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Analysis of Global Challenges and Future Research Needs in  
the Context of Low-income Countries. Report to Swedish  
International Development Cooperation Agency (SIDA)

Pakkasvirta, Jussi

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# Analysis of Global Challenges and Future Research Needs in the Context of Low-income Countries

FINAL REPORT 28 AUGUST, 2013

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## EXECUTIVE SUMMARY

This report is a global context analysis of the current and future challenges relating to thematic research on low-income countries, commissioned by the Swedish International Development Cooperation Agency (SIDA). The focus of this research has been to perform a gap analysis through the identification of major socio-economic trends and political changes with a direct or indirect impact on the changing contexts of development in low-income countries. The main objective has been to analyse the existing gaps between what we have identified as “change factors” and the existing research coverage on both the issues and low-income countries. The more prescriptive task of this report has been also to present the future research needs with regards to Low-income Countries, and to discuss what could be Sweden's contribution in these areas. Finally, the causal linkages between change factors and research support are discussed in relation their impact on the well-being of people living in low-income countries both in the present and in the future.

## THE RESEARCH QUESTIONS

1. *Identify the most severe/challenging current and future problems that affect/will affect low-income countries and their populations.*
2. *Identify current and future strategic research areas within the context of the those problems at a global, regional and local level, in the social sciences, humanities and natural sciences, and in terms of technology, natural resources and the environment.*
  - A. ***What questions and challenges are Universities and research institutions focusing on today? What areas are at the forefront of research at global, regional (including EU) and national levels (including Sweden)?***
  - B. ***What areas are under-researched at global, regional (including EU) and national levels (including Sweden)?***
  - C. ***Assessment of capacity building needs in low-income countries in the areas identified.***
3. *Identify knowledge gaps and challenges in the social sciences and humanities, in natural sciences and technology, in health sciences and in research on natural resources and the environment, in terms of the problems identified.*
4. *Identify the key actors at global, regional (including EU) and national levels (including Sweden), regarding both the production of new knowledge and capacity building needs. Key actors include research organizations (both established and emerging), networks (both established and emerging) and other relevant initiatives.*
5. *Identify funders that support research in relevant areas, i.e. donors, foundations, research councils. Who is funding what?*
6. *Identify current initiatives in the area of innovation in the context of development.*

## RESEARCH PROCESS

In order to achieve a credible and valid perspective on the current problems and future trends that impact low-income countries several sources of information were used. Firstly, global megatrends were identified from existing futures reports and scenarios. Identified megatrends were used to give a general framework for global development context. This overall picture was thereafter narrowed by collecting more specific perception and future scenarios from thematic interviews and focus group interviews. This exercise was essential to get a special LIC approach to the study. After six megatrends we identified six critical change

factors. Also an electronic survey was sent out to targeted experts in the field. Megatrends form a global cross-cutting change platform which affect behind most identified change factors. The data collection can be summarized as follows:

- 1) Desk Study: Collecting the relevant data from a journal review, as well as studies of future trends and forecasting reports and classifying these into three categories:
  - a. General global forecast reports (no indication of impacts on developing countries whatsoever)
  - b. Global forecast reports with specific development country emphasis (not necessarily including breakdown for LICs)
  - c. LIC-specific forecasts (with possible country-level breakdown)
- 2) Focus group interviews: Perceptions of development policy experts (researchers, NGOs, INGOs, donors, policy-makers and other stakeholders) of future developments.
- 3) Electronic survey: The experts contacted who could not participate in any of the focus groups but were willing to contribute to the study.

### **CRITICAL CHANGE FACTORS: FUTURE TRENDS, RISKS AND SCENARIOS**

The report aggregated six areas of critical change factors that are likely to have major welfare and well-being impacts and determine societal development in low-income countries. These change factors are:

#### ***1) DEMOCRACY AND ACCESS TO PUBLIC SPHERE***

Democratization is an indispensable megatrend in the poorest countries at present and will continue to be so for decades to come. It will without a doubt also continue to be an essential topic for academic interest. Internet and better access to information increases transparency. Individual empowerment will accelerate, and together with better education and an increased knowledge on societal issues, is likely to enhance the raise of the civic society. Some governments will still try to limit access to information and freedom of assembly. However, when civic pressure is high enough top-down control is not possible any longer. As far as societal development is stable (i.e. no internal or external conflicts) governments are forced to implement democratic measures and allow freedom of speech by citizens and press.

#### **Key Focus Areas for Future Research**

- a) Constructing democratic and good governance
- b) Civil society actions to reinforce representative democracy
- c) Social movements and young people

#### ***2) STATE, GLOBALIZATION AND CONFLICTS***

Between 500 million and 1 billion people live in states seriously affected by conflict or unstable governance. In contrast to most of the remaining developing world, these regions/states have seen little progress in terms of development outcomes, and their situations are becoming an increasingly serious part of the global development problem (The 2011 World Development Report). There is an urgent need to map alternative approaches to resolving sticky conflicts, and to build state legitimacy through inter-related actions on security (security-poverty relation), crisis prevention and economic recovery, and governance, and to strengthen legislative systems and access to justice (follow up and regulation).

#### **Key Focus Areas for Future Research**

- a) Youth and ICT (from an interdisciplinary perspective)
- b) New funds and taxation (local, national and global)
- c) The changing role of State, NGOs and business
- d) Corporate Social Responsibility
- e) BRICs and Role of the West?
- f) New conflicts (ethnic, environmental, raw materials, energy)

### **3) GOVERNANCE OF ENVIRONMENT AND NATURAL RESOURCES**

Since the onset of industrialization about 200 years ago, human development has come mainly at the expense of the environment and natural resources. Environmental degradation, climate change and land use change have altered the foundations and development pathways of economies that are dependent on agriculture and natural resources use. Some regions are able to benefit from this change, while the majority, particularly LICs will face serious challenges. Food security, degradation of natural resources and access to sustainable energy will remain key challenges in LICs. Strong, structural changes in the governance of natural resources – both globally and nationally - are needed to direct countries into sustainable development pathways.

#### **Key Focus Areas for Future Research**

- a) How can agricultural productivity be raised, especially in Africa where there has been remarkably little progress in this front?
- b) Climate change is increasing the challenges that agriculture and natural resources management sectors are facing in LICs. In many low-income countries, the vulnerability of the production systems and of a large proportion of the whole population
- c) In climate change and natural resources more emphasis on adaptation and building resilient production systems

### **4) DEMOGRAPHIC CHANGE, RURAL DEVELOPMENT AND URBANIZATION**

The expected growth in the world population will be concentrated in the urban areas of the less developed regions, whose population is projected to increase from 2.7 billion in 2011 to 5.1 billion in 2050. Rural and urban economies will become more and more integrated creating new economic opportunities. The new “mega-cities” become the new engines of both global and regional economies. Yet, increased urbanization requires large investments in sanitation, infrastructure etc., and curbing environmental pollution and loss of resources such as water basins, and arable lands becomes a major challenge.

#### **Key Focus Areas for Future Research**

- a) Mega-regions, Urban Corridors and City Regions as Hubs for Development
- b) Further identifying the interactions between demographic processes, natural resources and critical urban life support systems in the contexts of regional and sub-regional variations  
→ e.g. local uptake and implementation of water management systems
- c) Integrating demographic trends and factors into current studies of environmental change
- d) How to ensure better urban services and ensuring that research exists on pro-poor societal spending in urban areas in order to enhance social stability
- e) Nexus between urban employment and migration

### **5) GOVERNANCE OF PUBLIC POLICIES FOR SOCIAL DEVELOPMENT**

Capacities to address poverty and social inequalities, including ensuring that benefits from economic growth contribute to broader social development and capacities, in particular in countries, which are rich in natural resources. There is a need for tackling and limiting the negative, while enhancing the positive impacts and implications of globalisation, in particular in the context of mobility of people, availability of new communication technologies, and in both enhancing of trade and new investments within countries as well as ensuring benefits to the wider society.

#### **Key Focus Areas for Future Research**

- a) Intersectoral, interdisciplinary and implementation research for health and public policies
- b) Social science research for national social policy development
- c) Research on regulation and resource gathering for social development beyond user cost-sharing
- d) R&D on neglected diseases and conditions of local and national importance as well as on essential pharmaceutical policies for access, regulation, procurement and supply of medicines
- e) Impacts and politics of global and development priorities for national social development

### **6) SCIENCE, TECHNOLOGY AND INNOVATIONS**

Science, technology and innovation discourse has been dominated by rich nations and multinational corporations. Low-income countries have not been able to utilize innovative product and service models. LIC participation to global knowledge networks has been limited. Growing interest for applying new technologies to societal problems and stimulation of pro-poor innovations is likely to integrate LICs to the global innovation community. Positive (young) demographic patterns and growing purchase power are likely to increase interest of local SMEs and multinational companies.

#### **Key Focus Areas for Future Research**

- Clear shift from Northern research agendas towards South-South-North model, i.e. providing only core funding and leaving needs assessment and research agenda setting to Southern networks and partners.
- More focus on low-tech innovations in low-income countries
- Emphasis on innovations that help the every-day living conditions of the poor population in low-income and lower-mid income countries
- Special research program targeted to structural problems of low-income countries systems level change drivers
- More emphasis on multi-disciplinary research initiatives tackling horizontal and cross-policy problems, including access to knowledge and products of research
- Increasing attention on innovation research at the regional and local level

### **RESEARCH CAPACITY AND INSTITUTIONAL FRAMEWORK**

There is still much room for the development of skilled researchers and research managers in partner countries, and support to national research systems and institutions, including universities. South-South research networks and S-S collaboration with North-South-South linkages between Sweden, international research systems (e.g. CGIAR) and low-income countries for research and innovation could function well in narrowing the capacity gap between low-income countries and other countries.



### **Key Focus Areas for Future Capacity Building**

- National research systems and strengthening institutional basis of research for public policies, including capacities and institutional basis for health systems, health policy and public health research
- Support to training and professional development of highly skilled work-force
- Support to national research prioritisation and capacities to finance essential national research for health and social development needs

### **FUTURE ROLE OF RESEARCH SUPPORT**

There is an urgent and obvious need for *interdisciplinary* and multi-methodological comparative research in low-income countries, which can tackle multi-faceted problems (e.g. governance, gender, technical issues). To be able to create true transformation, there is a need for a complete rethinking of the dominant research agendas. Many of the interviewees identified that large-scale, problem-oriented research could be a solution for the future. There is a need for transformative research, which digs deep into the foundations of why a country is a low-income country, i.e. the root causes of “low-incomeness”. As simple as this may sound, this is also a daunting, under-researched domain.

# 1. INTRODUCTION

This study is a global context analysis of the current and future challenges relating to low-income countries calling for thematic research. It has been commissioned by the Swedish International Development Cooperation Agency (SIDA). This first section outlines the main research questions, describes main development trends, discusses the methodological choices that will be applied, and introduces the data collection methods that will be used. The purpose of this report is to identify the most challenging current and future problems relevant to low-income countries and their populations, and to assess which current and future research areas will be most effective to solve them. The objectives of the assignment are to:

- 1. Identify the most severe/challenging current and future problems that affect/will affect low-income countries and their populations.*
- 2. Identify current and future strategic research areas within the context of the those problems at a global, regional and local level, in the social sciences, humanities and natural sciences, and in terms of technology, natural resources and the environment.*
  - a. What questions and challenges are Universities and research institutions focusing on today? What areas are at the forefront of research at global, regional (including EU) and national levels (including Sweden)?*
  - b. What areas are under-researched at global, regional (including EU) and national levels (including Sweden)?*
  - c. Assessment of capacity building needs in low-income countries in the areas identified.*
- 3. Identify knowledge gaps and challenges in the social sciences and humanities, in natural sciences and technology, in health sciences and in research on natural resources and the environment, in terms of the problems identified.*
- 4. Identify the key actors at global, regional (including EU) and national levels (including Sweden), regarding both the production of new knowledge and capacity building needs. Key actors include research organizations (both established and emerging), networks (both established and emerging) and other relevant initiatives.*
- 5. Identify funders that support research in relevant areas, i.e. donors, foundations, research councils. Who is funding what?*
- 6. Identify current initiatives in the area of innovation in the context of development.*

The assignment considers both the present and future situation in a 10–30 year perspective, making use of a broad social sciences perspective including history, humanities, economics and related fields. Environmental studies, technology and natural resources are conceived in an interdisciplinary manner, i.e. including cross-cutting issues such as climate change, scarcity of natural resources, land use etc. Pedagogical and behavioural sciences are also taken into account in the analysis, as they offer important

added value engaging research and offering quality education in order to guide and enhance understanding of human growth, development, behaviour, learning and activities – all very essential for planning development research agendas.

The particular focus in health sciences will be on broader health sciences, public health research and publicly funded research, and the global context of institutions, incentives and financing that support health research in general. This will include an overview of and a focus on current developments and the global context of medical R&D gaps as they relate to current and future health challenges in low-income countries. The research approach and the analysis are based on the idea of an interdisciplinary learning culture, which emphasizes both the identification of existing best practices and innovative perspectives on possible futures, through lessons learned in previous global context analyses.

Study is structured in the following way. Chapter 2 is a broad discussion of major societal problems low-income countries are facing today and of future trends (both threats/risks and positive trends that with major impact on low-income countries). The first part draws mainly on futures studies and scenarios crafted by various research institutes, intergovernmental organizations and think tanks for the analysis of global trends. The second part analyses the perceptions and expert opinions voiced during the thematic interviews and focus group discussions conducted to inform this report. The chapter concludes with a summary of these findings. Chapter 3 analyses in more detail the global change factors identified in the previous chapter, as well as the the on-going research in these areas by major institutions, networks, research programs, and their main research priorities. Major research gaps will be discussed at the end of each thematic sub-section. The main findings are summarized in chapter 5, which also contains conclusions and recommendations for further research funding options.

## 2. FUTURE TRENDS AND THEIR IMPACT ON POPULATIONS LIVING IN LICs

The world is becoming a more complex, interconnected environment where people, organizations, policies and social institutions are interconnected through numerous diffuse and often hidden ties. This has increased the interdependency and unpredictability of the global system and thus made it more difficult for any single institution (state, international organizations or inter-governmental body) to steer and control it.

If this increased complexity and unpredictability make policy analysis and decision-making difficult today, it is needless to say that they make forecasting almost impossible. Economists and social scientists debate whether one should even try make forecasts or predictions that exceed a period of 5 years (which in fact was the traditional planning cycle in the Nordic States).

*" It is far better to foresee even without certainty than not to foresee at all. "*

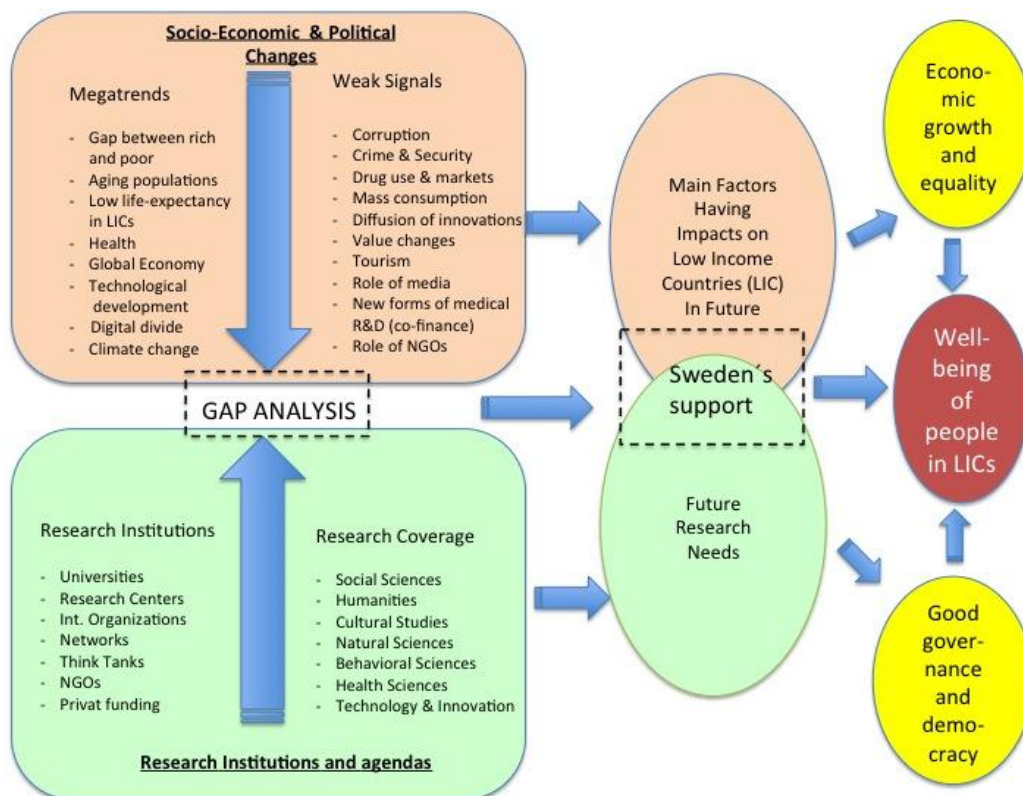
*--Henri Poincare in The Foundations of Science*

Being fully aware of all these restrictions, we have decided to carry out a number of exercises to track possible global trajectories during the next 10-15 years and assess their impact on populations in low-income countries (LICs). Although these trends are only indicative they contain valuable information on people's perceptions as to which global trends have the greatest influence on the conditions of living in LICs. This information is also a critical precondition to carry out our second task, namely to see how existing and future research inputs cover these areas.

### 2.1 Data, Methods and Research Process

Our analysis starts from identification of major socio-economic and political trends and changes with an impact on the varying contexts of development in low-income countries. We then map out the main research strategies and agendas in these areas and identify the main institutions and networks engaged in researching them. The main objective is to analyse the existing gap between the change factors and research coverage. The more prescriptive task is to present the future research needs in these areas and to discuss what could be Sweden's contribution in these areas. Finally the causal linkages between areas of change and research support will be discussed in relation to economic growth and equality of wealth distribution, good governance and conditions for stable and participatory democracy and their impact on the well-being of people living in low-income countries.

**Figure 1** presents the overall framework of analysis in this evaluation with some illustrative examples.



**Figure 1. Framework for analyzing current and future challenges for thematic research from the perspective of low-income countries and Sweden's contribution.**

In order to achieve a credible and valid perspective on the current problems and future trends that impact low-income countries, we have carried out a number of thematic interviews and conducted a number of focus group interviews between February–April 2013 (see table 1 below). An electronic survey was sent to those experts that could not participate in focus group sessions but were interested in contributing to the study. The data collection can be summarized as follows:

- 1) **Desk Study:** Collecting the relevant data from studies of future trends and forecasting reports and classifying these into three categories:
  - a. **General global forecast reports** (no indication of impacts on low-income countries whatsoever)
  - b. **Global forecast reports with specific development country emphasis** (not necessarily including breakdown for LICs)
  - c. **LIC-specific forecasts** (with possible country-level breakdown)
- 2) **Focus group interviews:** Perceptions of development policy experts (researchers, NGOs, INGOs, donors, policy-makers and other stakeholders) of future developments.
- 3) **Electronic survey:** The experts contacted who could not participate in any of the focus groups but were willing to contribute to the study.

A focus group is an informal discussion among a group of selected individuals about a particular topic. There are many potential focus group scenarios, for example women who are waiting to see their health care providers in a family planning clinic discussing contraception; farmers discussing how to improve their cultivation methods; NGOs finding new means to develop their advocacy of business community thinking

on how to improve corporate governance and social responsibility. Focus groups are thus group discussions arranged to examine a specific set of topics. The group is focused because it involves some kind of collective activity. Methodologically, focus group interviews involve a group of 6–8 people who come from similar social and cultural backgrounds or who have similar experiences or concerns.

The socio-economic change factors and questions related to research coverage of these areas were discussed in four types of focus groups or thematic interviews: 1) NGOs and citizens, 2) experts / researchers, 3) business community / or donors and 4) policymakers. The focus group interviews carried out for this study are presented in the table below<sup>1</sup>.

<b>Focus Group</b>	<b>Participants</b>	<b>Place / Time</b>	<b>Remarks</b>
<b>Focus 1. Pilot s (two)</b>	Development research & country expert (19 scholars)	Helsinki 13.2	Testing the methodology and data collection
<b>Focus 2. World Forum on Science and Democracy (WFSD) and World Social Forum (WSF)</b>	NGO representatives and researchers (27 in total)	Tunis on 23–30 March	Change factors
<b>Focus 3. Nepal</b>	Researchers, 5 groups (30 persons)	April, 2013	Global changes and their impact on LICs in Asia
<b>Focus 4. Geneva</b>	e.g. UNCTAD, UNRISD, WHO, ILO, UNAids, WTO, UNEP (25 persons)	Geneva Switzerland, April 2013	Several focus groups and interviews
<b>Focus 5. Leipzig</b>	Central America experts (15 scholars)	Leipzig, 8-10 March, 2013	As part of the conference
<b>Focus 6. Nairobi, Kenya and Dar es Salaam, Tanzania</b>	Researchers, Donors, NGOs (35 persons)	April 2013	Several interviews and focus groups

**Table 1. The list of focus group interviews**

<sup>1</sup>The list of individual participants is not attached to the report since some of the participants wanted to remain anonymous. List of organizations and institutions that supported our study can be delivered. The research team is grateful for all the comments and constructive remarks.

Several individual expert interviews (20) were carried out with same questions as for the focus groups. These results will be discussed at the end of the chapter when future trends are summarized. (see appendix 2)

**Figure 2** below introduces our framework for analysing the change factors according to their impact or leverage (vertical dimension) and their probability (horizontal dimension). Societal megatrends are change factors that have a tremendous impact on low-income countries (e.g. climate change, pollution, corruption, diseases such as AIDS/HIV, etc.). These factors can be predicted and foreseen and thus preventive actions are easier to plan. Read alerts or hidden opportunities, then again, are phenomena that are not very likely to appear but will have a big impact (conflicts, technological or social innovations etc.). Weak signals are likely to actualize but it is difficult to say what their impact will be on low-income countries at the societal level (e.g. new farming or production methods, cultural changes, democratic institutions etc.). White noise consists of external shocks and underlying economic or social phenomena, which make them difficult to predict or analyse (e.g. new consumerism, tourism etc.). The most interesting areas are naturally the high impact fields.

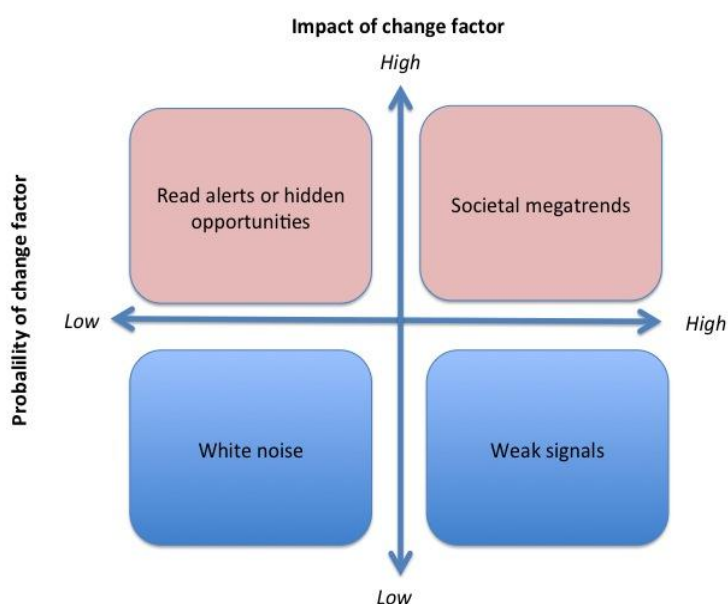


Figure 2. Framework for assessing the change factors

The approach makes use of a broad social sciences perspective including history, humanities, economics and related fields. Environmental studies, technology and natural resources are conceived in an interdisciplinary manner, i.e. including cross-cutting issues such as climate change, scarcity of natural resources, land use etc. Pedagogical and behavioural sciences are also taken into account in the analysis, as they offer important added value engaging research and offering quality education in order to guide and enhance understanding of human growth, development, behaviour, learning and activities – all very essential for planning development research agendas. The particular focus in the health sciences will be on broader health sciences, public health research and publicly funded research, and the global context of institutions, incentives and financing that support health research in general. This will include an overview of and a focus on current developments and the global context of medical R&D gaps as they relate to current and future health challenges in low-income countries. The research approach and the analysis are based on the idea of an interdisciplinary learning culture, which emphasizes both the identification of existing best practices and innovative perspectives on possible futures, through lessons learned in previous

global context analyses.

In terms of research, the broader context of global research policies seems to reflect priorities in global education policies and reforms, with a focus on primary education. This is accompanied by an increasing global focus on product development aspects of research, with a more limited role for national research institutions and their long-term capacities. This implies a challenge for low-income countries, for their long-term research capacities as well as for maintaining essential national research infrastructures.

The first challenge involved in the identification of the problems of low-income countries in terms of social sciences and the humanities is the wide spectrum of these sciences/disciplines in general. The second challenge of evaluation derives from the cultural and political heterogeneity of “developing countries”. Thus issues in the other fields of this global impact analysis (like health, natural sciences and technology, innovation and the environment) will be considered in terms of the social sciences and cultural issues. To focus the study it is useful to start from the general identification of the main themes, research disciplines, critical problems and research fields. The Millennium Development Goals of the UN provide a very general framework.

The research coverage will be assessed in two dimensions: 1) the leverage of research, i.e. how research (basic or applied) relates to these phenomena and how easily research findings can be utilized in given areas, and 2) the existing research coverage today and how it will develop in the future. Strategic research priorities exist in areas of high-leverage and low coverage. These under-researched areas open possible niches for research funding. Mature research agendas lie in the field of high coverage / high leverage and much-studied areas. These are important research areas, but are likely already mature, so that it is difficult to offer added value in these for any donor organization. Stagnant areas are the ones that are understudied but also lack research leverage. In other words, it is extremely difficult to tackle these problems or potential factors by means of research.

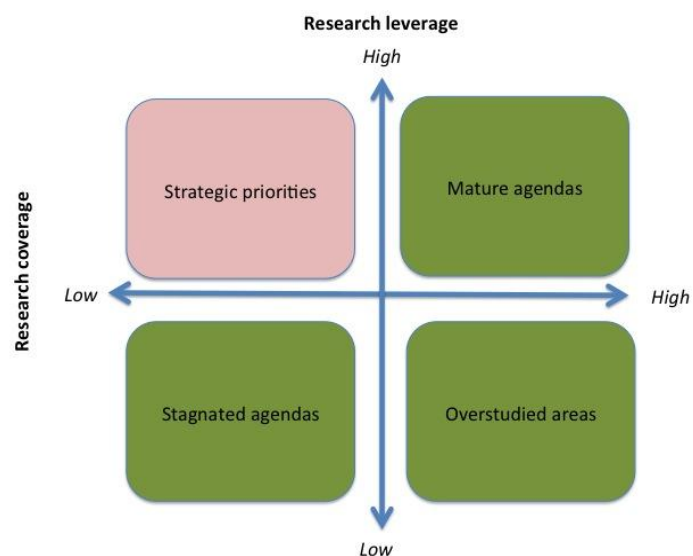
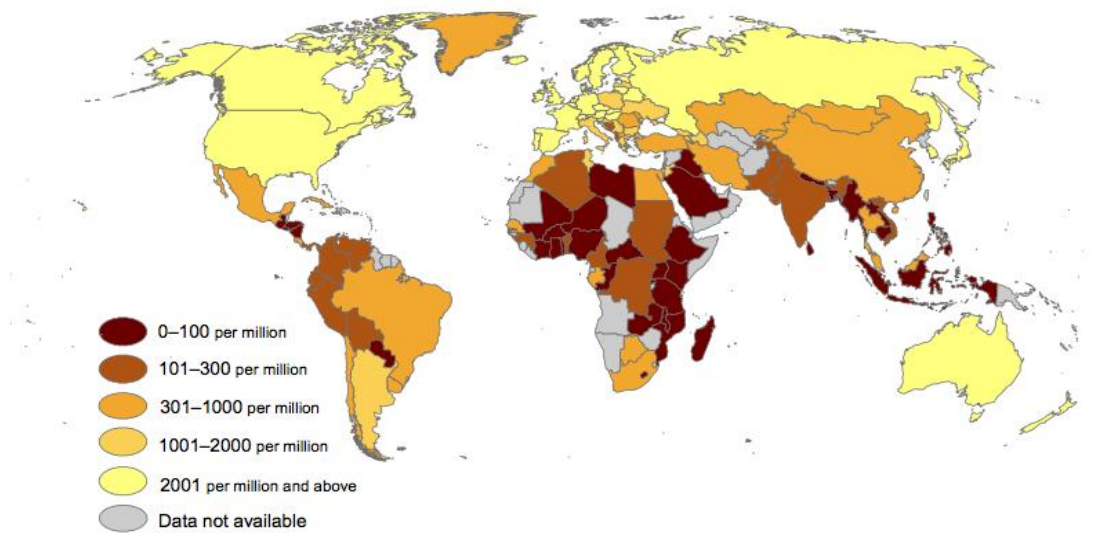


Figure 3. Framework for assessing the research coverage.

While the comparison between countries and regions reveals a troubling picture of developing countries' proportional under-representation, the fundamental problem is the considerable gap in many developing countries between the demand for and the supply of scientifically based knowledge relating to country-specific problems and needs. This gap can only be partially reduced with the aid of internationally produced knowledge. Developing countries must have the resources to own and conduct research themselves. This is vital if they are to produce their own country-specific research and if they are to acquire, transform and apply internationally developed knowledge and technology. Figure below shows the number of researchers per million inhabitants in 2010.



Global researcher distribution reveals clearly what the problem is for low-income countries. All low-income countries have less than 100 researchers per 1 million inhabitants. Scarcely 2 per cent of the world’s researchers are to be found in Africa, and they are responsible for less than one per cent of the world’s total production of scientific articles. Moreover, this share is concentrated in only a handful of countries (Sida 2010). This is clear evidence of the critical bottlenecks discussed earlier. When the research infrastructure is weak and there are no functioning partnerships between universities and companies, scholars are likely to move abroad to build their academic careers. Brain drain, together with non-existing government STI-policy, generates the vicious circle that cannot be resolved without external support. A breakdown of researchers in Africa, Asia and the Pacific is presented in Appendix.



**Figure 4. Researchers per million inhabitants, 2010 or latest available year (Unesco 2012).**

The total funding of the EU’s FP7 program is 9.2 billion Euros. When a subset of the FP7 is selected with research on “Cooperation” and “Sustainable Development Systems”, we can estimate the EU’s FP7 research investments in development issues, a total of 2.8 billion euros (European Commission 2011)

Sector	Per cent of total research funding	
	FP7	FP7 “Cooperation” and “Sustainable Development System”
Agriculture	4	3
Energy	4	19
Environment	4	12
Health	13	1
ICT	21	21
Materials	8	19
Security	1.5	0
Social Sciences	8	1
Space	2	4

Transport	7	20
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**Table 2. The EU’s FP7 program allocations for cooperation and sustainable development systems.**

Table 2 above shows that the EU's total allocation of 2.8 billion Euros for research on “Cooperation” and “Sustainable Development Systems” was mainly focused on the fields of energy and environment (31%), ICT and materials (40%) and transport. Social sciences, health, agriculture and security issues were underrepresented areas in FP7 development research allocations. However, some these fields (especially health and agriculture) were present in ICT, energy and environment programs.

## 2.2 Future Trends, Risks and Scenarios

In general, futures studies are an interdisciplinary field, studying yesterday's and today's changes, and aggregating and analysing both amateur and professional strategies and opinions with respect to tomorrow. There are several recent reports on global trends relevant to the focus of this study that aim to identify the major thematic or tectonic changes that will transform the global order and affect the lives of people in LICs.

The reports all give a rather similar picture of the megatrends and major challenges the world will face in the future. Yet, they apply somewhat different methodologies and were produced for different purposes.

**The National Intelligence Council** has published the report **Global Trends 2030**. It is a scenario-based predictive analysis of the world’s geopolitical changes and their impact on US foreign policy. Although the report itself does not include an emphasis on low-income countries, many of the global trends analysed have a direct or at least an indirect impact on LICs. For

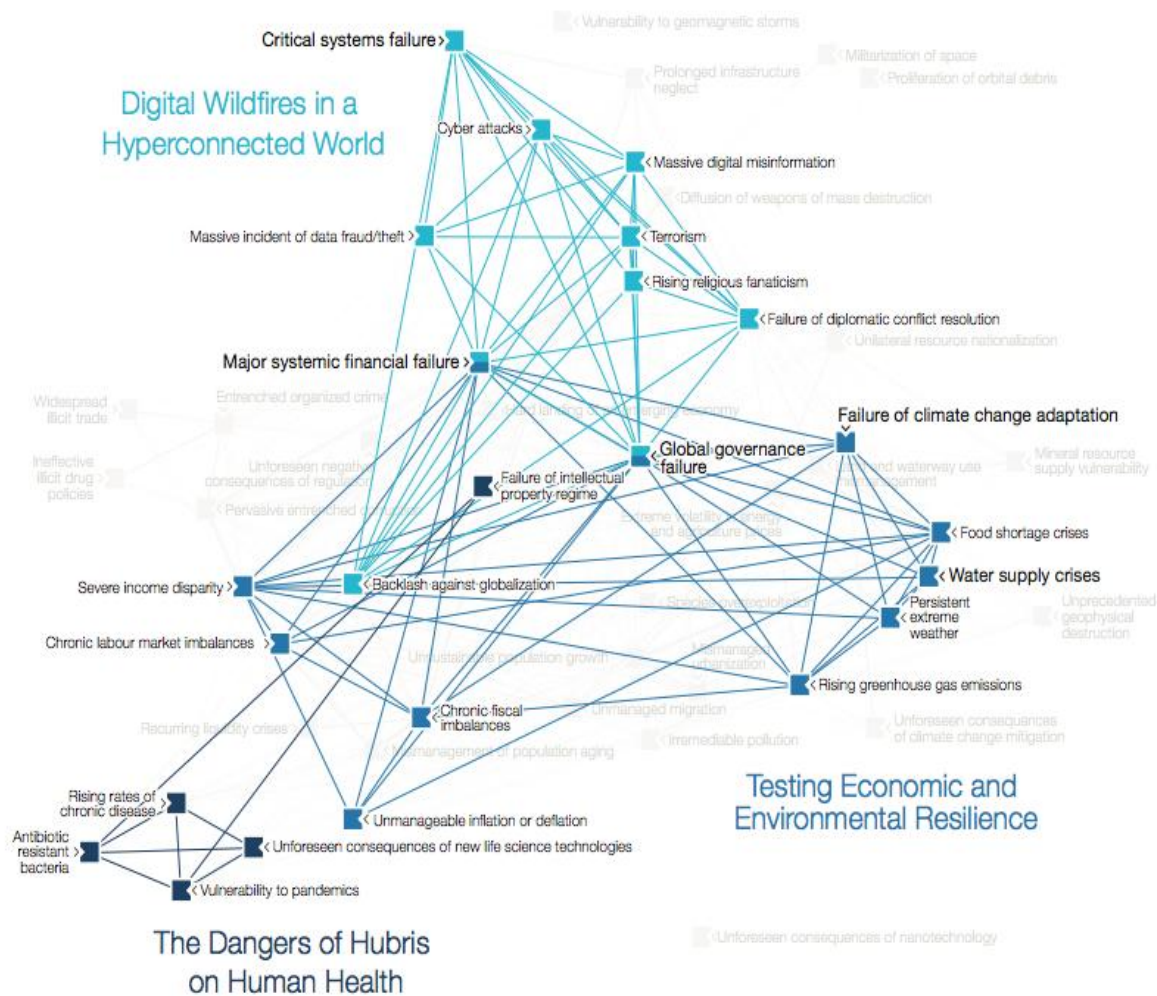
example, in 2013 there are several megatrends that are very likely to affect the lives of the populations in LICs in the future. These are: 1) the food-water-energy nexus, 2) demographic patterns, 3) the diffusion of power, and 4) individual empowerment. Some other game-changers include governance gaps, increased conflicts, a wider scope of regional instability, and the impact of new technologies.

**Scenarios:** A possible sequence of events that 'could' happen in the future, based on certain initial conditions or assumptions and what could follow from that.

**Megatrends:** Megatrends are the probable future or express what we know with great confidence about the future. Megatrends are certainties.

**Weak signals / wild cards:** low probability but high impact events (positive or negative), should they occur

**X-factors:** are emerging concerns of possible future importance and with unknown consequences. Although they are not considered among the global risks surveyed, they were submitted by experts as issues to monitor in the future.



Source: World Economic Forum

Figure 5. Global Risks Map (World Economic Forum 2013, 6)

The 2013 Human Development Report, “The Rise of the South: Human Progress in a Diverse World,” looks at the evolving geopolitics of our times, examining emerging issues and trends and also the new actors that are shaping the development landscape. The 2013 Report identifies four specific areas of focus for sustaining development momentum: enhancing equity, including the gender dimension; enabling greater voice and participation of citizens, including youth; confronting environmental pressures; and managing demographic change. The Report also suggests that as global development challenges become more complex and transnational in nature, coordinated action on the most pressing challenges of our era, whether the focus be on poverty eradication, climate change, or peace and security, is essential.

The World Economic Forum publishes a **Global Risks Report**. The 2013 Report examines the increasingly important issue of building national resilience to global risks. It introduces qualitative and quantitative indicators to assess overall national resilience to global risks by looking at five national-level subsystems (economic, environmental, governance, infrastructure and social) through the lens of five components: robustness, redundancy, resourcefulness, response and recovery. In the 2013 report risk factors are

analysed in a systems context and the Report emphasizes the nature of interdependencies between various problem or risk areas. Complexity and interconnectedness make it very difficult to forecast future developments and to build resilience.

Three risk cases discussed in the Report are what happens when two major systems are stressed simultaneously (Testing Economic and Environmental Resilience); when a seemingly minor system punches above its weight (Digital Wildfires in a Hyperconnected World); and when we become complacent in the continued ability of a system to stay one step ahead of a changing problem (The Dangers of Hubris on Human Health). The figure above shows the interconnections between main risk areas and their subsections. Although this figure describes the main global risks today it also indicates how to forecast the developments in the future.

The **European Report on Development 2013 (ERD 2013)** sketches three alternative global scenarios for the future: 1) neutral, 2) pessimistic and 3) optimistic. In a neutral scenario demographic pressures continue to strain the environment, and population ageing poses considerable social and economic challenges. Rapid urbanisation in less developed regions aggravates economic and environmental problems, such as unemployment and pollution. International migration remains fairly restricted, despite labour shortages in regions with ageing populations. Although global GDP per capita is increasing (thus leading to higher living standards), the world economy remains vulnerable to the performance of emerging economies. International trade and capital flows are increasing as a share of GDP, thus enhancing economic interdependence, and South–South economic relations are becoming more important. Employment remains subdued in many parts of the world, posing a challenge to inclusiveness and potentially leading to social unrest. Global poverty has reduced, although progress in SSA remains slow and inequality increases marginally. Finally, continuing global warming causes significant environmental and economic damage.

The Millenium project's **Global Challenges for Humanity**<sup>2</sup> -report analyses future global trends under the heading “The State of the Future”. According to the 2009 Report half the world appears vulnerable to social instability and violence due to increasing and potentially prolonged post-recession unemployment, as well as several longer-term issues: decreasing water, food, and energy supplies per person; the cumulative effects of climate change; and increasing migrations due to political, environmental, and economic conditions.

## 2.3 Identified Global Megatrends

In order to achieve a credible and valid perspective on the current problems and future trends that impact low-income countries several sources of information were used. Global megatrends were identified from existing futures reports, research literature and scenarios. Identified megatrends were used to give a general framework for global development context. This overall picture was thereafter narrowed by

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<sup>2</sup> The Millennium Project was founded in 1996 after a three-year feasibility study with the United Nations University, Smithsonian Institution, Futures Group International, and the American Council for the UNU. It is now an independent non-profit global participatory futures research think tank of futurists, scholars, business planners, and policy makers who work for international organizations, governments, corporations, NGOs, and universities.

collecting perceptions from thematic interviews and focus group interviews. This exercise was essential to get a special LIC approach to the study.

This report identifies six interrelated global megatrends that require further research and scrutiny, and which will be certain to affect also the low-income countries. These six megatrends were validated in group discussions and thematic interviews and thus formed an out for further discussions. Megatrends form a global cross-cutting change platform which affect behind most later identified change factors.

### *1) ICT impacts up to 2030: huge and unseen changes in human behaviour*

- + (positive) 2030 All people, also in LICs, have free Internet access and sufficient equipment/technological capacity for internet services**
- (negative) 2030 Digital divide strengthened, ownership of ICT in few hands**

The huge global expansion and escalation in the use of Information and Communications Technologies (ICT) plays an increasingly important role for development in LICs. LICs are set to witness progressively accelerating deployment of ICT across society, culture, politics and economy. ICT has the potential to reduce poverty by improving poor people's access to education, health, government and financial services. ICT helps small entrepreneurs and farmers by improving their connections to economic and social activities. The 1990s and 2000s "Digital Divide" is changing rapidly in MICs and LICs. Access to ICT services is possible even for the most poor. This progress, underpinned by advances in key technological infrastructures, regulatory reforms and innovative uses of ICT, is triggering fundamental questions: What role will ICT play to address poverty? How will ICT be used to deliver direct aid to the most needy? What impact will ICT have on building civil society? How, and through what processes, will ICT contribute to the industrial and economic strength of the poorest nations? Other questions also arise: How is ICT used and by whom? How do old and young people use ICT services? Is it just for entertainment or for socially and economically useful purposes? Who owns the channels and infrastructure? The need for **interdisciplinary and multi-methodological comparative** research is urgent and obvious.

### *2) Demographic change, especially changing socio-political role of youth*

- + 2030 More competent and educated global youth, interested in issues of sustainability**
- 2030 Growing youth unemployment, discontent youth in LICs mobilized, more and more, in politically and socially problematic activities**

Current research on political socialization considers youth a force for creating social change. The transition between adolescence and adulthood is a unique period to examine changes in human political and cultural behaviour. Developmental research during last decades has emphasized lifelong plasticity and the importance of the socio-historical contexts in which children grow up. This change in views of development has occurred at a time when populations in all societies are becoming more diverse and when there have been dramatic economic and socio-political upheavals throughout the world. There is a renewed need for research on the political development of young people. There is also new methodological and statistical global potential for examining this topic in increasingly meaningful ways. A direct connection exists between ICT development and young people's behaviour (also in political and social organization, in both

positive and negative ways). The financial crisis and increasing youth unemployment all around the world has dramatically affected many traditional social structures – and made the fate of youth a huge potential global unknown. These issues create an immense need for research, especially from the perspective of social and educational sciences, psychology and cultural studies (or from a more **interdisciplinary perspective**).

### 3) BRICS 2030 – changing power balances

**+ 2030 Asian flourishing economies have created sustainable energy strategies; creating space of manoeuvre for LICs and possibilities for global governance between commercial and/or integration blocs**

**– 2030 Growing competition for natural resources and energy have created new kinds of problems, especially in Africa**

The role of China and BRICS (Brazil, Russia, India, China and South Africa) as well as many other Latin American, Asian and African countries has created new challenges and opportunities for the low-income countries. The global concern is how to combine economic growth and growing energy needs with the protection and sustainable use of the global commons.

*Paul Collier has calculated the probability of civil war in "paradox of abundance" and Resource curse" countries. His conclusion is that in a country that doesn't dispose of substantial natural resources, the risk is only as high as a half-per cent. In countries that depend mainly on natural resources, on the other hand, the probability rises to 23 per cent. Raw materials are the most significant risk factor for a community-- more important than historical, geographic or ethnic factors.*

The BRICS, while now stagnating, have already changed, and are about to introduce more changes to the power structure of the world economic system. More **interdisciplinary and**

**problem-oriented** research has to be conducted to produce a detailed profile of strengths and weaknesses in terms of institutional frameworks, government performance and governance capacity, and to help answer central questions such as how sustainable the BRICS' economic development is. The major question for research is how to combine macro-economic mainstream research with other disciplines. More research on the role of BRICS is needed, and existing studies have to be better integrated in anticipation of the next research phase.

### 4) Changing role of state, globalization and regional integration

**+ 2030 Integration processes have opened new ways for good global and local governance**

**– 2030 Changing power balances and competition between blocks leading to more fragile states and new conflicts**

Between 500 million and 1 billion people live in states seriously affected by conflict or unstable governance. In contrast to most of the remaining developing world, these regions/states have seen little progress in terms of development outcomes, and their situations are becoming an increasingly serious part of the global development problem (The 2011 World Development Report). There is an urgent need to map alternative approaches to resolve existing conflicts, and to build state legitimacy through inter-related actions on security (security-poverty relation), crisis prevention and economic recovery, and governance, and to strengthen legislative systems and access to justice (follow up and regulation).

Other relevant problems exist in the areas of drugs and arms traffic, mobility (including tourism and

migration) and racist and extremist movements. There also exists a growing need for **interdisciplinary research to map urgent and unseen tendencies in the area of security**, in particular beyond a one-dimensional focus on terrorism. This includes a need to address the excessive focus in the security industry on execution to the detriment of research on the creation of benevolent police and military action.

### 5) *Natural resources 2030 – land & resource grabbing*

- + 2030 Sustainable and just land use and reforms are conducted with green energy solutions and with technological and social innovations
- 2030 Growing global insecurity and income gap – the control of natural resources management, technological and financial instruments are concentrated in BRICs and the West

A key challenge of the first half of the 21<sup>st</sup> century will be to strengthen democratic, participatory, and conflict preventing governance systems in the face of acute eco-social challenges such as climate change, land conversion and biodiversity loss, energy provision, and population growth.

Current environmental problems are shaped by complex governance, persistent uncertainties, and the potential for rapid and large-scale socio-ecological impacts. There is a need for environmental governance in the socio-ecological contexts of local communities dealing with the forces of globalization. Future global challenges, such as the sustainable use and management of natural resources, are issues of the **governance of environmental unknowns**. Such problems can only be understood within an interdisciplinary scope spanning both social and natural sciences. African LICs and some Latin American poor countries are dealing with an escalating competition for natural resources. Coupled with the increasing activity of BRICS, especially in Africa, these trends are giving rise to an aggressive drive for land and resources in a somewhat colonial style. Although states rich in natural resources tend to have considerably lower economic growth than states where the role of natural resources is less prominent, this “raw materials curse” is not inevitable, as demonstrated by the examples of Norway and Chile.

*“Rich lands with poor people” is not limited to the countries where fossil fuels are extracted. The same “curse” can also be observed where metals or minerals are mined. In nations like the Congo, Suriname or Sierra Leone, which are dependent on the mining industry, per capita income declined by almost 11 per cent in the 1990s. Globally, per capita income increased by 17 per cent during the same period. It’s not just the economy that’s cursed, but the entire state -- and the poorest suffer most. Authoritarian regimes are often in power in countries that depend on natural resources -- regimes that do not promote human rights or democracy.*

*But is this just a problem of bad governance?*

There exists an urgent research and research policy demand to support strategic objectives relating to the environment, society and technology and global well-being. Future research challenges will deal with how globalizing resource regimes will transform local societies and their environmental relations in LICs. The issue of hybrid forms of environmental governance, relevant for the management of environmental risks in southern cities and in rural regions, as well as in global institutions, will become prominent. An additional need exists to assess environmental impacts related to international trade and the governance of industrial ecosystems. The emergence of complex governance and persistent uncertainties will shape future environmental theories and paradigms. These will involve the challenge of combining environmental concerns with democratic principles. **Socio-cognitive risk governance models** concerning environmental systems, involving epistemic uncertainties and normative ambiguities, will be required.

## 6) Changing role of aid - Dependency on AID

**+ 2030 Aid is needed mostly to promote positive trends and on-going projects in an efficient and democratic way (and for climate change and natural hazards, or for resilience); tax systems are functioning well in LICs, tax paradises are vanishing, economic resources and finance provision are growing intensively in LICs.**

**– 2030 “The Curse of Aid” – international programmes continue to operate, but without much impact; at the same time, the volume of ODA is declining, aid for trade is growing excessively, but with predominantly negative impacts (accumulation of capital into BRICS & the West).**

Aid accounts for a tiny fraction of the world's financial resources – around 0.2% of global GDP since 1990. At the same time –following intensive discussions on ODA and national development projects –there remains a lack of global qualitative and comparative knowledge on how aid has been directed, managed and used in the countries where most of poor people live (not necessarily in the poorest countries). The focus of rich countries on aid as the key tool to help end poverty needs to be questioned, as it has been by various development researchers and activists. Efficient projects with good governance and with LIC ownership (South-South-North partnerships) will continue to be needed, and AID research will remain valid. The analysis of the role of China's and BRICS more generally will be a priority, but the re-analysis on Western aid remains a valid research target. Projects for the study of trade for aid, Corporate Social Responsibility, and the analysis of transnational financing and tax paradises, are needed to understand current aid-trends and volumes, and their new possibilities. In summary, the role of aid is changing rapidly, and the dependency on aid is going to undergo transformations. The role of China is perhaps the most urgent issue. The “curse of funding” will remain relevant, i.e. the problem of how poor countries can manage large-scale projects and avoid resource drain, corruption, and intellectual and technological dependency.

Additionally, **The biggest megatrend, which could be nominated as a general global TERAtrend, is connected to global changes in human behaviour** (such as unsustainable consuming habits and consumer behavior, proliferating in all the regions of the world with growing populations in many densely populated regions).

**Other globally interrelated trends, which could be nominated as GIGAtrends, are** 1) climate change impacts, connected to sustainable development needs and resilience, 2) issues of human rights, connected to diffusion of democratic practises and prevention of global and intra-state inequality, and 3) growing competition for natural resources, in the worst case leading to wars and violence in 2030–2100.

### 2.4 Results of the focus group and thematic interviews

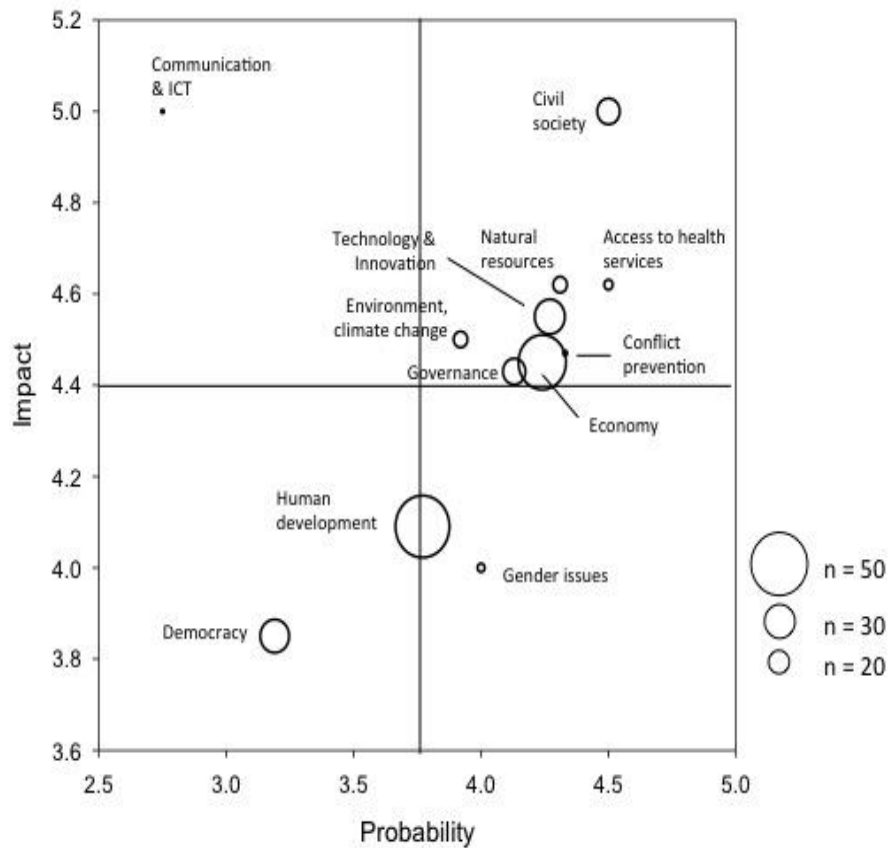
Global megatrends such as the above, or those identified by various think tanks, future studies centres and research institutions are generic, i.e. they are likely to have great impact on high, mid and low-income countries respectively. To identify those future trends that are particularly meaningful from the low-income country perspective we

*“Global public goods are chronically under supplied and there is need for collective action. A possible WTO agreement on the supply of knowledge as a public good could address this need”.*

*“Catch up African countries through trade, investment, good governance and South-South cooperation”*

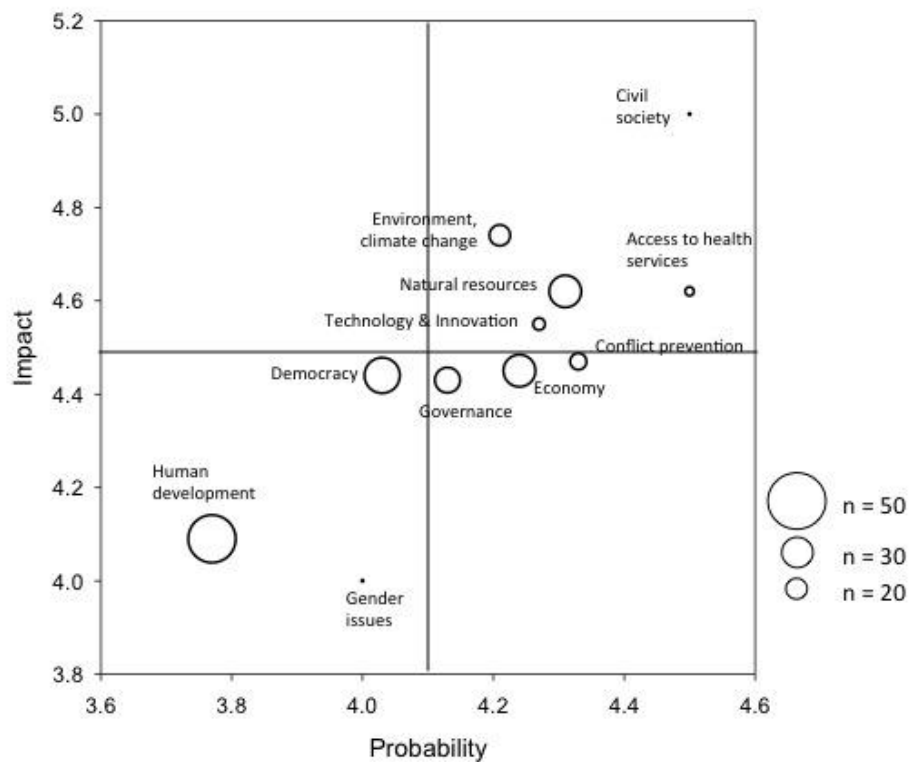


carried out a series of thematic interviews and focus group interviews (see Appendixes). The focus group methodology was composed so that each participant was asked to identify 2-3 global threats that have a major impact on people living in LICs. After that participants were asked to explain in more detail why they had identified that particular issue and finally to rate (in scale from 1-5) the impact of this change factor and estimate its probability. Each participant was asked to comment on the phenomena raised by others.



**Figure 6. Positive trends identified by the Focus Group Members**

After the discussion on future threats, the groups were asked to identify solutions to these problems or positive future trends applying the same procedure. After discussing the positive factors participants were finally asked to raise wildcards or weak signals, i.e. X-factors, or emerging concerns of possible future importance with unknown consequences. Although they are not considered among the global risks surveyed, they were submitted by experts as issues to monitor in the future.



**Figure 7. Negative trends identified by the Focus Group Members**

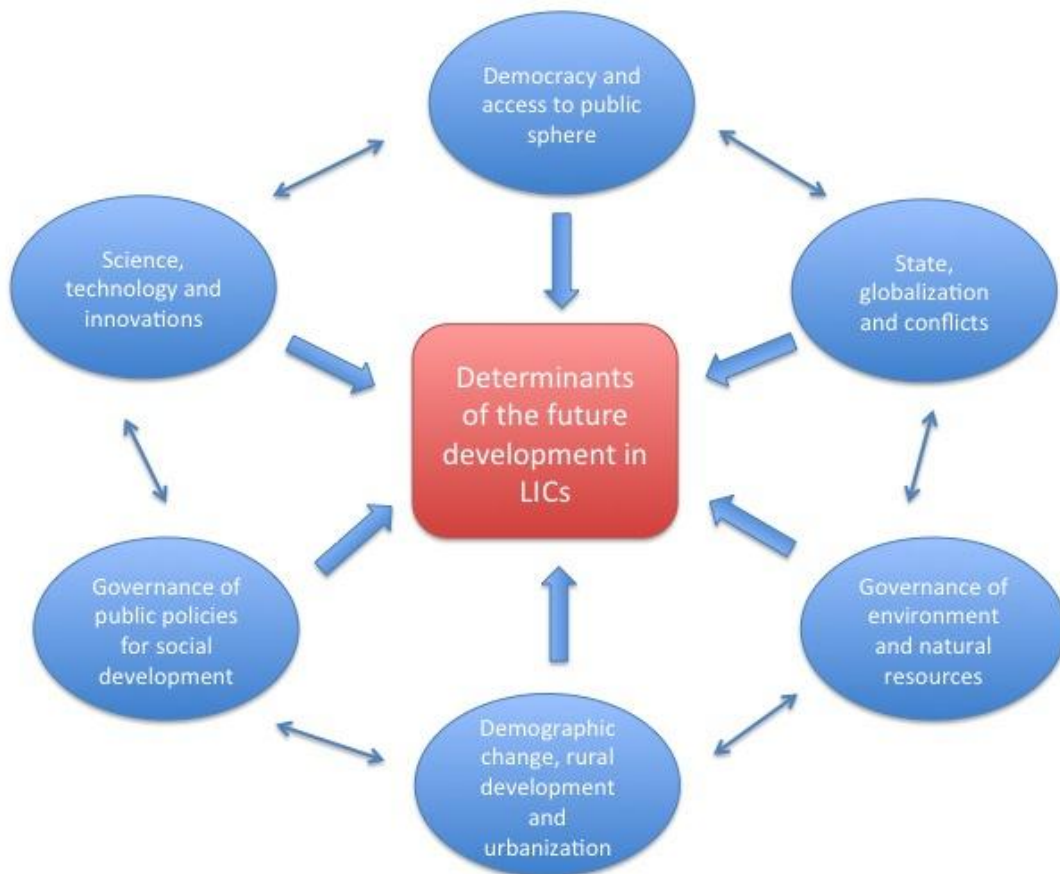
Most positive trends relate to the areas of civil society, environment and governance of natural resources, technological innovations and improvement of the health conditions of people living in low-income countries. Internet and access to information and knowledge was seen as one of the key drivers accelerating openness and transparency in low-income countries and thus giving people and civic organizations better access to the public sphere.

According to focus group discussion new innovations and technologies were seen as key drivers enabling green energy solutions and clean tech applications (impact on environment). Medical innovations were seen as tools for changing practices and providing cheaper medicine for the benefit of patients. However, knowledge and inventions can only benefit patients who have access to the fruits of innovation. What is needed, therefore, is not just innovation—but both innovation and access. Also, improvements in governance and democratic institutions were seen as big opportunities, but focus group members were more sceptical about the probability of public sector reform and the continuation of the democratic process.

Ironically, the same factors that were seen as opportunities for the people living in low-income countries were also regarded as their

*“Increase in major urban disasters due to natural disasters – cities have very weak preparedness mechanisms which largely exclude informal settlements”.*

biggest threats. There is plenty of evidence showing that low-income countries can seldom utilize technological innovations during the first or even second wave because of lack of funding for technology acquisition and diffusion, low technology and innovation intensity in industry, and a lack of human capital and a rising human resources crisis. Again, both innovation and access are needed. Negative developments in the area of governance of natural resources (e.g. land grabbing, increasing food prices etc.) are also evident.



**Figure 8. Critical Change Factor having Impact on LICs.**

The results of the focus group and thematic interviews can finally be aggregated to six critical change factors as presented in Figure 8 below. These factors are likely to have major welfare and well-being impacts and determine societal development in low-income countries. The identified change factors are:

- 1) Democracy and access to public sphere,
- 2) State globalization and conflicts
- 3) Governance of environment and natural resources,
- 4) Demographic change, rural development and urbanization,
- 5) Governance of public policies for social development,
- 6) Science, Technology and Innovations.

### 3. CRITICAL CHANGE FACTORS IMPACTING LOW-INCOME COUNTRIES

In this chapter we discuss in more detail the critical change factors shaping the future of low-income countries and their populations. The chapter will assess critically the main problems within these thematic areas, their linkages to other societal fields and policy areas, future trends and finally the role of research in solving these problems.

#### 3.1 Democracy and access to the public sphere

##### 3.1.1 Key problem areas and future perspectives

Democratization is an indispensable megatrend in the poorest countries at present and will continue to be so for decades to come. It will without a doubt also continue to be an essential topic for academic interest. In the focus group interviews conducted for this study the themes of democracy, civil society, social movements, social media and the public sphere turned up frequently.

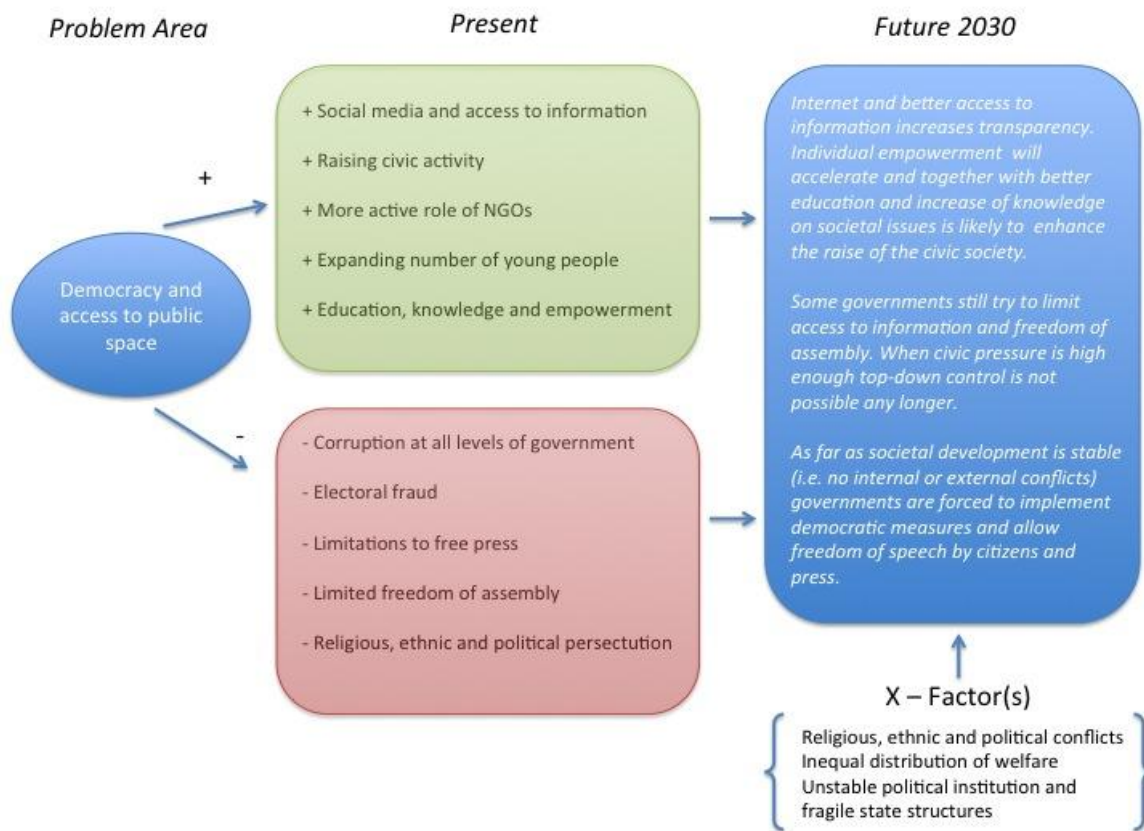


Figure 9. The Chain of Impact in the Field of LIC's Democratization Process.

Dominant development theory tends to consider democratization as a given precondition for the development of the poorest countries. Commonly, democracy is considered to consist of electoral and representative politics, which is further supposed to provide a more or less direct measure of "good governance". There is no doubt that democracy, governance, civil society, social movements, social media and the public sphere will be crucial elements in the effort to eradicate extreme poverty during the next decades. In order to be able to better understand their dynamics, role and relationship to poverty eradication, there is a need to move towards in-depth analyses of existing democratic systems.

### **Constructing democratic and good governance**

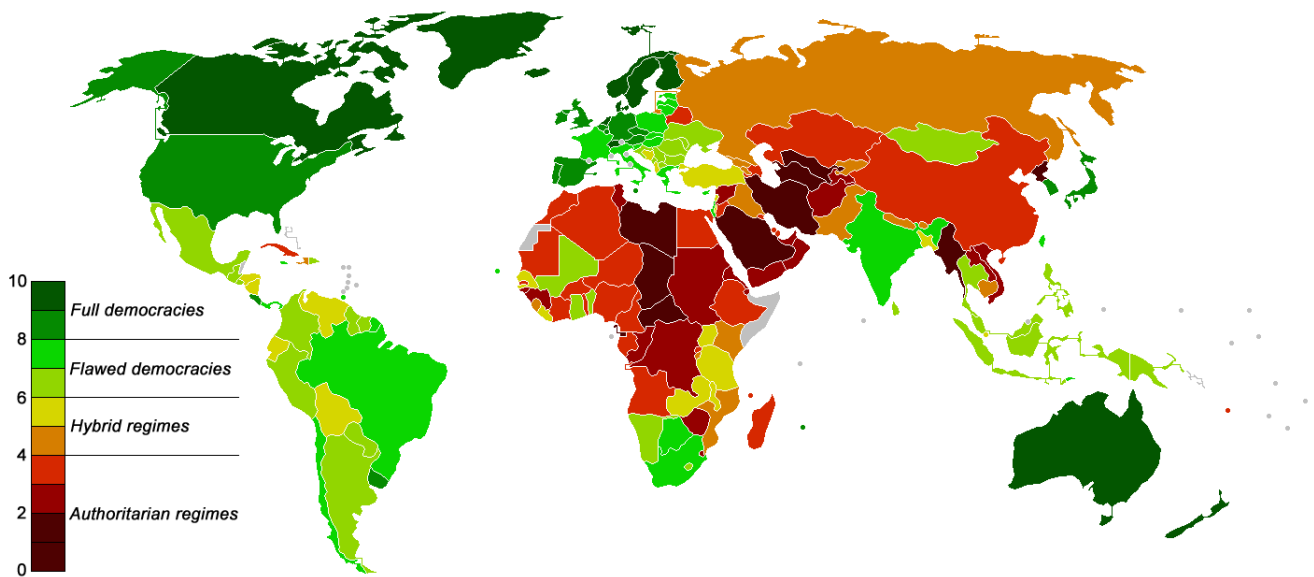
Almost all major development agencies recognize the promotion of good governance as a major trend and an important part of their agendas. Some of the many issues dealt with in the support to governance programmes by various donors include election monitoring, political party support, combating corruption, building independent judiciaries, security sector reform, improved service delivery, transparency of government accounts, decentralization, civil and political rights, government responsiveness and "forward vision", and the stability of the regulatory environment for private sector activities (including price systems, exchange regimes, and banking systems) (Gisselquist 2012).

Donor agencies regularly measure and assess the quality of governance, and tend to condition their assistance on these measurements. On the other hand, too wide and imprecise nature of the concept of "good governance", calls many measurements into question. Without more appropriate concepts, donor agencies have no clear basis upon which to argue for the merits of one measurement versus another, or to evaluate the relative importance of various components of governance in any classification (Gisselquist 2012).

Governance entails more than the institutions of the state or the market: it also includes the strategies, tactics, and knowledge that inform state, and more generally, political action.

### **Civil society actions to reinforce representative democracy**

During the last two decades democratic institutions have spread to most LICs, and after 1990 representative democracy spread rapidly in the developing world more generally. In the Economist Intelligence Unit's Democracy index 2012, only Ghana and Malawi were categorized as Flawed democracies, while other LICs were placed in the lowest categories of Hybrid regimes or Authoritarian regimes.



**Figure 10. Economist Intelligence Unit: Democracy Index 2011.**

While most states have become nominally democratic, with procedural elements present, substantive democracy is still very often absent. There has been a severe decline in the number of political party members and in voter turnout in most new democracies. Democratic theorists have thus become increasingly disillusioned with representative potential, and the trend seems to be turning towards a strengthening of civil society (Gisselquist 2012). Further democratization, both representative and participatory, will therefore obviously be a crucial challenge in LICs during the next two decades. The key question is how research can help to advance this objective.

Social scientists conclude rather unanimously that real democracy implies effective citizenship and a full spectrum of internationally agreed rights. Social theory also emphasizes that effective democracy should uphold and ensure the influence of citizens and their associations/movements on policymaking processes (Tilly 2007). Thus the thorough analysis of civil society, social movements and the public sphere are crucial elements of the development prospects of poor countries.

Since the 1990's the strengthening of civil society became a central part of the democracy promotion programmes implemented in both transition and developing countries. Donors invested generously in strengthening, building, nurturing and support of civil society institutions, training of civil society activists and funding their projects as a means of promoting democracy. In poor countries this was hoped to enhance aid effectiveness and support efforts to reduce the poverty, and in conflict or post-conflict areas it was seen as a tool for preventing or reducing conflict (Ishkanian 2007).

In practice, civil society is often equated with the development and growth of NGOs. This has led to an exponential growth in the numbers of NGOs also in the poorest countries, but has hardly generated genuine local participation or democratic public debate and culture. In many places the already existing civil society lost diversity and was reduced to professionalised NGOs that were engaged in advocacy or service delivery (Ishkanian 2007).

Some African leaders in the 1970s, Asian government officials in the 1990s and current Arab dictators have repeated distinctively similar sets of arguments: 1) democracy is a luxury that can and should only come after a certain stage of economic development and stability has been achieved 2) democracy is a Western individualistic value that is incompatible with more 'traditional' or kin-based societies.

It is definitely necessary to go beyond simplistic notions of democracy and governance and to deepen understanding of the processes and challenges poor countries face in building truly representative and accountable governments. For this reason, we need careful study of the relationship between democracy and a range of socio-economic factors, and analysis of democracy in the context of varying cultures, histories, ideologies, economic development, interest groups, social movements, gender, class, caste, ethnicity etc.

### **Key actors of change: social movements and young people**

A comparative study of the struggles that have been waged around democracy, accountability and governance is likely to reveal the emergence of new forms of popular participation and protest, new experiments in collective action among the social movements that have recently developed, as well as innovative ways and medias of organizing, strategizing and forming social ties, a transformative civil society and a vibrant public sphere (Heller 2013). In order to be able to understand these developments and integrate them into analyses, we need to go back to less teleological conceptions of democracy and governance and move towards in-depth analyses of existing democratic systems.

It is also important to keep in mind the rapid demographic changes and expansion of young generations in poor countries and especially the changing socio-political role of young people, which is also connected to business, education and the promises of ICT.

Current research on political socialization considers youth a force for creating social change. The transition between adolescence and adulthood is a unique period to examine changes in human political and cultural behaviour. Developmental research during last decades has emphasized lifelong plasticity and the importance of the socio-historical contexts in which children grow up. This change in views of development has occurred at a time when populations in all societies are becoming more diverse and when there have been dramatic economic and socio-political upheavals throughout the world. There is a renewed need for research on the political development of young people. There is also new methodological and statistical global potential for examining this topic in increasingly meaningful ways. A direct connection exists between ICT development and young people's behaviour (also in political and social organization, in both positive and negative ways). The financial crisis and increasing youth unemployment all around the world has dramatically affected many traditional social structures – and made the fate of youth a huge potential global unknown. These issues create an immense need for research, especially from the perspective of social and educational sciences, psychology and cultural studies (or from a more **interdisciplinary perspective**).

*Demographic change, especially changing socio-political role of youth*

+ 2030 More competent and educated global youth, interested in sustainable issues

–2030 Growing youth unemployment, discontent youth in LICs mobilized, more and more, in politically and socially dubious activities

The recent Arab revolutions have on the one hand demonstrated the potentially revolutionary role of

young people, and on the other hand that successful transitions to democracy are possible only if civil society either predates the transition or is established in the course of transition from authoritarian rule. Millions of anxious young people without a future were most likely one of the central catalysts in bringing down the undemocratic regimes in North Africa. Young people fuelled the revolts by using the new generation's abilities of social networking to spread the word of uprising to beyond other Arab nations.

Although there are many unanswered questions about social movements' impact on policy-making, its role should not be underestimated – quite the opposite. The reality is a complex one. Social movements are an essential part of strong civil societies and democracy as they defend political freedoms and work towards empowering the poor (dellaPorta & Diani 2006). Civic associations and people's movements are not at all homogeneous across developing countries, and differences in strength amongst them are mainly dependent on cohesiveness, level of economic development, the length of time that has passed since the country achieved independence and the extent of religious and ethnic disagreements (Lunat 2008). There are also social movements that can undermine democracy.

If “civil society” exists, it is often excluded from mainstream debate and the public sphere in the poorest countries, and discourse often takes place in alternative spheres due to unequal access opportunities. This often creates quite radical or intolerant interactions in marginalized groups of public sphere (Lunat 2008). Due to the unstable nature and fragile structures of public spheres in poor countries, counter-public spheres may become a marked threat to democracy and nurture extreme and violent movements which easily lead to conflicts.

### **Voices of the poor to the public sphere**

Media is essential in the creation of public spaces, and in how effectively people's voices can be heard. The close connection between public debate in the media and poverty reduction has been highlighted for many years, but conclusive research on the public sphere and so-called communicative power in the context of the low-income countries is largely absent (Inagaki 2007).

Communicative power and the new technologies of communication have widely been identified as providing the stimulus and media for the last wave of remarkable democracy movements in North Africa and the Arab countries, and have aided the socializing aspects of democratization. Transformative social movements inspired by Arab youth movements will most likely eventually spread also to the poorest nations governed by authoritarian and corrupt regimes.

During the last decade the public sphere has expanded substantially also in poor countries, and the capacity to contribute to public debate has increased. Three main trends have shaped this development: the wave of media liberalisation, the transformative changes brought by new technologies, and how advocacy and the effective use of communicative power are increasing pressure for social justice (Deane 2008). In the poorest countries the effects of these changes have only been becoming fully apparent very recently, and their role will most likely intensify in the near future.

While commercial media has benefited most from media liberalisation, more liberal policies in poor countries have also unchained expanding community media, a trend also facilitated by falling technology costs and easier access to the radio market. In Africa the growth in community radio has been very fast, with thousands of community radio stations operating across the region, and its political and social effects have sometimes been dramatic (Media for Sustainable Development Content Survey).



However, most expectations focus on the Internet, mobile telephony and other new technologies. Internet is the most decentralized, adaptive and interactive technology in existence and its use by civil society has been a core component in the growing influence of civil society in recent years everywhere. Never before have new territories for claiming public space emerged as rapidly as with the emergence of the Internet, and the allied technological revolutions of mobile telephony, satellite broadcasting and communication, and the host of other applications (Clifford 2007). On the other hand, poor, rural and marginalized communities generally have the least access to the Internet, the content of which is least reflective of their needs.

Even in the lowest income countries, the links between traditional media and new technologies have transformed communication from largely vertical to increasingly horizontally networked patterns of communication. Some of the most powerful effects of new technologies have been felt in the poorest countries where they have helped to revitalise public debate. In social environments where freedom of expression is curtailed, independent websites run from within the countries or from diaspora. New media sites provide a critical monitoring function of the media in places where it is dominated by commercial or political interests (Deane 2008).

It is evident that media creation and readership using new technologies and the Internet is not available to all social groups, compromising online representativeness. This issue is particularly relevant for LICs. In general, people living in poverty face particular obstacles for achieving freedom of expression and access to the media, associated with the conditions of poverty. Furthermore, the interests and concerns of people living in poverty are not sufficiently represented in the media. Threats to media freedom and freedom of expression continue to come from undue political influence, but critical scholars are also concerned about issues of economic control and pressure (Deane 2008).

When people do not have a voice in the public arena and where their concerns are not reasonably reflected in the media, frustration and alienation over lack of means of expression lead to disaffection with the political process, resulting in apathy or violence (Bellagio Symposium on Media, Freedom and Poverty).

### **3.1.2 Research Gaps and Role of Research**

The international development sector has tended to view the issues of the public sphere as secondary to those of healthcare, education and infrastructure, or issues such as trade, aid and debt. If citizens are to hold governments to account in new democracies, capacities for that to happen need to be better understood and developed. According to the UN guiding principles on extreme poverty, the rights and capacities of people, particularly those living in poverty, to voice their own perspectives and have them heard in public sphere should be recognized as critical to effective governance.

More research needs to be undertaken on the public sphere, communicative power and the implications of current media trends for poverty reduction. The marginalisation of people living in poverty from debates that shape their lives and the role of information and communication in sustainable democratic development find little space in development discourse. The opportunities for civil society actors to create their own communication platforms have never been greater. In most LICs alternative media has tended to emerge less in response to commercial power and more in response to governmental power, in order to create spaces free of control and censorship by the state (Deane 2008).

We do not have a sufficient understanding of the relationship of democracy, good governance and the reduction of poverty. Major donors tend give aid on condition of good governance, but does this facilitate effective democracy and eventually poverty reduction? The essential question is what sort of measures of good governance support pro-poor policies.

Another crucial question is under what conditions does civil society and social movements contribute to democracy and to more inclusive forms of development, and whether civil society expands rights-based conceptions of democratic inclusion? This presents a central analytical task: understanding how all citizens can effectively participate and engage in public life, independently of state control and economic power. The importance of civil society in counterbalancing the power of markets and narrow political interests is clear, but its effectiveness is highly contextual. As Patrick Heller concludes in a recent HDR paper, "Developing a richer understanding of the circumstances under which social movements and civil society can contribute to deepening democracy and making development more inclusive require close attention to the political settings in which civil society operates" (Heller 2013).

### **Research Gaps**

- a) Youth and ICT (from an interdisciplinary perspective)
- b) Political participation - the voices of poorest
- c) Democratic transitions
- d) New funds and taxation (local, national and global)

### **Key Focus Areas for Future Research**

- 1. Civic Security: employment and urban planning
- 2. BRICs and Human Rights
- 3. Media (and it's ownership), Internet
- 4. Constructing democratic and good governance
- 5. Social movements and role of young people

## **3.2 State, globalization and conflicts**

### **3.2.1. Key problem areas and future perspectives**

Globalization – in all its different components and definitions – has implied a change in relationship between state and markets as well as in relation to national and global actors. This is of particular relevance with respect to the relationship between LICs and global economic powers, including multinationals. While this relationship is particularly relevant for resource rich countries with extractive industries or substantial natural resources, it matters also with respect to the broader role of states and governance in the regulation of markets for reduction of social inequalities and more balanced growth. (UNCTAD 2012a).

Greater economic and social interdependence affect national decision-making processes in many ways, through transferring decisions to the international level, but also due to an increase in the demand for

participation and citizens pressure, it requires many decisions to be transferred to local levels of government.

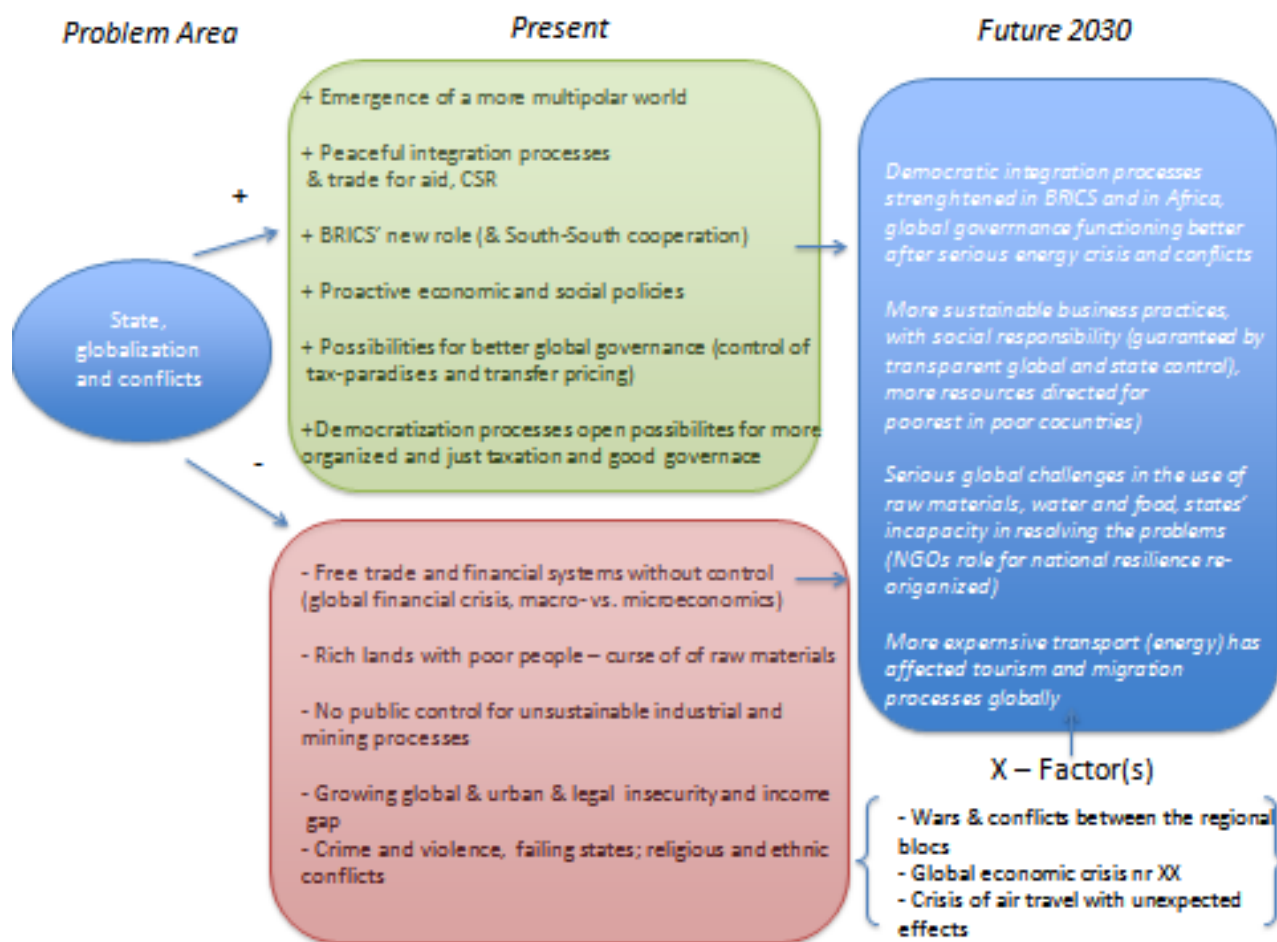


Figure 11. Chain of Impact of LICs State, globalization and conflicts.

Reducing the role of government in key social areas, downsizing public services in many of the poorest countries, and neglecting the important task of reinforcing political and economic institutions, left many LICs unprepared to meet the challenges and rapid transformations of globalization.

It should in any case be kept in mind, despite many concerns about the loss of sovereignty, that the state remains the key actor in the domestic as well as international arenas, and global governance is still designed by nation-states and driven by the initiatives, which they undertake.

The relationship between globalization, development and the state is complex and should be analysed in an impartial way. As a matter of fact, human development, the reduction of poverty and increased output of goods and services depend on national policies much more than on openness of economy. For the perspective of the LIC-countries, the promised benefits of globalization hardly ever arrived.

Globalisation affects low-income countries in particular, which may not have capacities to balance powers,

control markets and develop industrial policies for their own developmental priorities. This lack of balance leads to failure to utilise development prospects, which could enable more productive and sustain-able employment opportunities and support societal development. Countries that do not have a strong institutions as well as solid social policies are most apt to suffer the negative effects of globalization. This weakness became evident as a result of the latest financial crisis, which led to further struggles in low-income countries (UNCTAD 2009; UNCTAD 2012a).

On the other hand, the national institutional framework, its political culture and the quality of its leadership play an important role in fostering economic development and in promoting social welfare. Globalization cannot be made responsible for bad government, and as Amartya Sen has pointed out, bad government is the main cause of poverty.

External factors are also crucial in creating greater opportunities for a country's economic growth though trading rules have so far benefited the industrialized countries more than the less developed ones. The question is not whether to go global, but rather how to globalize.

Financialization and challenges with respect to access to knowledge and technologies have implied further insecurity and volatility for low-income countries. While globalisation has deepened income inequalities, some experiences from Latin America and Africa suggest that inequalities can be counteracted by proactive economic and social policies.

UNCTAD (2010) has defined an international knowledge architecture, which enables access to and use and generation of knowledge, including technology transfer and acquisition as a crucial part of the new international development architecture for low-income countries. The role of access to knowledge and the role of technology transfer continue to be dealt with as a part of trade and investment policies, where commitments made as part of international agreements may imply substantial compromises for low-income countries.

Strong democratic institutions are vital in order to seize the benefits of globalization, and to create an enabling environment for prosperity. Poorly managed states and exclusionary politics contribute to holding back economic and social development. To be sure, economic growth alone is not sufficient to sustain equitable human development. Poverty is reduced and development is more easily achieved when the state has a larger redistributive role, which is all the more important today to minimize the negative effects of globalization.

Nearly two-thirds of Africa's population live still in rural areas and majority of them in poverty. In sub-Saharan Africa and South Asia, more than three-quarters of the poor live in rural areas, and the proportion is barely declining, despite urbanization. While overall the developing world's rural population will peak and begin to decline in 2025, in sub-Saharan Africa this will not occur until 2045. Further deepening of poverty and inequality has implications for the social and political stability, among and within, nations.

According to the World Public Sector Report (2010) poor countries need to reinforce democratic state institutions, strengthen social policies, reinforce social capital, promote an efficient public administration, promote an effective strategy of resource mobilization and improve tax administration systems and build capacity in the public sector to support the creation and application of knowledge, innovation and technology for development.

Normally, institutional reform is a pre-condition of good governance. Having in place effective and

transparent legislative bodies, which can adequately represent and articulate the demands of citizens, and ensuring that they are based on an efficient administration, is of the utmost importance since they serve as the main fora for reaching agreements and concrete solutions to critical problems, including the eradication of poverty. Ensuring an independent and well-functioning judicial system is another important challenge that many countries face today.

In many LICs everything is going fine in macro-economic terms – but majority of the people do not see lot of change. Furthermore, it is now recognised that labour market flexibilities may not have reduced unemployment, but could have exacerbated as unemployed have been forced to accept lower wages to find work (UNCTAD 2012a). Also the roles of workers organizations and trade unions still offer vast challenges and obvious research gaps in LICs.

### **Human Rights – Ever More Important**

Various failures of development politics applied after 1980s inspired the UN, trade unions and other civil society organizations to seek new ways to transform development into a more human-centred process. Alternative approaches drew increasingly upon the corpus of international human rights law, cosmopolitan democracy and the corresponding principles and standards. The recognition of the strict respect of human rights constituted a solid reference for programming, both conceptually and operationally.

“The people who really need to know more about Africa, we the Africans, are not investing any significant resources in doing so.” (Charles Onyango-Obbo, Nation Media Group’s executive editor for Africa & Digital Media), The East African, March 30 – April 5, 2013

The UN Statement of Common Understanding, endorsed by the UNDG in 2003, embodied the consensus among UN agencies on the core elements of the human rights-based approach (HRBA) to development cooperation. Now HRBA is mainstreamed in all Western development policies and politics. For example, Finland pronounced in 2012 the human rights aspect as a leading principle of country’s new development policy strategy – with the note that everyone, including the poorest and most marginalised people should be able to enjoy the rights that have been recorded in international human rights agreements.

Yet despite the rich experience, research and knowledge accumulated, there are huge gaps between theory and practice. Many of the difficulties relate to the complexities of the diverse policy contexts and national circumstances, while others are endemic in the institutional settings of the various development actors.

### **CSR: New Perspectives from corporate power in LICs – or losing out in trade and business**

Multinational companies can have a significant influence with regard to policy formation in many national governments and in transnational bodies such as the World Bank. First, they look to establish or contract operations (production, service and sales) in countries and regions where they can exploit cheaper labour and resources. While this can mean additional wealth flowing into those communities, this form of ‘globalization’ entails significant inequalities. The wages paid in the new settings can be minimal, and worker’s rights and conditions poor. Multinationals constantly seek out new or under-exploited markets.

“How to attach/link economic “truths” to others issues, to real life, what is happening?” (Mapunda&Makulilo, University of Dar es Salam, April 5, 2013)

Strong markets and corporations require significant state and transnational intervention, but most of the LIC economies compete to attract incoming investments in order to spur their economic growth. In such processes, business and investments meet new challenges such as the unequal global development of laws and regulations, formal and informal institutions and networks, and the influence of national cultures and manifold stakeholder pressures.

Corporate social responsibility (CSR) is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis (European Commission 2001). CSR is a new issue in LICs and in development research. It has gained recognition as a new form of governance in business, understood as “good practice”, but in the end depends on the active choices of consumers and states. It is already established in a global context, with international reference standards set by the UN and OECD guidelines and ILO conventions (ISO 26000). CSR applies to a wide variety of company activities, especially in enterprises that operate trans-nationally in varied social and environmental settings. But it is still a voluntary system, and as such, lacks clear objectives and consistent and transparent criteria for workers, consumers and other stakeholders to measure company performance.

In many critical academic circles, in rich and developing countries alike, CSR practices are often seen simply as attempts to make minor or cosmetic changes to legitimizing the existing corporate power of the rich countries. On the other hand, introducing values other than profit-making onto the corporate agenda may also partially politicize social relations that in the dominant understandings of the “economy” are too often regarded as non-political. This political agenda of CSR is still a fairly neglected idea in academic discussions: until very recently, CSR was mainly addressed in studies of business ethics, and, obviously, by economists. From the social science point of view, it is, however, important to emphasize that CSR can also create new kinds of political spaces. CSR could also be a tool for conflict resolution if taken seriously and as a new “culture”, as a way of avoiding cultural stereotypes and as an instrument for a genuine understanding of the values of different actors. From this point of view it is interesting that transnational companies have found the most managerially-run western NGOs at many levels – they are prominent participants of business seminars, for example – but when real conflicts escalate in poorer countries, the local movements are not accepted as participants and equals. They are rather taken as problematic, too radical or even dangerous.

As part of the globalisation process many low-income countries have also become part of sub-contracting chains and trading in primary commodities, bringing new income but not realising the full potential for development (UNCTAD 2011). The focus groups emphasized capacities of LDCs to operate with respect to trade and economic policies. The increasing mobility of people and capital has implied that many countries have a substantial part of their productive workforce in other countries, yet this resource has not been utilised for national development (UNCTAD 2012b). The role and relevance of diaspora for development policies was also brought up by the focus groups and interviews.

While capacities of low-income countries to negotiate and participate fully in global governance has improved, important fault lines remain in the context of foreign investment and trade policies. Many low-income countries remain vulnerable to detailed and specific technical negotiations on trade, economic partnership and investment agreements with powerful counterparts, such as the European Union and United States. Global governance through economic and financial institutions, such as the World Bank, IMF and the OECD has so far offered only few alternatives. BRICS and other kind of South-South cooperation are changing the global power play, but there are no strong signals showing that LICs' voice would be heard more equally.

### **BRICS – a changing context towards a multipolar world**

New investors and relationships from BRICS have emerged within South-South cooperation and through the establishment of new networks, financing mechanisms and resources beyond traditional development banks and actors. This is likely to introduce both new risks and opportunities for low-income countries. Globalisation has also contributed to the emergence of a multipolar world, where new trading relationships could emerge between neighbouring countries, regionally or as part of South-South relationships rather than through more traditional North-South engagement.

The West and the rest are waiting to see whether the BRICS really can provide alternative engines of growth for the “old-fashioned” post-Washington Consensus, or whether their positive possibilities will wane along with that of the developed economies. In growth or decline, it is clear that their affluences will have significant implications for the future of the global economy – and in solving the huge global/human problems. The motivation behind the new kind of BRICS' cooperation is their shared desire to limit the power of the developed economies in the global financial system. In spite of many discrepancies – problems of multiparty cooperation compared with EU and US – the BRICS have found quite efficient ways to work together, bi- and multilaterally, that will impact not only their own development but also that of the rest of the world.

From the LIC point of view the BRICS strengthening role can also pose a future threat. In the absence of good governance and functioning tax systems, the options for redistributive policies and investment incentives are limited. BRICS activities do not necessarily solve non-transparent global tax systems, transfer pricing systems and problems of tax paradises. That is why the role of the West also has to be analysed to determine its role in this dynamic.

Intra-BRICS trade stood at 230 billion dollars in 2011, and the group is targeting 500 billion dollars by 2015. At the G20 summit in June 2012, the BRICS' leaders discussed creating a joint safety net in the form of a reserve fund to be used to counter capital flight in any of the BRICS countries.

The BRICS' growth slowed in 2012, but their success in the downturn compared to the developed economies has cemented their relative importance to the global economy. Brazil, Russia, India and China accounted for 20 per cent of world economic output in 2012 (a fourfold increase in the last ten years). The BRICS are home to 43 per cent of the world's population. BRICS' cooperation is a way to make their mark on global governance, just as they have on the global economy.

In many scenarios, Western dominance of global financial and political institutions is about to end. In June 2012, as Europe stumbled, the BRICS came to the rescue, pledging 75 billion dollars to the IMF's Eurozone bailout fund of 460 billion dollars. The move illustrates the bloc's increased importance in the global economy.

## **Conflicts – always there**

Wars within states involving different non-state armed actors have been the overriding trend in the nature of armed conflict and violence since the end of the Cold War, and this is not supposed to change in the years to come.

Although large-scale violent conflicts have diminished in number in Africa the past decade, recent episodes of violence and warfare reinforce the need to keep on working on peace-building and conflict prevention, and consider institution-building as a long-term endeavor in post-conflict countries.

Al-Qaeda's kind of transnational non-state armed actors were supposed to be an exception, but recent episodes in Algeria and Mali, among others, have shown a different reality. Transnational non-state armed actors, like Al-Shabaab, AQIM, FDLR, and LRA, or reorganized armed militias which used to work with the regime of Muammar Gaddafi, are operating and victimizing populations, challenging fragile governments, and raising the stakes of national and foreign investors.

Intrastate conflict between non-state armed actors and government is still a reality in Africa. It has increased violence against civilian noncombatants, causing social trauma and instability, and long term consequences beyond the casualty figures. One-sided violence is a major factor in the displacement of people, close to 28 million worldwide, mostly in Sub-Saharan Africa, a phenomenon also present in northern South America.

In this context of social and political conflict and development in the LDCs, there are four major challenges for international and multilateral development actors: 1) transnational non-state armed actors, 2) organized criminal violence, 3) increasing global demand for natural resources and corruption, and, 4) youth and the lack of opportunities.

Organized criminal violence is different from, but not easily differentiated from armed conflict. Revenues obtained from crime and criminal violence can be used to finance other non-state actors who engage in more traditional forms of politically motivated violence, such as insurgencies and terrorism. Criminals are also used by governments and their allies to fight their rivals in armed conflicts.

Criminal violence is far-reaching internationally. It is associated, for instance, with illegal coca cultivation in the Andean region in South America, cocaine trafficking to West Africa, and cocaine distribution in Western Europe. Transnational non-state armed actors in Africa are profiting from these illegal trades, which relates to armed insurgencies, violence against state officials and journalists, and widespread corruption of state authorities along the routes to the final markets. Poor and unemployed young males are the main labor force in this globalized illegal trade.

The increasing global demand for natural resources has opened new opportunities for criminal networks in the LDCs, opportunities that are enhanced when the country is still in the middle of an armed conflict or it is in a post-conflict situation. Institutional weakness and lack of government funding are features of the LDCs. In these circumstances local non-state armed actors, which control the territory, and well connected local power holders, mediate the exploitation of natural resources by foreign corporations and investors. The central government is weakened even more, local populations living in the resource rich areas are subjugated, unregulated resource exploitation affects forests, water wells, and the environment, and



conditions for armed conflict persistence or recurrence are in place. Transnational non-state armed actors are profiting from this, but there are no clear assessments about how they are operating and their links to local power structures.

**Positive trends for avoiding conflicts in LICs:**

- Less wars or open conflicts, mostly continued tension and sporadic clashes, less casualties in conflict.
- Education of women advances, also organization according to quantitative evidence by the UN.
- Timid economic growth moves ground from recruitment to armed groups and extremism.
- Young populations and ICT challenge status quo of authoritarian/military regimes (consider for example the Arab Spring creating demonstrations in a country like Niger).
- Regional and sub-regional organizations willing to take a stronger role in peace and security issues: consider African Union, ASEAN, ECOWAS, ECCAS, and SADEC.

**Challenges:**

- Youth unemployment reinforces easy recruitment to violence and armed groups.
- Conflict over natural resources likely worsen as exploitation affects the living environment of poor populations and benefits are meager.
- Transnational organized crime interlinks with local criminal structures and corrupt elites.
- Religious/extremist violence the only viable political expression in some areas.

**Worst scenarios:**

- Whole regions become zones of instability and un-governability (for example the Sahel).
- Spill-over effects of conflicts become faster and less manageable (Libya, Congo/Uganda etc.).
- Complex emergencies – social, political, environmental, etc. – are likely to affect LDCs due to their institutional weaknesses.

**3.2.2. Research Gaps and the Role of Research**

Research on global economic policies, global governance and globalisation remains dominated and shaped by the work within and for international organizations and development banks, with the exception of contributions from the South Centre, WIDER, UNCTAD and UNDP. A comparison can be made with Latin American countries with regional research economic policy research institutions. This has implied two issues in practice: first, the importance of World Bank and IMF on sources of data and framing of problems and solutions, and second, the unequal powers and capacities with respect to global multinational industries and development banks in production of research and technical expertise as compared to national and regional capacities.

This has resulted in a lack of capacities and research from the perspective of low-income countries, and by low-income countries, reaching beyond what has been asked for by international financial institutions. The same applies to trade negotiations, where low-income countries often remain decision-takers as a result of a lack of capacities to operate and negotiate for development.

While the phenomena of South-South cooperation and the increasing role of low-income investors has emerged on the development policy agenda, there is still very little research on how this change relates to developmental futures of low-income countries or respective capacities of states.

Another part of globalisation applies to the role of multinational industries in low-income countries, their contribution to national economies and public policies, including with respect to taxation, and how positive and negative impacts are distributed within countries.

In conflict studies, research is needed on long-term consequences of aid-delivery to regimes that can be classified as authoritarian or military ruled. Is there a preference of investment stability over democratic change? Qualitative research is needed to accompany quantitative data on development. It is also necessary to know more about the roles of local and regional power holders in making aid and conflict management and prevention effective. Research on fragile states is too focused on central states and omits de facto rulers. Most conflicts have local dynamics. A good example of this is Afghanistan.

There is also an obvious need for further research on trans-national non-state actors, such as Al-Shabaab, AQIM, LRA. On the other hand, BRIC-countries' investments in conflict-affected LICs might have unknown consequences which should be studied by methods of preventive peace and conflict research.

### **Research Gaps**

- a) The changing role of State, NGOs and business
- b) Corporate Social Responsibility
- c) Political transitions
- d) Role and the presence of the West (not just BRICS?)

### **Key Focus Areas for Future Research**

1. Income gaps and comprehensive poverty reduction
2. Relations of commercial and governmental power
3. New funds and taxation (local, national and global); as in 3.1
4. New conflicts (ethnic, environmental, religious, raw materials, energy)
5. Youth and ICT (from an interdisciplinary perspective); as in 3.1

### **3.2.3 Research Institutions, Networks and Agendas on Democracy, State, Globalization and Conflicts**

The World Social Science Report 2010 demonstrates that social scientists in sub-Saharan Africa and other low-income countries continue to operate under conditions that are still quite under-resourced. The science institutions in most LICs have been eroded over the past three decades by the devastating effects of domestic policies and events but also through international economic policies. The cumulative effect of these policies over time has been a decline (in relative terms) in scientific output, changes in modes of scientific work, the devaluing and degrading of scientific professions, and not least, brain drain.

LICs relative share of world science, in general, has been declining steadily over the past decades (as measured by papers published in ISI indexes). Robert Tijssen showed in 2007 that in the 1990's Sub-Saharan Africa fell dramatically behind in its share of world science production – from 1 per cent in 1987 to 0.7 per cent in 1996 – with no sign of recovery. Unfortunately this trend has not changed since then in relative terms.

The Centre for Research on Science and Technology at Stellenbosch University in South-Africa produced studies some years ago that compiled breakdowns of ISI papers for the social sciences and humanities (SSH) over the past 20 years, by each sun-Saharan country.

**Table 3. SSH output by country (1987–2007)**

Number of articles	Year	87–89	90–92	93–95	96–98	99–01	02–04	05–07	1987–2007	% distribution	Overall growth rate 1987–2007
South Africa		975	1,089	1,196	1,462	1,482	1,906	2,785	10,895	50.7%	+185%
Nigeria		748	626	438	382	341	475	542	3,552	16.5%	-27%
Kenya		182	153	189	189	259	353	414	1,739	8.1%	+127%
Zimbabwe		106	145	127	168	122	154	163	985	4.6%	+54%
United Republic of Tanzania		71	63	99	106	111	130	238	818	3.8%	+235%
Ghana		50	87	88	96	124	101	137	683	3.2%	+174%
Botswana		41	42	71	119	117	137	133	660	3.1%	+224%
Ethiopia		42	57	42	56	65	108	147	517	2.4%	+250%
Uganda		16	24	46	60	79	103	159	487	2.3%	+890%
Cameroon		17	54	41	51	66	81	95	405	1.9%	+2,282%
Zambia		72	36	44	25	23	33	73	306	1.4%	+325%
Malawi		25	36	54	40	22	30	48	255	1.2%	+920%
Namibia		7	10	33	38	28	40	48	204	0.9%	+2,814%
<b>Grand total</b>		<b>2,352</b>	<b>2,422</b>	<b>2,468</b>	<b>2,792</b>	<b>2,839</b>	<b>3,651</b>	<b>4,982</b>	<b>21,506</b>	<b>100.0%</b>	<b>+112%</b>

The table shows that output in selected sub-Saharan countries during the period 1987 – 2007 has increased steadily by an overall growth rate of 112%. Only countries that produced more than 200 papers over this period were included. South Africa's domination in sub-Saharan Africa is evident; Nigeria comes second. The data raises the question of whether a critical mass of universities exists in the region, able to maintain a steady annual output. Only the top seventeen universities are able to produce an average of twenty papers per year in ISI journals (see table by university in annexes). Many traditionally strong universities in sub-Saharan LIC countries such as Kenya, Tanzania and Zimbabwe struggle to maintain even these levels of output (Mouton 2010).

More than 340 journals are currently indexed in African Journals Online AJOL, which is based in Grahamstown in South Africa and managed by the National Inquiry Service Centre. Of these 340 journals, approximately 100 are categorized as being in the social sciences or the humanities (SSH).

Johann Mouton (2010) calculated that international publication in ISI journals (19,154 articles during the period 1990–2007) only constitutes about one-third of the total social science scholarship in the region.

**Table 4. SSH articles by source: 1990–2007.**

Distribution of articles by index		1990–1992	1993–1995	1996–1998	1999–2001	2002–2004	2005–2007	1990–2007
SSH articles in ISI journals		2,422	2,468	2,792	2,839	3,651	4,982	19,154
SSH articles in non-ISI journals	Non-SA AJOL journals				1,136	1,565	2,247	4,948
	South African journals	4,877	5,252	5,058	4,840	4,746	5,900*	30,673
<b>Total</b>		<b>7,299</b>	<b>7,720</b>	<b>7,850</b>	<b>3,975</b>	<b>9,962</b>	<b>13,129</b>	<b>54,775</b>

Source: 1990–2007

Note : There are many South African journals in AJOL which in this table have been counted under South African journals

Given that these figures exclude significant francophone journals and journals not listed on AJOL, the ISI share is undoubtedly even smaller in practice than this figure suggests. Leaving aside South Africa, a small number of countries produce the biggest shares of the AJOL output sub-Saharan Africa, besides Nigeria (37): Ghana (7), Ethiopia (6), Senegal (5), Tanzania (4), Uganda (5) and Zimbabwe (4). However, of the total (78) number of non-SA AJOL journals on this list, 27 have not produced any articles since 2006. These figures demonstrate how invisible African scholarship, especially in LIC countries, in the social sciences and humanities is, and why initiatives to give these publications greater exposure by supporting journals, open access repositories and other measures are so important (Mouton 2010).

Maureen Mweru (2010) compiled a study in Kenya’s main public universities, located in Nairobi. In-depth interviews and focus group discussions reveal “Why Kenyan academics do not publish in international refereed journals”. Reasons for this include lack of time and low salaries, difficulties in obtaining recent and relevant books and journal articles, negative reviews of submissions to journals, the attitude of the university’s administrative services and the attitudes of faculty. Overcrowded lecture halls, an excessive number of exams to grade, numerous university meetings, and serving on various university committees were all cited as taking up any extra time that could otherwise have been used to write journal articles. Little time was left for research and publishing. In the absence of research funding and grants, academics use their own personal resources, which often result in less research time and thus fewer research findings to publish. Low salaries also mean that academics cannot afford journal access fees.

Most social science in low-income countries is practiced in under-resourced universities. The lack of government support for social science research in LICs translates into very little support for research institutes and centres dedicated to the social sciences and humanities, whether based at universities or effectively operating as NGOs. Centre for Research on Evaluation, Science and Technology at Stellenbosch University (CREST) has compiled a list of research centres dedicated to the social sciences in 25 sub-Saharan countries (excluding South Africa) consisting a total of 149 research institutes and centres ([www.sarua.org](http://www.sarua.org)). However, of these, only 79 (or 53%) had an active website in June 2009. The majority of these centres are heavily dependent on so-called “soft” money, which poses a constant threat to their long-term sustainability. We cannot but agree with Johann Mouton, Director of CREST at Stellenbosch University and the African Doctoral Academy, that the precarious state of many of the SSH research centres in the sub-Saharan region is indicative of a more general trend in research and scholarship in all LIC countries i.e. *the de-institutionalization of science*.

The de-institutionalization of science has eroded and destroyed many university-based social science research centres. Transnational and regional research networks, and independent social research institutes and research NGOs are filling the void left by the lack of strong national research centres. The vast majority of these networks and institutes focus on interdisciplinary and more applied fields of the social sciences. These networks are predominantly sustained by international agency funding, which also tend to define to some extent the disciplinary emphasis and even research orientation (Mouton 2010).

The most prominent of these networks in low-income African countries are CODESRIA in Dakar, the African

Association of Universities (AAU) in Accra, Organization for Social Science Research in Eastern and Southern Africa (OSSREA) in Addis Ababa, and, to a lesser degree, the Kampala-based Centre for Basic Research (CBR). The African Association of Political Science (AAPS) in Harare and the Southern Africa Political Economy Series (SAPES) Trust were active through the 1980s into the 1990s before they experienced an unfortunate decline. Most of these networks were established to produce and disseminate advanced research knowledge, drawing on the best traditions of scholarship available in the region. Internationally UNRISD has provided innovative and cross-disciplinary work social and public policies in low-income countries with a crucial role in enabling scope for assessment and understanding of social policies in low-income context. Other international institutions include WIDER Institute, which has its focus on development economics. The regional African Institute for Economic Development and Planning (IDEP) provides scope also for public policy analysis and research. Other examples are African Labour Research Network funded from Northern trade unions and the Nepalese Policy Research Network (see more in chapter **Health Sciences and Social Policy**). A particular challenge both for international support and networking as well as for regional and national initiatives and institutions is the challenge of longer term financing. Olukoshi and Zeleza (2004ab) have accounted impacts of structural adjustment policies and financing upon African Universities as well as brought up more current trends in commercialization of research and funding of academic research. Sida has provided financing to many research institutions (e.g. UNRISD, WIDER, IDEP) and maintaining or expanding financing for global institutional actors on research such as UNRISD and WIDER as well as regional operators and institutions, in particular in Africa, could provide substantial influence and importance in comparison to modest levels of financing.

### **Funding of social science research**

Much of the social science in universities of low-income countries are underfunded and state funding of social science research in low-income countries is the exception rather than the rule. Most of the social science research is published in local journals that are not internationally visible and in projects that do not translate into building institutional capacity, nor into policy. This leads to individualistic research, fragmentation of effort, lack of critical dialogue within a community of scholars and often a lack of methodological rigour. Discipline-based work will eventually decline and basic scholarship such as social theory will also suffer. According to Johann Mouton, individualistic research is one side of the coin, of which the other face is consultancy research. *Consultancy social science* refers to the widespread practice of academics engaging in consultancy work – mostly for international agencies and governments – to augment their meagre academic salaries (Mouton 2010).

CREST completed a study in the SADC region (Angola, Botswana, DRC, Lesotho Madagascar, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Tanzania, Zambia and Zimbabwe), which addressed a number of these issues ([www.sarua.org](http://www.sarua.org)). The results show that more than two-thirds of all academics in the fourteen SADC countries regularly engage in consultancy. Perhaps the most surprising result is that a majority of academics in the humanities (61 per cent) indicated that they do some form of consultancy work. The overall picture points to the wide prevalence of consultancy work across all scientific disciplines. This hinders and possibly even dilutes the production of scientific knowledge, in comparison to so called pay-per-view knowledge.

The majority of social scientists in the LICs depend on international donors such as Sida/Sarec, NORAD, DANIDA, on the Netherlands, French and British governments, on various foundations in the USA (Ford, Rockefeller, Mellon, Kresge, Kellogg, Atlantic Philanthropies and Carnegie) or on IDRC in Canada. Of the

development banks, the World Bank is by far the dominant donor.

A distinction should be made between grants that support social science research more directly (as is the case with CODESRIA and OSSREA), and more indirect institutional support aimed at strengthening scientific institutions, such as Sida's support of electronic journals in Ethiopia and Carnegie's support of libraries and ICT networks in East and West Africa (Mouton 2010).

Bilateral donors are largely focused on providing institutional support to universities in LICs through the provision of research funding, support for research infrastructure (libraries, laboratories etc.), producing training and teaching materials for universities, and supporting MA and PhD programmes. This is an area where there are notable capacity gaps. There seems to be less support to humanities and non-economic social sciences, with important exceptions represented by NORAD (arts/culture, higher education) and NUFFIC (education, civil society, policies on poverty and good governance) and naturally Sida (Jones 2007).

Multilaterals invest heavily in supporting thematic-focused networks. The EU and particularly the World Bank Institute and the African Development Bank are focused on issues of poverty reduction, governance, trade and regional integration. But to find out exact sums is not easy.

It is very difficult and laborious to dig out accurate figures for donor funding of research capacity strengthening initiatives. However, it has to be kept in mind that OECD/DAC statistics are incomplete in the sense that they do not give comprehensive figures on how much the mainstream development donors actually finance research in LIC-countries, how these flows are distributed between disciplines, or even how much ODA funds are channelled for research overall.

One reason is that DAC-donors have provided their bilateral support in the form of budget or basket support, in which the contribution to higher education and research is not specifically identified and allocated for specific purpose and activity codes while reporting for OECD/DAC. Another obvious reason is the long-term nature of funding research capacity strengthening and the fact that many projects span over long periods of time and budget allocation years. Where specific research budgets can be identified, insufficient disaggregation by region, let alone each country, makes it difficult to estimate spending for low-

**Table 5. Donor Research Capacity Support in Africa Spending League Table (Jones 2007)**

<i>Agency</i>	<i>Approximate annual budget for capacity building (million USD)</i>	<i>Year</i>
DSIG/ NUFFIC	\$140m	2005
PHEA (funded by 7 donors)	>\$60m	2005/6
WHO	>\$40m (TDR, HRP)	2007
Rockefeller	c.\$25m	Annually
SIDA-SAREC	c.\$25m	2006
IDRC	>\$20m	2006/7
NORAD	c.\$20m	2007
Hewlett	<\$20m (policy research institute funding programme)	2008
Ford	?<\$20m	Annually until 2010
ISP	c.\$3m	2007

income countries. It is even more difficult to find out how much is actually channelled to different disciplines, like for research of Social Sciences in LICs.

According an ODI study (Jones 2007) the Netherlands, Sweden, IDRC and IRD (France) would appear to represent the leading bilateral donors in research capacity strengthening in Africa; WHO would appear to be the most significant multilateral in this field, while Rockefeller, Ford and more recently Hewlett lead among the group of private foundations. However, the overall proportion of dedicated spending on research capacity strengthening seems to be relatively limited, with the biggest overall donors spending comparatively little.

The CREST study of the SADC countries showed that a very substantial 42 per cent of all respondents from

**Table 6. Proportion of total research funding sourced from international agencies.**

Proportion	Nr of responses (n=634)	Total Valid Percent	RSA (n=236)	SADC rest (n = 342)
0-30%	366	63%	82%	50%
40 -60%	57	10%	12%	8%
70 - 90% +	157	27%	6%	42%

Source: CREST (2008) *The state of public science in the SADC region*. Report commissioned by SARUA.

SADC (more than 600 academics, South Africa excluded) indicated that they receive between 70 per cent and 90 per cent of their research funding from overseas (sarua.org).

In conclusion Johann Mouton argues that building individual and institutional research capacity remains the priority for the social sciences in sub-Saharan Africa. And although there are many examples of research capacity-building initiatives sponsored and supported by various international agencies, donor organisations and foreign governments, there is still very little consensus about the most effective approach.

The long-term effects of the very substantial losses of high-level human-power will persist in LICs for some time to come. Many LICs express deep concern that their investments in educating and training social scientists benefit other countries instead. A high proportion of well-trained scholars, including many of the best known, have left their country (Olukoshi 2010). The United Nations report on International Migration presented before the 61st UN General Assembly in August 2006 points out that between 33 and 55 per cent of the highly educated people of Burundi, Kenya, Mozambique, Sierra Leone, Uganda and Tanzania live in the countries of the OECD-countries.

Most universities do not have adequate research management infrastructures and do not have well-developed and well-functioning research directorates in place. The fact that academic salaries are poor and working conditions are not always conducive to research, forces many academics into consultancy and/or considering leaving their countries. Similarly, the lack of sufficient master's and doctoral programmes at many universities forces postgraduate students to consider studying elsewhere (Olukoshi 2010).

**Urgent research needs in Africa:**

- How to update land registers?
  - How to encourage women's participation in secondary education?
  - How to solve sewerage in the cities?
- (Nordic cooperation officer, Tanzania, April 2013)

It is important to note that the circulation and mobility of scientists across different countries and

institutions occurs where there are reasonably strong and well-resourced institutions. But the effects of scientific mobility on weak and dysfunctional institutions in LICs are quite different, and the worst effects of “brain drain” are apparent in these systems. A 2007 survey of the state of public science in the 13 countries of the SADC region (Angola, Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Tanzania, Zambia and Zimbabwe) showed that about 25% of scientists and scholars had seriously considered leaving their universities and countries to look for employment elsewhere (Mouton 2010).

Universities that do not feature in the top 500 of the SJTUHE ranking or the top 200 of the THE-QS ranking are devalued and are – by implication – poor-quality, second rate or failures. In the face of continuing global North–South inequalities, the burden of such characterizations weighs disproportionately on universities in the low-income countries (Saleem 2010).

Fighting against poverty requires global mobilization and worldwide studies. Social sciences are crucial to identifying the problems that underlie, result from and aggravate such change, and they provide the basis for developing sustainable solutions to such problems. Meaningful solutions require an understanding of how the poor apprehend their situation, what they most suffer from, and how to mobilize them best. We are in a period in which local studies and global theorization are both needed.

As Mkandawire argues (2009), attempts to improve Africa’s prospects by focusing on scientific advances and the benefits accruing from them have all too often overlooked the important perspectives which the humanities and social sciences afford, and it is vital that the social sciences and humanities are granted their rightful place if Africa’s – and other low-income countries – development challenges are to be fully and properly addressed.

To what extent does science in low-income countries (including both the social sciences and the humanities) address the most important development goals of the respective nations? The question is not whether social scientists influence decisions, but whether researchers work on themes directly related to policy concerns and to what extent; whether they should be financed accordingly; and whether it is justified that their work be assessed on the basis of its impact in the short term. At the same, it is obvious that research is a long time process while national policies can change quickly. The question is, then, again, should policy guide research or should research guide policies.

According an ODI study (Jones 2007) there appears to be a significantly lower investment in the social sciences and humanities. Given a growing realisation that poverty reduction, inclusive growth and good governance require more than technocratic solutions and instead call for critical social science, investing in support of (especially non-economic) social science methods and research would appear to be a potentially important area of contribution. This would however demand attention to and understanding of the local socio-cultural context, and the politics of the research-policy-practice environment, including governmental openness to critiques of existing social policies and governance practices.



### 3.3 Governance of environment and natural resources

#### 3.3.1 Key problem areas and future perspectives

Since the onset of industrialization about 200 years ago, human development has come mainly at the expense of the environment and natural resources. Due to population growth and rapid changes in consumption patterns, this damage to the environment is now approaching a scale at which it is beginning to threaten both growth prospects and the progress achieved in human and economic development.

This new situation is a major challenge for both developed and developing nations: developed nations with less than 20% of world's population still account for two-thirds of global consumption and 40% of greenhouse gas emissions. They need to act immediately.

Developing nations facing a gigantic task to reduce poverty and improve the living conditions of their people have to choose what kind of development pathway will meet both the needs of human development and of environmental sustainability. In either case, the legacy of industrialization – the dependence on “unlimited” raw materials and old technologies - is not the answer (Figure 12).

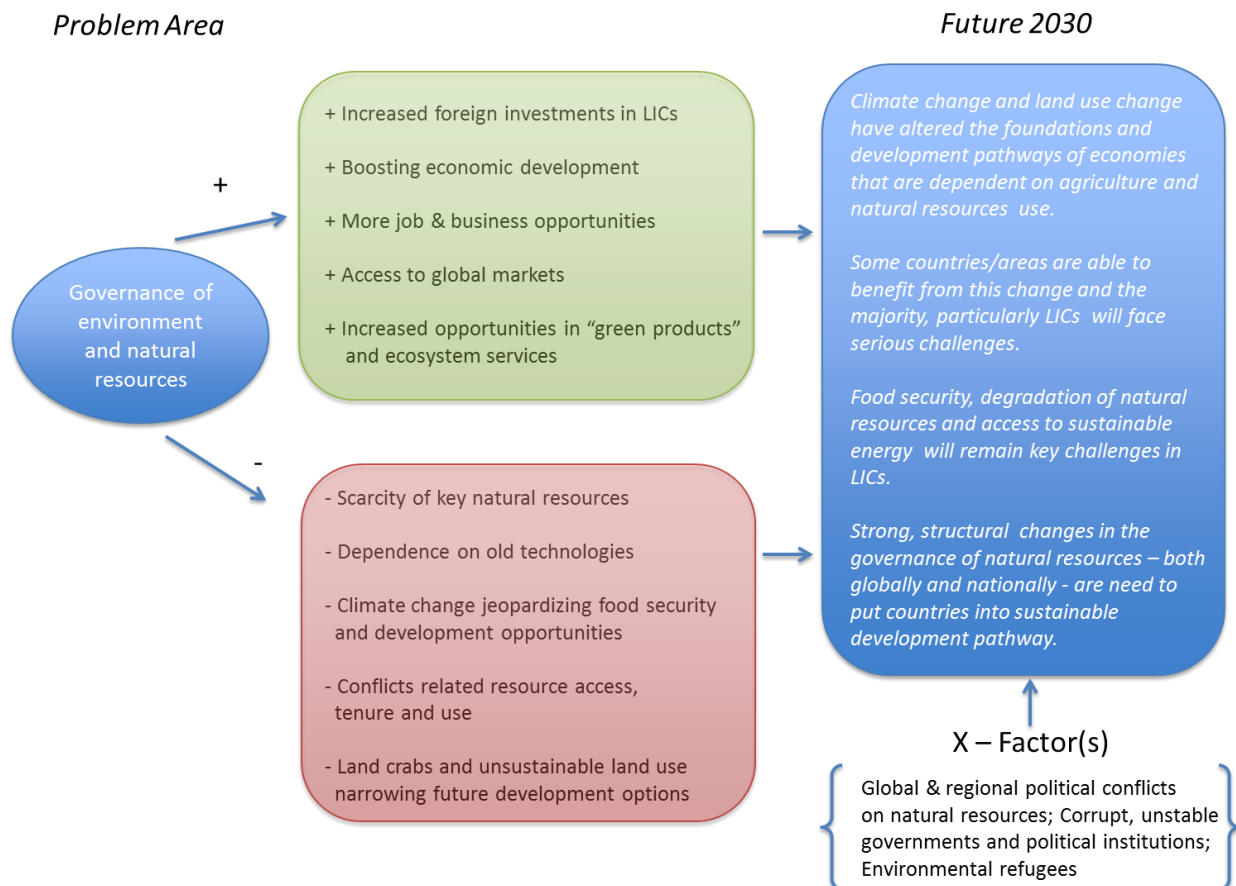
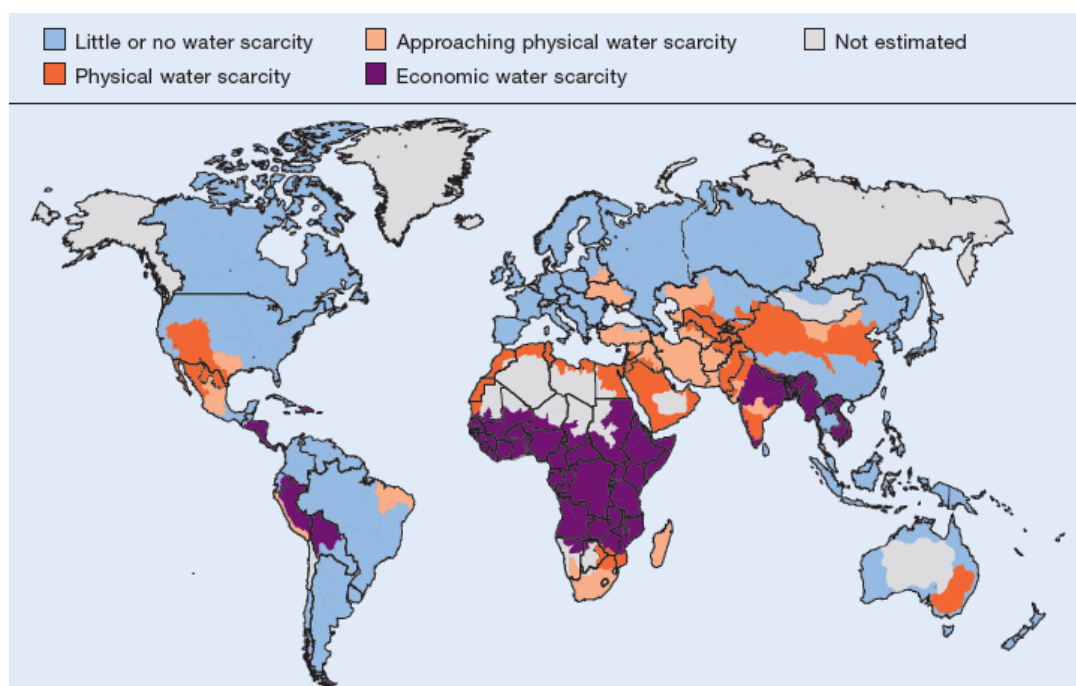


Figure 12. The Chain of Impact in the Field of LIC’s Environmental and Natural Resource Governance

## Scarcity of critical resources

It is becoming ever more difficult to provide universal access to water and energy and to achieve food security in a sustainable way. Close to 1 billion people are undernourished, 0.9 billion lack access to safe water and 1.5 billion have no source of electricity. Improved governance of water, energy and land will play a vital role in achieving the Millennium Development Goals (MDGs) (European Union 2012).

The sustainable management of water resources is becoming one of the major development challenges of our time. In low-income countries (LIC's), growing populations are increasing demand for water to produce essential commodities like food and energy. One big worry is water scarcity. In 2010, about 44 per cent of the world population lived in areas of high water stress, and projections indicate that an additional 1 billion people will be living in areas with severe water stress by 2030 (OECD 2008) (Figure 13). Another problem is poor water quality, which sets back growth. It degrades eco-systems, causes health-related diseases, constrains economic activities such as agriculture, industrial production, and tourism. In the worst case, it can lead to domestic and international migration.



**Figure 13. Areas of physical and economic water scarcity (current situation) (Comprehensive Assessment of Water Management in Agriculture, 2007).**

Globalization of trade and economies and rapid economic growth of emerging nations (China, India, Brazil, South Africa etc.) has had a far-reaching impact on natural resources and land-use over the past decade, which most likely will accelerate in the years ahead. For instance, foreign investments in mining, agricultural, and biofuel sectors have drastically changed the land-use patterns in many African countries (e.g. Cotula et al. 2011, Schoneveld 2011). One of the key drivers has most likely been the increasing volatility of and inflationary pressures on prices of valuable metals, food and energy – with the World Food Price Index more than doubling and the Oil Price Index almost trebling between 2005 and 2011 (Schoneveld

2011). In this situation, the poorest people in low-income countries (LIC's) are those who suffer most. A large proportion of the new investments described above are concentrated in low-income countries in sub-Saharan Africa. For instance, a recent report concludes that during 2008-2009, 203 farmland investors expressed an interest in 56.6 million ha globally, of which 39.7 million ha is located in Africa (Deininger et al., 2011). Past evidence provides strong reasons to believe that a significant proportion of food and bioenergy development will come at the expense of natural forests, either through direct conversion or indirect competition among various land uses (e.g. Gibbs et al. 2010). This has led to a situation where the greenhouse gas emissions from forest conversion to agriculture, mining, and urban areas account for about 12-15% of total CO<sub>2</sub> emissions – the same magnitude as the whole global transport sector (Kanninen et al. 2007).

### **Agriculture and food security**

In many low-income countries the agricultural sector contributes to over 50% of the GDP, and in spite of rapid urbanization, rural populations are still the majority in many countries. For instance, Africa's economies are driven by agriculture which contributes an average of 30 - 40% to most African economies, accounting for 17% of the continent's total GDP and at least 40% of the continent's foreign exchange earnings.

In many countries, poverty is concentrated in rural areas, and the gap between relatively well-off urban dwellers and poor people living in the countryside is increasing. According to the World Bank, 75 per cent of the world's poor live in rural areas and the majority depends on agriculture for their livelihoods. Thus, the performance of the agricultural sector is critically important for food security, due both to the impact of increasing food prices and to climate change (World Bank 2012). In terms of agricultural productivity, the green revolution has been able to increase the yields of most of the main crops in most parts of the developing world, particularly of that of rice in Asia. However, the progress in Africa has been modest, and increased research and development efforts are needed to enhance food security and to increase agricultural productivity in Africa.

Another aspect of high importance for rural development in many parts of the world is the issue of uncertainty of land use access and tenure rights (e.g. land grabbing etc.). The issue of rights may greatly inhibit agricultural investment and productivity improvements. Improving land governance is a challenging task, which may require deep transformational reforms. Here, research is needed to shed light e.g. on the role of access rights and tenure and of local institutions, inclusion/exclusion of women, indigenous people and the importance of agriculture natural resources management to local livelihoods.

### **Energy and sustainable development**

Energy is both a key factor in economic development and a central focus in addressing environmental problems and climate change. Fuel wood from trees accounts for 10% of total global primary energy, equivalent to 1.6 billion m<sup>3</sup> of wood. In the low-income countries, more than 90% of wood removals from forest and woodlands are for fuel, and wood energy accounts for more 80% of the total energy consumption (UNEP 2009).

About 2.6 billion people rely on traditional biomass for cooking (European Union 2012). The contribution of firewood to the energy supply has been relatively constant in time, due to the low cost and lack of available alternatives. In urban areas, charcoal is becoming the main source of energy, and the use of charcoal in the

low-income countries of Africa is projected to increase more than 50% between 2010 and 2030, as a result of rapid urbanization and population growth.

The emerging picture on the energy situation in low-income countries shows that: (a) fuel wood is still the dominant source of domestic fuel - even projections assuming continuation of the shift to other fuels show a continued reliance on it for a long time to come, particularly in rural areas; (b) natural forests are disappearing, and land under “common pool resources” are either shrinking or their access becoming increasingly restricted; (c) production and selling bioenergy (fuel wood and charcoal) is becoming an important source of income for very large numbers of rural and urban poor; (d) large-scale foreign investments in bioenergy development (e.g. oil palm, jatropha) are increasing, resulting in land grabs and loss of natural forests. These changes in bioenergy markets, profitability, or in participation in the supply chain, can have substantial impacts on the livelihoods of millions of people, particularly those living in low-income countries.

### Climate change jeopardizing development

Studies on the impact of climate change in Africa suggest that the impacts may be quite diverse, with different impacts between agro-ecological zones, with currently productive areas such as dry/moist savannah being more vulnerable to climate change while humid forests or sub-humid zones may become more productive (e.g. ILRI 2006, UNCCD Secretariat et al. 2010). The evidence suggests that these changes are likely to increase the vulnerability of the poor in developing countries (Differbaugh et al. 2007) (Figure 14), which may jeopardize all the aspirations and plans for sustainable development of the poorest countries and people.



Figure 14. Maplecroft’s Climate Change Vulnerability Index.

There are 16 nations that are at “extreme risk” because of the effects of climate change, including Bangladesh, Madagascar, Nepal, Mozambique, Haiti, Zimbabwe, Myanmar, and Ethiopia. Among the 25

nations characterized as most at risk, 12 are located in Africa. Among the nations considered “low risk” are Sweden, Norway, Finland, and Iceland. (<http://maplecroft.com/about/news/ccvi.html>).

The worst impacts of climate change will be in Sub-Saharan Africa. There, 96% of the sub-continent’s population is directly dependent on rain-fed agriculture. Agricultural production is projected to fall 50% by 2050 due to a reduction in rainfall and increase in temperatures, while the majority of African states will be faced with water scarcity and water stress by 2050. The land suitable for agriculture will be reduced by 6% and total agricultural GDP of the subcontinent will decrease by 9% during the same period (ILRI 2006, UNCCD Secretariat et al. 2010).

### **Low-income countries – occasional winners and frequent losers**

Low-income countries are occasional winners but frequent losers in a resource-constrained world. They find that prices rise for essential resource-intensive goods and services such as food, minerals and energy. Their employment opportunities may decline if growth is constrained by physical or economic shortages (European Union 2012). The reduced income from agriculture, fisheries and forestry due to climate change will certainly undermine the achievements made towards the realization of the Millennium Development Goals.

The new context of increased scarcity of key natural resources, poverty, globalized trade and investment, and climate change is creating a huge challenge for low-income countries: how to govern the management of natural resources as a coordinated response from the public and private sectors in order to promote inclusive and sustainable growth. ‘Business as usual’ is most likely leading to stresses and conflicts on natural resources and to marginalization of the most disadvantaged groups, which will undermine the ability to pursue sustainable and equitable development in the future.

### **3.3.2 Research Gaps and Role of Research**

With the increasing scarcity of natural resources, such as land and water, productivity gains will be the main source of growth in agriculture and the primary means to satisfy increased demand for food and agricultural products. With globalization and new supply chains, farmers and countries need to continually innovate to respond to changing market demands and to stay competitive. As climate changes, they will have to gradually adapt. All regions, especially the heterogeneous and risky rainfed systems of Sub-Saharan Africa, need sustainable technologies that increase the productivity, stability, and resilience of production systems.

Due to its paramount importance for development in low-income countries, agriculture deserves special emphasis in development research on poverty reduction. Studies show, that different rates of poverty reduction over the past 40 years have been closely related to differences in agricultural performance – particularly the rate of growth of agricultural productivity (DFID 2004), and higher agricultural productivity has been seen as a pre-condition for industrial transformation in most successful developing countries. This will also become a necessity for achieving food security in the low-income countries. Many of the world’s poorest depend on agriculture and so agricultural growth is often more poverty-reducing than growth in other sectors (World Bank 2007). Private firms, especially small, family farms, are efficient in adopting and using available production technologies. Now, climate change is increasing the challenges that agriculture and natural resources management sectors are facing in LICs. In many low-income countries, the

vulnerability of the production systems and of a large proportion of the whole population (see the Figure 10 above) is one of the key research areas in terms of their urgency and relevance for future development.

Key questions for future agricultural and natural resources research include: How might agricultural productivity be raised, especially in Africa where there has been remarkably little progress in this front? How much might improvements in technology, in land tenure and governance, in irrigation, in marketing, and in access to finance contribute? By how much might improvements in rural infrastructure promote higher farm productivity and a more diversified rural economy? How can formal and informal mechanisms for effective management of natural resources “commons” (e.g. shared fodder, forested areas, and water catchments) be strengthened to increase agricultural productivity? Are traditional uses of “common natural resources” disappearing and/or becoming privatized? How is climate change transforming the agricultural and natural resources sectors?

Another key area of research is related to governance of natural resources access, tenure and use, including land-use conflicts and the role of globalized trade. There are several areas of research that need to be strengthened to support policy formulation, e.g. the role of access rights and tenure and of local institutions, the inclusion of women, indigenous people and the importance of natural resources to local livelihoods. Due to the fact that the research on these topics is versatile and its agenda is constantly expanding, there is not only a need to increase research investments in these fields, but simultaneously, a need to build human capacity for this new and expanding research. This is particularly the case in the developing world. Paradoxically, in spite of all the increased investments in natural resources governance research during the last years, the capacity gap for natural resources governance research between developed and developing countries is getting larger rather than smaller.

Recent developments in natural resources research are putting more emphasis on new challenges related to the sustainability of natural resources management, including topics such as land grabs and foreign investments, deforestation and land use change, climate change, and renewable energy.

Climate change is one of the major challenges of the future, posing a threat to the food security of hundreds of millions of people who depend on agriculture and natural resources for their livelihoods. Climate change affects agriculture and food security, and likewise, agriculture and natural resource management affect the climate system. These complex and dynamic relationships are also shaped by economic policies, political conflict and other factors such as the spread of infectious diseases. The relationships between all these factors and how they interact are not currently well-understood, nor are the advantages and disadvantages of different responses to climate change. In order to develop practical solutions for agriculture in the face of climate change, we need to integrate knowledge about climate change, agriculture, and food security in a meaningful and innovative way.

Even without climate change, many agricultural systems in low-income countries are approaching a crisis point. Feeding a rapidly growing global population is taking a heavy toll on farmlands, rangelands, fisheries and forests. Water is becoming scarce in many regions. Climate change will be the additional stress that can push systems over the edge. Projected climate change will mean higher average temperatures, changing rainfall patterns and rising sea levels. There will be more and more intense, extreme events such as droughts, floods and hurricanes. Although there is a lot of uncertainty about the location and magnitude of these changes, they clearly pose a major threat to agricultural and natural resources management systems. Low-income countries are particularly vulnerable because their economies are closely linked to agriculture, and a large proportion of their populations depend directly on agriculture and natural ecosystems for their

livelihoods. Thus, climate change has the potential to act as a 'risk multiplier' in some of the poorest parts of the world.

In climate change research, the focus has predominantly been on mitigation (i.e. reduction of greenhouse gas emissions). However, whatever mitigation efforts may be made, climate change is already happening. It is not known exactly what will happen or where, but the impacts we are beginning to see will intensify. These changes will happen at the same time as, and will interact with, the impacts of other global trends such as population growth, urbanization, increasing demands for water, over-exploitation of ecosystems, and shifts in the world economy. The major challenge for many LICs is to find solutions where the responses – the adaptation options that will allow people to manage this challenge – will have to match with the overall development goals of the population.

### **Research Gaps and Key Focus Areas for Future Research**

- **Governance of Natural Resources**
  - Tenure and use, land-use conflicts and the role of globalized trade
  - Access and management of key resources, e.g. clean water
- **Food security, agriculture, rural development, and sustainable energy in LICs**
  - How can agricultural productivity be raised, especially in Africa where there has been remarkably little progress in this front?
  - Climate change is increasing the challenges that agriculture and natural resources management sectors are facing in LICs. In many low-income countries, the vulnerability of the production systems and of a large proportion of the whole population
  - In climate change and natural resources more emphasis on adaptation and building resilient production systems

#### **3.4.3 Research Institutions, Networks and Agendas**

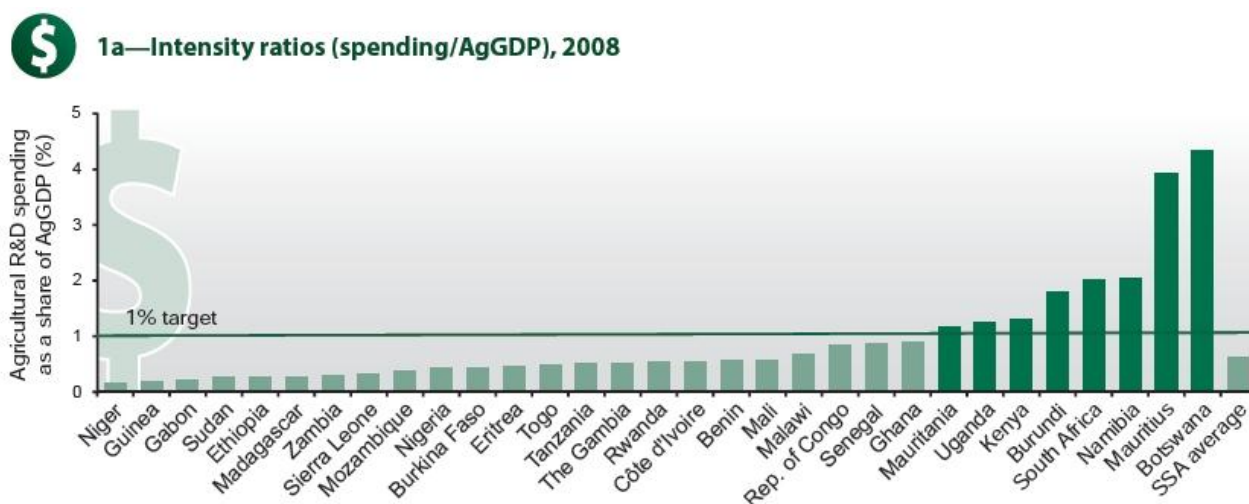
Over the past 20 years, countries like China and India have tripled their investments in agricultural and natural resources research and development. During the same period, research investments have increased only slightly in about half of Sub-Saharan African countries, and declined in the other half of the countries there (Pardey et al. 2006). Low investments in R&D and low international transfers of technology have gone hand in hand with stagnant cereal yields in Sub-Saharan Africa (SSA), resulting in a widening yield gap with the rest of the world (World Bank 2007). Now, with the expected 1 billion new people in Africa by 2050, it is urgent to increase R&D investment in LICs and particularly in Africa to improve food security and eradicate poverty.

Low spending in R&D is only part of the problem. Many research organizations in low-income countries face serious capacity constraints in terms of qualified scientists. In addition, public research organizations have serious leadership, management, and financial constraints. In SSA, about 30% of the agricultural researchers had PhD degrees, 43% MSc degrees, and 27% BSc degrees. However, researcher qualifications varied considerably across countries and by gender. On average, 22% of the agricultural researchers in SSA were female in 2008, compared to 17% in 2001 (Beintema & Stads 2011).

Since the establishment of the Consultative Group for International Agricultural Research (CGIAR) in 1971, major funding of research on natural resources management has been focused on agricultural research. Currently, the four key result areas of the CGIAR are: i) reducing rural poverty, ii) improving food security, iii) improving nutrition and health, and iv) sustainable management of natural resources. The 15 member

Centres of the CGIAR focus on a range of activities and operate semi-autonomously in pursuing their specific research agenda. Some have worldwide mandates for promoting the productivity of specific crops, livestock, and fish commodities. Others focus on multiple commodities within production systems in specific agro-ecologies. Still others concentrate on research related to natural resource management or to policies. The total annual of the CGIAR system and its 15 research Centres is 800 million USD per year.

Following two decades of almost stagnant growth (although the total investment level remained low) the investments in public agricultural R&D in Sub-Saharan Africa (SSA) have increased by 20 per cent between 2001 and 2008. In 2008, the SSA region spent \$1.7 billion on agricultural R&D and employed more than 12,000 full-time equivalent agricultural researchers (Beintema & Stads 2011). This recent growth, however, occurred in only a handful of—often relatively large—countries, and it was directed mainly toward rehabilitating neglected infrastructure and equipment. Nigeria, South Africa, and Kenya invested \$404 million, \$272 million, and \$171 million, respectively, on agricultural R&D, whereas a further 11 countries spent less than \$10 million each (Beintema & Stads 2011). Investment levels in many countries in the region, particularly in francophone West and Central Africa, have stagnated or fallen (ASTI & FARA 2012). On average, the SSA countries invested less than 0.5% of the agricultural GDP in research and development (Figure 15).



**Figure 15. Intensity of investment in agricultural research in Sub-Saharan Africa (per of agricultural GDP) (Beintema & Stads 2011)**

Donors, development banks, and sub-regional organizations contribute about 3 per cent of the agricultural R&D funding in Latin America and the Caribbean and in the Asia-Pacific. However, in Sub-Saharan Africa this share is much higher, although external donor funding for agricultural research is negligible in many middle-income countries in southern Africa and in countries afflicted by political unrest (Beintema & Stads 2011). The main external donors for agricultural R&D in SSA are: a) multilateral bodies, such as the European Union, b) CGIAR, and the United Nations, c) bilateral donors, such as foreign governments and private foundations, d) sub-regional organizations such as FARA, e) development banks, such as the World Bank and the African Development Bank.

The past funding trends have created a significant gap in research capacity between large developing countries and the remaining, generally smaller ones. For low-income countries with disproportionately low capacity, regional approaches make a lot of sense, at least in areas of mutual need and viable capacity in larger, neighbouring countries.



North-South-South collaboration can narrow the capacity gap between low-income countries and other countries. This would also have additional spill-overs if the capacity development of research organizations (e.g. through “sandwich PhDs” and other mechanisms) is integrated into these programs. The capacity building needs (both human and institutional capacity) are particularly in “new” areas of research such as governance of natural resources management, access and tenure, resources conflicts, adaptation of human and natural systems to climate change, and gender.

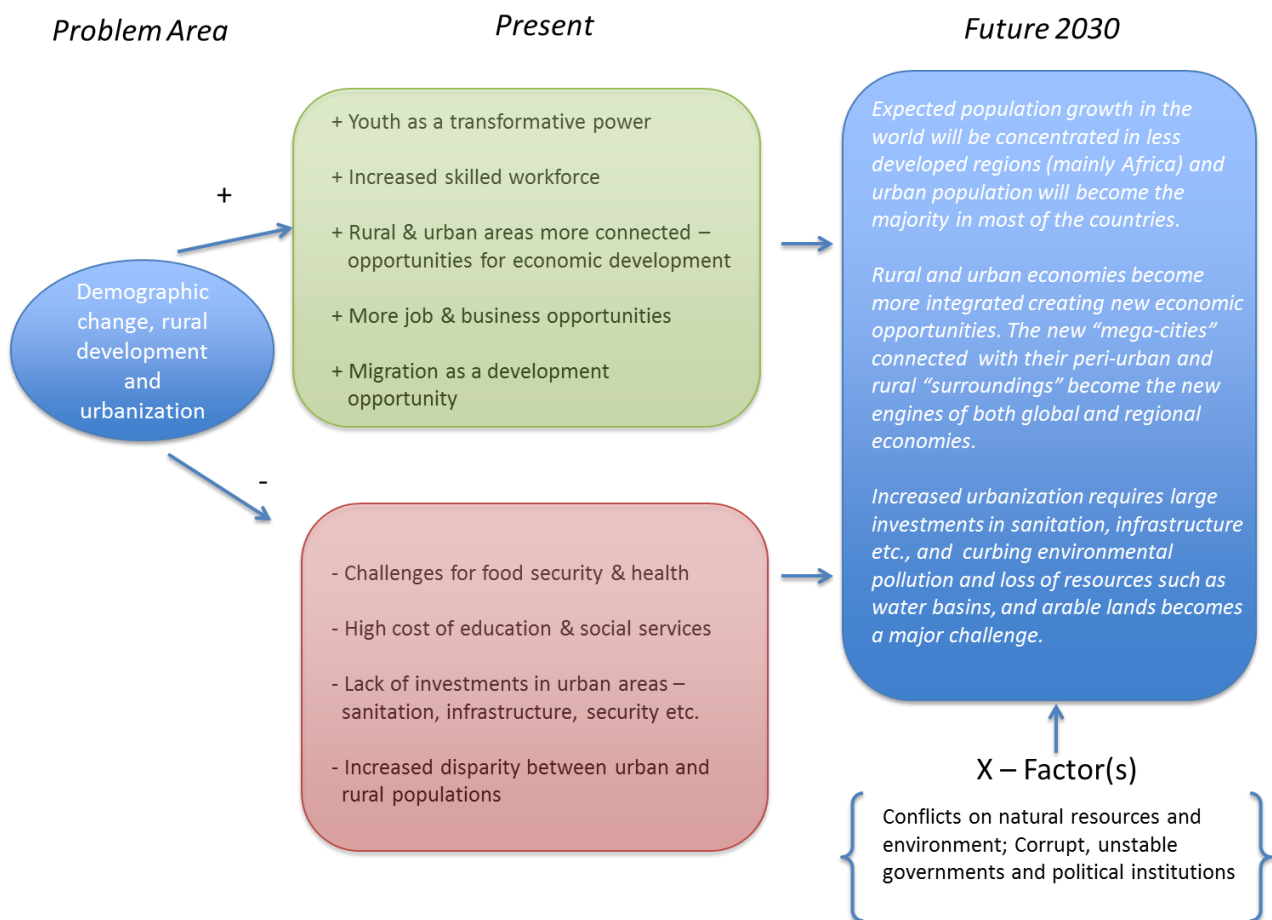
**Gaps in research financing and capacity building in natural resources:**

- Lack of skilled researchers and research managers and lack for support to national research systems and institutions, including universities
- Lack of national resource inputs on research with dependency from external and more short-term project financing
- Need to build interdisciplinary research programs that can tackle multi-faceted problems (e.g. governance, gender, technical issues) related to natural resources use and climate change
- Need to build South-South research networks by putting institutions and researchers in more advanced (usually larger) developing countries into partnerships with institutions and researchers in LICs and LDCs
- Need to boost the above-mentioned S-S collaboration with North-South-South linkages between Sweden, international research systems (e.g. CGIAR) and low-income countries for research and innovation that can narrow the capacity gap between low-income countries and other countries

### **3.4 Demographic change, rural development and urbanization**

#### **3.4.1 Key problem areas and future perspectives**

The world population is now 7 billion people, and it is expected to reach 9 billion people by 2050. About 50% of this population growth is expected to be in Africa. At the same time, the population of the least developed countries (LDC) is projected to double, increasing from 0.85 billion in 2011 to 1.7 billion in 2050 and to 2.7 billion in 2100. (UN DESA 2011).



**Figure 16. The Chain of Impact in the Field of Demographic Change in LICs.**

Most of the expected growth in the world population will be concentrated in the urban areas of the less developed regions, where population is projected to increase from 2.7 billion in 2011 to 5.1 billion in 2050. However, the rural population will still be the majority in many developing countries. In addition, poverty is concentrated in rural areas, and the gap between the relatively well-off urban dwellers and poor people living in the countryside is increasing.

As the world becomes predominantly urban, cities are merging to create new configurations such as mega-regions, urban corridors and city-regions. These configurations are emerging in various parts of the world, turning into spatial units that are territorially and functionally bound by economic, political, socio-cultural, and ecological systems. They are also becoming the new engines of both global and regional economies.

### **Demographic change – the world of young and urban people**

In general, population growth, or at least controlling population growth, has been a controversial, long debated subject. Following Malthus’ influential essay on population published in 1798, unsustainable population growth has been associated with environmental degradation, scarcity and even collapse. Along these same lines, unsustainable population growth in low-income countries and in urban areas, combined with urban mismanagement and environmental depletion will be placing an increasingly severe stress on

basic life-supporting capacities in low-income settings. The above processes relating to population growth are already affecting the use of land, water, air, energy and other resources.

Regionally Sub-Saharan Africa (SSA) is expected to experience the highest nominal and relative population increases, as its population is likely to more than double by 2050 (to about 2.2 billion). Asia will remain the world's most populated region, although its share of the world population will decline as SSA's grows. Additionally, between 2010 and 2035, non-OECD countries are expected to account for 70% of economic growth and 90% of energy demand growth (IEA, 2011).

Currently the population of the less developed regions in the world is still very young. So young, in fact, that according to the UN DESA (2011) the amount of children and young people in the least developed regions is now at an all-time high (1.6 billion children and 1.0 billion young people). Naturally, for low-income countries, this will place a heavy strain on education or employment provision, especially with the current global economic and financial fluctuations.

Globally also the number of people in the main working ages, 25 to 59, is at an all-time high. Yet, while in the more developed regions this number is expected to peak over the next decade, in low-income countries this is projected to keep rising. These population trends serve to clearly highlight the need for supporting **sector specific research and capacity building especially in employment creation and skills development in low-income countries.**

### **Growth of Urban Populations in a Global Context**

According to the United Nations World Urbanization Prospects, the world urban population is expected to increase by 72 per cent by 2050, from 3.6 billion in 2011 to 6.3 billion in 2050.

Today, the level of urbanization in the world varies among regions. At one extreme North America holds the highest proportion with 82.1 per cent of the population living in urban areas. Latin America and the Caribbean and Europe are the second and third most urbanized regions in the world with 79.4 and 72.6 per cent respectively. Africa and Asia still have the lowest per centage of urban population with only 40 and 42.5 per cent respectively, below the global average of 50.6 per cent.

The least urbanized regions by the middle of 21st century will remain Africa (61.8 per cent) and Asia (66.2 per cent), slightly below the global average of 70 per cent. Since most of the urbanization will occur in cities in the LICs, there is a growing concern about how these cities will absorb this growth and also how governments from LICs will avoid repeating the same mistakes made by MICs.

Another important phenomenon in LIC population patterns is migration. According to UNCTAD, in 2010, 27.5 million immigrants in least developed countries accounted for 13% of global emigration. It is estimated that only one out of four people from LDCs migrated to a developed country, while one out of five went to other LICs and half went to other developing countries.(UNCTAD 2011)

*The destructive culture of hurry in mega-cities:  
People use one half of their working hours in traffic  
jams in big cities – in countryside the time-space is  
still different, easy going.*

--Morris Odhiambo, Executive Director, CLARION  
Center for Law and  
Research International, Nairobi

Since cities are the future habitat for the majority of LICs, this is a crucial moment for spending on basic

infrastructure, social services (health and education) and affordable housing, and in the process stimulating urban economies and generating much-needed jobs.

Cities must become priority areas for public policies and research spending, with investment into creating adequate governance capacities, equitable service delivery, affordable housing provision and better wealth distribution.

### **Rural development**

In many low-income countries the agricultural sector contributes to over 50% of the GDP. In spite of rapid urbanization, in several countries the rural population is still the majority. Also, in many low-income countries, poverty is still concentrated in rural areas, and the gap between relatively well-off urban dwellers and poor people living in the countryside is increasing. According to World Bank, 75 per cent of the world's poor live in rural areas, and the majority of which depend on agriculture for their livelihoods. Thus, the performance of the agricultural and natural resources sectors is critically important for food security, due to the impact of increasing food prices and climate change (World Bank 2012).

In this situation, the governments play a key role in setting sound macro-economic, political, and social policies for balanced rural development, environmental sustainability, and poverty alleviation. However, poor rural people live in an integrated rather than a segmented world. Rural income and employment are often multi-sectoral, off-farm, and strongly linked with urban and peri-urban economic development (Rigg 2012).

### **Development Dynamics of Urbanization**

Taking place hand in hand with economic growth, urbanization has helped reduce overall poverty by providing new opportunities, raising incomes and widening the range of livelihood options for both rural and urban populations. Urbanization, therefore, does indeed play a positive role in overall poverty reduction, particularly where supported by well-adapted policies.

However, rapid urban growth and rural-urban migration in the LICs is also associated with several negative economic and social developments. The World Cities Report 2010-11 argues that the transition from low-income to middle-income country status is almost always accompanied by a transition from a rural to an urban economy. Therefore, countries with the highest per capita income tend to be more urbanized, while low-income countries are the least urbanized. Nevertheless, when urbanization is accompanied by weak economic growth, the result is the concentration of poor people in cities rather than poverty reduction, as has been the case in many African cities. (UN-Habitat, 2011).

### **Mega-regions, Urban Corridors and City Regions as Hubs for Development**

The mega-regions consist of natural economic units that result from the growth, spatial spread and convergence of geographically linked metropolitan areas and other agglomerations. The urban corridors are characterized by linear systems of urban spaces linked through transportation networks. These urban corridors are experiencing the fastest growth rates and the most rapid urban transformation. For example, in Africa, the greater Ibadan-Lagos-Accra urban corridor - 600 kilometres linking Nigeria, Benin, Togo and Ghana - is the engine of West Africa's regional economy.

Urban corridors are changing the functionality of cities with many positive effects (stimulating business,

real estate development, land value, interconnectivity among cities). However, urban corridors can result in severe urban primacy and unbalanced regional and urban development as they strengthen ties to existing economic centres, rather than permitting for more diffused spatial development.

City-regions take on a larger scale than large cities, expanding beyond formal administrative boundaries to take over smaller ones as well as semi-urban and rural hinterlands. Sometimes city regions even merge with other intermediate cities, creating large conurbations.

These new regional systems are creating a new urban hierarchy, and the complexity of the issues involved requires innovative and efficient coordination for urban management and governance. These new regional systems are also in danger of creating a new urban hierarchy and further patterns of economic and social exclusion.

Urban concentration has historically enabled flows of knowledge, the division of labour, the movement of goods and the combination of labour and capital that help transform poor places into rich ones. But urbanization can in the future also create enormous challenges and externalities, including contagious disease, congestion and crime that often seem to be far beyond the capacities of many LIC governments to manage.

### **Suburban Slums and Urban Mismanagement**

Suburban growth patterns and dispersed urbanization are occurring in many metropolitan areas around the world. The sprawl has several consequences in urban terms:

- 1 Population widely scattered in low-density developments or slums
- 2 Residential and commercial areas spatially separate
- 3 Poor network of roads with bad access
- 4 Lack of well defined activity hubs, like city centres and downtown areas
- 5 Overdependence on motorized transport, traffic jams where people spend a large part of the day, with high-energy consumption and pollution.

In developing countries, urban sprawl emerges mainly as an escape from inadequate governance, lack of planning and poor access to amenities. Rich and poor seek refuge outside the city, which generates further partitioning of the physical and social space. Urban sprawl is the symptom of a divided, dysfunctional city. In many developing countries, urbanization has often been characterized by informality, illegality and unplanned settlements.

In the future, one could project that cities will continue expanding in a discontinuous, scattered and low-density form that is not sustainable. And the more unequal a city becomes, the higher the risk that economic disparities will result in social and political conflict and urban violence. Another implication of urban sprawl is the degradation of a range of environmental resources such as water basins, arable land, mountainous areas, etc.

### **Migration and Labour Mobility as Poverty Reduction Strategies**

Many urban hubs collect people from all over the world. Labour migration and human mobility have been seen in many ways as key strategies for poverty reduction. Globally, the number of international migrants increased from 156 million in 1990 to 214 million in 2010, currently representing 3.1% of the world

population. Even South–South migration is growing and accounted for 34% of all global migrants in 2010. (United Nations 2011b).

The root causes and destinations for LIC migration are in a constant flux. The traditional view of South-North migration towards Europe and North America is no longer accurate, and emerging economies have become major destination countries. Similarly, neighbouring areas remain key destinations, rather than far off ones. Also the move towards consumption based economic systems necessitating new forms of income generation is creating labour mobility from the rural areas to urban areas, both within and across borders. Climatic changes, as a source of instability and resource shortages, and thus migratory aspirations, have also emerged as an interesting new phenomenon necessitating further research.

Forced migration continues to plague scarcity-stricken and conflict prone fragile low-income countries. Much research focuses on migratory logistics and migratory micromanagement. However, in the future the focus should rather be on **the root causes of scarcity and fragility leading to migratory necessities**, rather than on the plastering effects of migration governance and control.

### **Youth as a Transformative Power**

Large young populations will be entering the labour market in several low-income countries in the coming years. Countries with large young populations (especially in Sub Saharan Africa) need to be in a position to take full advantage of this demographic dividend.

Realizing the full potential of the young adults soon entering the labour market depends on the availability of productive employment opportunities and ensuring that young adults have the relevant skills. Only with the key elements in place can the “youth bulge” further economic growth and trigger inclusiveness.

The social and economic adjustments needed in each country will be significant, and necessitate country-specific research and policies. There will be no “one size fits all” solution, as labour market needs and cultures differ widely in low-income countries.

### **3.4.2 Research Gaps and Role of Research**

The fast pace of and the ways in which demographic changes are happening in low-income countries is creating a gap between research and policies needed to address the linkages of demographic trends, resource use, appropriate technology dissemination, and development. The large demographic and urban transitions require substantial economic and social adjustments in all countries. However, poorer countries are likely to have less time and fewer resources to take appropriate measures in view of the pace of change. LICs will have to improve capacities to assess the environment and development implications of their demographic trends and factors.

Local research will be of vital importance in formulating and implementing policies and action programmes for mitigating the adverse effects of rapid urbanization. These policies should build upon valid, sector- and region-specific research and data. They should be designed to address the consequences of population growth built into the specific population momentum, while at the same time encompassing measures to bring about the needed transition in an environmentally and socially sustainable way. Research should thus be policy relevant and combine environmental and population concerns within a holistic, humane view of

development based on LIC needs and ownership.

In 2007, and for the first time in human history, more than 50 per cent of the world's population lived in urban areas. The cities that are accommodating an ever-growing amount of people however cover only a meagre 1% of the world's land coverage. As such, cities, and unmanaged urbanization are both placing immense strain on certain social, economic and environmental ecosystems. Rapidly growing urban areas face major environmental and governance problems, and demand extensive further study.

Recent projections suggest that by 2030 the urbanization of world populations will increase to almost 60 per cent of total population, and to about 80 per cent by 2050. (UN DESA 2011). The fast pace by which cities are both growing and multiplying is creating a vacuum for relevant, context-specific knowledge and information for the use of local government and municipal management. As urban areas become the source of livelihoods for a majority of the low-income country populations around the globe, a huge strain on resources will take place. Planning of urban areas, and their impact on the environment become extremely important issues of research. The mismatch between the dearth of research on developing world cities and the enormous importance of their issues creates great opportunities for valuable research with high impact possibilities.

Migratory movements as poverty reduction strategies have received much research attention in recent years especially when it comes to remittances. For poverty reduction and pro-poor purposes, more research focus should however be placed on the mobility of low-skilled labour. Research has shown that global gains from unskilled labour mobility exceed those from skilled labour mobility. This is linked to a trait of unskilled workers being much less productive in their home countries than their skilled equivalents (ERD 2013). Moreover, low-skilled migration tends to involve people who are living closer to the poverty line and is therefore most relevant to achieving changes in the standard of living.

#### **Key Focus Areas for Future Research**

- Mega-regions, Urban Corridors and City Regions as Hubs for Development
- Suburban Slums and Urban Mismanagement, urban insecurity
- Migration and Labor Mobility as Poverty Reduction Strategies

**Additionally, relevant international, regional and national research institutions could be encouraged by the donor community to undertake the following activities:**

- a) Further identifying the interactions between demographic processes, natural resources and critical urban life support systems in the contexts of regional and sub-regional variations
- b) Integrating demographic trends and factors into the on-going study of environmental change, using the expertise of international, regional and national research networks and of local communities
- c) Ensuring the existence of effective research on urban services for poor people and more specifically that research exists on pro-poor societal spending in urban areas.

#### **3.5.3 Research Institutions, Networks and Agendas**

Below there is a selection of research networks working in the fields covered above. These networks can provide ample links to many relevant actors and funders in the field. Among the leading networks and institutions dealing with global urban issues and research is UN-Habitat, concentrated on topics such as environment and climate change, land and housing, risk and disaster management, social inclusion, urban

development and management, water sanitation and infrastructure. UN-Habitat publishes annually a wide range of books and reports about the cities around the world and on specific urban issues, such as the State of World's Cities. <http://www.unhabitat.org>.

Other relevant international organisations providing global research and data especially on migration and labour mobility naturally include the International Labor Organization (ILO) and the International Organization for Migration (IOM).

**The Global Urban Observatory (GUO)** is one of the various programs within UN-HABITAT. The goal of the observatory is to monitor global progress in implementing the Habitat Agenda and to monitor the global urban conditions and trends. The programme addresses the need to improve the world-wide base of urban knowledge by supporting governments, local authorities and organizations of civil society develop and apply policy-oriented urban indicators, statistics and other urban information. GUO also coordinates the monitoring of the Habitat Agenda and the Millennium Development Goals and activities pertaining to the production of reliable and up-to-date urban indicators at regional, country and city levels. GUO also assists the Agency in the effort to become, by 2013, a premier reference centre for data collection, analysis, monitoring and reporting on sustainable urbanization.

**European Urban Research Association (EURA)** seeks to offer a bridge between urban research and policy in Europe. EURA-researchers want to help policy makers support integration, cohesion, and collaboration in the area of urban policy. <http://www.eura.org/>

**The South Asia Urban Research Network (SAURN)** is a virtual plus portal, which provides a web based platform for institutions and independent researchers working on urban issues in the South context, to connect, exchange knowledge and form collaborations to pursue further research in this area. [www.sauran.org/](http://www.sauran.org/)

**The Our Cities- Network.** The goal of the "Our Cities" Network is to provide a service to the Latin American community by articulating and exposing urban problems, disseminating the principles of urban planning in its broadest sense, including theoretical production in different thematic areas, and recommending, proposing and evaluating possible solutions and ways of funding or sponsorship. <http://rednuestrasciudades.blogspot.fi/p/historia.html>

**International Union for the Scientific Study of Population (IUSSP).** The Paris based IUSSP's mission is to promote the scientific study of population, encourage exchange between researchers around the globe, and stimulate interest in population issues. [www.iussp.org](http://www.iussp.org)

**The INDEPTH Network** is a global network of health and demographic surveillance system (HDSS) field sites in Africa, Asia and Oceania. It produces reliable longitudinal data not only about the lives of people in low- and middle-income countries, but about the impact on those lives of development policies and programmes. <http://www.indepth-network.org/>

**Partners in Population and Development (PPD)** is an intergovernmental initiative created specifically for the purpose of expanding and improving South-to-South collaboration in the fields of reproductive health, population, and development. PPD has established partnerships with 21 national and regional training and research institutions as Centres of Excellence in Asia, Africa, Middle-East and Latin America.

**Migration for Development in Africa (MIDA) –programme.** "Migration for Development in Africa" (MIDA)



is a capacity-building programme, which helps to mobilize competencies acquired by African nationals abroad for the benefit of Africa's development. It was launched to strengthen the capacity building efforts in assisting African countries to benefit from the investment they have made in their nationals. The qualifications and skills applied in Europe and North America should be brought back into the mainstream of development of the African continent. The programme is run by the International Organisation for Migration (IOM) in cooperation with African sub-regional bodies such as the Economic Community of West African States (ECOWAS), the Southern African Development Community (SADC), the East African Community (EAC), and the Maghreb Arab Union (UMA).

### 3.5 Governance of Public Policies for Social Development

#### 3.5.1 Key problem areas

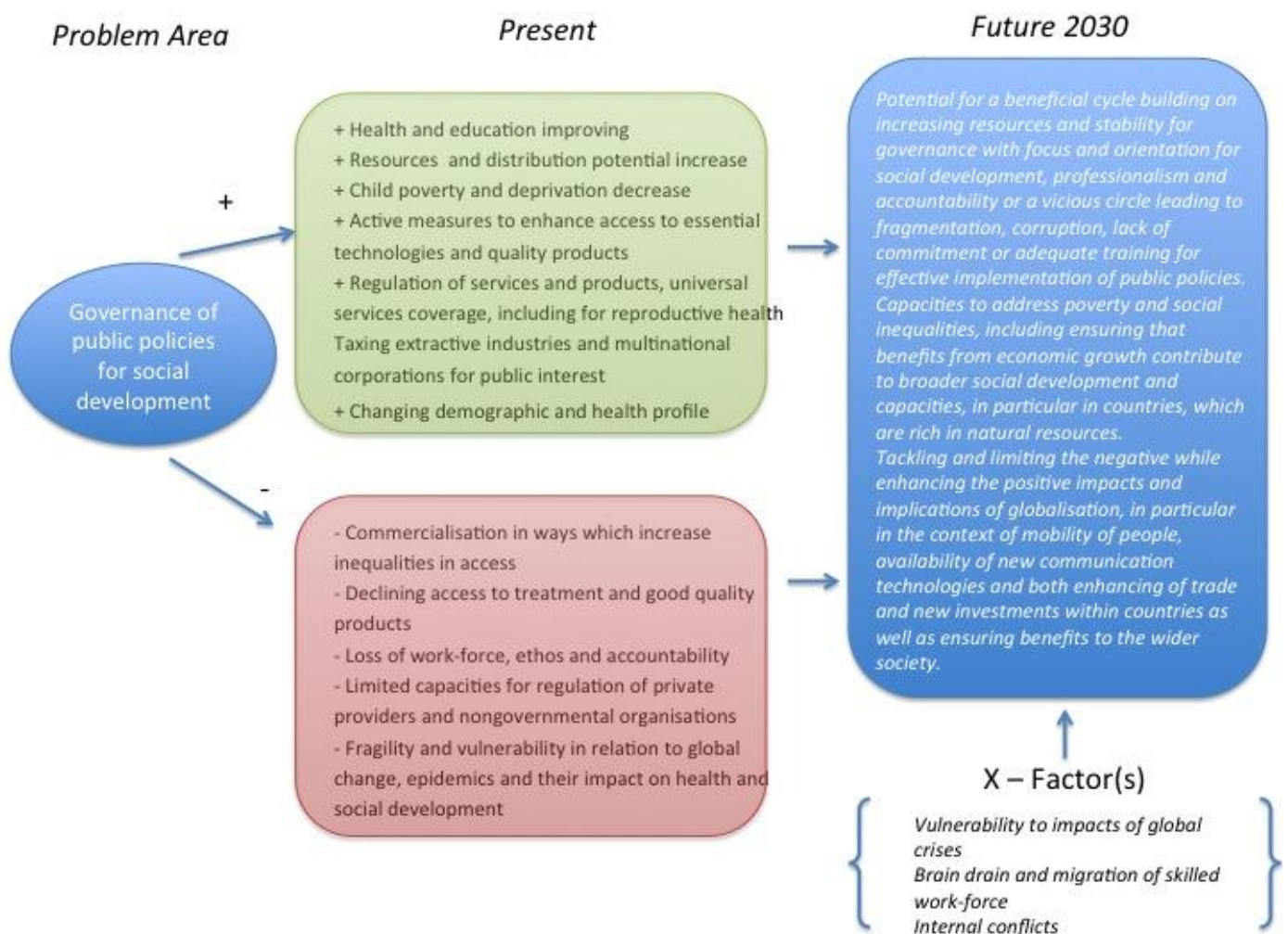


Figure 17. The of Chain of Impact in the Field of Governance for Social Development in LICs

## **Investment on public policies for comprehensive social development**

The main theme and focus is on effective government policies for social development, in particular, in a low-income context. This has particular implications for longer-term development. The capacities of the state to contribute to social development result from investment in responding to basic needs and infrastructure. It is now recognized that the impact of public policies can be long-lasting. UNDP (2013) report has highlighted the negative impacts of cuts to education as part of structural adjustment policies in the 1980s to demographic transition as well as correlation between past public investment in social and physical infrastructure and progress in the human development index, which uses social development indicators as a measure for success. Investment for social development and implementation of public policies cannot thus become an afterthought of investing on growth.

The role of aid policies and implementation of public sector reforms since the 1990s has in many countries contributed to the process. Public sector reforms have been judged at best mixed and often as failures in relation to the aims of improving governance and management of public budgets, programs and services (see e.g. Robinson 2007, Crook 2010). The lack of national ownership and understanding of the politics of reforms, in particular in low-income contexts, has been emphasized in evaluation of public sector reform policies (Scott 2011).

A particular challenge for long-term development and investment on social development in low-income countries is to find a way in which aid, foreign investment and trade policies can positively contribute to the building of long-term public policy capacities, resource gathering and required institutional bases within countries. The mixed experiences from commercialization of public utilities and provision of health and education services were reflected in the focus groups for this report. A crucial issue for the future may thus be not only investment in public services but the issue of how this is to be done.

“Reducing poverty and inequality is not just about having the right economic policies; it is also about pursuing appropriate social policies and types of politics that elevate the interests of the poor in public policy.” (UNRISD 2010)

## **Avoiding expansion of poverty and creation of unequal structures**

Since the 2008 financial crisis, poverty and socio-economic inequality have become more prominent parts of national policy-making and debate in wealthy countries, however, with new insights and actual reduction of poverty emerging from Latin America and Africa (ECLAC 2012, Ortiz and Cummins 2011). Furthermore, existing development policies will need to recognize that most of those poor are not based in low-income countries, but in lower and middle income countries (Sumner 2010). The relationship between growth and poverty has brought up problems of economic growth as the key element for poverty reduction. If unbalanced distribution of benefits and costs of global economic growth implies that growth is failing those poor, then rather than focus on growth, policies and the global economic system should focus directly on achieving social and environmental objectives (Woodward and Simms 2006).

Investment on social development can have broader significance for economic development and attracting foreign direct investment to the country. For example, it has been estimated on the basis of panel study analysis that raising life-expectancy by 1 year is likely to increase foreign direct investment by 9% to low and middle income countries Furthermore, investing in health and social development can improve

prospects for foreign investment as panel study analysis suggests that raising life-expectancy by 1 year increases cross increase of FDI by 9% to low and middle income countries (Alsamet al. 2006).The relevance of the positive relationship between improvement in health and social development and capacity to attract foreign direct investment is likely to be even higher in countries where tourism is part of key economic sectors, which is the case for many low-income countries.

On the other hand, poverty levels as well as capacities to address poverty within countries are at a different overall level in low-income countries. While a third of the world's poor live in fragile states, this share could rise to half in 2018 and nearly two-thirds in 2030 (Chandy et al. 2013). Large inequalities are known to have further impacts on societies, in particular in relation to children, women and vulnerability to conflict (Ortiz and Cummins 2011). While focus on absolute poverty within countries is important, also socioeconomic differences, both within and across countries will matter with new blunt analysis on global income inequalities:

*"I conclude with something that resembles a slogan: either poor countries will become richer, or poor people will move to rich countries. Actually, these two developments can be seen as equivalent. Development is about people: either poor people have ways to become richer where they are now, or they can become rich by moving somewhere else. Looked from above, there is no real difference between the two options. From the point of view of real politics, there is a whole world of difference though"* (Milanovic 2012).

### **Brain drain, human resources and resource gathering for public policy**

In order to create and enable more equal structures, government and public policies need to be part of a broader development process, including with respect to building of capacities and institutions as well as maintaining a sustainable resource gathering basis within societies. While there has been a substantial focus on how to keep public expenditure in control, there has not been an equal focus on sustainable financing of public policies in the context of a globalizing world.

The focus on public policy research has remained to large extent on the basis of "given" scarcity of public resources or on benefits and costs of user cost-sharing for education and health. The broader context of taxation or resource gathering within societies has not gained substantial research interest or considered as focus for research. At the same time the need for investing in socially sustainable societies is reflected in the shift of emphasis towards pre-payment and taxation in financing of public services (DiJohn 2011).

Analysing resource gathering for public policies is an area of research, where old, emerging and new avenues could be explored in research. Recent research suggests that, "there is a strong argument in the literature that a substantial governance 'dividend' can be gained from mobilizing domestic financial resources through the tax system" (Fjelstad 2013). While taxation has not gained substantial focus in development literature or practice, it is a particularly interesting area for research and it is of particular relevance for resource rich low-income countries, for example, in relation to mineral rents and politics of domestic resource mobilization for social development (Hujó 2012; UNRISD 2012). The focus on resource gathering and politics of resource mobilization provide examples of research areas as well as broader "systems" analysis, which have not gained sufficient focus for research (see below).

The extent and nature of brain drain is of increasing relevance to many low-income countries as it affects in particular the highly skilled work-force and researchers, in particular health professionals and workforce (Mullan 2005, Chen et al 2004, Mackey and Lian 2012). The importance of professional education and national teaching and research institutions is crucial also to knowledge building for national governance. Particular attention has been drawn to the impacts of migration of health professionals, but migration is an issue also for a wider range of skilled professionals. Many low-income countries lose a disproportionate amount of highly skilled professionals, although this varies across developing countries. (Table 1). While commercialization of services has been assumed to retain professionals within a country, the shift of personnel from the public to the private sector has been seen as a critical challenge of the coming years due to competitive dynamics (Basu et al 2012).

*“The conditions under which a country is gaining or losing are not a matter of fate; to a large extent, they depend on the public policies adopted in the receiving and sending countries”* (Docquier and Rapoport 2012).

**Health, Education and Social Security systems and implementation for the 21<sup>st</sup> century context**

It is possible to achieve good health with low-income, with increasing recognition of the role of health systems for better health outcomes (Balabanova 2013).

Addressing determinants of health requires not only improved functioning of health systems, but also

a more prevention oriented focus extending to other sectors (Leppo et al 2013), with the potential to bring substantial health co-benefits from changes in other policies, for example in relation to inside air pollution and cleaner cooking stoves (Grieshop et al 2011). The disease profiles of low-income countries have come closer to high-income countries, with a higher relevance of non-communicable diseases for low-income countries (WHO 2011), but regional analysis also reveals the continued importance of malaria and HIV/AIDS in Sub-Saharan Africa (Lozano et al. 2012).

Access to knowledge and affordable and good quality medicine and health technologies is not only a matter of new medicines, but of access to decent quality and affordable treatment. Regulation, production and procurement practices, and medicine distribution and use are also important for limiting antibiotic resistance. There is substantial scope for national regulation, and while nongovernmental organizations can complement, they cannot replace, state action (Cameron et al 2008; Mackintosh et al. 2011). Finally, the failure of current R&D incentives to respond adequately to the needs for treatment of so-called neglected

	1	2	3
Burundi	43,1	19,2	0,4
Burkina Faso	27,0	4,1	0,2
Bangladesh	37,8	3,7	0,4
Eritrea	26,3	11,7	2,0
Gambia	13,2	26,4	4,4
Haiti	24,8	75,4	9,3
Kenya	46,6	15,7	1,1
Cambodia	19,7	43,7	2,8
Laos	19,7	24,7	7,0
Mauritania	23,4	11,8	1,0
Malawi	51,6	38,5	0,3
Nepal	46,9	6,9	0,4
Sudan	36,6	5,5	0,4
Uganda	50,8	7,6	0,5
Zambia	58,1	25,4	0,7

1. Percentage of highly educated of emigration population  
 2. Highly educated emigration rate (%)  
 3. Total emigration rate (%)  
 Emigration rate = emigration population per total population  
 Source: OECD/DIOC 2005/6  
<http://www.oecd.org/els/mig/Emigration%20rates.pdf>

diseases has resulted in a need for global action in the area (CEWG 2012, Rottingen et al. 2013) (see Chapter 3.7).

The scope and need for long-term planning and building of national social security systems alongside growth is increasingly recognized (Barrientos 2011). In many ways this is an area where research can make a difference for low-income countries in planning social protection alongside growth and at a national plan and policy level, rather than in the form of specific programs and projects. The experiences in Latin American countries in the field of social assistance and social protection could provide substantial basis for further South-South cooperation in the field of social assistance and social security, including cash transfer programs, such as bolsa familia (Soares et al. 2012).

However, there is an increasing recognition that separate more narrow and targeted programs with focus on health, education or social assistance can be easy to measure and analyse in terms of their output, but have failed to provide a more comprehensive and sustainable context for social security. A 21<sup>st</sup> century challenge is to focus on educational, health and research *systems* as a whole in low-income countries, rather than narrow programs. The broader focus is likely to serve a variety of developmental and sectoral needs, including needs with respect to both vocational education and higher education. The same applies to health care, where a focus needs to be both on provision of health services as well more population health oriented public health programs. Equity and sustainability of financing remains a challenge for educational systems. While there is a broader recognition of importance of investment in educational systems in low-income countries, it is necessary to understand how these serve different populations and gender. Further analysis is also required with respect to impacts of commercialization of educational systems and whether poorer pupils gain sufficient quality of education for promised social returns (Save the Children 2013, Heyneman and Stern 2013).

### **3.5.2 Research Gaps and the Role of Research**

It is known that good health can be achieved on relatively low-incomes and that current challenges for public policies in low-income countries are not necessarily dependent solely on new or innovative research. This has been highlighted, for example, by international comparisons on the basis of human development indices and data (UNDP 2013). On the other hand, there is scope for innovation and novel policy ideas in particular for rethinking social policy and development options for low-income countries in a national context, as well as for a focus on how national educational, health and public works systems function, and what kind of research systems would serve these on the basis of national priorities and a broader global context befitting the 21<sup>st</sup> century. Research on public policies remains, in particular in the context of international financial institutions, focused on scope for reduction of public spending rather than exploring new avenues for long-term revenue gathering beyond user cost-sharing or how economic growth could better benefit broader social development especially in resource rich low-income countries.

However, there remains a need for specific focus on R&D for particular diseases which predominantly affect poor countries and/or populations (see Chapter 3.7). Low-income countries are also often more vulnerable to global epidemics, pandemics, new and emerging infections and consequences of global change. There is also a need for more critical research, evaluation and focus on how governments can best utilize results of this research and how development policies can support that both prevention and treatment are affordable within a low-income context in long-term. We also need to know better what lies behind the migration of professionals globally and how sufficient professional work-force can be retained

within countries as this varies substantially across low-income countries. While this has been raised in particular for health professionals, it remains an issue also more broadly in countries with high rates of emigration. Furthermore, while substantial focus has been on development of new medicines, there has been less research on pharmaceutical policies, procurement, regulation and supply within countries.

It is important to note that different types of research are likely to be required within low-income countries, with a focus not only on science and technology or academic research published in high-ranking journals, but also on national research systems suited for the broader purposes of governance and professional education and development. This should include a recognition of their contribution to education and training of professionals and civil service, research and analysis for policy-making in the form of surveillance, evaluation, implementation and operational research, as well as assessment of the impacts on health of policies in other sectors, and finally critical research and economic and political analysis for improved transparency and accountability of policy-makers in practice.

### 3.6.3 Research Institutions, Networks and Agendas

Major inputs on research funding have been made in the field of biomedical research and R&D. This is reflected also in the global and international emphasis and focus, which remain tilted in favour of R&D on new technologies and interventions over other areas of research (Pratt and Loff 2012). While there is a need to ensure sufficient funding of medical research as well as to consider the role of R&D within the low-income countries on the basis of health policy priorities within a country, it is clear that in low-income context more commercially oriented resource incentive R&D ventures remain best served by financing channels oriented towards private sector and commercial and industrial policy support.

The challenge for funding in the field of medical research and development and capacity building in this context could be the analysis of how different types of incentives or measures, such as equitable licensing or technology transfer could be used, and how regulatory and oversight issues are related to the more commercialized context of R&D within countries. The need for more intersectoral and problem-based research that meets the requirements of development contexts came up both in the literature and in focus group interviews. Another thematic emphasis has been the focus on more systems based research in the field of public policies – including health, education and social security – as well as on operational and implementation research, highlighting the need for different types of research. There is a relative lack of social policy and research on macro-level options for social policies, in comparison to analysis of more specific interventions and programs. While importance of public policies for gender equity and women's education remains an important policy issue, gender implications were not necessarily reflected as strongly in research on public policy, e.g. in the field of public sector reforms. Support for national health systems has been on the global, regional and national agendas of many countries. For example, the WHO African regional office has passed a resolution for strengthening national health research systems (AFR/RC48/R4). However, the analysis of the situation in 2006 implied that there was still a long way to go (Kirigia and Wambebe 2006).

The establishment of national health research systems is also not necessarily helped by global policies. International financing for health research projects is often geared to address specific diseases or interventions, yet these may not represent national health policy or research priorities. COHRED has also brought up a health research paradox, when *“many low and middle income countries contribute more to the overall budget for research in their countries than they receive from external sources. Yet it is the*

*external contributions that often decide what research questions are being addressed” (COHRED 2007).*

Capacity building needs can be divided into capacity building needs for essential national research capacities for undertaking public policies (e.g. national research institutions), with respect to higher education and research excellence (e.g. Universities), and focus on science and innovation (e.g. public private partnerships and private sector R&D). Capacity building has gained further attention more recently with the establishment of networks, which address in particular capacity building (e.g. ISHReCA), and the strengthening of the national basis for capacity building and partnership (e.g. African Network on Drugs and Diagnostics innovation (ANDI), Asean network on drugs, diagnostics and traditional medicine, Essence on health research) as well as a more specific focus on national institutional basis for research (IANPHI, Wellcome Trust African Institutions Initiative) (see chapter 3.7.3 for further information on capacity building).

"African academics and researchers are best placed to identify what is needed to strengthen their academic institutions. ISHReCA is already raising the profile of African views on capacity strengthening and ensuring that these views are heard. ESSENCE is one group of development donors and health-research funders willing to engage in such discussions” (Witworth et al 2008).

Globally, research on poverty, equity and social inequalities has benefited from a focus on research and research support within international organizations, including, in particular, WIDER, World Bank, OECD, ILO and private foundations. However, this remains dominated by a disciplinary emphasis on economics. Broader social science research in the field is supported by UNRISD, UNESCO (MOST-programme), UNICEF, academic university and research institution collaboration, aid agencies, nongovernmental organisations and think tanks within the broader context of social science financing (see above). A specific International Social Science Programme, Comparative Research Programme on Poverty (CROP) ([www.crop.org](http://www.crop.org)) has been run by the University of Bergen.

Global financing for research is perhaps best documented in the field of health, where specific financing and focus has been given to research on neglected tropical diseases, where the United States National Institute for Health, European Union and Bill and Melinda Gates Foundation remain major global funders (CEWG 2012; Rottingen et al. 2013, G-Finder 2012) (see chapter 3.7.3 for more detail). In addition to research support, the contribution of the European and Developing Countries Clinical Partnership Initiative (EDCPT) can also be seen as capacity building and networking. Other R&D initiatives related to broader initiatives are, for example, ANDI (African Network for Drugs and Diagnostics Innovation) and Drugs for Neglected Diseases initiative (DNDi). In addition, there is a substantial number of networks that focus on particular diseases or issues (e.g. HIV/AIDS vaccine) or product-development partnerships.

The more traditional research coordination and financing mechanism of TDR, the Special Programme for Research and Training in Tropical Diseases is undergoing change alongside emerging new forms of coordination and financing under WHO (CEWG 2012, Rottingen et al 2013). In broader health research, international exchange on health research has since early 1990s drawn from the work of Global Forum for Health Research and the COHRED (<http://www.cohred.org/>). The Alliance for Health Policy and Health systems research has a specific global focus in promotion of health systems research (<http://www.who.int/alliance-hpsr/en/>), but funding on health systems research remains low and not comparable to financing allocations on biomedical research or R&D, which reached over \$3,045 million for reported funding on neglected diseases in 2011 (G-Finder 2012) (see further discussion in chapter 3.7.3).

Financing for research and R&D has focused in particular on treatment or vaccines for particular diseases or on specific interventions (see e.g. COHRED 2007). In addition to health systems research, another more recent research platform is the establishment of the implementation research platforms in support of realising MDGs, but with joint participation of TDR, Special Programme of Research, Development and Research Training in Human Reproduction (HRP), and WHO programme for maternal, newborn, child and adolescent health and partnership for maternal, newborn and child health ([www.implementationresearchplatform.org/partners#.UaNws23uzX9](http://www.implementationresearchplatform.org/partners#.UaNws23uzX9)). A more recent effort to strengthen national public health institutes is the international Association of National Public Health Institutes (IANPHI)(<http://www.ianphi.org/membercountries/>), which is funded by members and the Bill and Melinda Gates foundation, which works with and for national public health institutes across countries.

In comparison to health related research, research on social policy and public policies and social development has received more limited global attention and funding. Research on social policy and social protection suffers from the broader state of social sciences research and financing in low-income countries (see above). The World Bank and regional development banks engage with research and analysis, and WIDER and UNRISD run coordinated research programmes in the area. UNESCO has offered some financing through MOST-programmes, and ILO and UNICEF are also engaged in related research. Development policy related to social research is also funded directly through development aid institutions, agencies and research programmes. The global initiative on social protection floors has also been associated with a number of networks and linkages between United Nations agencies and academic researchers (see e.g. Deacon and Kaasch 2009).

Social development research is supported globally by UNRISD, which has been able to network and bring up substantial output with a very limited resource base. In this respect UNRISD would benefit from expansion and level of support sustaining a critical mass of expertise and capacities. Codesria (Council for the Development of Social Science Research in Africa) (<http://www.codesria.org/spip.php?rubrique1&lang=en>) remains the main social science network in Africa, founded in 1973, with links to sub-regional networks, a number of partners as funders and a role in financing research. The African Labour Research Network ([www.alrn.net](http://www.alrn.net)) consists of labour-related research institutes and research departments of trade union federations in Africa with funding from Northern trade unions. One example of more national networks is the Nepalese Policy Research Network (<http://nepalpolicy.net/>), backed by a group of nongovernmental organisations and institutions. IDEP functions as a subsidiary body for the UN Economic Commission for Africa. While it was established already in 1962, it has more recently gained ground and has an aim to become a regional key institution for public policy guidance, training, analysis and research. Thus it could have the potential and basis for regional alternative analysis of African economic development.

Education policies are shaped by long-term international initiatives on Education for All (1990) as well as the implementation of Millennium Development Goals, emphasising government responsibilities in the field with the support of a number of international agencies, governments and nongovernmental organisations. The UN Secretary General has also initiated a specific Global Education First – initiative (<http://www.globaleducationfirst.org/>). UNESCO and the UNESCO International Bureau of Education, UNICEF, OECD/DAC, the Commonwealth and development banks are important for international networks and their financing. Networking has also been geared towards utilizing diasporas with national networks in Ethiopia (Hyden 2010). International Foundation for Science (IFS) supports smaller grants to younger researchers and can be seen as one way of addressing brain drain as well as enhancing research in an earlier point of career with allocation of grants worth 5 million US\$ and 135 member organizations



[\(http://www.ifs.se/about-ifs/\)](http://www.ifs.se/about-ifs/).

### **Strategic Challenges for Research**

The focus on public policies and access to education, health and public utilities as well as necessities to address migration and limited pool of professional workforce within countries emphasizes the need of more national and long-term priority-based research, including on resource gathering scope and options.

However, inputs on problem-based interdisciplinary and intersectoral research are very hard to track beyond financing level of individual projects. As problems are often complex or “wicked” problems, this is not necessarily reflected in research financing and requirements, where more narrow research focus and disciplinary boundaries remain an issue. More broad-based research has to some extent taken place in research in the field of global change and environmental sustainability, but remains also a challenge in particular with respect to social development, conditions of labour, industrial policies and how these relate to public policies and interests within society. The establishment of broader issue-based – rather than more narrow discipline based institutions and support programs – could help in supporting this type of research further.

A second challenge is, in particular, the strengthening of social policy and development research with a focus on what developmental public policies and social policies for the 21<sup>st</sup> century should consist of, and how these should be governed? This applies both to social security systems and national health systems, which remain often analysed on “one intervention” basis rather than in the context of overall national policies.

Third, social development policy options in low-income countries are often strongly influenced by global initiatives and aid policy focus, yet there is strikingly little analysis of these policies and priorities from a low-income country perspective or priorities. In practice some discussion and debate has surfaced in the context of user charges in schools and health care as well as with respect to the role of financing for HIV/AIDS, tuberculosis and malaria for health policies and research, in particular, in Africa. However, the process and politics of aid policies has remained a less analysed area, even though in the case of policy debates and discussions with respect to user cost-sharing it has been important for changing policies in the field.

Fourth, we have a gap in research and innovation concerning resource gathering for public policies in a development context as well as implications of different options to equity and long-term sustainability of public policies. There remains relatively little research on different options for taxation or other potential and innovative means for resource gathering for public policies in low-income countries - or distributional impacts of different resource gathering options. This is a case with particular relevance for resource rich low-income countries as well as for those countries which would like to move away from user cost-sharing in health and education.

Fifth, national priorities for research need to be made at national level. While this has been under broader discussion on health, it applies as well to other social development research. There are also research needs, which are local and national, resulting in lack of broader emphasis in the development research or literature. There is a need to support capacities and sustainability of national health research systems and prioritization processes as well as research on such problems, which are specific or more important to the

regional, national or local health, and social problems, practices or endemic diseases. The need for understanding national research systems and prioritization applies also to research on broader living environments, analysis of labour markets, social security, gender and distribution of income, ownership and capacities within the society. Finally, there are likely to be some areas, which may not gain sufficient national priority in spite of their relevance. These should still be considered as part of international research support and priority, such as research on gender, reproductive health and research on vulnerable and minority groups or where particular national resource or political stakes are high.

### **Financing of Research and R&D in Health**

In health research can be divided into medical and clinical research, R&D on products and technologies related to health and health policy, health systems and public health research.

Health R&D is usually much larger than what is understood as health research primarily due to the fact that a large share of this consists of pharmaceutical and biotechnology industry research. While this research process is often funded by public sector resources as result of incentives provided by intellectual property rights, it is generally addressed as private sector research.

UNESCO gathers data on Gross domestic expenditure on research and experimental data (GERD), but for health GERD this needs to be combined from different sources. Rottingen et al. (2013) recent and comprehensive analysis and calculation on existing R&D found that “data for health R&D investments were found for only 37% of all countries. Data availability for this indicator was particularly poor for low-income countries, lower-middle-income countries, and upper middle-income countries (14%, 19%, and 37%, respectively) and was much better for high-income countries (72%).” They further concluded that in terms of investment on health R&D, estimated to be 240 ppp adj. billion \$ in 2009 with 89.5% coming from high-income countries, 7.9% from upper middle income countries, 6.2 % from lower middle income countries and 0.1 % from low income countries. The main investors were USA, Japan, Germany and United Kingdom and proportionally to GDP Switzerland, Iceland, Denmark, USA and Sweden. For available data from mainly high income countries it was further estimated that 60% came from the business, 30% from public sector and 10% from the private sector foundations and not-for-profit entities. 26 billion of the 240 billion was spent in low and middle income countries.

A separate Policy Cures conducted and Bill and Melinda Gates foundation funded G-Finder report ([http://g-finder.policycures.org/gfinder\\_report/](http://g-finder.policycures.org/gfinder_report/)) provides compilation of data for neglected diseases, which represent a 31 diseases and R&D for medicines, vaccines and other products for these diseases. G-Finder estimated that in 2012 at total of 3.05 billion \$ was invested on neglected diseases. G-Finder (2012) report further concludes that “The public sector continued to play a key role in neglected disease R&D, providing almost two-thirds (\$1.9bn, 64.0%) of global funding in 2011, with philanthropic sector contributions (\$570.6m, 18.7%) closely matched by investments from industry (\$525.1m, 17.2%). The US maintained its position as the pre-eminent funder of neglected disease R&D, accounting for just under 70% of all public funding (\$1.4bn, 69.5%). The main funder was United States NIH (39.2%), Bill and Melinda Gates Foundation (17.1%), Industry total (13.8%) and European Commission (3.8%).

Analysis for African financing on health R&D was made as part of a study on centres of excellence which concluded that in spite of increasing resources otherwise, national public financing stagnated in around 50

\$ million with the higher spending resulting mostly from external resources and private sector spending between 2008 and 2010. According to Nwaka et al. (2012)" the annual budget of departments or units, within African institutions range from five hundred US Dollars (\$500) to thirty five million US Dollars (\$35 million) with a mean value of \$1.49 million". The study also found out that in total 266 different institutions supported African R&D during the three year study period with a further list of agencies and countries on the basis of their mentioning in research applications (<http://www.biomedcentral.com/content/pdf/1472-698X-12-11.pdf> )

Health research may be relatively well accounted for as a field in comparison to other research, but large share of assessments and comparisons of spending has remained on estimates and extrapolation. Furthermore, there is much less information on funding of health systems and public health research. In practice this type of research remains funded through national and development aid agencies (CDC, NIH, SIDA, DANIDA, IDRC, DFID) financing of essential national research institutions, technical assistance through international agencies and development banks as well as more specific research and cooperation programmes for project-related research work. Funding of health policy and health systems research has been supported in low income countries mainly through bilateral development funds, on the basis of estimates between 2003 and 2008 bilateral agencies accounted 67.8%, national government 11.1%, private 14.4% and other 16.7% (Bennet et al 2008).

In Africa European Union has support has contributed to African network for drugs and diagnostics innovation (ANDI) and development of centres of research excellence, United States has supported, for example, training and capacities for research through Emergency plan for HIV/AIDS relief and DFID and Wellcome trust have had own programmes with focus on support to African institutions and capacity development. A particular challenge is strengthening capacities for epidemiological research towards non-communicable diseases and injuries as traditionally capacities and emphasis on epidemiological research has been on communicable diseases. (Nachega et al. 2012).

Health systems and public health research remain predominantly funded by public sector funds with an additional role for private foundations, where for example, the Rockefeller Foundation currently has a programme on health systems. However, the establishment and role of Bill and Melinda Gates Foundation has taken private sector funding to another level in the area of health. Bill and Melinda Gates Foundation funds a large variety of health research activities, a review on grant-making programme of total US 8.95 \$ billion between 1998 and 2007 has shown that the initial input was stronger on new technologies and vaccine development research comprising (36.5%) of funding on health, whereas applied health research share was 11.4% and the share of health services (4.7%) and public health (6.7%) even smaller (McCoy et al 2009). Substantial part of this research support has benefited American Universities and researchers in high-income countries. Furthermore, a similar emphasis and move towards innovation seems to have taken place in European Commission Horizon 2020 program, with implied strategic developmental focus on the European Union and Developing Countries Clinical Trials Partnership (EDCTP) for 500 million € between 2104 and 2023 (Council of Europe 2011, European Commission 2011).

In terms of publications the most recent analysis by Rottingen et al. (2013) implies that "the proportion of health-related publications showed a rise in share of lower and upper middle income country publications from 2002 to 2011 for 2% and 10% respectively, yet even in 2011 high income country authored publications was 84% in 2011 and low income country publications remained with less than 1% share. Analysis of epidemiological and public health publications for Africa showed further that while the number

of publications has been increasing between 1991 and 2010, these are heavily concentrated in South Africa and fields of HIV/AIDS, malaria and tuberculosis (Nachega et al 2012). While innovation for health and R&D has been prioritised within many low income countries, for example in Africa, there is also a risk that if this is not complementary to funding on other research areas, crucial areas within public health and health systems can suffer from resource shifts from other health research to innovation and product development. It is also important to ensure that funds allocated to innovation for health do support national health and essential health research priorities. Furthermore, the role of national government in financing both health research and R&D within low income countries remains unclear and further enhances influence of funders on what and how research is undertaken.

Research on changes with respect to the International Centre for Diarrhoeal Diseases (ICDD) in Bangladesh - an international research centre - has emphasized the importance of capacity building and core funding, which allows more independent decisions on research strategy, as well as aligning funding on the basis of these, rather than donor priorities. (Mahmood 2011)

The importance of academic publications and international peer reviewed journals are not necessarily an equal measure for all health research as output it is likely to reflect methods, focus and purpose of research, for example, research for policy-making is likely to be published as reports or in local language publications.

Financing and support to capacity building on health research seems to come largely from the same sources of international donors which support research, including international organizations, bilateral donors, private foundations, nongovernmental organizations and issue based networks and institutions (e.g. national public health institutes).

### **Capacity building**

Capacity building for health has gained more recognition in the context of research policies with TDR support to networks as well as support from bilateral donors and private foundations. ISHReCA (<http://www.who.int/tdr/partnerships/initiatives/ishreca/en/>) and ESSENCE (<http://tdr-essence.ning.com/>) are two capacity-building networks currently residing with TDR. COHRED (<http://cohred.org>) compiles information as well as provides support to capacity building. Research focussed networks, such as Alliance for Health Policy and Systems Research (<http://www.who.int/alliance-hpsr/en/>) and INCLLEN (<http://inclentrust.org/>), which has its focus more on clinical epidemiology, provide support and networking in their particular areas. Other Networks with support to capacity-building include, such as EVIPNet (<http://global.evipnet.org/>) is hosted by the WHO with the purpose of providing for systematic use of health research in policy-making, CARTA (<http://www.cartafrika.org/>) Consortium for Advanced Research Partnership is a south-south network coordinated jointly by Kenya and South Africa with Members also from high-income country institutions, Training and Support Centre (<http://www.tarsc.org>) based in Zimbabwe has focus on developing further knowledge and capacities in health research and maintains the Equinet (<http://www.equinetfrica.org/bibl/>) secretariat, INDEPTH (<http://www.indepth-network.org/>) is a global network of members who conduct longitudinal health and demographic evaluation of populations in low- and middle-income countries (LMICs). INDEPTH has a variety of international donors, but hosts also an EU funded programme on research centres of excellence. In addition, capacity building impacts and role has also been emphasised with respect to the EDCTP (<http://www.edctp.org>), which is expected fund of 500\$ million between 2014 and 2023 for cooperation and work on clinical trials contributing to capacity building in the area.

While establishing centres of excellence has become supported as institutional basis for innovation and biomedical research, a comparable move in the field of public health is the establishment of International Association of National Public Health Institutes (IANPHI) which seeks to strengthen or establish national public health institutes in countries.

### **Partnerships and Networks**

Partnerships and networks are new modalities for financing and implementing Science, Technology and Innovation projects in developing countries. They vary significantly by the degree of institutionalization (long-term partnerships vs. ad hoc networks), by steering model (North-South vs. South-South) and by the resources and capital (financial, human and intellectual capital) available. In this chapter we introduce only some partnership programs that are interesting from the perspective of STI. Networks are so scattered and mobile that it is impossible to come up with an exhaustive list of organizations.

*EU's FP7 (The Seventh Framework Programme of the European Union)* widens the scope of STI activities in Europe. New international policy enables the participation of the STI-actors from developing countries in EU's innovation platform. This international policy has three objectives: 1) to support European competitiveness through strategic partnerships with third countries in selected fields of science and by engaging the best third country scientists to work in and with Europe, 2) to enhance the production of knowledge and scientific excellence by enabling European universities, research institutions and firms to establish contact with their partners in third countries, thereby facilitating access to research environments outside Europe and promoting synergies on a global scale and 3) to address specific problems that third countries face or that have a global character, on the basis of mutual interest and mutual benefit.

[http://cordis.europa.eu/fp7/public\\_en.html](http://cordis.europa.eu/fp7/public_en.html)

**Grand Challenges Canada** is dedicated to supporting Bold Ideas with Big Impact in global health. Grand Challenges is funded by the Government of Canada and funds innovators in low- and middle-income countries and Canada. The bold ideas GCC supports aim to integrate science/technology, social and business innovation. <http://www.grandchallenges.ca/who-we-are/>

The UK supports partnerships between higher education institutions through its **Development Partnership in Higher Education program (DELPHE)**. Managed jointly since its inception in 2006 by the British Council and the Association of Commonwealth Universities it had by 2009 supported partnerships and multi-institutional projects involving 245 higher education institutions worldwide. Projects range from agriculture, the environment, health, and information technology, and also include staff and student training, course redesign and communication workshops. The amount of money allocated to DELPHE program (2006 to 2013) is 15 million pounds.

<https://www.gov.uk/development-partnerships-in-higher-education-delphe>

**UKCDS (Collaborative on Development Sciences)** is a loosely-coupled network with the permanent secretariat. Their task is to bring together key UK funders and stakeholders who provide support for research relevant to development by improving stakeholder collaboration in development sciences, encouraging research policies and practices of UK funders to reflect good practice in development and by supporting the UK to be a global leader in development sciences and their application.

[http://www.ukcds.org.uk/page-Vision\\_and\\_aims-53.html](http://www.ukcds.org.uk/page-Vision_and_aims-53.html)

**The Wellcome Trust** has launched its own African Institutions Initiative with a \$ 50 million commitment to strengthen Africa's universities and research institutions through partnerships and networks. More than 50 institutions from 18 African countries are partnered in seven international and pan-African consortiums. Each is led by an African institution and includes research and higher education partners from Australia, Europe and the U.S. The seven consortiums are concentrated in the biomedical field. They operate independently and set their own agendas. Activities include leadership training and professional development; PhD and post-doctoral fellowships; improved infrastructure; competitive grant schemes; and the provision of up-to-date equipment. In addition, the **Bill and Melinda Gates Foundations** supports low income countries and low income populations especially in the fields of health, education and poverty reduction. Total allocations in 2011 and 2012 have been \$3.4 billion annually. **The Gatsby Foundation** has funded and implemented programs in Africa since 1985. The foundation focuses on a small number of ambitious sector development programs in East Africa. Targeting high potential sectors where growth could benefit large numbers of poor people and where the pre-conditions for change exist, it partners with governments and the private sector to identify and tackle the constraints along the whole value chain that are holding sectors back. Main areas of support in Africa have been sector development, agricultural finance, local institution building, agricultural research, and governance.

[www.wellcome.ac.uk/Funding/Biomedical-science/International-funding/Global-health](http://www.wellcome.ac.uk/Funding/Biomedical-science/International-funding/Global-health)  
<http://www.gatesfoundation.org/Who-We-Are/General-Information/Foundation-Factsheet>  
<http://www.gatsby.org.uk/en/Africa.aspx>

#### **Key focus areas for future research**

- Intersectoral, interdisciplinary and implementation research for health and public policies, including research on public health, prevention and social determinants of health
- Social science research for national social policy development, including support to political sciences and analysis
- Research on regulation and resource gathering for social development beyond user cost-sharing, in particular for resource rich low-income countries
- R&D on neglected diseases and conditions of local and national importance as well as on essential pharmaceutical policies for access, regulation, procurement and supply of medicines
- Impacts and politics of global and development priorities for national social development

#### **Capacity building needs**

- National research systems and strengthening institutional basis of research for public policies, including capacities and institutional basis for health systems, health policy and public health research as well as research on social security and labour markets.
- Support to training and professional development of highly skilled work-force for public administration and regulatory capacity needs
- Support to national research prioritisation and capacities to national finance of essential national research for health and social development needs

## 3.6 Science, Technology and Innovations

### 3.6.1 Key problem areas and future perspectives

Science, technology and innovation can play an important role in reducing poverty and thus can make a significant contribution to meeting the key commitments of the eight Millennium Development Goals.

According to OECD's Oslo manual (2005, 46): "An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations".

The means vary from boosting agricultural productivity to providing the means to generate energy cheaply, utilizing ICT in knowledge production and learning or distributing clean water and medicines to the poorest people in LICs.

Innovation policies are traditionally described and framed as national or sectoral systems. Many of the innovation literature findings on setting-up national or regional innovation systems, building partnership networks between universities, government agencies and firms, are not valid in the low-income country context. In order to reach the poorest and most vulnerable groups in the low-income countries new community-based initiatives are urgently needed.

In this section we discuss the role and development of STI-systems in LICs, challenges and opportunities that innovations represent for LICs, the role of higher education institutions and knowledge networks as critical preconditions for creating or applying innovations in LICs, and finally how research on innovations takes the context and conditions of LICs and the poor into consideration.

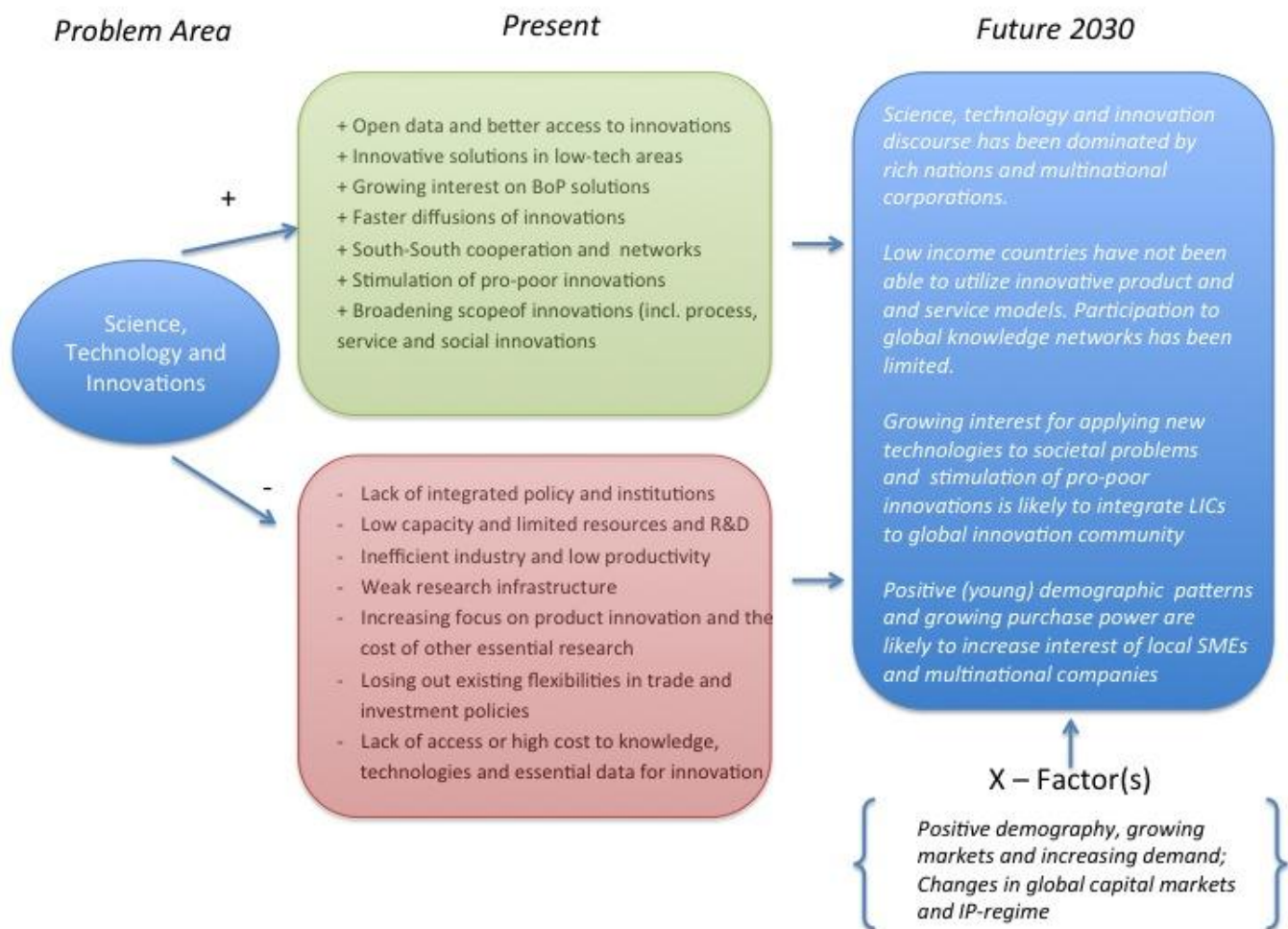


Figure 18. The Chain of Impact in the Field of Innovation Development.

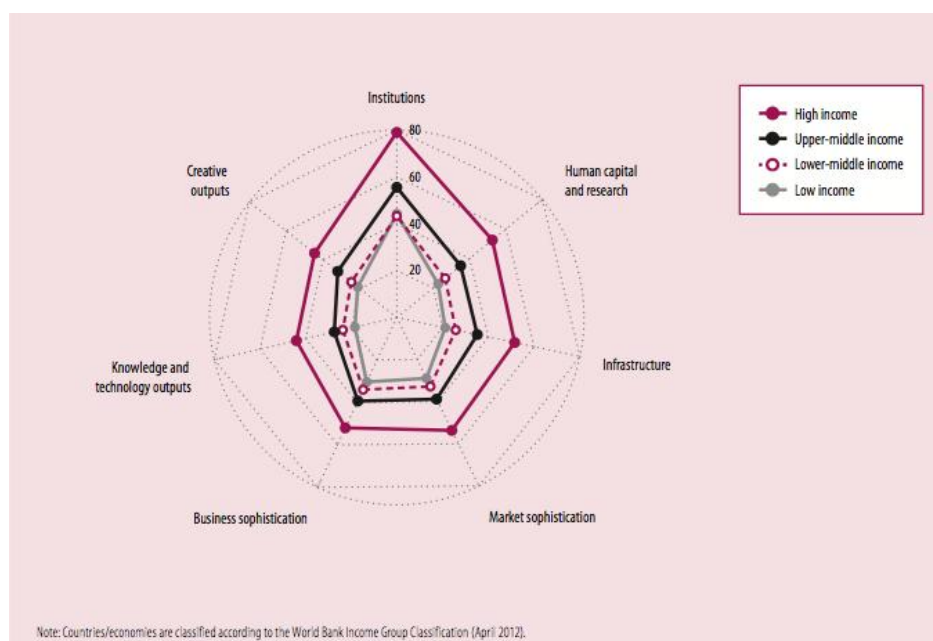
On the other hand, some global trends (better access to internet and mobile communication, open data solutions and creative commons licencing, empowerment of individuals, the growing ratio of young people in LICs, Bottom of the pyramid solutions and products) are likely to increase the interest of multinational corporations on LIC markets and give incentives to governments to build and support innovation systems at all levels of government. Yet, it is critical that this development also enhances the emerging business ecosystems and R&D&I activities of the LICs. According to the UNCTAD (1999) it is important to emphasize technology transfer in the case of LICs. This transfer can be achieved through knowledge internalization – when harnessed and utilized by the entity that produced it – or knowledge externalization – when acquired by the entity through minority joint ventures, franchising, capital goods sales, licenses, technical assistance, subcontracting or equipment-manufacturing arrangements.

A positive example is provided by Uganda which began with a good investment promotion agency, used specific advantages at a low technology level (e.g. with cultivating flowers and exporting them in European markets), made appropriate reforms in the education system at all levels, and benefited from coherent support from donors. Thus Uganda has gradually been able to build a sustainable path toward development.



According to the World Bank (2004) the overall context in which innovation in developing countries takes place is dominated by two global drivers:

- a) The first one is the intensification of the globalization process. Spurred by the revolution in telecommunications, this globalization manifests itself, among other things, in the importance of trade within the global economy. It has also significantly reduced barriers of time and distance throughout the world, linking the most remote to the most vibrant areas.
- b) The second global driver is the intensive ongoing technological change stimulated by tremendous scientific advances made in the foundations of life, matter, energy and time. As a consequence of these changes, a new development era is gradually taking shape, replacing the industrial era.



**Figure 19. Comparison between LICs and other income groups in sub-pillars of Global Innovation Index**

Figure 14 shows the gap between low and high income countries in the subareas of innovation both in input, including the areas of (1) Institutions, 2) Human capital and research, 3) Infrastructure, 4) Market sophistication, and (5) Business sophistication); and output, relating to (6) Knowledge and technology output and 7) Creative outputs. Two interesting observations can be made from the figure: first, patterns of average score in various sub-pillars are quite similar between different income groups. This indicates that there are certain generic or system strengths and weaknesses in global innovation developments. Secondly, the gap between low-income and lower-mid income countries is relatively small. It will diminish even more if we compare the poorest regions and municipalities within these two country categories). However, the problem with these generic comparisons is that they often tend compare apples and oranges, i.e. the neglect the institutional and cultural context.

Although, innovations themselves are market-driven and developed in close collaboration between universities / research institutes and companies, governments play a key role in developing innovation

infrastructure and policy.

World Bank (2010, 68-69) emphasizes seven areas that are critical for successful innovation development.

- 1) *Technology strategy – tapping into global knowledge and technology for dissemination in the local economy.* Especially low-income countries should adapt global knowledge to local needs (special attention to the poor) and R&D structure should focus on adaptive research in close contact with local needs and users.
- 2) *Institutions – minimal equipment.* Low-income countries tend to have mediocre innovation climate, including poor governance, limited infrastructure, inadequate education and lack of managers.
- 3) *Legal framework and minimal rules of the game.* There is an urgent need for LICs to establish structures for research, education and the institutional framework for innovation system at all levels of government.
- 4) *Policy focus – specific needs and assets.* There should be clear priority areas for innovation programs. These areas should be economically (e.g. tourism, agriculture) or socially (health, communication, loans etc.) justified.
- 5) *Agents of change – using global connections for leveraging change in the domestic context.* In the case of LICs there is great threat for becoming dependent on foreign technologies, investments and aid that might cause brain drain together with institutional and behavioral inertia. There for low-income countries should work hard to establishing domestic innovation structures and processes.
- 6) *Reform approach – acting on specific sites and stimulating broader reforms via success stories.* These reforms should start from specific sectors and pilots and thereafter disseminated to other areas of the society.
- 7) *Cultural and behavioral characteristics – respecting cultural and behavioral specificities.* The idea behind user-driven innovation is that innovative products and services should be tailored according to customers needs. These cultural specificities differ not only from one country to another both also within a country among its provinces, municipalities and social groups.

There is potential for innovation (STI) driven development, and there are individuals and organizations who could act as agents of change. Tanzania has a number of opportunities for making its innovation system more dynamic: it can exploit new knowledge and new technologies (ICT, biotechnology) to increase value-added of resource-based industries; it can build on ICT cluster to develop related innovative service and industrial activities; it can advance further in selected niches in the agricultural, industrial and service sectors; it can exploit Tanzania's environmental advantages to capture a larger share of tourism market.

### **Information and communication technologies**

Information and communication technologies (ICT) are enabling technologies that underline the knowledge economy and information society developments e.g. through providing new opportunities for entrepreneurship, equal access to information and new services, political participation. They also play an important role in renewing traditional industries typical to developing countries.

The use of Internet in low and lower-middle income countries did not start until 1994, whereas in several high-income countries it started already in 1990. In 2004, in high-income countries, about 40 per cent of the population enjoyed Internet services, while the percentage was less than 3 per cent in low-income

countries. However, it is known that Internet adoption follows an S-shape pattern and due to technological progress and cheaper prices of computers and mobile phones same trend that has happened in high income and lower-middle income countries is likely to take place also in low-income countries. The huge global expansion and escalation in the use of ICT play an increasingly important role for development in LICs. The LICs are set to witness progressively accelerating deployment of ICT across all the society, culture, politics and economy. ICT has potential to reduce poverty by improving poor people's access to education, health, government and financial services. ICT helps small entrepreneurs and farmers by connecting them better to economic and social activities. The 1990s and 2000s "Digital Divide" is changing rapidly in MICs and LICs. This progress, underpinned by advances in key technological infrastructures, regulatory reforms and innovative uses of ICT, is triggering fundamental questions: What role will ICT play to address poverty? How ICT is employed to deliver direct aid? What impact will ICT have on building civil society? How, and through what processes, will ICT contribute to industrial and economic strength of the poorest nations?

The possibility of access to ICT services exists even for the most poor. Other questions arise: How is ICT used and by whom? How do old and young people use ICT services? Who owns the channels and infrastructure? How can countries better utilise and benefit from open access products and service for ICT, and lower national costs of both establishment of ICT infrastructure support as well as maintaining these at national level?

#### **Utilising innovative approaches and potential**

The scope and potential to use more open access based programmes and resources as part of ICT policies, and the question of how these can be enabled through new ICT policies, is a particular challenge and opportunity for low-income countries. Open access knowledge resources and online research networking offer options and wide potential for access to knowledge to researchers, and internet-based teaching and learning opportunities offer scope for utilising a more global and international context for research.

However, realizing this potential is not only dependent on software, but also on costs of bandwidth and mobile internet within countries. Low-income countries have paid substantially higher prices for bandwidth, while there are emerging and new prospects for utilisation of wireless technologies. The developments in the area also move fast, with the potential not only to benefit from leaps to further technological advances, but also a risk of investing in creating redundant structures. Furthermore, the development of commercial avenues for websites and developments run on the basis of advertising income is likely to be burdened by lack of buying power in local markets.

#### **Access to knowledge and balancing commercial policy options with public interests**

The landscape in the area of trade and investment policies is changing, with renegotiation and change in approaches taken as part of global trade and investment negotiations, and a focus on innovation and incentives for R&D. This is of particular importance for low-income countries in relation to access to knowledge, including the issue of how negotiating Trade Related Aspects of Intellectual Property Rights (TRIPS) agreements implementation transition period extensions for low-income countries will proceed. Impact of multilateral and bilateral trade and commercial policies has been a particular concern with respect to access to medicines, enhancing local production of generic medicines and in particular access to HIV/AIDS medicines, where a need for second line treatment is already emerging. A clear warning of the potential impact of the situation has been expressed as part of UNAIDS technical briefings, warning

that: "There is a real danger that if the LDCs do not get a further extension, the progress that has been made to improve access to HIV-related medicines in these countries will be reversed" (UNAIDS 2011).

Furthermore, it is unclear to what extent such incentives for innovation, which are driven by returns from product prices, will be able to contribute to such R&D, which will be of importance for poor people and for domestic markets within low-income countries due to lack of buying power. This problem has been at the centre of global concern over lack of investment in R&D on medicines for the poor, as seen in a global report on the matter, emphasizing the importance of public funding, open innovation and equitable licensing measures as well as grants for innovation to the private sector in low-income countries (CEWG 2012). It is thus not clear that low-income countries will be able to reap substantial benefits of innovation from intellectual property rights and exclusivity driven regimes for innovation in all sectors, in particular when these commitments may result in substantial costs for access to knowledge and products, such as medicines.

This does not mean that there would not be significant prospects to enhance and invest in innovation for health and medicine in low-income contexts, but it does indicate that it is crucial to consider how this is done and that incentives for innovation impact positively on the wider research environment, access to knowledge and the affordability of products, rather than merely operating as an extension of strategies promoted in rich countries. Furthermore, while access to knowledge and technology transfer are important for national industrial and innovation strategies, these need to be set in a framework where they will contribute positively to broader developmental processes and needs within countries.

### **Higher education and innovation**

Education policy affects innovation in three main ways. First, a high level of general and scientific education facilitates acceptance of technological innovation by consumers and society at large. Second, innovation systems require well-educated researchers, teachers, extension officers, and producers to develop relevant innovations. Third, it is generally easier for producers with a good general, business and technical education to adopt some technological innovations (OECD 2013).

DDRN - The Danish Development Research Network (a research and knowledge network with more than 2000 members in which 40% in the South) carried out an interesting study in 2010 titled "Mapping the world of higher education and research funders: actors, models, mechanisms and programs". The study aimed to answer the following questions: What types of activities are supported? What countries are being targeted? What types of partnerships are encouraged? At what level is funding provided? Are co-financing arrangements being used? What is the duration of the programs? How are they administered? The study found that the biggest donors of higher education, according to OECD/DAC, are not the mainstream development donors like DFID, Netherlands or the Nordic countries but instead, Germany (\$1,094.80 million in 2008), France (\$1,072.28 million) and Japan (\$488.89 million). In comparison, European Union support to higher education developing countries in 2008 was only \$185.25 million and US support \$42.93 million.

In the development bank sector the World Bank is by far the dominant institution today. From its low of \$ 120 million in 2001 and 2004 it has boosted funding to considerably higher levels. In 2008 it amounted to \$500 million. On the private and philanthropic side, the Partnership for Higher Education in Africa (PHEA), made up of seven foundations, was the single largest institution with a total spending of \$300 million

between 2000 and 2010, but its secretariat was closed in 2010 and work continues by some of the individual foundation members. Other important funders include the Gates Foundation, the Wellcome Trust of the U.K., and the International Development Research Center (IDRC) of Canada. Norway is interesting in the Nordic context because it is the only country that has continuously operated special scholarship programs for students from the South. The country's provision of scholarship support is also the reason it is listed much higher in OECD statistics than Denmark, Finland or Sweden (Hydén 2010).

UNCTAD (1999, 215) observes that “R&D does not play a role in early stages of industrial development.” The proposition is to remedy that issue. Indeed, traditional R&D is oriented towards technology-intensive developments, which are necessarily costly. UNCTAD analysed that “much of this R&D is directed to absorbing, adapting and improving imported technologies.” The suggestion here is to use the pool of pre-existing local knowledge to leverage the local economy, create a dynamic comparative advantage and boost local MNEs. Every community uses specific traditional products. The idea for each community would be to list them and study their potential for international development.

With regards to surveying developing nations, the World Bank (2010) and the OECD (2005) recommend focusing on capability building and acquisition of resources, as well as on the innovation process and its intermediate outputs. Following this discussion, the measurement focus in the context of this study is in the future trends of Science, Technology and Innovations in developing economies and the research coverage in that field.

The World Bank (2010) concedes that purportedly objective measures can be problematic in developing economies, not only because of lack of (reliable) statistical data (Archibugi and Coco, 2005), but because of the industry structure that often consists of small and medium enterprises (SME) that work on relatively low technology levels compared to SMEs in the developed nations. A further reason is due to potentially large so-called informal sectors that consist of self-employed entrepreneurs as well as micro and small enterprises that are not officially registered and whose activities do not count toward official statistics (Kraemer-Mbula and Wamae 2010). In these circumstances, the absorptive capability of micro enterprises may be low, as will be the availability of knowledge from institutions such as research organizations.

As suggested above, these issues concern STI-oriented development policies in a broader sense, of which the promotion of ICT and knowledge-based societies is an important although not the only element. While some of the issues have been addressed already by the extant literature on STI, innovation systems and policy at a conceptual level, there is a noticeable lack of comprehensive frameworks for analysis from the low-income country perspective.

The concept of innovation should be broadened from traditional innovation systems model to cover also service innovations and social innovations. Social innovations aim to solve social problems arising from government or market failure. Inabilities to recognize citizens' needs or lack of incentives to provide necessary goods or services are examples of such failure. It is very likely that these kinds of failures will become more common with the co-emergent societal challenges of an aging population, increasing migration, persistent unemployment and imminent climate change, and the increasing need for energy efficiency and sustainable development. In the context of low-income countries these types of innovations are critical success factors for accelerating economic activities, social cohesion and well-being of citizens.

### 3.6.2 Research Gaps and the Role of Research

Academic literature on Science, Technology and Innovation (STI), innovation systems and policy has recently paid increasing attention to the applicability of experiences in developed countries to developing countries. International organizations such as the World Bank, the OECD and UNESCO are also heavily engaged in this area. Concepts such as research for development, pro-poor innovation, bottom of the pyramid, and STI/ICT4D, all reflect mounting enthusiasm about opportunities of STI-oriented development policies.

However, concern is also raised about the applicability of such policies in low-income countries. ICT and information society developments in developing countries is probably the area that has received the best coverage in the literature and there now exists an expanding evidence-base also in terms of quantitative indicators in this area.<sup>3</sup> ICT can be a key enabling technology for entrepreneurship, socio-economic renewal, growth and poverty reduction in developing countries. At the same time it is important to realize that a shift towards STI-oriented development policies implies that donor-recipient cooperation is, and has the potential to, extend to various other STI areas where the evidence-base for policy is much weaker. This shift should also centrally include societal considerations as a precondition.

The role of STI depends on the scope, affordability and potential of benefiting results from STI within countries as well as how these benefits are distributed. In this respect a crucial aspect in this process is how it support to STI relates to public policies, national research institutions and capacities within Universities and research institutes. In terms of poverty reduction investment on STI and in particular ICT infrastructure can provide wider benefits for a broader number of small and medium sized enterprises, however this is likely to require careful consideration on how this is done. One danger is that investment in particular on in-house R&D end up becoming mere corporate subsidies with little input to growth, productivity or broader welfare within societies. Another concern relates to overblown or short-term expectations from investments to specific projects without consideration of capacities of educational system or financial sustainability of the field of research or R&D within a country.

Investing in innovation can provide new avenues of income for low-income countries, but faces ethical issue relating to the commercialisation of research, a limited pool of skilled professionals, shifting scarce resources away from other essential research, lack of regulatory and standard-setting capacities, and issues which relate to broader societal benefits and purposes of research. Ethical issues with respect to subcontracting research and in particular, health-related research and clinical trials in low-income countries (Glickman et al 2009), have already been raised and will remain important in the future. Further challenges will include balancing human resources between contract research, essential health services and national research in particular, where higher salary levels of research-related contract work can draw skilled workers out of lower paid public sector employment. Another set of ethical and political issues relates to agricultural research, bio-prospecting, commitments of sharing of benefits on the basis of biodiversity treaties, and how commercial innovation relates to traditional medicine and treatments.

On the other hand, there is clear potential for science-based health innovations in Africa (Al Bader et al 2010), the best known case perhaps being that of bednets in Tanzania (Shah et al 2010) Furthermore, medical research has been identified by all African regional economic integration organizations as one of

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See e.g. <http://www.itu.int/ITU-D/ict/partnership/> for a good gateway for access to ICT-related indicators in developing countries.

their priorities (Juma 2010). Particular attention has been drawn to the potential of regional centres of excellence in the field as well as innovation systems for health (see e.g. Nwaka 2012, Chataway et al. 2009, COHRED 2013)

While the focus on innovation in the context of more commercially driven R&D lies at the forefront of currently promising actions sought within LICs, this is also an area where there is relatively little research on politics, governance and implications of how and on what basis “knowledge-based economies” and industrial policies are being built in practice. Where are the strengths of regional measures, where do low-income countries interests reside in different fields, and how do these interests differ across countries and their capacities to engage in partnerships and cooperation across public and private sectors, regionally and globally? Of particular interest are prospects of South-South and regional cooperation in the field, as well as understanding better how policies relate to national regulatory capacities and global corporate interests and strategies. Many of these issues are highlighted in the analysis of the Tanzanian case of bednets:

“To have a coherent vision for innovation, Tanzania may wish to address some key issues: coordination across stakeholders involved with health research, increasing graduates in health-related disciplines, and building capabilities in biological testing, preclinical testing, formulation and standardization, and related areas important to moving from basic research to applications. The private sector can be encouraged to innovate through improved access to financing, and incentives for R&D. The diaspora community represents an untapped source for partnerships and access to other developing world markets and technology. The government may wish to set up mechanisms to encourage south-south collaborations, and to bring the public and private sector together around specific projects to help realize the country’s innovation potential.” (Shah et al 2010)

### **Research Gaps**

- Pro-poor innovations / Bottom of Pyramid Approach and its impacts
- Access to internet / information among the poorest
- Networks between universities, research institutions, firms and government

### **Key Focus Areas for Future Research**

- Clear shift from Northern research agendas towards South-South-North model, i.e. providing only core funding and leaving needs assessment and research agenda setting to Southern networks and partners.
- More focus on low-tech innovations in low-income countries
- Emphasis on innovations that help the every-day living conditions of the poor population in low-income and lower-mid income countries
- Special research program targeted to structural problems of low-income countries systems level change drivers
- More emphasis on multi-disciplinary research initiatives tackling horizontal and cross-policy problems, including access to knowledge and products of research
- Increasing attention on innovation research at the regional and local level

### 3.6.3 Research Institutions, Networks and Agendas

Many of the concepts, approaches and initiatives linked to STI, innovation systems, business development, public-private partnerships and similar initiatives are essentially linked to the idea of promoting innovation in society. The second assumption underpinning this study is that innovation, driven by the private sector and enabled by the public structures and knowledge creators, is the key wealth creating mechanism also in developing countries, just as it is in industrialized countries. That being said, the key building blocks of innovation (novelty, utility and successful diffusion) have not usually been taken explicitly into account in development cooperation to date.

The amount of resources a country allocates to research (together with R&D) correlates positively with the amount of international publications and patents. This, however, is dependent on the number of researchers, research institutions, libraries and laboratories, and the clear government strategies and policies on science, technology and innovation. Applying such indicators, the uneven distribution of resources between rich and poor parts of the world becomes even more pronounced.

Lorenzen (2010) have carried out a longitudinal study on the gaps between innovation research coverage and low-income countries. Figure below shows the results of the cross-tabulation between selected journals and their foci on different income groups at the country level. The table shows clearly that low-income countries are underrepresented in all of the journals, with only 1 or two hits in a ten year period. The only exception is the Journal of Technovation with 32 hits. The journal encompasses all facets of the process of technological innovation from conceptualization of a new technology-based product or process through commercial utilization.

**Table 6. Articles published in selected journals by income groups, 1997–2008 (Lorenzen 2010)**

	LIC	%	Lower MIC	%	Upper MIC	%	HIC	%	Total
<i>Research Policy</i>	1	.31	39	11.93	28	8.56	259	79.20	327
<i>Industrial and Corporate Change</i>	1	1.45	2	2.90	7	10.14	59	85.51	69
<i>R&amp;D Management</i>	1	2.44	7	17.07	0	.00	33	80.49	41
<i>Journal of Evolutionary Economics</i>	2	4.76	2	4.76	0	.00	38	90.48	42
<i>Technovation</i>	32	8.65	62	16.76	34	9.19	242	65.41	370
Total	37	4.36	112	13.19	69	8.13	631	74.32	849

**Table 7. Results from the literature search by themes (Lorenzen 2010)**



Search terms	Developing countries AND innovation	LICs AND innovation	LICs AND development	LDCs AND innovation	LDCs AND development	“Country” AND innovation	Total
Hits	474	33	648	14	278	351	1798
1 <sup>st</sup> filter: abstract	50	5	38	1	13	164	271
2 <sup>nd</sup> filter: full text	25	3	24	1	4	96	153

Lorenzen (2010) continued their meta-analysis by filtering single country studies by innovation and multi-country studies by innovation and development. This resulted in a total of 2,222 hits. Interestingly the most important type of innovation addressed was organizational (36%), followed by process (20%), product (19%), and a mixture of the two (7%). The pre-eminence of organizational innovation reflects the concern with participatory processes involving communities in strategies aiming at a solution of their problems. Insofar as technology was specifically addressed, it was in many cases homemade; sources included local firms (10%), communities (9%), government (8.5%), organizations (7%), universities (5%), and local-only networks (7%).

Lorenzen concluded that main reasons for such an underrepresentation of LICs in innovation studies is: 1) There is no innovation in LICs, 2) There is innovation in LICs but everybody is too busy studying innovation in more interesting countries, 3) There is innovation but understanding it requires an analytical apparatus they do not have or 4) There is innovation but nobody recognizes it.

According to the World Bank’s Trading Economics Statistics in 2010 the number of scientific and technical journal articles in low-income countries has risen from 916 in 1985 to 1564 in 2009. Scientific and technical journal articles refer to the number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. This indicates the increasing activity in innovation research related to LICs.

<http://www.tradingeconomics.com/low-income/scientific-and-technical-journal-articles-wb-data.html>

The European Union has been the world leader in research and innovation (responsible for 24% of world expenditure on research, 32% of high impact publications and 32% of patent applications). Over the past decade, however, the global dynamics in the field of innovation, R&D and competition has changed dramatically. Global research and innovation were, until recently, dominated by the European Union, the USA and Japan. As the emerging economies continue to strengthen their research and innovation systems, a multipolar system is developing in which countries such as Brazil, China, India and South- Korea exert increasing influence. The share of the BRICS in global expenditure on R&D doubled between 2000 and 2009.

The EU still is the world’s largest provider of Official Development Assistance (ODA), totaling almost € 54 billion in 2010. It is also the world’s largest economic block with 501 million inhabitants and a total GDP of over € 12 trillion in 2009; its annual imports from third countries exceed € 1.3 trillion (Euro zone only). Sida has also increased its attention to knowledge formation and innovation systems in economic development

processes among high and low-income countries alike. A greater recognition of the role of knowledge carries with it a focus on the importance of research, and a potentially more central role for universities and other institutes of higher education and learning. The current strategy for Sida's research cooperation does, in a similar manner, point to investments in innovation systems as a means to encourage opportunities for utilizing research as a tool for development.

Research and Development (R&D) funding is even more difficult to track down than basic and applied research. In the past governments were the main funders of R&D especially in the US (partly related to defence spending) and the EU (Nordic countries being on the R&D/GDP list). The economic crises and austerity of the public sectors in the US, EU and Japan has changed the picture in two ways: 1) The role of the BRICs has increased clearly on R&D spending and 2) private sector investments on R&D have grown simultaneously.

Total global R&D for 2007 is estimated at \$ 982 billion in current dollars of which 62% was carried out by business. The top 1 000 innovating companies were responsible for 50% of the global total. Smaller companies carried out only 8.7%. At the same time government financing of R&D has constantly been falling in OECD countries. This is only part of the picture since governments have reduced their direct support for business R&D in favor of indirect support through tax incentives and other policy instruments.

The European Union will launch its next programme on Research and Innovation (Horizon 2020) by the end of 2013. The aim of the programme is to strengthen the EU's position in science with a dedicated budget of € 24 598 million. This will provide a boost to top-level research in Europe, including an increase in funding of 77% for the very successful European Research Council (ERC). Strengthen industrial leadership in innovation € 17 938 million. This includes major investment in key technologies, greater access to capital and support for SMEs. It also provides € 31 748 million to help address major concerns shared by all Europeans such as climate change, developing sustainable transport and mobility, making renewable energy more affordable, ensuring food safety and security, or coping with the challenge of an ageing population. Although the main focus of the program is inside Europe, it will allow third-party participation by special measures embedded into program (in the same way as FP7 actions).

There are numerous projects funded by the World Bank in countries on the African continent. For instance in Burundi they focus on energy efficiency and financial & private sector development, in Comoros on coastal resources, infrastructure and services support, in Congo on capacity building and polio control, in Eritrea on power distribution and education sector, in Ethiopia on women entrepreneurship and capacity building, in Kenya on development policy and rural road network, in Madagascar on transport and skills development, in Malawi on development policy and nutrition, on Mauritius on economic transition and waste management, in Rwanda on empowerment of girls and women and on banking, in Seychelles on disaster preparedness, in Sudan on agriculture and forestry and on capacity building, in Swaziland on health and local government, in Uganda on electricity, waste and transport, in Zambia on poverty reduction as well as national parks and in Zimbabwe e.g. on public works.

The World Bank also expects to kick off a new US\$430 million Africa "Centres of Excellence" initiative next month, aimed at strengthening capacity in universities in West and Central Africa. The project will promote regional specialization among participating universities and strengthen their ability to deliver quality training and research. The project targets strengthening seven to 10 higher education institutions in West and Central Africa, where 10 to 15 centres of excellence will be selected to focus on training and applied research in areas of relevance to Africa's development such as water, infrastructure, hospitality industries,

banking, and information and communication technology. The objective of the project is to build capacity in science, technology, engineering and mathematics fields as well as in health and agricultural sciences. Other objectives include to promote regional specialisation among participating universities in areas that address regional challenges, strengthen the capacities of the universities to deliver quality training and applied research and to meet the demand for skills required for Africa's development, such as for extractive industries.

Development Innovation Ventures (DIV) is a USAID program that holds a quarterly grant competition for innovative ideas, pilots and tests them using cutting-edge analytical methods, and scales solutions that demonstrate widespread impact and cost-effectiveness. DIV's tiered-funding model, inspired by the venture capital experience, invests comparatively small amounts in relatively unproven concepts, and continues to support only those that prove they work. The DIV portfolio includes evidence-gathering and scale-up activities in 17 countries and 9 sectors around the world.

Innovations Against Poverty (IAP) is an interesting initiative by the Sida, to support businesses to develop services, products and processes that will benefit people living in poverty. The IAP is designed for companies based in, or operating in a poor country.

IDRC's Science and Innovation program supports research and capacity building to help developing countries produce, adapt, and use STI for development. Along with gender, key cross-cutting themes within the program are intellectual property rights, science granting councils, and inclusiveness.

**African Development Bank.** ADB has established a Trust Fund for Higher Education, Science and Technology with the goal of contributing to the economic and social advancement of the regional member countries by providing scientific research and innovation products which can enhance national capacities to meet the technological, industrial, health and agricultural development challenges facing them. The Bank's strategy for Higher Education, Science and Technology (HEST) allows it to be among the leading promoters of science, technology, and innovation in the continent's higher education and research institutions, research networks and centres of excellence. A robust science and technology base is a prerequisite for sustained economic growth and higher education, scientific research, and technological innovation are required to tackle many social, human, and economic development challenges. Key focus areas include biotechnology and engineering.

**AU - African Union.** The African Union and the European Union have established Partnership on Science, Information Society and Space. These focus especially on:

- Support the development of an inclusive information society in Africa;
- Support S&T Capacity Building in Africa and Implement Africa's Science and Technology Consolidated Plan of Action;
- Enhance cooperation on space applications and technology.

Meetings have been organized to endorse these issues. The most recent meeting was held on 10 October 2011 at the AU headquarters in Addis Ababa, Ethiopia to discuss ways of maximizing the use of the available knowledge on science & technology in Africa as well as to promote innovation systems.

**COMESA - Common Market for Eastern and Southern Africa.** COMESA's current strategy is economic prosperity through regional integration. To assist in the achievement of trade promotion within the Eastern

and Southern Africa region, COMESA has established the following programmes: trade policy, trade facilitation, multilateral transport, information communication technology (ICT), energy, private sector development, investment promotion and gender mainstreaming. One of the challenges of COMESA is to increase economic growth and investments by enhancing productivity.

In September 2010 at the COMESA Summit in Swaziland, the incoming chair, King Mswati III of Swaziland, initiated the development of COMESA's first programme for science, technology and innovation (STI). The planned COMESA STI programme should help member states improve the use of modern scientific knowledge and latest research outcomes in the innovation processes, especially among the small and medium sized enterprises. The political initiative adopted by the Summit unanimously called, for example, for the establishment of technology parks, establishment of an ICT Training and Skills Development Fund, and elaboration of a COMESA school curriculum for ICT.

Implementation of the science, technology and innovation (STI) programme will be structured in four interrelated sub-programs or actions as follows: (a) Setting up STI Parks, (b) Support to cluster development, (c) Capacity building and regional and international cooperation and (d) Setting up the institutional framework.

The final objective of cooperation in Trade, Customs and Monetary Affairs is to achieve a fully integrated, internationally competitive and unified single economic space within which goods, services, capital and labour are able to move freely across national frontiers. Under infrastructure focus is on transport, ICT, energy, water and meteorology. Additionally the strategic planning and research unit leads the development of medium and long term strategic plans for COMESA. Identified priorities for the 2011-2015 COMESA Planning Cycle include productive capacity for global competitiveness, infrastructure development, cross-cutting issues, cooperation and partnership and institutional development.

**The Committee for Science and Technology in Developing Countries – COSTED.** The Committee for Science and Technology in Developing Countries (COSTED) was established in 1966 as a special interdisciplinary Committee of the International Council for Science, ICSU (formerly International Council of Scientific Unions) vested with the specific responsibility of linking science and technology to sustainable development in the South. This was in recognition of the important role of science and technology in the development process as well as the imperative to bring under-privileged nations to the main stream of international science, particularly those addressing global issues such as climate change, environmental issues, etc.

COSTED is expected to play an advisory role to ICSU on the range of science and technology initiatives for and in developing countries, their potential for application to social and economic development and environmental concerns. These initiatives are pursued by COSTED in co-operation with other members of the ICSU family, the United Nations Educational, Scientific and Cultural Organisation (UNESCO), regional and international scientific bodies and national science councils in developing countries. The core funding for programmes is derived from ICSU and UNESCO as well as from annual membership subscriptions. COSTED works in close collaboration with a number of international scientific and development agencies in specific projects, which are funded on a case-to-case basis. The host governments generously provide operational costs of the Secretariats.

The mission of COSTED is to strengthen, organise and integrate the scientific communities of developing regions of the world; to stimulate and facilitate the participation of scientists and scientific institutions of

the developing countries in the activities of international science and technology; to generate programmes and projects that increase the scientific and technological capacity of developing countries and address problems relevant to their cultural and socio-economic development and of international scope; and to provide advice on science and technology policies to governments and other concerned institutions in the developing world.

ECA (Economic Commission for Africa – United Nations). The Economic Commission for Africa (ECA) was established by the United Nations (UN) in 1958 to promote the economic and social development of its member States, foster intra-regional integration, and promote international cooperation for Africa's development. Work focuses on two areas (promoting Regional Integration in support of the African Union vision and priorities and meeting Africa's special needs and emerging global challenges) under various thematic pillars such as Regional Integration, Trade and Infrastructure and ICT, Science and Technology for Development.

ECA has also discovered the importance of developing knowledge-based economy. Accordingly, there are a lot of knowledge and skills in Africa, but the challenge is to find meaningful patterns in their use and exploitation. Human development is based on reliable access to the substantial information. Capacity building at the individual and institutional level requires the ability to produce, share and use information. Knowledge and information base mapping of African countries is essential to benefit the continent from the advantages of knowledge-based economy and to play an active part of the international knowledge economy. Implementation takes place through several programmes. One of the largest programmes (COMTEL) aims to create a regional telecommunications network covering 22 African countries.

**Enhanced Integrated Framework (EIF) for trade-related assistance for the Least Developed Countries (LDCs).** The EIF is a multi-donor programme, which supports LDCs to be more active players in the global trading system by helping them tackle supply-side constraints to trade. The programme works towards a wider goal of promoting economic growth and sustainable development and helping to lift more people out of poverty. The programme is currently helping 47 LDCs worldwide (including Burundi, Comoros, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Madagascar, Malawi, Rwanda, Uganda, and Zambia) supported by a multi-donor trust fund, the EIF Trust Fund, with contributions from 22 donors. The partner agencies consist of International Monetary Fund, International Trade Centre, United Nations Conference on Trade and Development, United Nations Development Programme, World Bank, and World Trade Organisation.

**IGAD (Intergovernmental Authority on Development).** The Intergovernmental Authority on Development (IGAD) in Eastern Africa was created in 1996 to supersede the Intergovernmental Authority on Drought and Development (IGADD). The recurring and severe droughts and other natural disasters caused widespread famine, ecological degradation and economic hardship in the Eastern Africa region and the efforts of individual countries to cope with the situation were not enough concerning the magnitude and extent of the problem. A regional approach to supplement national efforts was needed. IGAD aims to increase cooperation in food security and environmental protection, promotion and maintenance of peace and security and humanitarian affairs, and economic cooperation and integration. Important objectives are e.g. to promote joint development strategies and gradually harmonize macro-economic policies and programmes in the social, technological and scientific fields, promote and realize the objectives of the Common Market for Eastern and Southern Africa (COMESA) and the African Economic Community as well as to facilitate, promote and strengthen cooperation in research development and application in science

and technology.

IGAD programmes include CEWARN (Conflict Early Warning and Response Mechanism), ICPAT (Capacity Building Programme Against Terrorism) and ICPAC (Climate Prediction & Application Centre).

**NEPAD (New Partnership for Africa's Development).** NEPAD represents Africa's leaders will and commitment to tackle the part of the hallmark problems of developing practical applications to help the African Union and set goals to be achieved. At the same time the role of science and technology for development is recognized. One of the main goals is to reduce the technology-based difference between Africa and the rest of the world. The programme targets an annual average growth rate of 7% for Africa to meet the MDGs (Millennium Development Goals). Focus areas cover e.g. infrastructure, human development as well as science and technology.

The Science and Technology Consolidated Plan of Action (CPA) has a number of programmes and projects which are grouped into two core areas: research and development and mechanisms to improve policy and promote technological innovation. In the former programme cluster four focuses on ICT, space science and technologies and in the latter programmes tackle 1) African science, technology and innovation indicators initiative, 2) Improving regional co-operation in science and technology, 3) Building public understanding of science and technology, 5) Building science and technology policy capacity and 6) Promoting the creation of technology parks.

The ICT component of NEPAD aims to increase the density of telecommunication to a comfortable level, so that citizens can make use of information and communication technology. Additional aims are to reduce costs and improve service reliability, to achieve the e-adequate level of competence in all African countries as well as to develop an effective ICT-based tool for young people and students allowing to educate engineers, programmers and software developers.

**SADC (Southern African Development Community).** The mission of SADC is to promote sustainable and equitable economic growth and socio-economic development through efficient productive systems, deeper co-operation and integration, good governance, and durable peace and security, to allow the region to emerge as a competitive and effective player in international relations and the world economy. The Regional Indicative Strategic Development Plan (RISDP) and the Strategic Indicative Plan is the framework for SADC Regional integration, reaffirming the commitment of SADC Member States to good political, economic and corporate governance entrenched in a culture of democracy, full participation by civil society, transparency and respect for the rule of law. In this context, the African Union's New Partnership for Africa's Development (NEPAD) is embraced as a credible and relevant Continental framework, and the RISDP as SADC's Regional expression and vehicle for achieving the ideals contained therein.

In terms of science and technology the overall goal is to develop and strengthen national systems of innovation in order to drive sustained socio-economic development and the rapid achievement of the goals of the SADC Common Agenda including poverty reduction with the ultimate aim of its eradication. The focus areas include strengthening of regional cooperation on S&T; development and harmonization of S&T policies; intra and inter-regional cooperation; research capacity in key areas; technology development, transfer and diffusion; and public understanding of S&T.

A Task Force within SADC was founded in 2003 to coordinate the international cooperation. The mission of the Joint SADC International Cooperating Partners (ICPs) Task Force (JTF) is to enhance international

cooperation in the implementation of SADC regional development plan (RISDP).

**The Higher Education for Development** program is administered by USAID. It has sponsored collaboration between United States and developing country universities since 1987. By now, the number of such partnerships exceeds 300 in about 60 different countries. Higher Education for Development (HED) mobilizes the expertise and resources of the higher education community to address global development challenges by facilitating and managing higher education partnerships. Each partnership links a higher education institution in the United States with another institution in a host country. In support of USAID's development goals, partners work together to address a wide range of challenges—from public health to entrepreneurship training, and beyond. Funding for HED partnerships comes from the United States Agency for International Development (USAID), USAID Missions and the U.S. Department of State. <http://www.hedprogram.org/ourwork/index.cfm>

**The International Development Research Centre (IDRC)** is a Canadian Crown corporation established by an act of Parliament in 1970 to help developing countries find solutions to their problems. IDRC encourages and supports researchers and innovators in those countries to find practical, long-term solutions to the social, economic, and environmental problems their societies face. Its goal is to find ways to reduce poverty, improve health, support innovation, and safeguard the environment. IDRC's Science and Innovation program supports research and capacity building to help developing countries produce, adapt, and use STI for development. Along with gender, key cross-cutting themes within the program are intellectual property rights, science granting councils, and inclusiveness. [http://www.idrc.ca/EN/Programs/Science\\_and\\_Innovation/Pages/default.aspx](http://www.idrc.ca/EN/Programs/Science_and_Innovation/Pages/default.aspx)

**In sum**, the science, technology and innovation discourse has been dominated by rich nations and multinational corporations. Low-income countries have not been able to utilize innovative product and service models. LIC participation to global knowledge networks has been limited. Growing interest for applying new technologies to societal problems and stimulation of pro-poor innovations is likely to integrate LICs to the global innovation community. Positive demographic patterns and growing purchase power are likely to increase interest of local SMEs and multinational companies. Also, the role of local community based innovation models should be emphasized more in future (incl. service innovations and social innovations).

## 4. CONCLUSIONS AND RECOMMENDATIONS

Research relating to development issues always includes an analysis of fairly complicated interdisciplinary systems, in which researchers' calls for "more research" is not always the only way to solve problems. The range of various research-oriented institutions, think-tanks and foundations in different sectors of society is also so wide as to lead to information overload and problems in the areas of coordinating activities in validating research findings and results. Nevertheless, more basic research is needed on development, but also more attention should be paid on the use and synthesis of already of existing research and data, in improving the use of existing knowledge of development. Also, further work and funding need to be allocated to the nexus between research, policy and practice.

Six global megatrends identified in this report, together with six critical change factors above, are being confronted precisely in low-income countries. Also country- and region-specific solutions should be identified and analysed in future more in detail. This is crucial for enhancing strategic capacity and knowledge base of Southern Research Communities. Especially, the universities in low-income countries are still, in many ways, the best-situated institutions for local knowledge gathering and dissemination. However, LIC universities are in dire need of capacity development funding joined with research funding. It is necessary to ensure appropriate balance in financing different institutions, research centres and universities, and that there is capacity to absorb additional funding. In comparison to availability of large short term research grants, low-income context often requires a more long-term focus on sustainable financing and capacity building for research. This could also enable mainstreaming quality in capacity and resource building among the strong national universities in LICs.

There is thus a dire need to create efficient and creative research capacity in LICs. Universities are overwhelmingly understaffed and have little to offer to the bright minds of the future. As such, many ways of organizing the aid for research needs to be rethought. Currently, there are several structural problems in most northern and centralised research funding instruments. Funding often consists of small niche projects that are spread across a large array of partners. These projects fall short in creating transformative momentum. Efficient training of skilled researchers and research managers and support to national research systems and institutions, including universities, is needed.

The need for **interdisciplinary and multi-methodological comparative** research is urgent and obvious. More **problem-oriented** research has to be conducted to produce a detailed profile of strengths and weaknesses in terms of institutional frameworks. There is a growing need for **interdisciplinary research to map urgent and unseen tendencies in the area of security.**



## 4.1 Strategic Funding Options

To summarize the arguments presented throughout this report the following issues should be discussed more in detail:

- The transformative gaps: What are the missing capacities whereby LICs research institutions are not attracting investments and integrate into global academic community?
- The international architecture of development finance for research and critical evaluation of global development research models and results
- Research funding balance and absorption capacities of universities in low-income countries.
- The nature of research and reporting of research collaboration between developed and developing countries, including exploitative forms of "cooperation".

Four strategic directions for Donor agencies future research funding framework are identified in the figure Bellow. The figure provides an illustration of the “status quo” of mainstream current funding approach and draws vectors towards more centralised or decentralised, and niche or structural funding options for the building of future funding frameworks. The figure 20 below shows four alternative options based on two dimensions:

- 1) Who defines research agendas, goals and objectives (North-South), and
- 2) What is the scope of research (niche vs. structural problems)?

These are naturally ideal models, and in real-life there are always elements of all these models present. It is, however, important for any donor to make strategic choices about the design of future research programs and to explain why certain priorities and choices were made. The approaches are expanded and described in the table below.

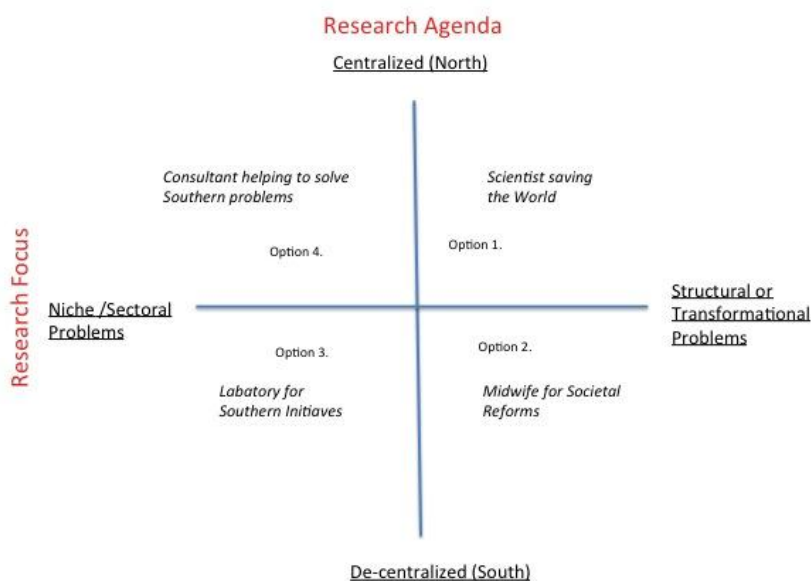


Figure 20. Alternative options to create research agendas between North and South

Table 8. Alternative models elaborated

Strategic Options	Donor Agency's Role	Strengths	Weaknesses
Option 0. <i>Status quo</i>	Donor continues with existing strategy and updates it only by changing research priorities	<ul style="list-style-type: none"> <li>· Empirical evidence for success in economic and welfare policies</li> <li>· Long history</li> <li>· Strong institutions and capacity</li> <li>· Existing practices and know-how</li> <li>· Good networks and partnership arrangements</li> <li>· Existing core funding model (support to universities, libraries, laboratories and staff training) still important in LICs where the capacity and research infrastructure is weak.</li> </ul>	<ul style="list-style-type: none"> <li>· Backward looking focus and yesterday's solutions for future problems</li> <li>· Low commitment and ownership by Southern partners</li> <li>· Low leverage and effectiveness</li> <li>· Contextual problems in exporting best practices</li> <li>· Insufficient support for Southern capacity building</li> </ul>
Option 1. <i>Scientists saving the world ("Northern Think Tank")</i>	Donor's research funding options advocate for Western Welfare Model and Values, focusing on societal and structural problems	<ul style="list-style-type: none"> <li>· To tackle preliminary problems in LICs and see the "big picture"</li> <li>· Focus on broad structural problems</li> <li>· Avenue for recognition of values guiding international cooperation and global support for research in a changing global context</li> <li>· Possibilities for multidisciplinary</li> </ul>	<ul style="list-style-type: none"> <li>· Paternalistic top-down approach</li> <li>· Commitment and ownership by Southern partners dependent on adhering to these values</li> <li>· Difficult research designs and data collection problems</li> <li>· Lack of understanding complex, interconnected problem areas</li> </ul>

		<ul style="list-style-type: none"> <li>· programs and cross-sectoral studies</li> <li>· Joint programs with other donors in the spirit of Paris declaration</li> <li>· Pre-tested models and research designs</li> </ul>	<ul style="list-style-type: none"> <li>· Short term impacts and effectiveness may be low</li> <li>· Problems with empirical evidence and accountability</li> </ul>
Option 2. <i>Midwife for societal reforms</i>	Donor takes an active role in facilitating Southern initiatives and networks that aim to accelerate societal reforms and to solve structural problems (structural South-South-North model)	<ul style="list-style-type: none"> <li>· Strong ownership by Southern partners and networks</li> <li>· Strong emphasis on policy learning and capacity building</li> <li>· Scope for support through both global and bilateral support</li> <li>· Better understanding of local contexts and causal relations between problem areas</li> <li>· Inductive and iterative multi-disciplinary approach</li> <li>· Platforms for genuine social innovations</li> </ul>	<ul style="list-style-type: none"> <li>· Low capacity of Southern partners to tackle big societal problems</li> <li>· Problems in the relationship with other donors and international agencies with stronger input and influence on national policy options and choices within countries</li> <li>· Rigid and hierarchical governance structures</li> <li>· Hidden agendas</li> <li>· Methodological and data collection problems</li> <li>· Lack of transparency and empirical evidence</li> </ul>
Option 3. <i>Laboratory for Southern Initiatives</i>	Donor provides support for Southern Research Initiatives and experiments	<ul style="list-style-type: none"> <li>· Strong Southern ownership</li> <li>· Possibilities for innovative and exploratory research ideas and designs</li> <li>· Easy-to-do research with practical relevance</li> <li>· Short term evidence</li> <li>· Demand-driven approach</li> </ul>	<ul style="list-style-type: none"> <li>· Narrow focus – limited scope</li> <li>· Problems of how choices are made and with the process by which Southern Research Initiatives and experiments are defined, processed and chosen</li> <li>· Problems of scaling and aggregation (generalization)</li> </ul>

		(bottom-up) · Cost-efficient projects	problems) · Slow learning curve · Low strategic relevance both from the science and policy perspectives
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Option <i>4.Consultant helping to solve Southern problems</i>	Donor defines research agenda and goals. Provides best Nordic knowledge and know-how to solve clearly defined Southern problems	· Strong Nordic networks and experts · Sharing best practices · Transparency and accountability · Easy to measure (baseline – ex post measurement)	· Traditional knowledge transfer model with known problems · Necessity to ensure funding also for resources and time spent in the North or within multilateral or intermediate agencies · Contextual problems in utilizing results · Lack of Southern ownership · Research infrastructure and capacity not necessarily sufficiently mature to absorb models
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The strategic options illustrate the strengths and weaknesses of the different funding programme possibilities. While each aims at creating a transformation conducive research base, the identified challenges and opportunities need to be taken into account in each choice of direction.

The fact that the valuable, transformative knowledge generated on LICs lies inaccessible far beyond their borders is highly problematic. So called solutions to many of the global megatrends and complex and interconnected problems facing low-income countries lie in Northern, industrialized countries very far from where the solutions should be implemented. Strategic option 1. (Scientist saving the world) characterizes the same problem many global research institutions, INGOs, think tanks and development banks are facing. Societal problems of low-income countries cannot be solved by creating comparative statistics and development indicators from an ivory tower.

Model 4 (Physician) is a traditional twinning-type of an activity model in which Northern experts help their Southern partners to increase their knowledge capacity to solve clearly defined (niche) problems. This

model relies on strong science networks and experts, together with sharing best practices tested in practice. There are several problems related to this approach, namely the lack of Southern ownership, contextual differences in transferring knowledge and best practices as well as the problem of absorption.

The two South-driven options (models 2 and 3) are based on a more participatory approach and intend to design research agendas and objectives based on local needs. Equity in research collaboration and research funding is important to reduce global inequality and to provide a climate that is conducive for transformation. Partnerships that give inadequate representation to scientists from developing countries or reduce their role to subcontractors for data collection can at worst be seen as exploitative. Researchers from developing countries can also be involved only to fulfil largely 'operational' or consultative roles in research projects. Ethics and equity in research partnerships are matters, which donors could monitor and analyse more closely. Optimally, research collaborations should be guided towards genuine partnerships with the aims of mutual learning and local capacity building. Most of the time, however, donor funded research activities are spread thin and conducted through small-scale projects in large consortia, amounting to more administration and less concrete results. This tendency is heavily criticized by Southern partners and most importantly seldom leads to long-term transformative results. On the other hand, donor preference of very large projects can exclude smaller institutions, which cannot bear the costs and risks of a very large project or programme.

In model 2 the donor's role is to act as a midwife facilitating the creation of South-South networks and research programs. The common denominator of those initiatives is that they all focus on major societal problems (often structural) and apply ambitious multidisciplinary research settings and networks. This is likely to enhance Southern ownership and commitment and create new types of local partnerships and networks that truly strengthen multidisciplinary research and policy dialogue between scholars, policy-makers and citizens. This however requires strong research capacity and strategic vision among the local partners, otherwise there is a risk that the donor community and multinationals may have too much influence on research design and objectives.

In model 3 the creation of local partnerships is easier since the focus of the research is more sector specific, intra-disciplinary or niche specific. Here donor's role would be a laboratory providing platforms for local initiatives and experiments. This research is very pragmatic and likely to solve clearly defined problems. The problem with this model, however, might be that a narrow focus means losing sight of the big picture. There might also be serious problems in scaling up or aggregating the results of this kind of research.

To sum up: "one cannot transform a country through microfinance" (comment by one of interviewed experts). The same goes for research. Truly transformative research requires large investments in transformative programs. There is a need to get away from the funding structure of thinly spread projects in all sectors and countries. Rather donors should aim at consolidating a holistic, joint approach by pooling resources. This can be achieved either by gaining more funding partners or by centering funding on the most transformation conducive countries or domains.

To be able to create true transformation, there is a need for a complete rethinking of the dominant research agendas. There is a need for transformative research, which digs deep into the foundations of why a country is a low-income country, i.e. the root causes of "low-incomeness". As simple as this may sound, it is a daunting, under-researched domain.

Truly transformative research also focuses on the gaps, which remain in the creation of ***productive resource***

**capacities:** What are the necessary knowledge capacities, entrepreneurial capacities, legal capacities and governance capacities that are lacking for the transformation of a country?

Low-income countries are not necessarily low in resources. What, then, are the gaps, which hold the potential and actual performance of the countries so far apart? These gaps need to be studied as they include clear links to all the other challenges a country may face.

There seems to exist a presumption that technological, entrepreneurial and organizational capacities exist for development even in low-income countries. These capacities are instrumental for being able to implement necessary reforms. **There is thus a need for a systemic approach to research on the explanations for dysfunctional or lacking capacities as root causes of non-development.**

National research institutions are crucially important for essential research infrastructure and policy implementation, in particular through collection and analysis of data and implementing applied research (e.g. national public health institutes). Thus, **a key recommendation is the further development of research institutes inside emerging universities and the creation of a semi-independent, publicly funded institutional basis for long-term national research policy and needs.** There would be ample possibilities for research capacity building of this sort especially with emerging universities in post-conflict settings. These initiatives could even be constructed as twinning activities with Swedish or Southern institutes for added value and contacts.

## 4.2 Thematic Conclusions

### ***Democracy and access to public sphere***

Democratization is an indispensable megatrend in the poorest countries at present and will continue to be so for decades to come. It will without a doubt also continue to be an essential topic for academic interest. Internet and better access to information increases transparency. Individual empowerment will accelerate, and together with better education and an increased knowledge on societal issues, is likely to enhance the raise of the civic society. Some governments will still try to limit access to information and freedom of assembly. However, when civic pressure is high enough top-down control is not possible any longer. As far as societal development is stable (i.e. no internal or external conflicts) governments are forced to implement democratic measures and allow freedom of speech by citizens and press.

### **Key Focus Areas for Future Research**

- a) Constructing democratic and good governance
- b) Civil society actions to reinforce representative democracy
- c) Social movements and young people
- d) Civic Security: employment and urban planning
- e) BRICs and Human Rights
- f) Media (and it's ownership), Internet

### ***State, globalization and conflicts***

Between 500 million and 1 billion people live in states seriously affected by conflict or unstable governance. In contrast to most of the remaining developing world, these regions/states have seen little progress in

terms of development outcomes, and their situations are becoming an increasingly serious part of the global development problem (The 2011 World Development Report). There is an urgent need to map alternative approaches to resolving sticky conflicts, and to build state legitimacy through inter-related actions on security (security-poverty relation), crisis prevention and economic recovery, and governance, and to strengthen legislative systems and access to justice (follow up and regulation).

### **Key Focus Areas for Future Research**

- a) Youth and ICT (from an interdisciplinary perspective)
- b) New funds and taxation (local, national and global)
- c) The changing role of State, NGOs and business
- d) Corporate Social Responsibility
- e) BRICs and Role of the West?
- f) Income gaps and comprehensive poverty reduction
- g) Relations of commercial and governmental power
- h) New conflicts (ethnic, environmental, religious, raw materials, energy)

### ***Governance of environment and natural resources***

Since the onset of industrialization about 200 years ago, human development has come mainly at the expense of the environment and natural resources. Environmental degradation, climate change and land use change have altered the foundations and development pathways of economies that are dependent on agriculture and natural resources use. Some regions are able to benefit from this change, while the majority, particularly LICs will face serious challenges. Food security, degradation of natural resources and access to sustainable energy will remain key challenges in LICs. Strong, structural changes in the governance of natural resources – both globally and nationally - are needed to direct countries into sustainable development pathways.

There is a lack of skilled researchers and research managers and a lack for support to national research systems and institutions, including universities. Similarly, national resource inputs on research are lacking and dependent on external and more short-term project financing. There is a need to build interdisciplinary research programs that can tackle multi-faceted problems (e.g. governance, gender, technical issues) related to natural resources use and climate change.

### **Research Gaps and Key Focus Areas for Future Research**

- **Governance of Natural Resources**
  - Tenure and use, land-use conflicts and the role of globalized trade
  - Access and management of key resources, e.g. clean water
- **Food security, agriculture, rural development, and sustainable energy in LICs**
  - How can agricultural productivity be raised, especially in Africa where there has been remarkably little progress in this front?

- Climate change is increasing the challenges that agriculture and natural resources management sectors are facing in LICs. In many low-income countries, the vulnerability of the production systems and of a large proportion of the whole population
- In climate change and natural resources more emphasis on adaptation and building resilient production systems

### ***Demographic change, rural development and urbanization***

The expected growth in the world population will be concentrated in the urban areas of the less developed regions, whose population is projected to increase from 2.7 billion in 2011 to 5.1 billion in 2050. Rural and urban economies will become more and more integrated creating new economic opportunities. The new “mega-cities” become the new engines of both global and regional economies. Yet, increased urbanization requires large investments in sanitation, infrastructure etc., and curbing environmental pollution and loss of resources such as water basins, and arable land becomes a major challenge.

Currently there is thus a need for further identifying the interactions between demographic processes, natural resources and critical urban life support systems in the contexts of regional and sub-regional variations. This should essentially include integrating demographic trends and factors into current studies of environmental change. Research should be directed towards ensuring better urban services (e.g. local uptake and implementation of water management systems) and ensuring that research exists on pro-poor societal spending in urban areas in order to enhance social stability. Another important area of research should also cover the intricate nexus between poverty, urban employment and migration.

### **Key Focus Areas for Future Research**

- c) Mega-regions, Urban Corridors and City Regions as Hubs for Development
- d) Further identifying the interactions between demographic processes, natural resources and critical urban life support systems  
→ e.g. local uptake and implementation of water management systems
- f) Integrating demographic trends and factors into current studies of environmental change
- g) How to ensure better urban services and ensuring that research exists on pro-poor societal spending in urban areas in order to enhance social stability
- h) Nexus between poverty, urban employment and migration

### **Governance for Public Policies for Social Development**

Capacities to address poverty and social inequalities, including ensuring that benefits from economic growth contribute to broader social development and capacities, in particular in countries, which are rich in natural resources. There is a need for tackling and limiting the negative, while enhancing the positive impacts and implications of globalisation, in particular in the context of mobility of people, availability of new communication technologies, and in both enhancing of trade and new investments within countries as well as ensuring benefits to the wider society.

There is a need for strengthening the institutional basis of research for public policies, including capacities and institutional basis for health systems, health policy and public health research as well as research on



social security and labour markets. Support should be given to training and professional development of highly skilled work-force for public administration and regulatory capacity needs, as well as to national research prioritisation and capacities to national financing of essential national research for health and social development needs

#### **Key Focus Areas for Future Research**

- a) Intersectoral, interdisciplinary and implementation research for health and public policies, including research on public health, prevention and social determinants of health
- b) Social science research for national social policy development, including support to political sciences and analysis
- c) Research on regulation and resource gathering for social development beyond user cost-sharing, in particular for resource rich low-income countries
- d) R&D on neglected diseases and conditions of local and national importance as well as on essential pharmaceutical policies for access, regulation, procurement and supply of medicines
- e) Impacts and politics of global and development priorities for national social development

#### **Science, Technology and Innovations**

Science, technology and innovation discourse has been dominated by rich nations and multinational corporations. Low-income countries have not been able to utilize innovative product and service models. LIC participation to global knowledge networks has been limited. Growing interest for applying new technologies to societal problems and stimulation of pro-poor innovations is likely to integrate LICs to the global innovation community. Positive demographic patterns and growing purchase power are likely to increase interest of local SMEs and multinational companies. Also, the role of local community based innovation models should be emphasized more in future (incl. service innovations and social innovations).

#### **Key Focus Areas for Future Research**

- Clear shift from Northern research agendas towards South-South-North model, i.e. providing only core funding and leaving needs assessment and research agenda setting to Southern networks and partners.
- Support for the user-driven local innovations. Role of research is to test alternative models.
- More focus on low-tech innovations in low-income countries.
- Emphasis on innovations that help the every-day living conditions of the poor population in low-income and lower-mid income countries. The Role of research is to provide evidence for results achieved.
- Special research program targeted to structural problems of low-income countries systems level change drivers (e.g. multidisciplinary)
- More emphasis on multi-disciplinary research initiatives tackling horizontal and cross-policy problems, including access to knowledge and products of research

- Increasing attention on innovation research at the regional and local level (community-based innovation platforms).

#### 4.2.1 What we may have missed?

The thematic conclusions above are based on the material accumulated within the scope of the project. However, this cannot be seen as exhaustive. At least the following areas can also be seen as significant for LIC's in the future, but which did not receive attention in the researched material.

- Urban security and securitising public space
- Trade unions
- The importance of education on every level
- Good governance and corruption
- Sustainability, consumers
- Human Rights
- How aid has been directed, managed and used in the countries where most of poor people live such as India and Brazil, and not necessarily in the poorest countries
- Green innovations and technologies
- Transport & Tourism and air travel's role in the future

### 4.3 Recommendations

An initial observation would indicate that large share of our recommendations are already within the emphases and scope of financing by Sida. While the focus of this analysis was not on what Sida does, it is necessary to note that in this respect the message of recommendations is likely to be more on importance of maintaining support and ensuring continuity for support to existing policies and financing in future.

- Future global challenges, such as the sustainable use and management of natural resources, are issues of the **governance of environmental unknowns**.
- Support to **problem oriented, multidisciplinary research** as well to building of, financing and maintaining essential national research institutions
- **Socio-cognitive risk governance models** concerning environmental systems, involving epistemic uncertainties and normative ambiguities, will be required
- **Well-defined projects** with direct funding to Southern partners, to avoid micro-management and micro-finance - small is not always beautiful
- **Different partnerships** with good governance principles, prepared in South-South-North cooperation
- **Learning together from different Nordic best practices/worst examples**
- **Different roles of new actors** and their analysis: China's role in Africa is interesting, but we should not overlook how the West is operating (**How EU and US are doing business in Africa**)
- **Latin America and Russia**: what LICs could learn from Latin American urbanization processes and problems; Russia, history and the role of the state in energy issues: lessons to learn?

- **Innovation's role** – where needed, and where just an empty word? Combining scientific and technological with *social innovations'* cycles and ideas
- **Improving the use of existing research.**

## Epilogue(s)

### 1- Scientific cultures, values, and paradigms of development – the “eternal” need for interdisciplinarity

In this study, we have not been able to analyse cultural aspects of poverty, aid and development. At least some words on these matters are in order. Interdisciplinary scholars and pedagogues, such as Paolo Freire (2007) and Boaventura de Sousa Santos (2002), have consciously promoted the idea of a *democratic learning culture*. The approach is closely linked to the hermeneutic ability to understand different cultures and different ways of explaining things (and doing research).

In practice, a democratic learning culture suggests that the researcher not only listens to an academic from a different research tradition but also respects and strives to understand the paradigmatic and methodologically different ‘other’. All knowledge has value, and serious ‘interdisciplinarians’ need to contemplate this idea sincerely. At the same time, an interdisciplinary attitude carries pedagogical implications, too: who ‘teaches’, how and why? It is also a question of local and global power relations – ideological, cultural and political – in the context of area and cultural studies. What can we learn from the South, from the innovative experiences in the so-called developing countries (Pakkasvirta 2010a; Teivainen 2003)? There is also a huge political and cultural need for this kind of learning. Without such learning that transgresses the idea of developed/adult/teacher vs. developing/child/pupil, global democratization cannot advance very far.

An interdisciplinary alternation of viewpoints, and an effort to imagine and analyse the world even upside down, helps the researcher in creating interesting and different hypotheses. The change of perspective can prove dramatic. In development issues and studies this dramatic aspect is always present. Changes to the traditional power angle –from

North to South – also often reveal differences between common and academic knowledge. In our daily lives we often compare and change perspectives and our reasoning spontaneously, but in academic research we easily follow the same methodology, theory, paradigms, materials, and disciplinary rules that we are used to and educated in. This kind of academic attitude, which does not seriously consider the idea of changing perspectives, is rather common in mainstream research, whether in economics, political science, sociology, geography or history. But a genuine interdisciplinary study would strive to adopt more multidimensional perspectives and use the ‘interdisciplinary imagination’ as a tool to understand the variety of ways in which knowledge is created and constructed.

Similarly, the use of different scholarly traditions and methodologies is integrated into the idea of an interdisciplinary and democratic learning culture. Let us imagine a technical engineer who has to start to clean a forest. He has learned everything about using the chainsaw. He also knows the technological properties of his equipment. Nevertheless, he cannot clean the forest rationally if he does not have information from other disciplines such as biology-based forestry. He has to know what to cut and how. In other words, he has to know something about the plants and trees and the forest as a whole, as a complicated ‘interdisciplinary’ system (Pakkasvirta 2010b).

Since the ‘positivist quantitative corpus’ (the basics of quantitative analysis and scientific causalities) has faded from many academic cultural studies programmes, students often find themselves in a situation where ‘anything goes but nothing helps’. The simple solution is to combine both quantitative and qualitative methods in social sciences and humanities, and to do this in an imaginative yet also strictly academic and interdisciplinary way.

The selected sources and the nature of different research materials have always defined academic

disciplines. Researchers learn to use certain materials and analyse them in accordance with the traditions of their disciplines, which also determines research tactics and attitudes. Such academic manners and traditions are often based in the differences between qualitative and quantitative analysis (Becher&Trowler 2001). The distinction and dichotomy is nevertheless rather artificial and should be crossed, even more so in an interdisciplinary study.

This also helps to combine different research strategies and tactics. Academic structures, traditions and institutions are still relatively bound to the classical system of faculties, strict disciplinary rules and study tracks. While many of these have a long history dating to the Middle Ages, these 'ways of doing' are more than a hundred years old also in the 'young sciences', including the social sciences (Wallerstein 1996). Interdisciplinary 'disciplines', such as area and cultural studies, are sometimes seen as competitors by the traditional disciplines, or they are written off as not adequately academic. This is strange, because at the same time the need of interdisciplinarity is proclaimed and praised in academic speeches, evaluations and planning. Interdisciplinary can gradually deal with this fairly common problem, when more non-disciplinary space is made available for specialists with generalist interests. The way to proceed is by promoting somewhat radical transdisciplinary thinking in present multi- and interdisciplinary schools, study tracks and institutions.

These include a request for a democratic learning culture, the use of different epistemological angles in a creative way, and the rethinking of quantitative and qualitative analysis and data. Especially in cultural studies of development issues, the combination of internal-external analysis is needed in seeking to identify the impact of the external *together with* the internal.

## **2- Africa is coming – or just an African Dream?**

Along with the economic growth of BRICS the new developmental trends of African nations are part of a global multipolar shift. Six out of ten of the world's fastest growing economies of the past decade are found in Sub-Saharan Africa. The economy of the continent which comprises over 50 nations grew at an average annual rate of 5% – even through the global financial crisis.

African economies have been opened and inflation

reined through the initiatives of independent central banks. Africa's coming economic rise will however require stronger institutions and better functioning judiciaries and governments, which battle the corruption that still besets the continent. In addition to democratic reforms African governments will have to rid themselves of the traditional bottlenecks of development. The need remains for more roads, harbors, electricity and clean water.

Although Africa is still full of nations that are hindered from development by wars, illiteracy and illnesses, the overall scale of warfare being waged on the continent is in decline. Crisis continues to afflict the eastern DRC, northern Nigeria and Mali, but open, large scale conflicts have lessened.

Africa continues to be an important source of natural resources, but the raw materials only tell one part of the story of the continent's development. Only a third of Africa's economic growth in the years 2002–2007 derived from raw materials. Growth was spurred on by consumer-driven business, agricultural development, and advances in transport, telecommunications and industries.

African growth is guaranteed by the fact that in the year 2040 Africa will be home a larger labour force than China or India. Africa's population now exceeds one billion, but the continent's population estimate for the year 2050 is projected at over 2 billion.

It is often overlooked in discussions of China's role in Africa that Brazil's trade with African countries has increased by a factor of six in the last decade. At the same time Brazil has doubled the number of its embassies in Africa and forgiven over one billion dollars in debts to African nations.

Europe may now be at a somewhat marginal position in Africa, but EU countries have also altered their approach from one of development aid providers to one of partners. Differences do however remain. While European politicians and World Bank officials lecture on about transparent governance, human rights, democracy and inflation prevention, Chinese counterparts build a dam and snatch up rights to land and oil deposits.

Europe retains a certain part to play. China's example has led some African leaders to play with the thought that perhaps their countries too could look forward to an economic miracle without the need for democratic reforms. At the same time, economic, political and cultural cooperation between African nations has seen progress on many fronts, and the EU

can act as a good partner here. The weakness of the now 50-year-old African Union continues to lie in its inability to demand good governance and well-functioning democracies for its citizens. And if outsiders happen to offer their views their instructions and demands are branded as meddling in the internal affairs of the continent. The burden of colonialism continues to be visible in many ways and from many sides.

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## APPENDICES

### Appendix 1. List of Low-income Countries

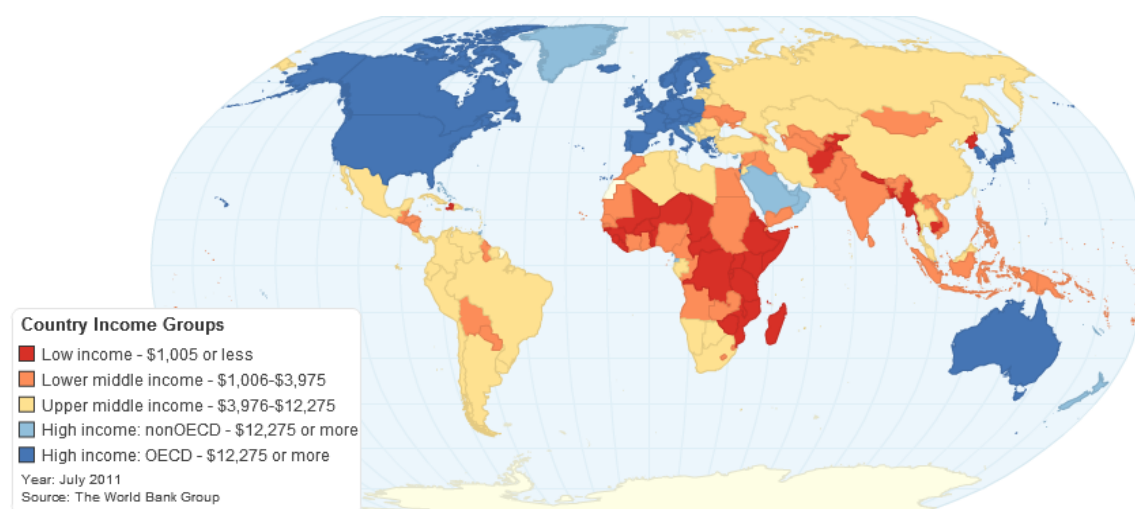
Classification by the World Bank

36 countries

Criterion: Gross National Income per capita, calculated using the [World Bank Atlas method](#). 1025 US\$ or less.

Low-income countries as of July 4<sup>th</sup> 2012:

Afghanistan	Gambia, The	Mozambique
Bangladesh	Guinea	Myanmar
Benin	Guinea-Bissau	Nepal
Burkina Faso	Haiti	Niger
Burundi	Kenya	Rwanda
Cambodia	Korea, Dem Rep.	Sierra Leone
Central African Republic	Kyrgyz Republic	Somalia
Chad	Liberia	Tajikistan
Comoros	Madagascar	Tanzania
Congo, Dem. Rep	Malawi	Togo
Eritrea	Mali	Uganda
Ethiopia	Mauritania	Zimbabwe



## Appendix 2. HDI comparison of LIC and predictions for future development

Country	Human development index (HDI)			IMF GDP per capita prediction (current US\$)				
	HDI 2013	HDI 2020	prediction HDI 2030	prediction 2013	2014	2015	2016	2017
Afghanistan	0,374	0,613	0,669	668	699	726	750	766
Bangladesh	0,515	0,571	0,619	835	897	966	1041	1123
Benin	0,436	0,502	0,55	841	875	912	951	1048
Burkina Faso	0,343	0,388	0,426	617	656	698	741	786
Burundi	0,355	0,462	0,489	317	334	352	374	408
Cambodia	0,543	0,614	0,669	1018	1111	1215	1331	1459
Central African Republic	0,352	0,46	0,49	451	477	501	526	551
Chad	0,34	0,446	0,477	872	876	884	891	899
Comoros	0,429			898	941	985	1031	1079
Congo, Dem. Rep	0,304	0,572	0,587	251	261	273	285	301
Eritrea	0,351	0,495	0,508	606	659	712	775	799
Ethiopia	0,396	0,411	0,456	518	545	584	622	659
Gambia, The	0,439	0,474	0,493	541	576	606	629	657
Guinea	0,355	0,538	0,58	561	542	640	754	868
Guinea-Bissau	0,364	0,427	0,452	529	592	615	642	671
Haiti	0,456	0,562	0,593	827	883	956	1028	1099
Kenya	0,519	0,617	0,651					
Korea, Dem Rep.	no data							
Kyrgyz Republic	0,622							
Liberia	0,388	0,388	0,395	470	490	545	562	581
Madagascar	0,483	0,536	0,557	458	472	488	527	570
Malawi	0,418			262	273	283	297	312
Mali	0,344	0,609	0,642	586	613	640	669	703
Mauritania	0,467	0,484	0,507	1174	1189	1244	1306	1380
Mozambique	0,327	0,488	0,557	691	733	802	878	958
Myanmar	0,498	0,656	0,7	914	964	1019	1066	1104
Nepal	0,463			641	685	726	769	814
Niger	0,304	0,336	0,363	434	460	485	511	533
Rwanda	0,434	0,577	0,626	723	774	833	899	969
Sierra Leone	0,359			656	733	756	784	816
Somalia	no data							
Tajikistan	0,622	0,757	0,776					
Tanzania	0,476	0,537	0,581	699	731	771	808	847
Togo	0,459	0,509	0,538	586	601	621	639	664
Uganda	0,456	0,659	0,765	590	613	640	676	713
Zimbabwe	0,397	0,708	0,778	1622	1720	1858	2009	2168

What is the HDI?

The Human Development Index (HDI) is a composite measure of health, education and income that was introduced in the first Human Development Report in 1990 as an alternative to purely economic assessments of national progress, such as GDP growth. It soon became the most widely accepted and cited measure of its kind, and has been adapted for national use by many countries. HDI values and rankings in the global Human Development Report are calculated using the latest internationally comparable data from mandated international data providers. Previous HDI values and rankings are retroactively recalculated using the same updated data sets and current methodologies, and are presented in Table 2 of the Statistical Annex of the 2013 Report. The HDI rankings and values in the 2013 Human Development Report cannot therefore be compared directly to HDI rankings and values published in previous Human Development Reports.

### **Appedix 3. Haiti – the only LIC of Latin America: hit by natural calamity**

#### **Haiti – the only LIC of Latin America– and hit by natural calamity (problems of Aid)**

On January 12, 2010, a 7.3 magnitude earthquake struck Haiti, the epicenter in Leogane, near Port-au-Prince. The Inter-American Development Bank estimated it to be the largest in proportional impact that any country has ever experienced and that it could cost USD13.9 bn and take 10 years to rebuild the country. More than 220.000 people died and 3.5 million individuals were affected. In the following weeks after the disaster, an evaluation of the damages was conducted, led by the international community and in collaboration with some members of the Haitian Government.

The terrible disaster that hit Haiti marked a distinguished point in the history of the country; there will be always a before and an after this event. The earthquake exacerbated Haiti's multiples vulnerabilities, rooted in its troubled history, to the extreme extent; the situation has never been worse and it offers the unique opportunity for Haiti's new beginning.

The re-definition of a social contract, of the state's responsibilities, of the citizens' rights behind the idea of "building-back better" imply a powerful opportunity of a societal change in the light of major equity, dignity and sustainable growth.

This evaluation produced on the 17<sup>th</sup> of March 2010 a report called the Post Disaster Needs Assessment (PADN) which constitutes the base for the PARDN (The Action Plan for National Recovery and Development) that was presented at the donors' conference in New York at the end of March 2010. The PARDN designed the institutional structure responsible for the coordination of the reconstruction efforts and it's in this document that the establishment of the CIRH (Interim Commission for the Reconstruction of Haiti) and of the Fund for the Reconstruction of Haiti (FRH) took shape. Already during this initial phase, the Haitian civil society strongly criticized the lack of participation and ownership of the Haitian stakeholders, blaming the United States to direct the scene overpassing the national authorities.

The mandate of the CIRH was to conduct strategic planning and coordination and implement resources from bilateral and multilateral donors, non-governmental organizations, and the business sector, with all necessary transparency and accountability. CIRH requested all projects that were initiated after the 17<sup>th</sup> of June 2010 to be submitted to the CIRH for review and approval. An additional element of the CIRH structure is the Performance and anti-corruption Office, which was meant to guarantee that all projects for the reconstruction approved by the Commission, as well as the activities of the CIRH itself, comply with the highest standards of transparency, accountability, performance and good governance.

The CIRH is not involved in implementing any project and does not manage directly the funding for the projects that have been approved. The funding are managed by the FRH, channeled through three partners (The IBD; the WB Bank;

the UN) to the implementing entities.

The idea behind the creation of the CIRH was not only responding to a need, but it is agreed to a certain extent, that it also represented a good opportunity. Unfortunately, its foundation was marked by a blurred process too strongly directed by the West (United States) in the framework of a heavily discussed emergency law; as a consequence, the CIRH, since its beginning, suffered of a deficit of legitimacy, which increased thanks to a weak internal and external communicational strategy and to some procedural constraints. As a consequence, the CIRH has been surrounded by a widespread misinformation, generating confusion. The main misunderstanding concerned the mission itself of the Commission, often interpreted as an implementing body overpassing the authority of the national institutions. A second aspect is in relation to the management of funds: the Commission was often framed as being in charge of funding allocation, while in reality the funds were managed by the FRH. Anyhow, only 18% of the total contributions disbursed by December 2011 for the recovery of Haiti was channeled through the FRH, which managed only approximately 400 million USD of pledges. This means that the majority of funding was managed directly by the NGOs or the international organizations or bilateral programs, without passing through the FRH.

#### **Appendix 4. Academic Journal Review**

For this study an academic journal review was compiled through an analysis of the top academic journals listed in the Google Scholar Metrics system. Google provides a simple and efficient window into the visibility and influence of recent articles in scholarly publications, listing publications in specific research areas rated by their number of citations. The journal review was conducted specifically in the domain of social sciences and development economics, and took into consideration the most cited journals per relevant domain from 2010-2013. Altogether the journal mapping covered 17 journal titles, covering over 200 separate issues. Only journals in English were analysed.

The journals in question were scanned for frequency of relevant content. The topics with the highest frequency can also be interpreted as receiving the necessary amount of research funding. The main results by thematic areas are as follows:

##### **Democracy and access to public space**

Due to the time period of the research, the journal review included a high frequency of articles on social and political violence and unrest (e.g. Arab spring and electoral violence) as well as popular and civil society activism in low-income countries (thus excluding e.g. most occupy movements). However, the Third World Quarterly for example focused much more on the situation and rights of marginalized and indigenous populations, whereas for instance the International Studies Quarterly focused on questions of democratization. On the other hand, one could identify a possible research gap in the journals analysed on economic shocks and poverty that give rise to unrest directly or indirectly, and thus an increased risk of civil strife as a causal consequence of econometric reasoning.

##### **Governance of environment and natural resources**

The Google Metrics journal review showed a clear concentration in research on volatile food prices and food shortages. Within the domain of natural resource challenges, LIC electricity constraints, and the access to sustainable, affordable energy were high frequency topics of research. Research topics somewhat missing in the review were those of wildlife and nature conservation, and of how scarce natural resources restrict growth and may instigate conflict or threaten post-conflict peace.

Research relating to climate change was extensive. Most research in the more social scientific and



development economics domain concentrated on climate change induced economic and energy vulnerability. Less research could be found on climate change related economic shocks, which is an increasingly relevant topic for many LICs.

### **Demographic change, rural development and urbanization**

Within review revealed an abundance of research on poverty related migration and the urbanization of the poor especially in development related journals such as the Journal of Development Economics and World Development. Research published in the journal World Development also focused heavily on land acquisitions and land rights. Research topics which would merit perhaps more neutral scientific enquiry would be population growth and the scarcity of resources in urban areas, as well as research on urban violence and gangs in emergent sub-urban settlements in settings beyond only those of Latin America.

### **Governance of public policies for social development and innovations**

The journal review revealed that in development economics journals there is a clear focus on research on educational investments and gendered income and welfare disparities. There is a wide array of articles on the social and economic impacts of HIV/AIDS, while studies of the similar impacts of other diseases are less frequent. Furthermore, while a substantial part of health sciences research is published elsewhere in health and medical journals, these remain more focused on diseases and R&D in comparison with health systems, governance, accountability or regulation within the sector or with respect to medicines and health technologies beyond exploring impacts of single interventions. Our interviews also indicated that a potential gap exists in more intersectoral research on impacts, research on taxation and resource gathering for social welfare, research on how global trade and development policies relate to national policies, and political science research and research in the field of social and public policies. Another recent research gap recently has been in the development potential of minimum wages and the decline of individual bargaining power in LICs.

The journal review revealed extensive research on the opportunities of micro credit and foreign direct investments in poverty alleviation. Yet much less research can be found on technology and patent transfer and global information asymmetry.

### **State, globalization and conflicts**

International relations journals with high citation indexes and broad readership, such as Foreign Affairs and International Studies Quarterly, both seemed to focus most of their low-income country research on topics relating to security, third party interventionism and conflicts. Yet, with all the writing on conflicts and fighting, arms races and small arms proliferation receive little research attention, at least in top journals. Development Economics journals focus more on questions of fiscal transparency and corruption as well as currency volatility and the “fear of floating”. Yet they seem to shun research on forced labour and the seasonality of income.

In the next part these areas are assessed in more detail from a science perspective, i.e. mapping out the global research coverage of social sciences, natural sciences, health sciences and social policy and innovation studies. Although there is a large amount of data, statistics, reports, evaluations, the picture on global research coverage in the given fields remains rather fragmentary. There are several reasons for this: 1) areas are overlapping, 2) data and statistics are often biased (missing data, different coding and classification criteria etc.), 3) low-income countries are not present or problems in breaking down data, 4) thousands of research institutions, programs, networks, funds etc. around the world and 5) no clear

indication of research priorities or future research agendas.