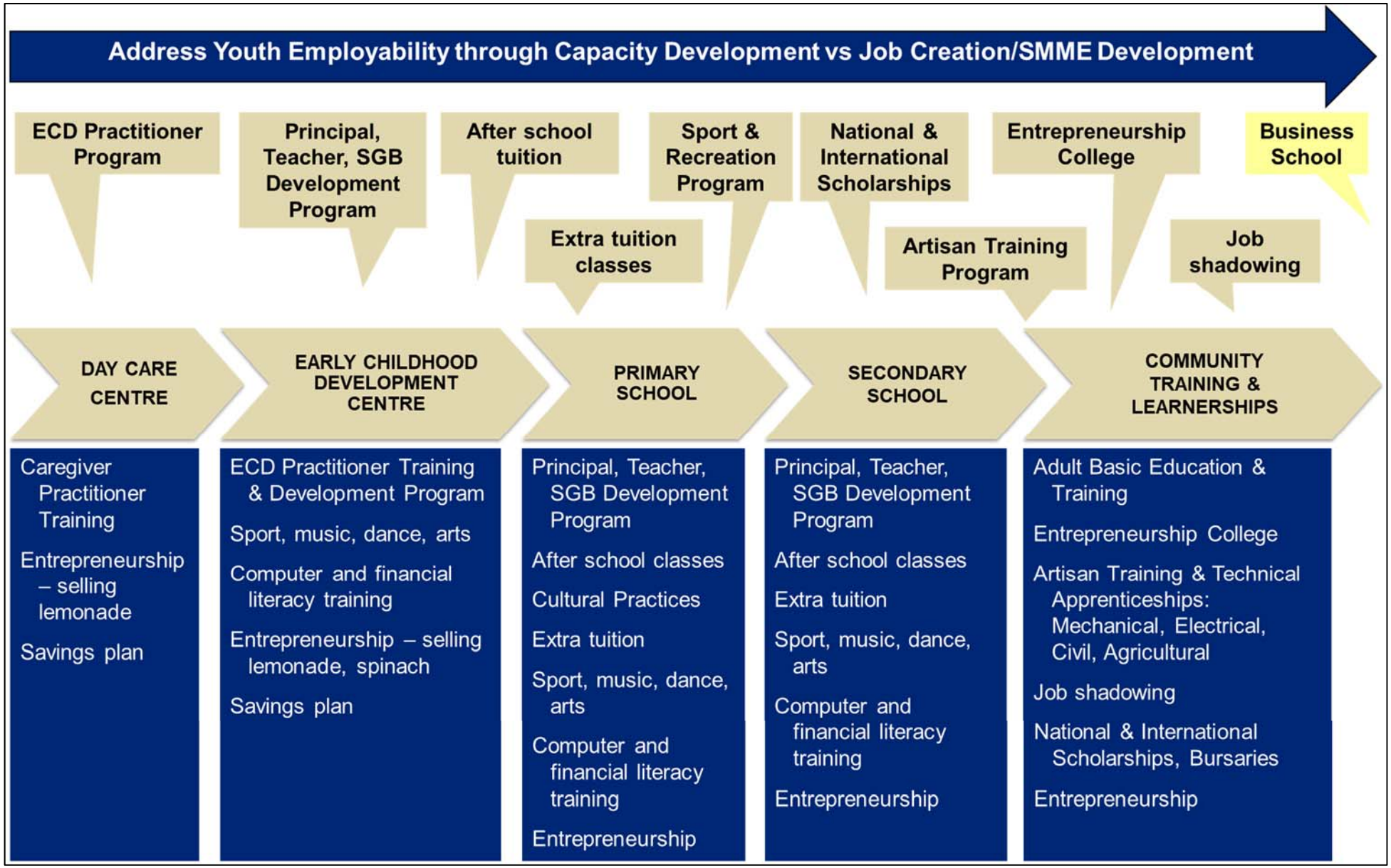


Figure 7.19: Instrument to map surrounding Educational Institutions

Source: Researchers construction

In the Northern Cape, for example, a regional approach by the REIPPPP could enable capacity development to be offered to the surrounding provinces and neighbouring countries. An added advantage is that mining companies and the IPPs have already invested in many of the building blocks and it would now be a case of extending the Capacity Development value-chain. The REIPPPP should set a Big Hairy Audacious Goal (BHAG) to establish the equivalent of an ADvTECH/Curro that will compete, if not even surpass, ADvTECH/Curro. The blueprint for establishing the Gordon Institute of Business Sciences (GIBS) could even be utilised. The opportunities for the REIPPPP to develop a 'cradle to grave' approach to Capacity Development is significant, as the SPV would be able to compete with the existing private educational companies.

Finally, should the IPPs be responsible for Human Development? The core business of the IPPs is optimal energy generation. The IPPs do not have the requisite developmental expertise, and therefore community development should be the sole responsibility of experts. The multi-faceted nature of human development, especially in rural communities, will straddle several pillars, namely, socio-economic development, education, healthcare, infrastructure development, food security, enterprise development, skills development and training, agriculture, and conservation of nature.

7.8.2.6. Radical Economic Transformation

By implementing the strategy to develop the capacities of the beneficiaries, the REIPPPP has the potential to translate the term 'Radical Economic Transformation' into tangible Jobs, Skills Development and SMME Development. By implementing the 'upside down pyramid' approach, the REIPPPP could address the estimated 50% youth unemployment, and, thus, directly contribute to the intent of the NDP. Figure 7.18 depicts the radical approach to community responsibility and project implementation. The extent of the number of jobs created is only limited by the available funding.

According to Adendorff (2017), the debate regarding radical economic transformation has been on-going, but the government of South Africa has not been able to define what radical economic transformation entails. Adendorff (2017) argues that people need to continue performing conscientiously in order to accomplish what has to be achieved, including providing policy clarity to improve both economically, and also the developmental confidence. Adendorff (2017) points out that the core of the challenge is to change the structure of wealth creation and to transform the patterns of ownership. This transformation can be achieved by including citizens who are marginalised, the majority of whom are black, and by making the citizens feel that they are part of the economy (Adendorff, 2017).

Adendorff (2017) continues by stating that longer-term trend growth estimates which are abstracted from shorter-term cyclical trends, give rise to the following key factors that will drive radical economic transformation for South Africa:

- Growth in the working-age population and therefore the potential workforce (predicated on the most recent UN population projections);
- Increasing human capital, which is proxied by average education levels across the adult population;
- Growth in the physical capital stock which is driven by capital investment net of depreciation; and
- Total Factor Productivity (TFP) growth to ensure radical economic transformation, which is driven by technological improvement and catching up by lower income groups with richer ones, by utilisation of global best practice benchmarking towards radical economic transformation.

Adendorff (2017) concludes by pointing out that the structural developments such as an increasing population and grant depending change, will require forward-thinking policies that will equip the South African workforce to make societal contributions later in life, to promote sustainable/radical economic transformation. Declining global trade growth, rising inequality and increasing global uncertainties are intensifying the necessity to create a diversified radical and transformative developmental economy that will create opportunities for all South Africans (Adendorff, 2017).

According to Anne Githuku-Shongwe, the UN Women's multi-country director responsible for South Africa, Botswana, Swaziland, Lesotho and Namibia, the cost of reacting to gender-based violence cost South Africa between R28.4bn and R42bn, depending on the calculation method employed (Makhubu, 2018). Githuku-Shongwe argues that the investment in reducing gender-based violence needed to be implemented with additional programmes. For example, the recruitment of men into campaigns to fight violence, a programme to sponsor dialogues in every district of South Africa, and the inclusion of government and private sector reach every community in order to discuss the problem (Makhubu, 2018).

The Renewable Energy Sector, i.e. the REIPPPP, and the ultimate custodian of the REIPPPP, the Department of Energy of South Africa, has a real opportunity to make a meaningful contribution to South Africa and in so doing address the requirements of the NDP. The REIPPPP is at a unique stage in its evolutionary journey, especially since during February 2018, when Public Enterprises Minister, Lynne Brown authorised Eskom to purchase additional power from the IPPs, unblocking almost 24 months of stagnation for the REIPPPP. Regarding the REIPPPPs commitment to mainstreaming gender through the socio-economic empowerment of women, there is no increased risk to the REIPPPP to develop women-led IPPs.

The many unintended consequences of incorporating Economic Development into the REIPPPP will only manifest itself in several years' time. The programs might create unrealistic expectations; there is also the potential to create divisions between the beneficiary communities within the 50 km radius, and those communities that fall outside of the 50 km radius. The Community Trust Funds that promise large financial pay-outs to the beneficiary communities, if only after year 15 of operation, will all conspire to derail the REIPPPP over the longer-term. By design, the REIPPPP has created an economic division (and in the longer-term, potential social division) between the beneficiary communities that will receive the Economic Development proceeds, and those communities that have been excluded. The Economic Development proceeds generated by the IPP have to be invested in Enterprise Development and Socio-Economic Development initiatives for the beneficiary communities.

These developmental funds are invariably invested in very depressed rural communities, where any commercial potential drives both positive and negative behaviour. For those communities that fall outside of the 50 km beneficiary radius, one could envisage disappointment and possible anger towards the IPPs and the 'beneficiary communities' for their exclusion to life-changing developmental funds. The rationale of the Community Trust Funds was introduced to ensure that the surrounding communities would derive commercial benefit from the renewable energy operation. However, the communities that have been excluded from this opportunity will most likely challenge their exclusion once the Community Trust starts to generate a dividend. The Community Trust Funds that promise to generate significant dividends after a 15-year period will further exacerbate the problem, as the Economic Development funds combined with the significant Community Trust Funds will be limited to the beneficiary communities. There are sufficient case studies in the mining sector of the success and failures of Community Development Trusts that have been established around mining operations. Similar case studies are available regarding co-operatives in the agricultural sector.

7.8.2.7. Entrepreneurship, SMME and Enterprise Development

According to the world-renowned Management Consultant, Peter Drucker, in his book, The Effective Executive, Drucker distinguishes efficiency and effectiveness and states that "Efficiency is doing things right; effectiveness is doing the right things.", (Drucker, 2006). Drucker further states that entrepreneurs should not assume because entrepreneurs do things well that they ought to be doing those things. Instead, being effective requires knowing where to focus and consequently automating, outsourcing, and relegating everything else (Drucker, 2006). For this study, Entrepreneurship can be considered as the umbrella for Enterprise Development and SMME Development. The challenge is that the terms Enterprise Development and SMME Development has the potential to create an expectation that the beneficiary will be guaranteed a job.

Building on the strategic objectives proposed earlier in this chapter, Figure 7.20 presents a functional structure for a SPV. Typically, pure investment institutions will not fund job creation, as this portion of the value chain provides the zero-labour risk, with the highest returns.

On the opposite end of the spectrum, one is confronted with mass unemployment, high labour risk, and, possibly, investments which must be written off. Therefore, IPPs generally fall into the centre portion when creating SMMEs. Yet, the problem of mass unemployment requires a degree of calculated risk-taking, as well as the possibility of write-offs. Based on a best estimation, the SPV would require not more than between 50 to 100, highly skilled, motivated, and energetic human resources. This SPV structure is based on the principle of outsourcing all non-core and transactional business, and on the approach of establishing key partnerships. As an example, for the disbursement of funds to community beneficiaries, which invariably might be thousands, if not millions of small value transactions, the SPV could partner with any one of the financial institutions that have a demonstrated track record of community development.

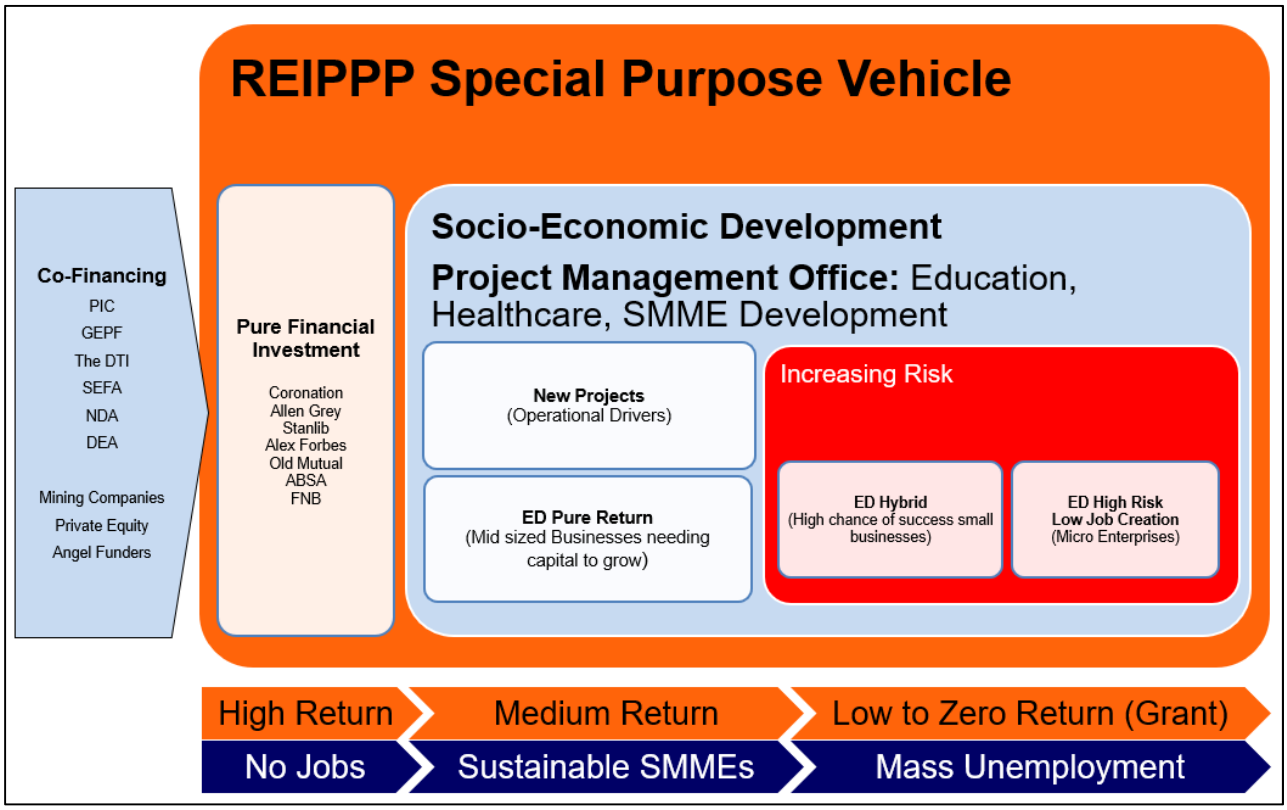


Figure 7.20: REIPPPP Special Purpose Vehicle

Source: Researchers construction

The ultimate custodian of the REIPPPP, the Department of Energy, could consider externalising the REIPPPP in its entirety through a SPV for Human Capital Development.

By establishing the SPV, all the Socio-Economic Development initiatives will be externalised and thereby free the IPPs to focus on their core business of power generation. The SPV is also important from a sustainability perspective as the developmental needs of the communities will have to continue after the IPPs cease to operate after the 20-year period. The SPV approach also presents the REIPPPP and the IPPs with an opportunity to prepare a sustainable IPP closure programme. The SPV could take the form of a For-Profit Social Enterprise, with the legal persona of Private Company (Pty Limited) which is treated by South African law as a separate legal entity. The SPV could subscribe to the governance rules as per King III. The structuring of the SPV should incorporate all stakeholders and could be governed by a Public Private Community Partnership (PPCP). The medium to longer-term objective could be the listing of the SPV on the JSE and several other international stock exchanges.

The opportunity also exists to consolidate the Economic Development Funds and the Community Trust Funds. These funds could be operationalised under the same SPV umbrella and thereby eliminate the possible duplication and resultant investment dilution that currently exists. The SPV could be an attractive vehicle for potential funders and investors, one that can demonstrate credible governance and proven developmental track record.

Conversion to a Super Tax or Royalty could also be considered. The same logic can be applied to the Community Trust Funds. Alternately, the Community Trust instrument could be collapsed. The Economic Development and Community Trust proceeds could be considered a form of ‘community tax’. As such, these proceeds could be directed to the fiscus in the form of a tax or royalty or collected and placed into a central fund. Thereby, freeing up the IPPs from the Economic Development and associated obligations. However, this approach will require confidence in the investment, management, and disbursement of these developmental funds. This approach also eliminates the growing commercial expectation of communities that surround these power generation operations and the disappointment suffered by those communities that fall outside the 50 km radius. The IPP should remain focused on core business, which is optimised power generation.

The raising of co-funding should also be investigated. Local and international development funding and CSI revenues have shrunk substantially since 2008, potentially impacting the delivery of the Socio-Economic Development initiatives by the IPPs. There are several opportunities for co-funding that the SPV can access. To illustrate, the DTI has enhancement programmes available to South African registered entities engaged in primary, secondary, and ancillary manufacturing activities. The grant is provided to approve applications for new, upgrading, or expansion projects. The programme offers a reimbursable cost-sharing grant of up to a maximum of R40 million in qualifying costs for machinery and equipment, bulk infrastructure, owned land and buildings, leasehold improvements, and competitiveness improvement activities. Companies, like the Sekunjalo Investment Group, headed by Dr Iqbal Survé, has launched an impact fund with R500 million of seed capital to boost entrepreneurship, support renewable energy initiatives, and support women-owned businesses (Khumalo, 2017). The fund intendeds attracting local investors like the Small Enterprise Finance Agency (SEFA), as well as international entities, with the fund projected to grow from the initial R500 million to about R2bn within a year of launch (Khumalo, 2017). During the earlier rounds of the REIPPPP, financial institutions like Old Mutual, Nedbank and ABSA invested significantly in the REIPPPP. During 2017, RMB in collaboration with KfW Development Bank (KfW) established the Facility for Investment in Renewable Small Transactions (FIRST), a fund structured initially for the financing of small renewable energy projects (Hawarden, 2017).

Finally, a Sovereign Wealth Fund should be investigated. Depending on risk appetite, the SPV could be structured based on a Sovereign Wealth Fund. However, the portfolio would have to accommodate the spread from real investment to loan and grant funding. According to (Moyo, 2018), the REIPPPP is considered to be one of South Africa’s most successful PPPs with development funding of more than R20 billion being committed to Socio-Economic Development, with the majority of the funding being utilised to empower rural communities. During January 2018, the Minister of Public Enterprises, Lynne Brown announced that Eskom’s application to procure additional renewable energy from IPPs had been approved (Creamer, 2018). The power purchase agreements (PPAs) for 27 wind and solar projects procured by the Department of Energy in late 2015 could finally be signed (Creamer, 2018).

The collective investment value of the IPP projects is estimated to be more than R60 billion (Creamer, 2018). The cumulative finance under the direct control of the REIPPPP is substantial, and this funding pool should be leveraged to attract additional DFIs, public, and private sector investors. Opportunities for investors from 'informal' sources such as stokvels could also be encouraged.

7.8.3. Summary

In summarising this section, the REIPPPP is at a unique stage in its evolutionary journey, especially since during February 2018, when Public Enterprises Minister, Lynne Brown authorised Eskom to purchase additional power from the IPPs, unblocking almost 24 months of stagnation for the REIPPPP. Regarding the REIPPPPs commitment to mainstreaming gender through the socio-economic empowerment of women, there is no increased risk to the REIPPPP to develop women-led IPPs, as opposed to conventional IPPs.

However, the legacy of Apartheid will now be combined with the legacy of almost a decade of corruption and disregard for Good Governance. The consequences of the unethical leadership could potentially be another period of debilitating *'over governance'*, where people will become risk-averse and too scared to make decisions, and the RSA could become a country of *'tick boxes'*. The challenge for the REIPPPP and any visionary organisation is that to implement any *'blue-sky thinking'* approach to solving complex problems might well be met with resistance. One could infer that the implementation of Radical Economic Transformation will also be similarly constrained.

The empirical results of this study demonstrate that Executive Leadership is statistically significant in relation to Good Governance and Successful Women's Empowerment. This study has demonstrated that the need for Ethical Leadership is even more critical than having Good Governance systems in place. The problems associated with *'State Capture'* also underscore the need for Ethical Leadership.

Finally, the Dinokeng Scenario 3, *'Walk Together'*, proposed that during 2015 to 2017 a social pact would emerge, and one of the predictions was that a *'Citizens Charter'* would be born (Altman *et al.,* 2008). According to Scenario 3, 2018 to 2020, South Africa would embark on *'Building a Nation'* (Altman *et al.,* 2008).

Walking Together would allow the RSA to: address critical economic and social challenges only if civil society, business, labour, and the State engaged and cooperated; collectively increase accountability, build the capacity of the State, deliver core public services, and develop a common identity and nationhood; and succeed if, and only if, citizens and leaders from all sectors rise above their narrow self-interests and contribute purposefully to building our nation.

7.9. CONCLUDING REMARKS

The objective of this study was to make a positive contribution to the socio-economic empowerment of women within the renewable energy sector of the RSA. Through the process of theoretical model building, and the supporting literature review, the extent of the structural challenges that South Africa faces as regards to mainstreaming gender and gender-based violence was surfaced. These structural challenges include the increase in femicides and even more barbaric acts of burning victims and cannibalism in the Eastern Cape and KwaZulu-Natal, the disparity between rich and poor, the breakdown in good governance, i.e. ethical behaviour in both public and private sectors, and the pedestrian pace to mainstreaming gender. The Statistician General, Pali Lehohla, stated that anger, jealousy, money and an unequal society are the motives of crime (Statistics South Africa, 2016). If the inequality is the driver of that crime which remains highest among 90% of the population, then it would be impossible to reduce crime in the foreseeable future, (Statistics South Africa, 2016).

The Renewable Energy Sector as a whole, as well as the ultimate custodian of the REIPPPP, the Department of Energy of South Africa, has a real opportunity through its REIPPPP to make a meaningful and sustainable contribution to South Africa, and in so doing address the requirements of the NDP. The opportunities are predicated on the following:

- There is a quantum of funding that is generated by the renewable energy sector;
- There are superb local skills available, especially among the young graduates;
- The youth unemployment rate is estimated to be greater than 50%, and must be addressed as a matter of urgency;
- There is an opportunity to reduce South Africa's contribution to greenhouse gases and thus respond to the Paris Agreement; and
- The Renewable Energy Sector has a real opportunity to practically contribute to the ongoing investment in the social capital of South Africa.

The socio-economic empowerment of women within the renewable energy sector will require a conducive prevailing environment within South Africa, a possible 5-point plan for the RSA could be:

- **Behavioural Change:** Change the behaviour of the RSA through a shared vision of the future;
- **Local Economic Development:** Manufacture locally, buy locally, sell regionally, continentally, and internationally;
- **Education:** Educate the RSA to a level where they are globally competitive;
- **Sustainability:** Make the unpopular decisions to ensure a bright future for the RSA and all its citizens; and
- **One Nation:** Engender trust (not division).

Since the industrialisation period, the renewable energy sector is potentially one of the most significant opportunities to drive socio-economic change. The knowledge wave was limited to countries that had the expertise, innovation, and infrastructure (internet) to facilitate and deliver these knowledge services. There is limited risk to mainstream gender within the renewable energy sector, and to realise the socio-economic empowerment of women. The Renewable Energy Sector has nothing to lose, but a lot to gain, the good experiences gained by the mining sector should be replicated and amplified, while it would be criminal for the Renewable Energy Sector to repeat errors of the past, mainly since the social funding is intended to develop our future leaders.

To conclude this study, ***"That which you desire for yourself, your children, your family, should be that which you desire for South Africa. Our behaviour, actions, and attitudes should guide every South African to achieve the greatness we are capable of achieving as a unified Nation."***

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APPENDIX A: ETHICS CLEARANCE

SCHOOL OF ECONOMICS,
DEVELOPMENT AND TOURISM

Nelson Mandela Metropolitan University

for tomorrow

SCHOOL OF ECONOMICS, DEVELOPMENT AND TOURISM
SCHOOL RTI

Tel: 041 504 2504
Email: lindie@nmmu.ac.za

18 August 2016

APPROVAL OF RESEARCH PROPOSALS (100% RESEARCH)

Dear Prof Adendorff,

Kindly note that the research proposal for student H Keown (217122604) served at the School RTI Meeting of 12 August 2016, and was **APPROVED**.

Below find excerpt from the minutes:

Student Name	**H Keown**
Student Number	217122604
Degree	PhD (Development Studies)
Supervisor **Co-Supervisor**	Prof CM Adendorff
Title of Dissertation	THE DEVELOPMENT OF A SOCIAL-ECONOMIC MODEL TO PROMOTE WOMEN EMPOWERMENT INITIATIVES IN THE RENEWABLE ENERGY SECTORS OF SOUTH AFRICA
RESOLUTION	The committee recommended the following: The proposal be **APPROVED** without any changes and can submit to the Faculty RTI Proposal Meeting. ***Noted that Pro Forma Ethic Clearance is required*** *Where changes are suggested, it remains the responsibility of the supervisor to ensure that the changes are effected in order to guide the student during the research process.*

Resolution number: SRT16.26.5

Kindly take into consideration the deadlines for the Faculty Research Proposal Committee meetings for final approval, before the student can continue with his/her research.

FACULTY RESEARCH PROPOSAL COMMITTEE MEETING	
DATE OF MEETING	LAST DAY TO SUBMIT ITEMS FOR AGENDA
6 September 2016	26 August 2016
14 October 2016	3 October 2016

Should you have any queries, please contact Ms L van Rensburg.

Kind regards,

Prof R Ncwadi (chair)

APPENDIX B: QUESTIONNAIRE COVER LETTER

The Socio-Economic Empowerment of Women in the Renewable Energy Sector

NELSON MANDELA UNIVERSITY

The purpose of this research is to ascertain the factors that positively influence the Socio-Economic Empowerment of Women in the Renewable Energy Sector. The researcher would greatly appreciate 10 minutes of your time to capture your experience and insights.

Dear Respondent,

We are connected via LinkedIn or one of the other social media platforms. I would greatly appreciate your assistance to remedy the challenge of women empowerment / gender based violence by participating in this PhD research study. You might be receiving this survey again as this is an appeal to increase the number of respondents to improve the quality of the data set. I am using the Snowball sampling method and would respectfully request if you could forward this survey to your network. In addition, you might have heard about the re-branding of Nelson Mandela University and this revised cover letter also services to confirm the authenticity of this survey.

In an effort to capacitate and economically empower women in the Renewable Energy Sector, we have carefully selected a targeted group of leaders from various international and national organisations to participate in this doctoral research study. While conducting this research effort, You, your peers and members of your team have been identified as having the professional experience to contribute to this research effort which is being conducted under the supervision of Prof. Chris Adendorff, Dr. Ricardo Amansure and Dr. Deon Els from the Nelson Mandela University in Port Elizabeth, South Africa.

We would therefore like to invite you to participate in completing this 10-minute electronic survey by following the web link provided to the Nelson Mandela University online survey website. The questions may appear repetitive but they have been designed to either prove or disprove the theoretical model. Feedback regarding the outcome of the survey will be made available to all participants and no identification details are required.

Respondent, please note the following:

1. **Is this research effort approved by the Nelson Mandela University?** Yes.
2. **Where can I find more information about this research effort?** Read more.
3. **Can respondents outside of the Republic of South Africa complete this questionnaire?** Yes.
4. **Who is the target audience?** Stakeholders and interested parties involved with mainstreaming gender and/or the renewable energy sector.
5. **Is this research questionnaire only for females?** No, there is no gender bias and we encourage men to complete the questionnaire.
6. **Do I require knowledge of the renewable energy sector?** No.
7. **What is B-BBEE?** Read more.
8. **Can I forward this survey?** Yes, we are using the Snowball Sampling Method and ask that you circulate this questionnaire to your network(s).
9. Forward to a friend.
10. **LinkedIn Profile:** Read more.

Please click **Begin Survey** or copy/paste this link into your web browser: http://forms.nmmu.ac.za/websurvey/q.asp?sid=1756&k=dlouehziqm

With sincere thanks and appreciation,
Harvey Keown +27 83 380 4991 or research@af-sd.com

Begin Survey

You have been included in this distribution list because you are considered an expert; have displayed a keen interest in mainstreaming gender; and would like to promote the socio-economic empowerment of women in the renewable energy sector.

Our mailing address is:
Africa Foundation for Sustainable Development
Suite A401
Fredman Drive
Sandton, Gauteng 2196
South Africa

APPENDIX C: QUESTIONNAIRE

NELSON MANDELA UNIVERSITY

Web Survey

Socio-Economic Empowerment of Women in the Renewable Energy Sector of the RSA

Page: 1

1. Demographic Information

Why use demographic questions in surveys? Demographic questions are an important aspect of any survey and are designed to assist researchers to determine what factors may influence a respondent's answers, interests, and opinions. Collecting demographic information will enable the researcher to cross-tabulate and compare subgroups to see how responses vary between these groups.

1.1 *	Would you like a copy of this research study?	○ Yes ○ No
1.2	What is your email address?	
1.3 *	Are you based in South Africa?	○ Yes ○ No
1.4 *	What is your gender?	○ Female ○ Male
1.5 *	What is your age?	(please select)
1.6 *	What is your ethnicity?	(please select)
1.7 *	What is your highest qualification?	(please select)
1.8 *	Do you serve on a Board of Directors?	○ Yes ○ No
1.9 *	What is your level within your organisation?	(please select)
1.10 *	Are you formally involved in the Renewable Energy sector?	○ Yes ○ No
1.11 *	Are you formally involved in Community Development?	○ Yes ○ No
1.12 *	Are you formally involved with Mainstreaming Gender?	○ Yes ○ No

2. Socio-Economic Empowerment of Women

This section aims to determine the main contributors and variables which can positively influence socio-economic empowerment of women initiatives in the renewable energy sector in the Republic of South Africa.

2.1 *	Women in the renewable energy sector that have decision-making power deliver better outcomes.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.2 *	In the renewable energy sector, consultation that spans the entire project life-cycle increases sustainability.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.3 *	Initiatives in the renewable energy sector that have well developed strategic objectives increase sustainability.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.4 *	In the renewable energy sector, companies that have a clear vision of their future increase sustainability.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.5 *	In the renewable energy sector, the B-BBEE code of conduct is an important policy to address the inequality of the past.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.6 *	In the renewable energy sector, good executive leadership is essential.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.7 *	In the renewable energy sector, companies should have effective change management strategies.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.8 *	In the renewable energy sector, executive leadership should understand how to build a more equitable society.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.9 *	In the renewable energy sector, it is important for executive leadership to have a clear understanding of the role of funding in socio-economic development activities.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.10 *	It is important that companies in the renewable energy sector have a corporate culture that embraces socio-economic development.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.11 *	Board members of companies in the renewable energy sector should demonstrate a high level of integrity.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.12 *	Executive leadership of companies in the renewable energy sector should develop the capacities of women.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.13 *	It is important to have well-funded socio-economic initiatives in the renewable energy sector.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.14 *	In the renewable energy sector, it is important to engage all affected parties.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.15 *	In the renewable energy sector, it is important to have well developed socio-economic development plans aligned to the strategic business objectives.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.16 *	Executive leadership in the renewable energy sector clearly define their strategic socio-economic development objectives.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.17 *	Shareholders in the renewable energy sector should have a clear understanding of the intent of the B-BBEE code of conduct.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.18 *	In the renewable energy sector companies with good executive leadership increase sustainability.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.19 *	Executive leadership in the renewable energy sector should have a clear understanding of the benefits of change management.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.20 *	Executive leaders in the renewable energy sector should consider socio-economic development a core business goal.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

2.21 *	The renewable energy sector should manage its socio-economic development funds to create new jobs.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.22 *	Executive leadership in the renewable energy sector, should adopt a long-term approach toward investment in socio-economic development.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.23 *	Executive leadership of companies in the renewable energy sector should demonstrate a wide variety of skills.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.24 *	It is important that companies in the renewable energy sector have well defined processes to promote women empowerment.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.25 *	Longer-term initiatives in the renewable energy sector deliver more sustainable results.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.26 *	Companies in the renewable energy sector understand the importance of engaging communities in a meaningful manner.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.27 *	For the renewable energy sector, being able to visualise the future for others is a critical success factor.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.28 *	In the renewable energy sector, executive leadership are prepared to take calculated risks.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.29 *	In the renewable energy sector, the B-BBEE code of conduct encourages executive leadership to go beyond compliance.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.30 *	In the renewable energy sector, it is essential that executive leadership can formulate appropriate strategic socio-economic development objectives.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.31 *	In the renewable energy sector, it is important that executive leadership manage the redirection of financial resources to the intended beneficiary communities.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.32 *	Executive leadership in the renewable energy sector should have a clear understanding of community development.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.33 *	Executive leadership in the renewable energy sector should willingly fund the target beneficiaries.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.34 *	Executive leadership in the renewable energy sector should not limit the abilities of subordinates.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.35 *	In the renewable energy sector, it is important that companies effectively communicate the responsibilities of their executive leadership.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.36 *	In the renewable energy sector, companies should be held accountable for women empowerment.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.37 *	Renewable energy sector initiatives that have good policy frameworks deliver better results.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.38 *	Companies in the renewable energy sector understand the importance of engaging stakeholders to reduce reputational risk.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.39 *	Decision makers in the renewable energy sector have the experience to develop long-term socio-economic plans.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.40 *	Employees at all levels in the renewable energy sector should have a role in the implementation of the strategic socio-economic plan.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

2.41 *	In the renewable energy sector, it is important that the B-BBEE code of conduct ensures sustainable outcomes.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.42 *	In the renewable energy sector, it is important to develop good systems to measure leadership performance.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.43 *	The renewable energy sector should develop effective systems to manage change introduced by their initiatives.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.44 *	In the renewable energy sector, executive leadership should have the experience to undertake community development initiatives.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.45 *	In the renewable energy sector, executive leadership should promote black economic empowerment.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.46 *	It is important that the renewable energy sector develop a culture of continuous learning.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.47 *	In the renewable energy sector, executive leadership should make decisions based on ethical principles.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.48 *	In the renewable energy sector, companies should embrace women empowerment.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.49 *	Capacity development of women is a critical success factor in the renewable energy sector.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.50 *	Executive leadership in the renewable energy sector are willing to engage a diverse range of stakeholders.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.51 *	Executive leadership in the renewable energy sector have an appreciation for the socio-economic challenges of others.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.52 *	Companies in the renewable energy sector have well-defined socio-economic monitoring plans.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.53 *	Executive leadership in the renewable energy sector should adopt a long-term approach when applying the policies of the B-BBEE code of conduct.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.54 *	In the renewable energy sector, it is important for executive leadership to view results as a measure of performance.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.55 *	In the renewable energy sector, executive leadership should understand change management practices.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.56 *	Executive leadership in the renewable energy sector should be prepared to take calculated risks when dealing with community development.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.57 *	It is important that companies in the renewable energy sector contribute to local manufacturing.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.58 *	The corporate culture of companies in the renewable energy sector should be conducive to new ideas.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.59 *	In the renewable energy sector, it is important that companies have effective risk management systems.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree
2.60 *	Executive leadership of companies in the renewable energy sector should support women to acquire assets.	Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

The researcher would like to thank you for your time and effort invested in completing this online survey, this is most appreciated. If you require further information please feel free to contact the researcher, Harvey Keown on +27 83 380 4991 or h.keown@af-sd.com

Submit Questionnaire

APPENDIX D: QUESTIONNAIRE DEVELOPMENT

This section deals with the development of the questionnaire and the transfer of the questionnaire to the NMMU electronic online survey platform. MailChimp was used as the bulk mailer to disseminate the link to the online survey that was hosted on the NMMU online survey website. Feedback from the pilot stage of the questionnaire development indicated that the supporting information should be removed, and therefore only a single cover page was developed for the MailChimp campaign, and the supporting information was removed from the survey

Part I: Cover Letter developed on MailChimp Platform

The Socio-Economic Empowerment of Women in the Renewable Energy Sector of South Africa

The purpose of this research is to ascertain the factors that positively influence the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa. The researcher would greatly appreciate 10 minutes of your time to capture your experience and insights regarding this research topic.

Dear << Test First Name >>,

You have been identified as having the experience and professional expertise to contribute to this research body of knowledge. This study comprises of several national and international entities and is being conducted under the supervision of Prof. Chris Adendorff from the Nelson Mandela Metropolitan University in Port Elizabeth, South Africa, and Dr Ricardo Amansure as co-supervisor. We would, therefore, like to invite you to anonymously and voluntarily participate in completing this 10-minute electronic survey by following the web link provided to the Nelson Mandela Metropolitan University online survey website. The questions may appear repetitive, but they have been designed to either prove or

disprove the theoretical model. Feedback regarding the outcome of the survey will be made available to all participants, and no identification details are required.

<< Test First Name >>, please note the following:

1. This survey will close on Wednesday, 31st May 2017.
2. **Can respondents outside of the Republic of South Africa complete this questionnaire?** Yes.
3. **Who is the target audience?** Stakeholders and interested parties involved with mainstreaming gender and/or the renewable energy sector.
4. **Is this research questionnaire only for females?** No, there is no gender bias, and we encourage men to complete the questionnaire.
5. **Is this research effort approved by the Nelson Mandela Metropolitan University?** Yes.
6. **Can I forward this questionnaire?** Yes.

Please click on **Begin Survey** or **copy/paste** the link into your web browser: http://forms.nmmu.ac.za/websurvey/q.asp?sid=1756&k=dlouehziqm

With sincere thanks and appreciation,

Harvey Keown +27 83 380 4991 or h.keown@af-sd.com or www.af-sd.com

Begin Survey

Part II – Questionnaire developed on NMMU Survey Platform

NMMU Online Questionnaire

The following sections describe the formulation of the questionnaire as developed on the NMMU survey platform. The NMMU online survey platform determines the layout of the questionnaire.

Preamble

We now collect demographic information. If you would like to refer to the preceding information while responding to this survey, just cut/paste the link below into a new internet browser window:
http://forms.nmmu.ac.za/websurvey/q.asp?sid=1756&k=dlouehziqm

Footer

The researcher would like to thank you for your time and effort invested in completing this online survey; this is most appreciated. If you require further information, please feel free to contact the researcher, Harvey Keown on +27 83 380 4991 or h.keown@af-sd.com

Questionnaire Submitted Text

Dear Respondent,

Thank you very much for taking the time to assist with the Socio-Economic Empowerment of Women within the Renewable Energy sector of the Republic of South Africa. If you require further information, please feel free to contact the researcher, Harvey Keown on +27 83 380 4991 or h.keown@af-sd.com

Survey Over Text

Dear Respondent,

Thank you for very much for taking time to assist with the Socio-Economic Empowerment of Women within the Renewable Energy sector of the Republic of South Africa. This survey is now closed. However, if you require further information, please feel free to contact the researcher, Harvey Keown on +27 83 380 4991 or h.keown@af-sd.com

Demographic Information

Why use demographic questions in surveys? Demographic questions are an essential aspect of any survey and are designed to assist researchers in determining what factors may influence a respondent's answers, interests, and opinions. Collecting demographic information will enable the researcher to cross-tabulate and compare subgroups to see how responses vary between these groups. The demographic questions, the possible choices, the type of response allowed and the associated coding for post data analysis is presented in the table below.

FACTORS INFLUENCING THE SOCIO-ECONOMIC EMPOWERMENT OF WOMEN IN THE RENEWABLE ENERGY SECTOR OF THE REPUBLIC OF SOUTH AFRICA.

Section A: Demographic Questions

Demographic Data

	Demographic Question	**Response**	**Code**	**Code**
1.	Would you like a copy of this research study?	Yes/ No *Radio buttons (yes/no)*	Y/N	D1
2.	What is your email address?	*Open Question (short answer)*		D2
3.	Are you based in South Africa?	Yes/No *Radio buttons (yes/no)*	Y/N	D3
4.	What is your gender?	Female/Male *Radio buttons (one choice)*	F/M	D4
5.	What is your age?	18 - 24 years old 25 - 34 years old 35 - 44 years old 45 - 54 years old 55 - 64 years old 65 - 74 years old 75 years or older *Drop down list (one choice)*	18 25 35 45 55 65 75	D5
6.	What is your ethnicity?	Asian African Black Coloured Indian White Other *Drop down list (one choice)*	A B C I W O	D6
7.	What is your highest qualification?	No schooling completed Some high school, no diploma High school graduate, diploma, or the equivalent Some college credit, no degree Trade/technical/vocational training Bachelor's degree	NS ND HS CC TT BD	D7

		Master's degree Professional degree Doctorate degree Other *Drop down list (one choice)*	MD PD DD OT	
8.	Do you serve on a Board of Directors?	Yes/No *Radio buttons (yes/no)*	Y/N	D8
9.	What is your level within your organisation?	Board of Directors Executive Senior Management Middle Management Other *Drop down list (one choice)*	B E S M O	D9
10.	Are you formally involved in the Renewable Energy sector?	Yes/No *Radio buttons (yes/no)*	Y/N	D10
11.	Are you formally involved in Community Development?	Yes/No *Radio buttons (yes/no)*	Y/N	D11
12.	Are you formally involved with Mainstreaming Gender?	Yes/No *Radio buttons (yes/no)*	Y/N	D12

Section B: Survey Questions

Several factors influence the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa. Using the following scale, please indicate to what extent that you agree or disagree with the statements by circling the appropriate number in each row:

1 = Strongly disagree
2 = Disagree
3 = Somewhat/slightly disagree
4 = Neither agree nor disagree
5 = Somewhat/slightly agree
6 = Agree
7 = Strongly agree

	Questionnaire	**Strongly Disagree**						**Strongly Agree**	**Code**
		1	**2**	**3**	**4**	**5**	**6**	**7**	
1.	Women in the renewable energy sector that have decision-making power deliver better outcomes.								SED1
2.	In the renewable energy sector, the consultation that spans the entire project life-cycle increases sustainability.								SE1
3.	Initiatives in the renewable energy sector that have well developed strategic objectives increase sustainability.								SA1
4.	In the renewable energy sector, companies that have a clear vision of their future increase sustainability.								SP1

5.	In the renewable energy sector, the B-BBEE code of conduct is an important policy to address the inequality of the past.								BE1
6.	In the renewable energy sector, good executive leadership is essential.								EL1
7.	In the renewable energy sector, companies should have effective change management strategies.								CM1
8.	In the renewable energy sector, executive leadership should understand how to build a more equitable society.								EE1
9.	In the renewable energy sector, it is important for executive leadership to have a clear understanding of the role of funding in socio-economic development activities.								FM1
10.	It is important that companies in the renewable energy sector have a corporate culture that embraces socio-economic development.								CC1
11.	Board members of companies in the renewable energy sector should demonstrate a high level of integrity.								CG1
12.	Executive leadership of companies in the renewable energy sector should develop the capacities of women.								WE1
13.	It is important to have well-funded socio-economic initiatives in the renewable energy sector.								SED2
14.	In the renewable energy sector, it is important to engage all affected parties.								SE2
15.	In the renewable energy sector, it is important to have well developed socio-economic development plans aligned to the strategic business objectives.								SA2
16.	Executive leadership in the renewable energy sector clearly define their strategic socio-economic development objectives.								SP2
17.	Shareholders in the renewable energy sector should have a clear understanding of the intent of the B-BBEE code of conduct.								BE2
18.	In the renewable energy sector companies with good executive leadership increase sustainability.								EL2

19.	Executive leadership in the renewable energy sector should have a clear understanding of the benefits of change management.								CM2
20.	Executive leaders in the renewable energy sector should consider socio-economic development a core business goal.								EE2
21.	The renewable energy sector should manage its socio-economic development funds to create new jobs.								FM2
22.	Executive leadership in the renewable energy sector should adopt a long-term approach toward investment in socio-economic development.								CC2
23.	Executive leadership of companies in the renewable energy sector should demonstrate a wide variety of skills.								CG2
24.	It is important that companies in the renewable energy sector have well-defined processes to promote women's empowerment.								WE2
25.	Longer-term initiatives in the renewable energy sector deliver more sustainable results.								SED3
26.	Companies in the renewable energy sector understand the importance of engaging communities in a meaningful manner.								SE3
27.	For the renewable energy sector, being able to visualise the future for others is a critical success factor.								SA3
28.	In the renewable energy sector, executive leadership are prepared to take calculated risks.								SP3
29.	In the renewable energy sector, the B-BBEE code of conduct encourages executive leadership to go beyond compliance.								BE3
30.	In the renewable energy sector, it is essential that executive leadership can formulate appropriate strategic socio-economic development objectives.								EL3
31.	In the renewable energy sector, it is important that executive leadership manage the redirection of financial resources to the intended beneficiary communities.								CM3

32.	Executive leadership in the renewable energy sector should have a clear understanding of community development.								EE3
33.	Executive leadership in the renewable energy sector should willingly fund the target beneficiaries.								FM3
34.	Executive leadership in the renewable energy sector should not limit the abilities of subordinates.								CC3
35.	In the renewable energy sector, it is important that companies effectively communicate the responsibilities of their executive leadership.								CG3
36.	In the renewable energy sector, companies should be held accountable for women's empowerment.								WE3
37.	Renewable energy sector initiatives that have good policy frameworks deliver better results.								SED4
38.	Companies in the renewable energy sector understand the importance of engaging stakeholders to reduce reputational risk.								SE4
39.	Decision makers in the renewable energy sector have the experience to develop long-term socio-economic plans.								SA4
40.	Employees at all levels in the renewable energy sector should have a role in the implementation of the strategic socio-economic plan.								SP4
41.	In the renewable energy sector, it is important that the B-BBEE code of conduct ensures sustainable outcomes.								BE4
42.	In the renewable energy sector, it is important to develop good systems to measure leadership performance.								EL4
43.	The renewable energy sector should develop effective systems to manage change introduced by their initiatives.								CM4
44.	In the renewable energy sector, executive leadership should have the experience to undertake community development initiatives.								EE4
45.	In the renewable energy sector, executive leadership should promote black economic empowerment.								FM4
46.	It is important that the renewable energy sector develop a culture of continuous learning.								CC4

47.	In the renewable energy sector, executive leadership should make decisions based on ethical principles.								CG4
48.	In the renewable energy sector, companies should embrace women's empowerment.								WE4
49.	Capacity development of women is a critical success factor in the renewable energy sector.								SED5
50.	Executive leadership in the renewable energy sector are willing to engage a diverse range of stakeholders.								SE5
51.	Executive leadership in the renewable energy sector have an appreciation for the socio-economic challenges of others.								SA5
52.	Companies in the renewable energy sector have well-defined monitoring plans.								SP5
53.	Executive leadership in the renewable energy sector should adopt a long-term approach when applying the policies of the B-BBEE code of conduct.								BE5
54.	In the renewable energy sector, it is important for executive leadership to view results as a measure of performance.								EL5
55.	In the renewable energy sector, executive leadership should understand change management practices.								CM5
56.	Executive leadership in the renewable energy sector should be prepared to take calculated risks when dealing with community development.								EE5
57.	It is important that companies in the renewable energy sector contribute to local manufacturing.								FM5
58.	The corporate culture of companies in the renewable energy sector should be conducive to new ideas.								CC5
59.	In the renewable energy sector, it is important that companies have effective risk management systems.								CG5
60.	The executive leadership of companies in the renewable energy sector should support women to acquire assets.								WE5

Legend for Questionnaire Codes.

	Variable	**Code**
1	Socio-Economic Development	SED
2	Stakeholder Engagement	SE
3	Strategic Acumen	SA

4	Strategic Planning	SP
5	Broad-Based Black Economic Empowerment	BE
6	Executive Leadership	EL
7	Change Management	CM
8	Executive Education	EE
9	Fund Management	FM
10	Corporate Culture	CC
11	Corporate Governance	CG
12	Women’s Empowerment	WE

Part III – Additional Information for the Questionnaire

Questionnaire Page One

Preamble

The purpose of this research is to ascertain factors that could positively influence the Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa.

Footer

The researcher would like to thank you for the time and effort you have invested in completing this online survey. If you require further information, please feel free to contact the researcher, Harvey Keown on +27 83 380 4991 or h.keown@af-sd.com

Brief Overview

The early stages of this research were premised on the assumption that if women were economically empowered it would be easier to mainstream gender issues, drive gender equity and eliminate gender-based violence, as women would have the financial resources to extricate themselves from dire situations. However, research conducted about gender quotas, regardless of whether the quotas are legislated or voluntary, has indicated that the contribution they make is insignificant if not augmented with activism, as there is no guarantee that women's voices will be heard, and their concerns championed. The research concluded that quotas alone are insufficient and that a combination of quotas and activism is likely to prove more successful in delivering substantive legislation. This perspective is further supported by the fact that although strides have been made regarding the promotion of gender equity, the incidences of gender-based violence remain high in most of the Sub-Saharan African countries, with the RSA exhibiting the highest incidence of recorded rape in the world since 2004.

Socio-Economic Development, Enterprise Development, Economic Development, Corporate Social Investment, Corporate Social Responsibility, and Economic Empowerment can be considered as a collection of programmes, projects or interventions that aim to uplift the social and the economic position of beneficiary

communities, and through this process provide access to the economy for these beneficiaries. It is vital to ensure that these initiatives are sustainable, replicable, and scalable to maximise the investment in community development. The analogy of “teaching communities to fish” starts to focus the developmental efforts on capacitating communities by imparting skills; developing the access to markets and the workplace; increasing access to finance and the securing of finance. When these efforts are achieved, there are likely to be sustainable and financially viable enterprises. The researcher is appealing to professionals to participate in this PhD study to assist with the socio-economic empowerment of women in the renewable energy sector of the RSA.

To conclude, although this research focuses on the socio-economic empowerment of women within the renewable energy sector, it could be equally applicable to the mining, manufacturing, and agricultural sectors. Your participation in this research will contribute to improving the lives of impoverished communities in the RSA and elsewhere, and all questions, feedback or comments are most appreciated. To increase the survey sample, we would greatly appreciate if you could circulate this electronic survey to your personal and professional networks. The researcher also encourages male respondents to contribute their expertise and knowledge.

Questionnaire Page Two

Preamble

This section can be skipped and has only been included to provide additional information.

Footer

The researcher would like to Thank-You for your time and effort invested in completing this online survey; this is most appreciated. If you require further information, please feel free to contact the researcher, Harvey Keown on +27 83 380 4991 or h.keown@af-sd.com

Background

This research effort is aligned with the objectives agreed at the Paris COP Agreement of December 2015 where 195 countries adopted the legally binding global climate contract. The pact defines a global plan of action to limit global warming to below 2°C. Governments agreed to the following mitigation actions to keep the global average temperature below 2°C: reduce the risks/impacts of climate change by limiting the increase to 1.5°C; to reach a plateau for global emissions and to institute quick reductions with the open innovation. Adaption interventions centred around strengthening (civil) societies ability to deal with the impacts of climate change and to provide support for adaptation interventions to developing countries (European Commission, 2016b).

Paris Agreement

According to studies conducted by the World Bank, approximately 1.1 billion people globally lack access to electricity, with a further 2.9 billion people relying on fossil fuel or other biomass to service their cooking and heating needs. The World Bank estimates that 4.3 million deaths per annum can be ascribed to the use of these fuels. *"Africa has 640 million of its people who do not have access to electricity. A total of 7 million Africans has no access to clean energy and majority use charcoal and kerosene. This always leads to deaths. We should stop this"*, Akinwumi Adesina, the President of the AfDB, (African Development Bank, 2015). Speaking at the COP21 in Paris, Adesina stated that it is regrettable that Africa is often referred to as a dark

continent due to the lack of access to electricity by the majority of its residents (African Development Bank, 2015). Adesina continued by stating that the AfDB would also triple its financing to climate change initiatives by 2020 (African Development Bank, 2015).

Naoko Ishii, the GEFs CEO and Chairperson stated that as the GEF progresses with a new and innovative investment strategy, the GEF is deeply committed to initiating and enhancing projects (Global Environmental Facility, 2015). According to Ishii, the objective is to more efficiently deliver on the goals for gender equality while addressing the challenges humanity face in the global environment (Global Environmental Facility, 2015).

According to Ishii, the issues not separate and only by engaging partners, both women and men can see the reversal of the negative trends threatening the ecosystems save future generations (Global Environmental Facility, 2014a). During October 2014, at the 47th GEF Council in Washington DC, Ishii stated that as a result of the GEFs sixth replenishment (GEF-6), the Facility had a fund of US$4.4 billion for the next four years (Global Environmental Facility, 2014a). Ishii further stated that the GEF has more resources, a strategy that will propel the GEF to even greater heights, and an even stronger policy agenda (Global Environmental Facility, 2014a).

Mainstreaming Gender

This research effort will focus on women's empowerment within the renewable energy sector of the RSA, with a particular focus on women and the beneficiary communities. This research approach is due to the reasoning and argument that the renewable energy sector is a relatively new sector and does not have to contend with the negative legacy associated with the mining, agricultural and manufacturing sectors. This study will develop past/present/future perspectives for the renewable energy sectors of the RSA and will draw on lessons learnt from the mining, manufacturing and agricultural sectors. This study will also establish a baseline of how the proposed sectors' activities over several decades have changed and influenced the socio-economic empowerment of women. The baseline will then be researched to compare the current situation of women's empowerment within the renewable energy sector in the RSA and the strategy towards future sustainability.

Empowerment of Women

This research effort is premised on the fact that the economic empowerment of women requires the positive contribution by all actors and should not be the sole responsibility of women to drive these initiatives. Women in rural communities are faced with challenges of physical violence, as highlighted in a 2016 Victim Crime Survey Report by the Statistician General, Pali Lehohla, stating that money, jealousy and an unequal society are the primary drivers of crime in South Africa (Statistics South Africa, 2016). According to Lehohla, offences, assault and murder are likely to occur either in the home or among people who know one another when under the influence of either drugs or alcohol (Statistics South Africa, 2016).

Lehohla continues by pointing out the following statistics (Statistics South Africa, 2016):

- 71% of women respondents were victims of sexual offences
- mainly women between the age group of 20 and 54 who had never been married are likely to be attacked
- 37% of people don't report sexual offences because they don't really believe that it is a serious matter, in some cases believing that the police could not do anything
- 72% of males experienced some type of assault, where teenagers between the age groups of 15 to 34 are most likely to be victims
- 35% of murder in urban metros and 38% of murders in rural areas are perpetrated by men between 15 to 34
- approximately 43.7% of the murderers are also known their victims
- in the case of the elderly, the rate is estimated at 42%, with many of them residing in the rural areas, indicating that these are mainly farm murders, and if distilled by race, these would be mainly white farmers

Lehohla further states, “Anger, jealousy, money and indeed an unequal society, it's just that we didn't show you another slide that shows inequality amongst blacks is highest, its highest rather amongst blacks. If these are the motives of crime and inequality is the driver of that crime, which remains highest among 90% of the population. Then the drivers of crime as reflected here make it impossible to reduce

crime in the foreseeable future.", (Statistics South Africa, 2016). Also, rural women are boxed into the *'veggie patch'* initiative that subjects them to long hours under harsh environmental conditions, and invariably these women are the elders and grandmothers within these communities.

Why is this research effort significant?

Imagine if we could change the *'veggie path'* paradigm to one where women are owners/shareholders of these renewable energy operations. The hypothesis is that the blockages that rural and urban poor women contend with are created at the highest level of decision making, for example, at the Boardroom level. The inference is that women have access to finance, but securing the finance is yet another major challenge. This research effort will, therefore, develop a theoretical model that will establish the positive drivers that influence the economic empowerment of women.

Frequently Asked Questions

1. Who is the target audience?

Private and Public-sector decision makers who serve on Boards, Executive Level, and Senior Management.

2. Is this research questionnaire only for females?

No, there is no gender bias, and we encourage men to complete the questionnaire.

3. What frame of reference should I use when responding to the questionnaire?

The best approach will be to ask the question, `If I am an Executive, what are the positive factors that would influence the economic empowerment of our rural and urban poor women?

4. What is Broad-Based Black Economic Empowerment (B-BBEE)?

B-BBEE aims to enable the meaningful participation of most South African citizens by structuring and transforming the South African economy. Through the B-BBEE process, further capacity will be created within the broader economic landscape at all levels through skills development, employment equity, socio-economic development, preferential procurement, enterprise development. Especially small and medium

enterprises which will facilitate the entry of black entrepreneurs into the mainstream of economic activity, and the advancement of co-operatives.

5. Is this research effort approved by Nelson Mandela Metropolitan University? Where can I obtain more information about this research effort?

You can contact the researcher, Harvey Keown, see contact details below or use the following link to access the approved research proposal:
https://www.dropbox.com/s/4bn1ju9ad8vn3xh/Harvey%20Keown%20-%20Ph%20D%20%26%20Approval%20%2801082016%29.pdf?dl=0

APPENDIX E: DISSEMINATION OF THIS SURVEY

The MailChimp campaign platform was used to disseminate the electronic survey via email, Twitter, and Facebook postings. Ten email campaigns were disseminated over a period of several months. This approach was utilised as several additional contact databases augmented the initial contact database. During the dissemination process, the Nelson Mandela University changed its branding and logo, thus necessitating the amendment of the electronic survey. Also, specific techniques were also learnt regarding the questionnaire format, and the utilisation of the LinkedIn, Twitter, and Facebook contact databases. The campaign list: Women's Empowerment in the Renewable Energy Sector, with the subject: Socio-Economic Empowerment of Women in the Renewable Energy Sector was delivered on Tuesday, 26th Sep 2017 10:47 to a total of 2,564 Recipients. The table below summarises the campaign details and represents the final survey that was disseminated to the respondents.

Table: Campaign Details

Campaign URL	http://mailchi.mp/af-sd.com/2a9vl48ntp-1428565
Delivery date & time	Tue, 26 Sep 2017 10:47
From name	PhD Researcher: Harvey Keown
From email	research@af-sd.com
Subject line	Socio-Economic Empowerment of Women in the Renewable Energy Sector
Recipients	Sent to list: Women's Empowerment in the Renewable Energy Sector

Source: Researchers construction

Campaign #10 was used to expand on the MailChimp reports and further analyse the campaign statistics. The figure below presents the click map for the survey with:

- 5.2% of the respondents clicking to read more information about this study
- 6.7% of the respondents clicking to read more information about this Broad-Based Economic Empowerment
- 5.9% of the respondents clicking to read more information about the researcher's LinkedIn profile
- 24.4% of the respondents clicking on the URL to start the survey

- 57% of the respondents clicking on the “Begin Survey” button to start responding to the questionnaire

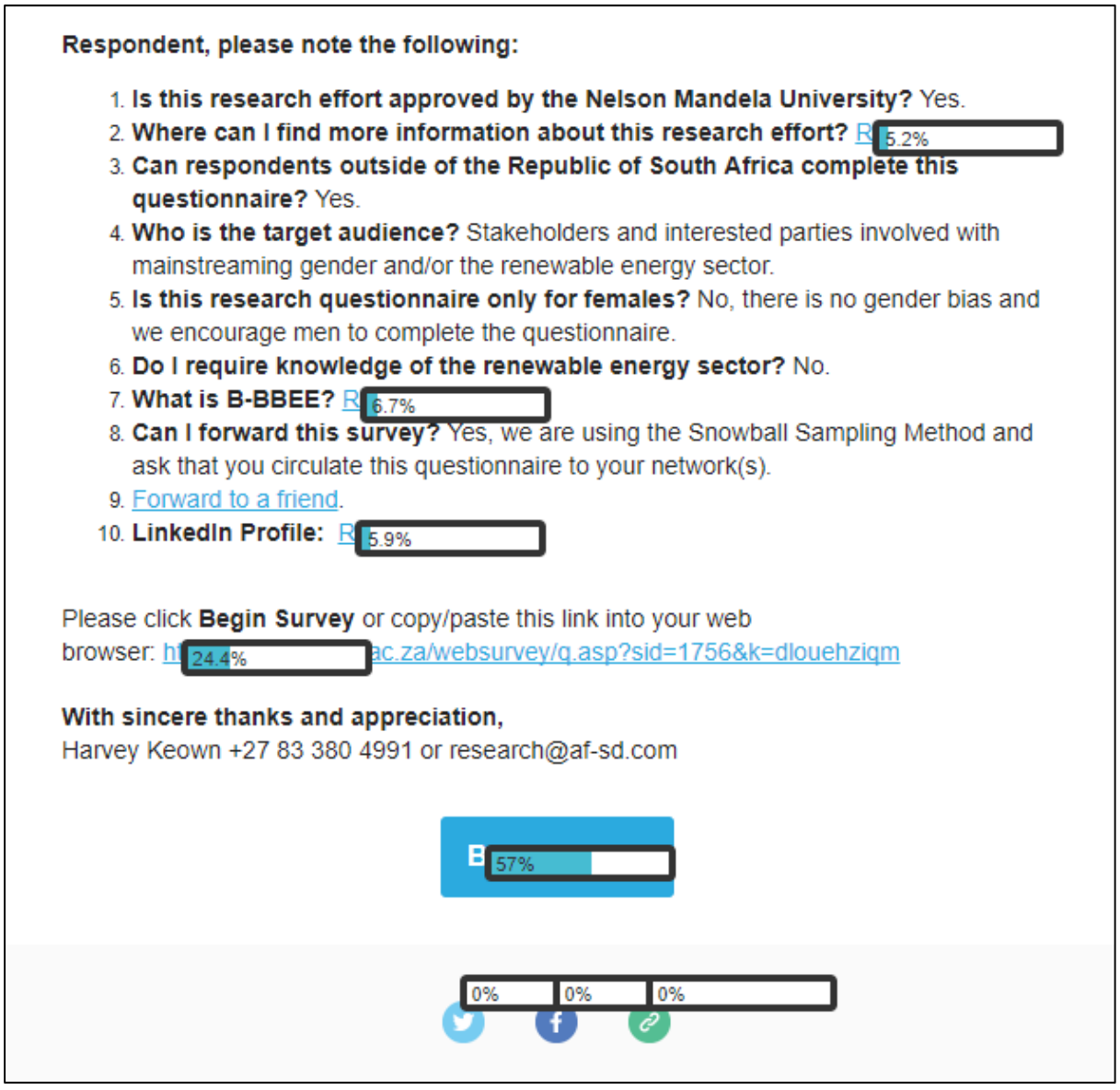


Figure: Click Map

Source: Researchers construction from MailChimp Report

The table below provides additional statistics relating to the Open Rate and the Click Rate. The Open Rate refers to the number of times that the email was opened. The Click Rate refers to the number of times the survey was clicked.

Table: Open Rate and Click Rate Statistics for Campaign #10

Open Rate	24.2%	
List average	19.1%	
Industry average (Non-Profit)	19.8%	
Opened	580	
Clicked	96	
Successful deliveries	2,397	93.5%
Total opens	1,259	
Last opened	14/10/17	11:44
Forwarded	14	
Forward opens	3	
Bounced	167	
Unsubscribed	9	
Click Rate	4.0%	
List average	3.0%	
Industry average (Non-Profit)	2.1%	
Clicks per unique opens	16.6%	
Total Clicks	135	
Last clicked	13/10/17	15:48
Abuse reports	0	
URL	**Total Clicks**	**Unique Clicks**
http://forms.nmmu.ac.za/websurvey/q.asp?sid=1756&k=dlouehziqm	111 (82%)	84 (79%)
https://en.wikipedia.org/wiki/Broad-Based_Black_Economic_Empowerment	9 (7%)	9 (8%)
https://www.linkedin.com/in/harvey-keown-514503/	8 (6%)	8 (7%)
https://www.dropbox.com/s/w6mrhzu4htsz00h/Harvey%20Keown%20Ph.D%20Dissertation%20%2809062017%29%20ABSTRACT.pdf?dl=0	7 (5%)	6 (6%)
http://www.af-sd.com/	0 (0%)	0 (0%)
https://www.facebook.com/pg/Africa-Foundation-for-Sustainable-Development-189191697787967	0 (0%)	0 (0%)
http://www.twitter.com/hkeown	0 (0%)	0 (0%)

Source: Researchers construction

The figure below represents the responses to the survey within the first 24 hours of the survey being distributed to the contacts database. As can be seen from the Figure below most of the responses occurred within the first 10 hours of the survey being disseminated, after that the response rate flattens out.

The conclusion that can be drawn is that respondents that read the email within the first 10 hours are more likely to respond to the electronic survey, than those respondents that will revisit the email later. These deferred respondents are more unlikely to read the email, and thus unlikely to respond to the survey.

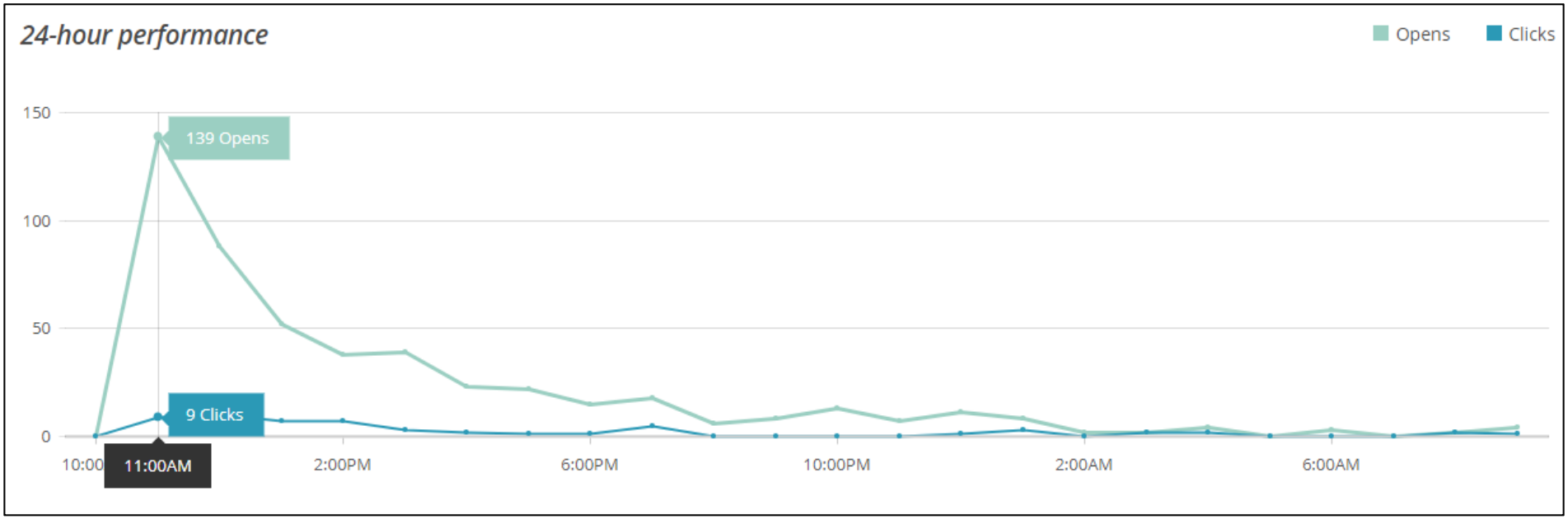
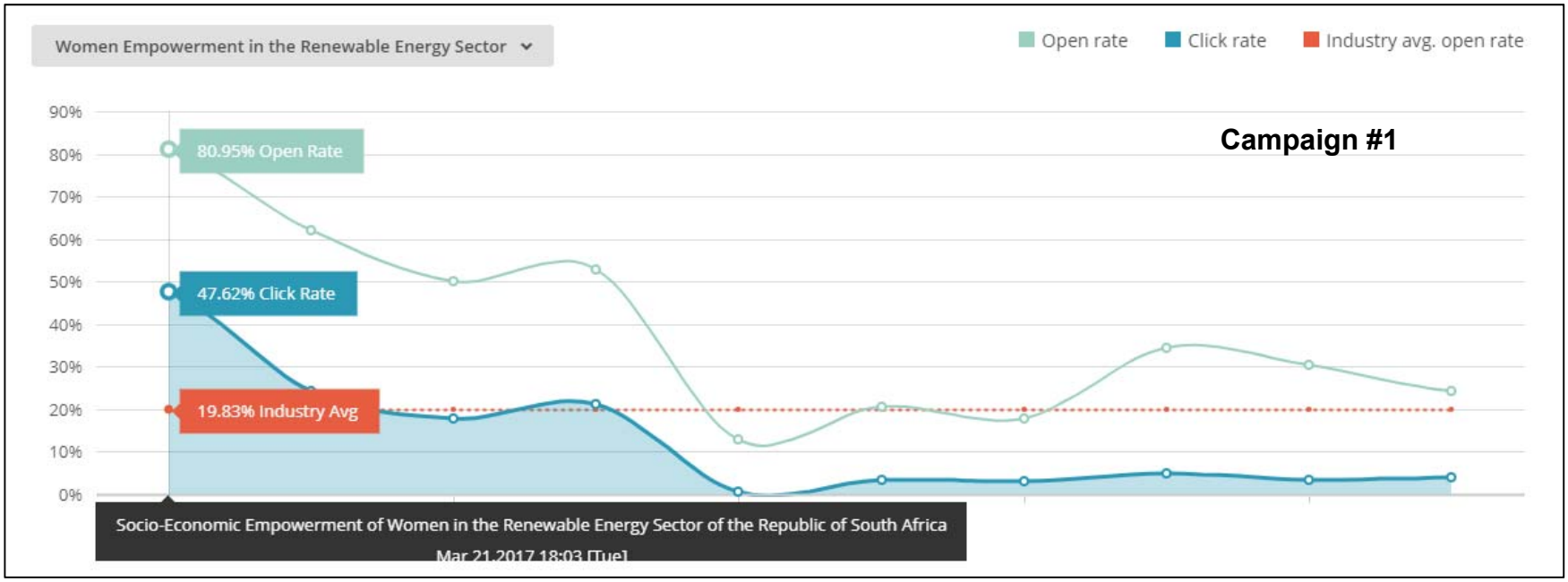
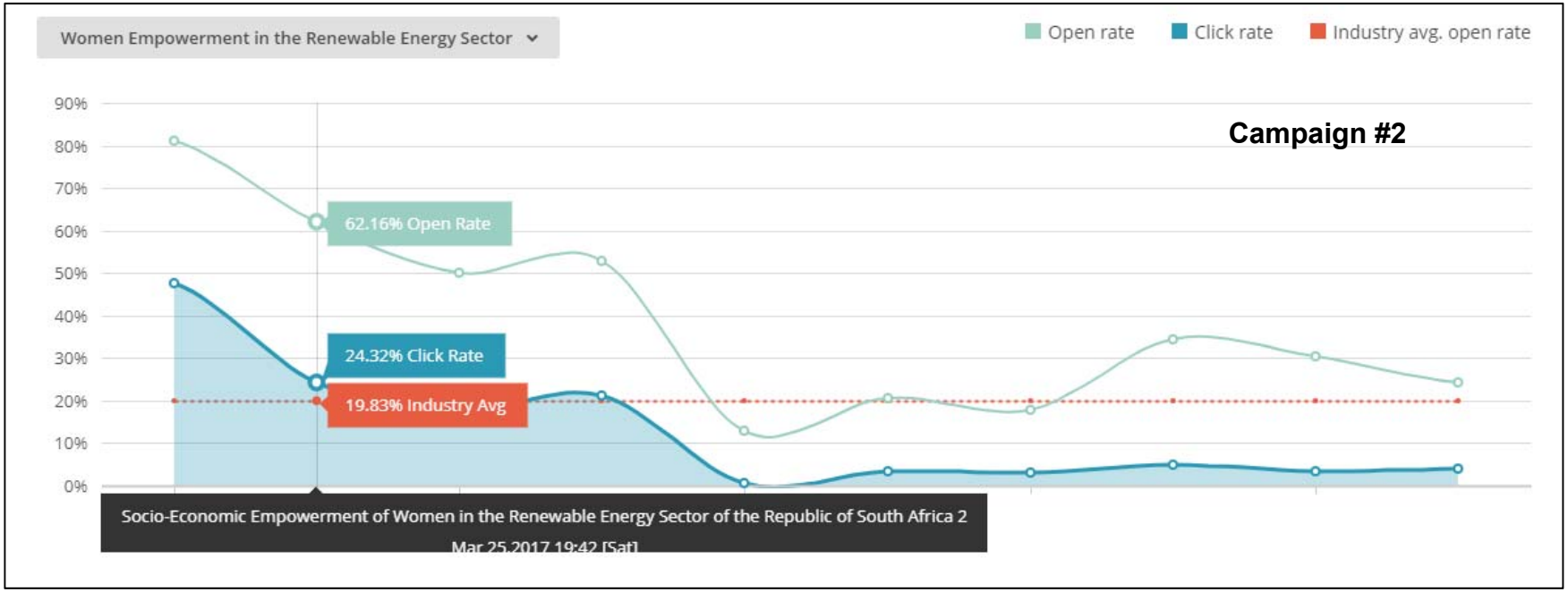


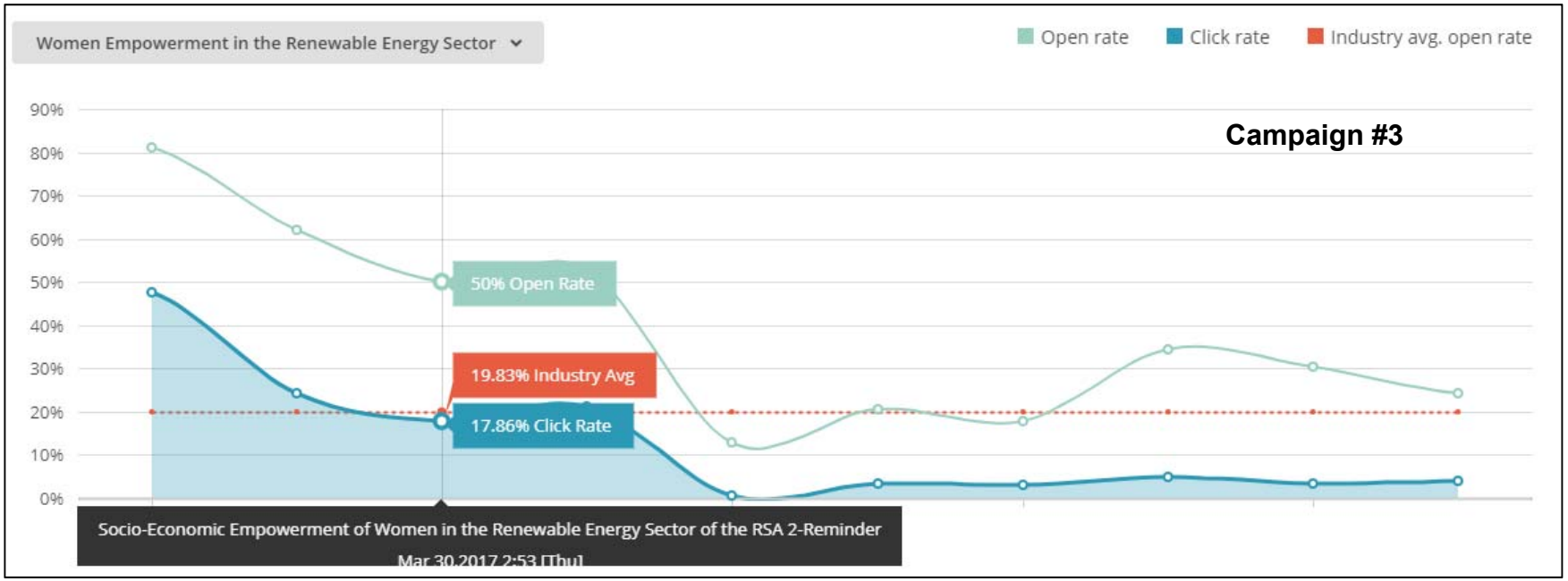
Figure: 24 Hour Performance of Campaign #10

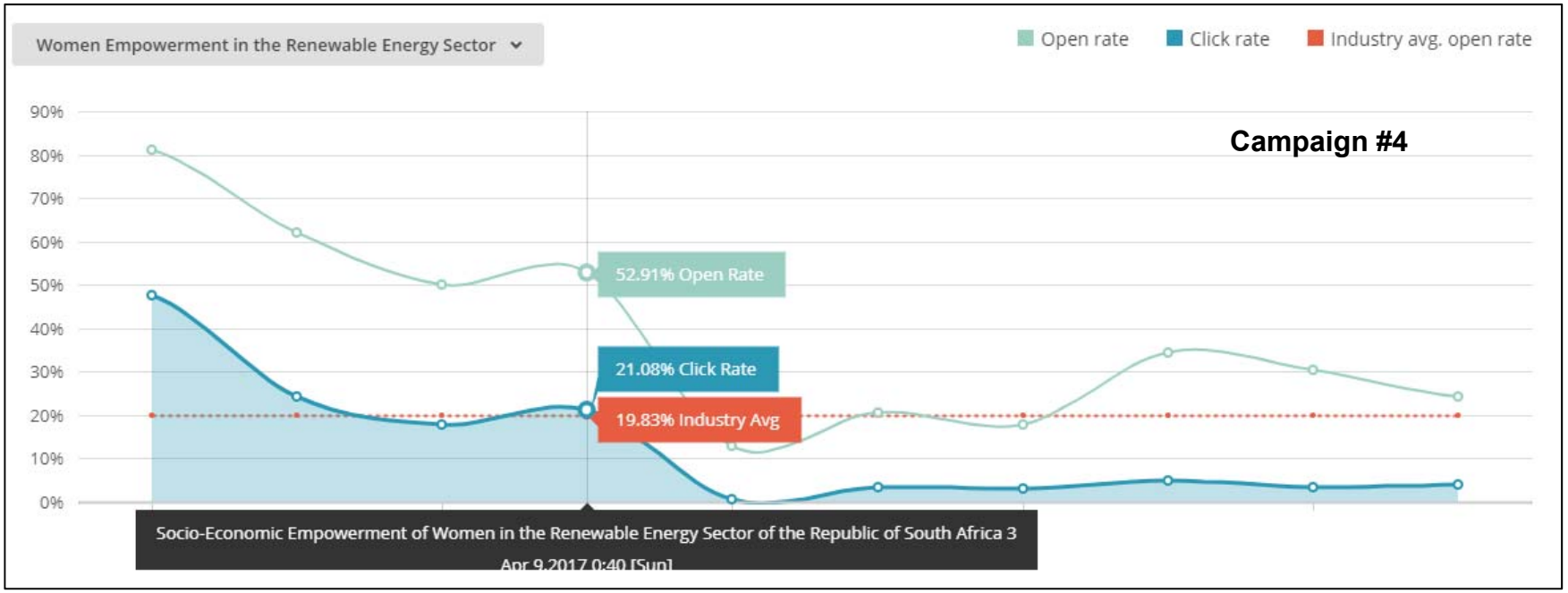
Source: Researchers construction from MailChimp Report

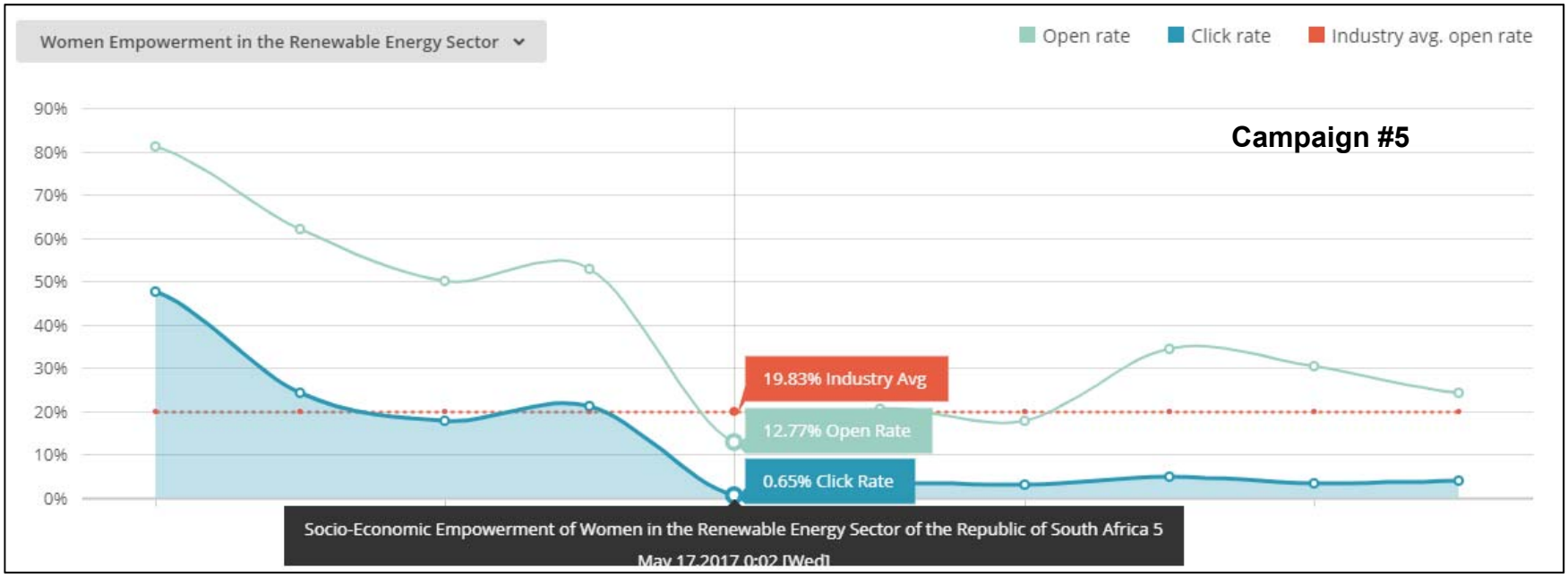
The charts below illustrate the ten campaigns that were disseminated as well as the Open Rate, Click Rate, and the Industry Average Open Rate.

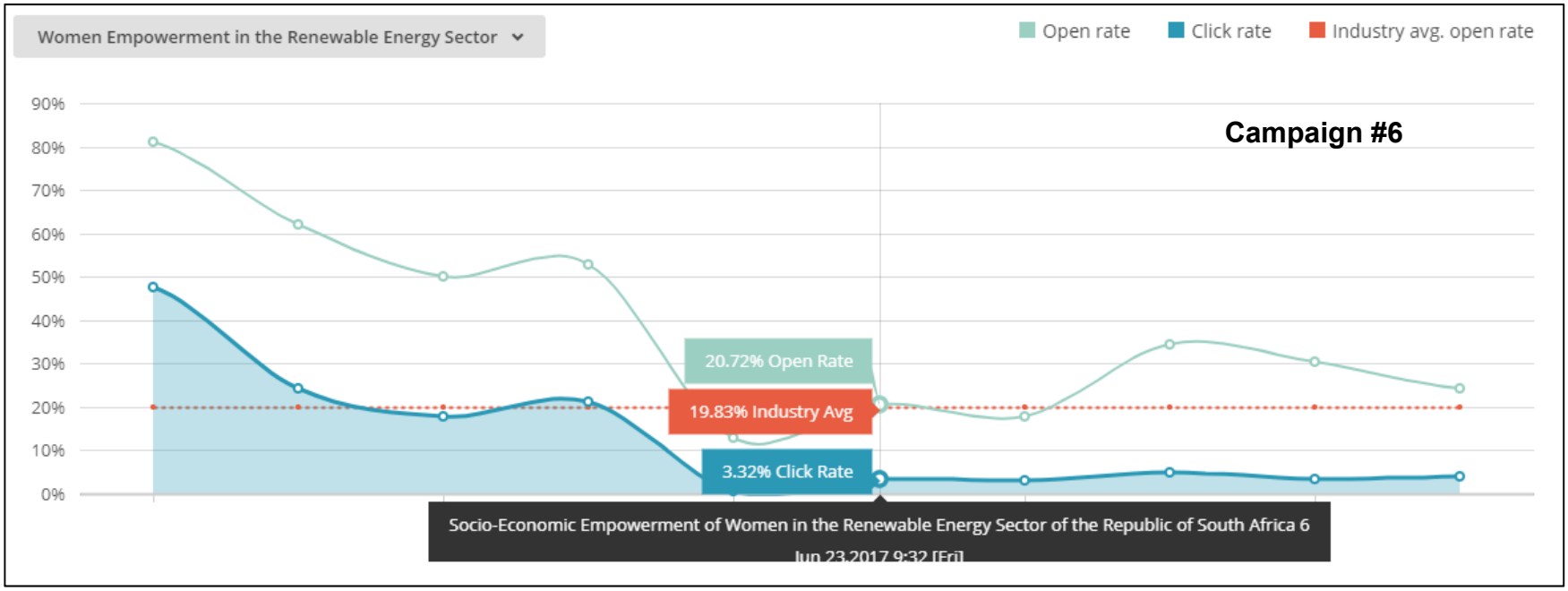

Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #1
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
80.95% Open Rate
47.62% Click Rate
19.83% Industry Avg
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa
Mar 21 2017 18:03 [Tue]

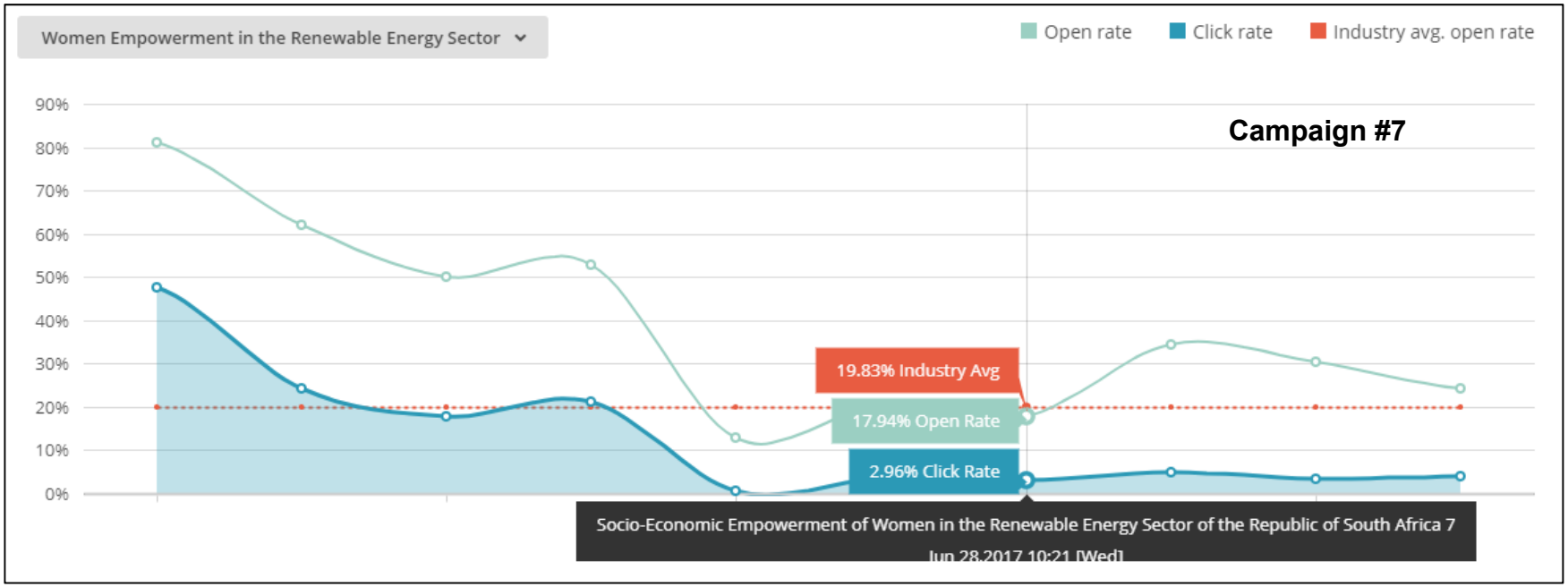

Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #2
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
62.16% Open Rate
24.32% Click Rate
19.83% Industry Avg
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa 2
Mar 25 2017 19:42 [Sat]

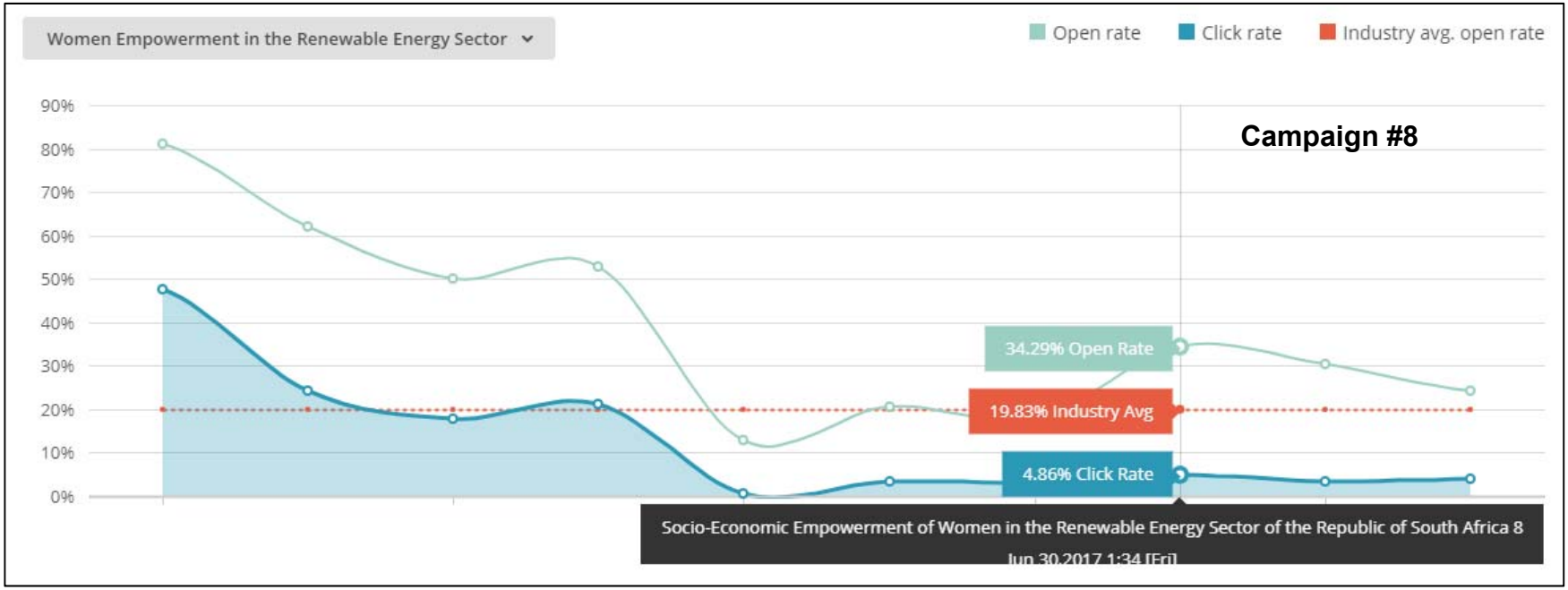

Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #3
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
50% Open Rate
19.83% Industry Avg
17.86% Click Rate
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the RSA 2-Reminder
Mar 30,2017 2:53 [Thu]

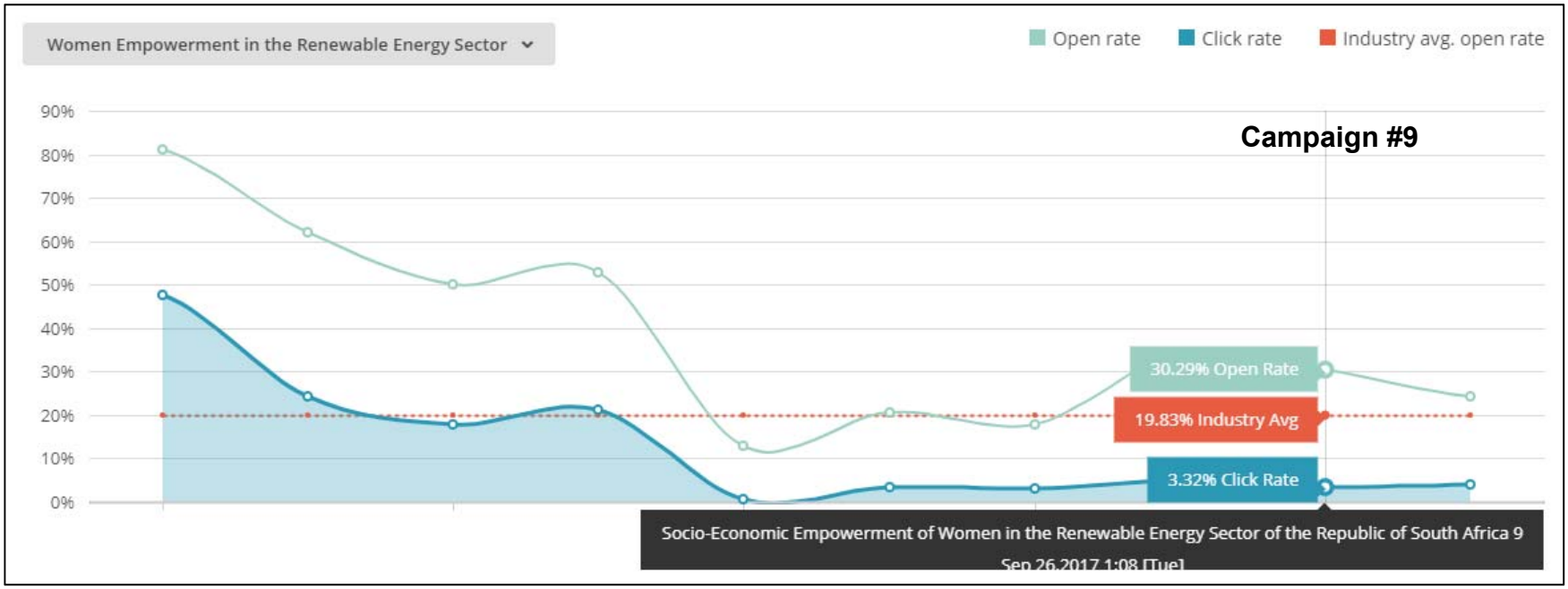

Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #4
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
52.91% Open Rate
21.08% Click Rate
19.83% Industry Avg
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa 3
Apr 9,2017 0:40 [Sun]

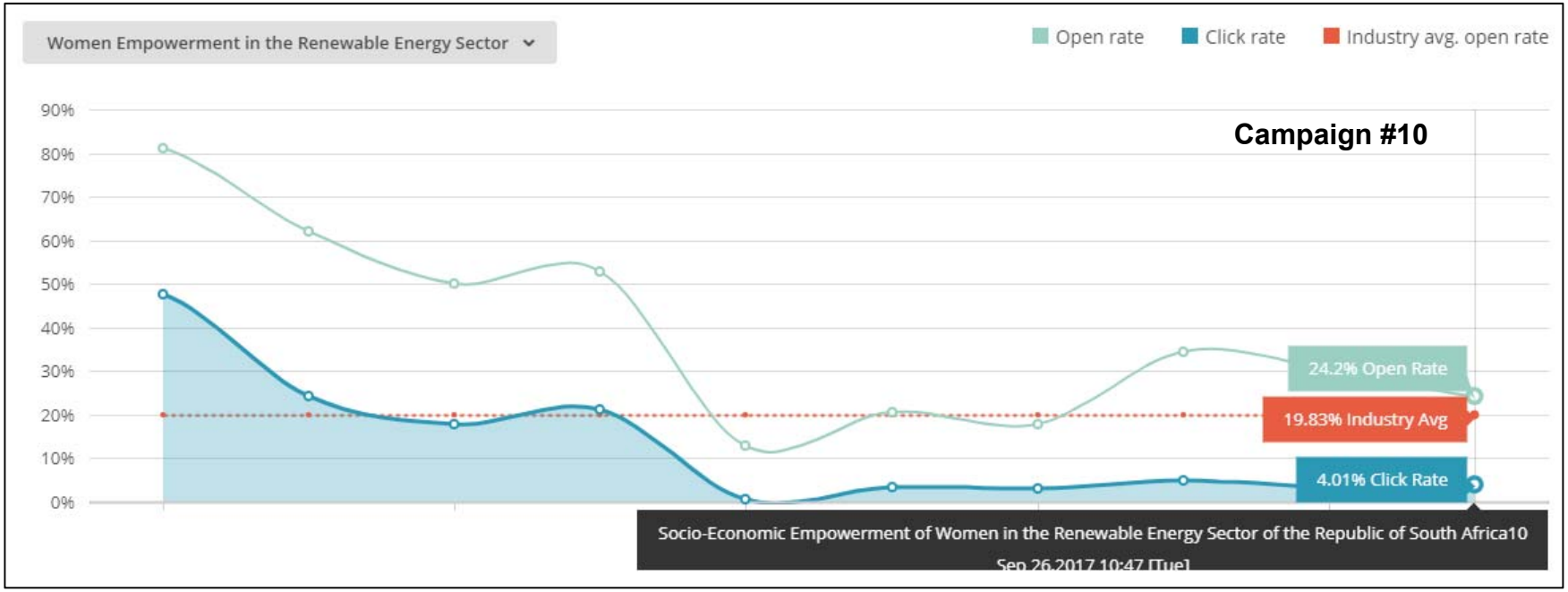

Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #5
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
19.83% Industry Avg
12.77% Open Rate
0.65% Click Rate
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa 5
May 17 2017 0:02 [Wed]


Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #6
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
20.72% Open Rate
19.83% Industry Avg
3.32% Click Rate
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa 6
Jun 23 2017 9:32 [Fri]


Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Campaign #7
19.83% Industry Avg
17.94% Open Rate
2.96% Click Rate
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa 7
Jun 28,2017 10:21 [Wed]


Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Campaign #8
34.29% Open Rate
19.83% Industry Avg
4.86% Click Rate
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa 8
Jun 30,2017 1:34 [Fri]


Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #9
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
30.29% Open Rate
19.83% Industry Avg
3.32% Click Rate
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa 9
Sep 26,2017 1:08 [Tue]


Women Empowerment in the Renewable Energy Sector
Open rate
Click rate
Industry avg. open rate
Campaign #10
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
24.2% Open Rate
19.83% Industry Avg
4.01% Click Rate
Socio-Economic Empowerment of Women in the Renewable Energy Sector of the Republic of South Africa10
Sep 26,2017 10:47 [Tue]

The figure below represents the respondents by geographic area, with South Africa having most of the responses, followed by the United States of America and Switzerland. The responses from the United Kingdom were surprisingly low. However, the positive responses from Nigeria could be an indication of the levels of interest in mainstreaming gender and the renewable energy sector.

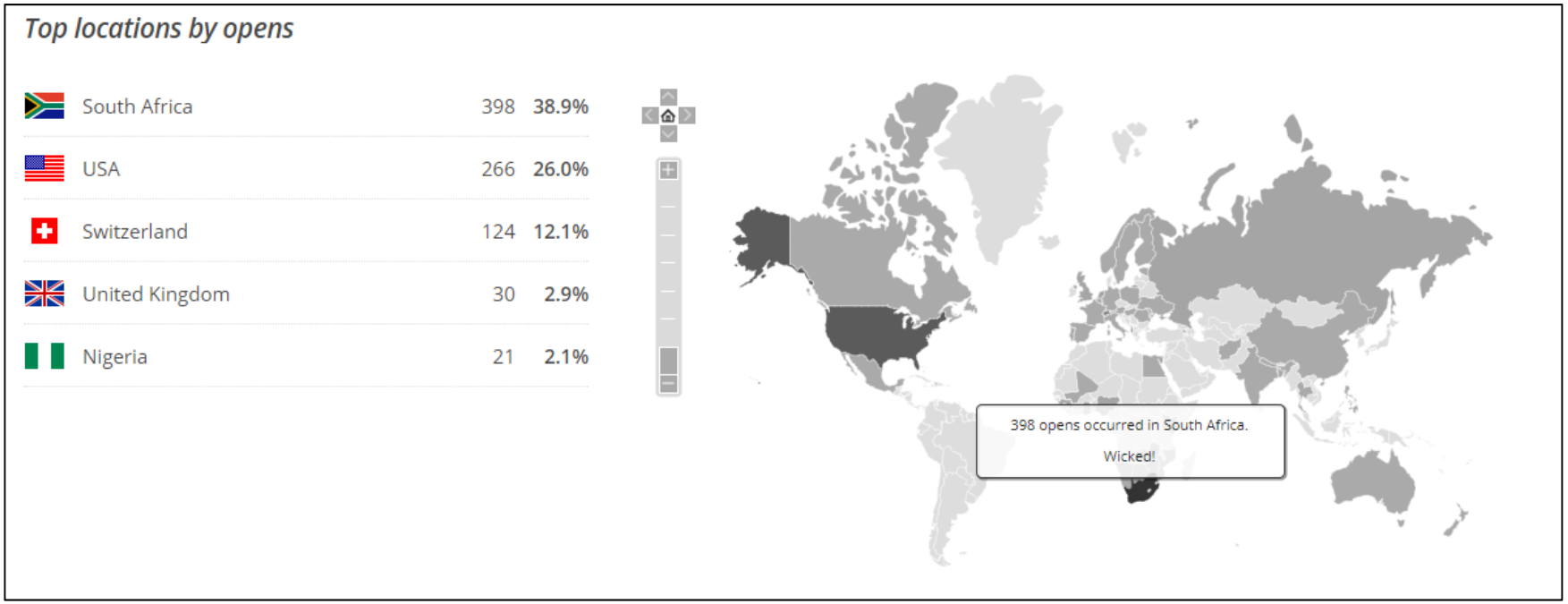


Figure: Responses by Geography

Source: Researchers construction from MailChimp Report