**Global Development Network
Program Document**

**Doing Research Assessments:
Understanding Research
Systems in Developing
Countries**

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GDN
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Acknowledgments

Abstract

Research for development is the process that enables the production of knowledge for critically analyzing evidence and policy challenges. Social sciences aim to provide a critical analysis of societies and human behavior, and contributes to a better understanding of development challenges – which is fundamental to realizing national and global development agendas. An analysis of research systems, we argue, is key to understanding the poor performance of social science research in developing countries. We propose an approach to assess national social science research systems based on the growing literature on knowledge systems, as well as the previous work carried out by GDN in the scope of the Doing Research Pilot Phase. We develop a methodology based on three functions of social science research systems, namely the production, diffusion and uptake of research. The method is implemented in three steps. The context analysis is an overall assessment of economic, political, historical and international context for doing research. A stakeholder mapping serves to identify research producers and users in the national research system. Finally, the Doing Research Assessment Framework provides a structured approach to analyzing research system's functions and processes, using a combination of secondary data, surveys and interviews. The proposed Framework can then be used to draw both empirical and analytical findings, and its comparability makes it a potential tool for benchmarking research systems in developing countries.

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Introduction

The Doing Research Program

The Global Development Network (GDN) is launching a major innovative program to document and address the challenges of doing quality social science research in developing countries. GDN's **Doing Research Program**, has been set up to assess how the characteristics of a research system[1] impact the capacity to produce, diffuse and use quality social science research as a key element of social and economic development. It is informed by the findings of seven case studies supported by GDN between April 2014 and April 2016, which focused on the social science research environment in eleven developing countries.

The program aims to inspire research policies, map research strengths, support research capacity building efforts and enhance the quality of research that can be used for policy decisions and local democratic debate in developing countries. Social science research provides a critical analysis of societies and human behavior, and contributes to a better understanding of development challenges – which is fundamental to realizing national and global development agendas. The aim of the program is to develop methods and tools for a practical and objective analysis of social science research systems and to benchmark them in terms of production, diffusion and uptake of research. Country reports, comparative global reports and data will inform actors from research, development and policy communities about their policy-oriented research environment and how it can be improved.

1. In this document, the terms 'research system' and 'social science research system' as used interchangeably.

The Doing Research Assessments

The Doing Research Assessment (DRA) is a method for analyzing in detail the key factors impacting the social science research system in developing countries. The assessments are conducted using the Doing Research Assessment Framework (DRAF), which enables a systematic analysis of the strengths, weaknesses, challenges and bottlenecks related to doing quality and policy-relevant research in developing countries. This, in turn, allows us to benchmark these systems – for the purpose of improving research policies and the underlying conditions for carrying out research. In this sense, the DRAs are the practical application of the Doing Research program. A program proposal complements this document and details the strategy for implementing the Doing Research program.

1. Rationale and Background

In a global knowledge economy and in the context of the Sustainable Development Goals (SDGs), there is a growing recognition among governments and international organizations of the importance of mobilizing local research for higher education and innovation, as part of wider strategies for socioeconomic development (African Union, 2015; UNESCO, 2009; Cloete, 2011). In this sense, research (for development) is the process that enables the production of knowledge for critically analyzing evidence and policy challenges. Research systems must be developed to promote the use of locally-grounded social science research as a key input to democratic debate and sustainable development planning. Social science research is particularly relevant because implementing the SDG agenda and translating sectoral goals into operational plans is fundamentally a local endeavor which requires contextualized knowledge of the local political economy.

How can we determine the extent to which social science research – the professional activity of carrying out creative and systematic work to generate and contend knowledge on societies and human behaviors – effectively contributes to development and improves the lives of people in developing countries? We propose broadening our view of social science research: connecting research with civil society, policymakers and international development communities by looking at the social science 'research system' – the set of institutions, practices, structures and rules that either facilitates or hinders the production, diffusion and uptake of social science research.

Figure 1 illustrates the chronic underinvestment in research in developing countries. The graph shows a ratio of 1:6.5 for gross expenditure on Research and Development (R&D) between high-income countries and upper-middle income countries, and a staggering 1:328 difference with low-income countries in 2014. Between 1996 and 2014, the gap between high- and low-income countries widened by close to 15%. This underinvestment creates a vicious circle that adversely affects research capacity in developing countries. There is an urgent need to study national research systems before the research capacity gap widens, further undermining the conditions for effective development research.
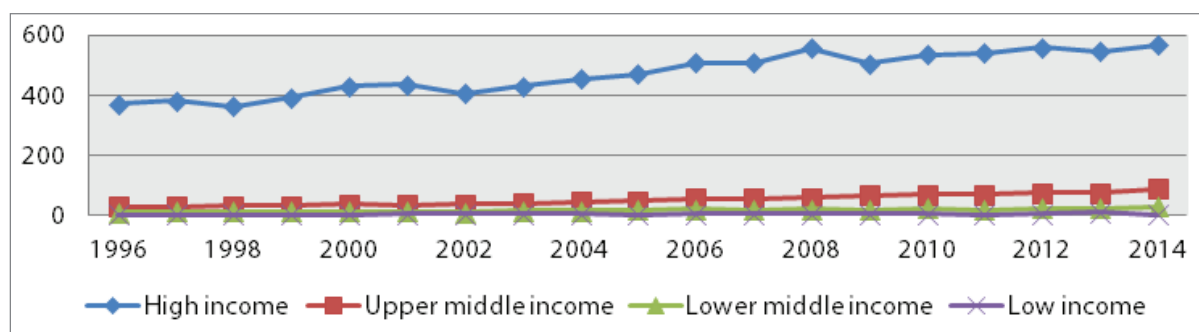
Source: UNESCO Institute of Statistics

In addition to underinvestment, poor infrastructure, the absence of a research strategy and cohesive policy at the national level, the lack of a professional cadre of research leaders and mentors for younger researchers, and the failure to develop a critical mass of peers, are some of the main causes for this under-performance. While research in the North is a highly interactive and collaborative experience, in many developing countries it is still a lonely endeavor, and often a rather obscure career choice (Balarin et al., 2016). The underlying conditions in the research environment at the country level, combined with poor organizational policies and practices, undermines incentives and opportunities to carry out rigorous, international-standard social science research with the potential to impact policies and people's lives.

Another point of concern is the near absence of development researchers from developing countries. Most of the research for development policy is currently carried out by researchers from universities in Europe and North America. This partly explains the failure to develop a critical mass of researchers in the South and the widening gap in research capacity in recent years. In 2012, for example, only 2.3% of the world's research articles had at least one African author.[2]

However, it is important to note that social sciences are often underrepresented in assessments of research production in developing countries. Traditionally, the metrics used to measure research production have been biased toward the natural sciences (Archambault, 2004; Hicks, 2004;

Nederhof, 2006). Certain types of social science literature are excluded from these metrics and there is an over-representation of English-language journals.[3] To challenge this situation, interested actors need to develop new tools to successfully capture this bias.

A number of factors, including the lack of critical mass and a research for development agenda primarily led by foreign donors (with little ownership by the local research community), have meant that research institutions in developing countries have had to rely primarily on foreign researchers. This gap, illustrated by the figure below, must be closed. There needs to be more effort to integrate higher education, local research and socioeconomic development. Figure 2 shows the differences in the proportion of researchers in different countries; there was, for example, a 50-fold difference in the number of researchers (per 1,000 inhabitants) between the OECD average and Ghana in 2010.

An analysis of research systems, we argue, is key to understanding the poor performance of social science research in developing countries. Information on research systems would allow research and development actors to answer a number of key questions, which are currently difficult to answer in the absence of relevant performance metrics. What are the individual, organizational and institutional factors that impact the process of doing research? What are the comparative strengths and weaknesses of Southern research systems and how can we build on them? How does local research fit into the development policy agenda and is it effective and sustainable?

2. https://www.researchtrends.com/issue-35-december-2013/africa-doubles-research-output/

3. Relatively more social science research is published in local-language journals (which are not included in bibliometric data). In addition, English language skills are usually poorer in developing countries, making it more difficult for researchers to publish in internationally-recognized journals.

Figure 2: Total number of researchers (FTE) in 2010 per 1,000 inhabitants
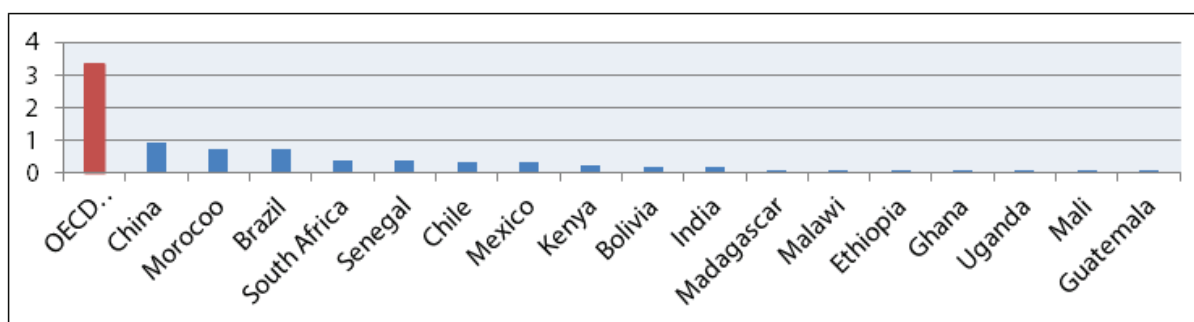
Source: UNESCO Institute for Statistics; UNDESA World Population Prospects.

Before detailing our approach, it is useful to first clarify a few terms that will be used throughout the rest of the document.

Box 1: Definitions

Researcher: Researchers are professionals engaged in the conception or creation of new knowledge through research, improving or developing concepts, theories, models, techniques, instrumentation, software or operational methods (OECD, 2015). This definition is based neither on formal qualifications nor on levels of education, but on the actual activity of doing research and producing knowledge.

Social sciences: The branch of science concerned with society and human behaviors. It includes disciplines such as psychology, cognitive sciences, economics, business, education, sociology, law, political science, social and economic geography, media and communications, and interdisciplinary social sciences (OECD, 2015).

Social science research: The professional activity of mobilizing, interpreting, owning and using creative and systematic work to generate and contend scholarly knowledge on societies and human behaviors. Doing research in social sciences is essentially a political and social process of critical assessment, with an important bearing on development challenges. This activity involves stakeholders that can be producers or users (or both) of research and their interactions and feedback into the research cycle. We consider four groups of stakeholders involved in social science research: higher education institutions, government and funding agencies, industry, and civil society.

Social science research system: The set of institutions, practices, structures and rules that enable the production, diffusion and uptake of social science research. This document uses the terms 'research system' and 'social science research system' interchangeably.

Performance of the social science research system: The capacity of the system to provide an enabling environment which supports the undertaking of quality research and its effective communication and subsequent use by a broad range of stakeholders, including academia, policymakers, civil society and donor organizations.

(Research) production: The process through which research is created by researchers and research organizations, including the necessary inputs and activities which directly enter the production function.

(Research) diffusion: The communication of research findings and products; and the channels through which academia, policymakers, civil society and the private sector interact to discuss and share these findings. It involves generating interest, forming attitudes and changing behavior to support the adoption of research.

(Research) uptake: The exploitation and adoption of research-based products for practical use or the application of research results and methods in specific and direct ways.

Quality research: Research that pursues a socially-useful question, that is rigorous and reliable, that adds to the existing body of knowledge and is relevant to local contexts and/or local and global development challenges.

Critical mass: The minimum number of people/groups required to develop a sustainable research culture. It allows the creation of discussion groups and encourages collective emulation, through learning societies, schools of thought or other forms of collective action/reflection – which form the basis of an effective peer culture.

Benchmarking: The measurement of the observed performance of a social science research system and the comparison with similar measurements of other systems. The aim of benchmarking is to identify the strengths, challenges and bottlenecks of these systems overall and in specific areas; learn from others; and improve performance.

1.1 Objective

The overall objective of the program is to support the global sustainable development agenda through the strengthening of social science research systems in the South. GDN's program aims to understand, map and assess social science research systems to analyze structural barriers to doing research and highlight pathways for action. It will support research capacity building and promote the role of research in shaping democratic debate and decision making – which, in turn, can be used to inform sustainable development policies.

Social science research provides a critical analysis of societies and human behavior, and contributes to a better understanding of development challenges – which is fundamental to realizing national and global development agendas. The proposed DRA methodology can act as a basis for development planning by providing systematic and comparable information on local research; with the aim of improving the quality and ownership of public opinion and policy-relevant research in developing countries.

Our approach is further developed into more specific objectives which translate into three program components. The three components are distinct but interrelated, each leading to a specific set of outputs contributing to the program's expected results and its overall objective. The program components and corresponding activities are further detailed in the Doing Research brochure[4]. This working paper describes the DRA methodology and, as such, focuses mainly on Component 1.

The practical and objective analysis of social science research systems will be presented in detailed country reports, while the benchmarking results will feature in

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4. The Doing Research brochure is available on the program website at www.gdn.int/doingresearch

comparative global and regional reports. These will be compiled using publicly available data collected during the DRAs. This will help to inform actors from research, development and policy communities of the characteristics of their local policy-oriented social science research environment and ways that it can be improved.

Component 1: To use a systematic methodology – the Doing Research Assessments – to analyze and assess the performance of national social science research systems.

Component 2: To benchmark and compare research systems across countries and over time, to document global and regional trends in research production, dissemination and uptake.

Component 3: To develop practical resources to create incentives and awareness, and support development actors in reforming research systems with improved policies and contextualized capacity building efforts.

1.2 Related Projects and Initiatives

There is currently no method for systematically assessing and measuring research systems as defined above, particularly for social sciences in developing countries. However, four projects and initiatives provide some useful insights:

1. The **Ranking of National Systems of Higher Education,** developed by Universitas 21 (U21), evaluates the performance of national higher education systems in 48 countries. It does so by measuring 20 variables grouped under four categories: resources, environment, connectivity and output (Williams et al., 2013). In fact, U21's ranking is different from most other rankings in that it ranks national higher education systems rather than individual universities, positing that systems produce the environment conducive to the emergence of quality higher education institutions. U21's ranking gives a measure of this environment, benchmarking the 48 targeted countries. The final ranking is adjusted to the level of economic development by controlling for the countries' GDP per capita. It uses data from various international agencies such as OECD, UNESCO and the World Economic Forum, bibliometric data from **Scopus**, **webometrics** from the Cybermetrics Lab,5 and a survey of participating universities.

2. **U-Multirank** is a multidimensional, user-driven approach to ranking higher education institutions, funded by the European Union and developed by a consortium led by the Center for Higher Education Policy Studies. It differs from other rankings, such as the Academic Ranking of World Universities or the Times Higher Education Universities Rankings, in that i) users can personalize the rankings by selecting indicators based on their preferences and priorities, and ii) it uses self-reported data from participating universities and a student survey, as well as bibliometric and patent data from international databases such as **Web of Science** and **PATSTAT** (Jongbloed et al., 2013). In addition, it compares the performance of higher education institutions (HEIs) by providing a measure of different university activities including teaching and learning, the extent of

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5. The Cybermetrics Lab is responsible for editing the Webometrics Ranking of World Universities

knowledge transfer and the international orientation of a university.

3. The OECD has recently launched a new initiative which will provide valuable insights both in terms of definitions and approach. Their multidimensional **Benchmarking Higher Education System Performance Project** will identify the strengths and weaknesses of education systems in OECD countries; enable comparisons across countries; and provide a basis for peer learning and the development of strategies for improvements in the performance of higher education systems. There are three broad categories of indicators in education, research and engagement – considered the central functions of a higher education system. The context is an important component and includes elements of governance and resources (human and financial). A key feature of this project will be its ability to identify how and why some higher education systems are performing better in these areas than others. This is, in fact, very much in line with the objectives of the Doing Research Project: it goes beyond documenting the status quo by providing useful inputs for action. This benchmarking exercise will draw on existing data related to education, research, engagement, governance and resources from a range of sources including OECD internationally-comparable indicators, international data (e.g., **Eurostat** and **Eurydice**), and national data.

4. **Snowball Metrics** is an initiative created and funded by research-intensive universities using commonly agreed metrics and methodologies. At the time of writing, 23 universities from Australia, the United Kingdom and the United States have joined the project, which also includes a partnership with **Elsevier**. This initiative features a benchmarking of the partner universities, based on a practical methodology and metrics determined and agreed on by the universities themselves. Snowball metrics evaluate research in universities using three process-based dimensions: inputs, processes and outputs/outcomes. Data for the indicators are taken from a variety of datasets, of which the main ones are Scopus, Web of Science, **Google Scholar** and **Altmetrics**.

1.3 The Doing Research Pilot Phase

The Doing Research pilot phase looked at 11 countries as a first step toward describing, characterizing and, whenever possible, measuring the most relevant features of the research environment in developing country contexts.[6] It was implemented by GDN between April 2014 and April 2016, with seven research teams in Africa (Cameroon, Côte d'Ivoire, Niger, South Africa), Latin America (Bolivia, Paraguay, Peru) and Asia (Bangladesh, Cambodia, India, Indonesia). [7] Covering a diverse sample of countries in very different contexts, and using varied research methodologies, the pilot phase provided a wealth of valuable qualitative information on the complex nature of research environments (GDN, 2016a).

For several countries, this was the first time an analytical exercise aimed at capturing the issues and challenges linked to the research environment had been conducted.

6. Initially, the Doing Research pilot phase was meant to look at the research 'environment' rather than social science research 'systems'. However, the analysis of the pilot case studies revealed the limits of this approach; the 'systems' approach adopted by some of the case studies was more adept at capturing the interrelationships between the different components contributing to research quality.
7. More information about the pilot phase synthesis and the country reports can be found at www.gdn.int/dr.

They reveal the key factors that influence the quality, quantity and uptake of research in developing countries. A wide range of approaches were used, ranging from qualitative historical and social analysis to quantitative econometric measures of the determinants of research production. Despite the differences in contexts and approaches, a number of common findings emerged. The main findings of the pilot studies (discussed in more detail in the Doing Research pilot phase synthesis) are presented below.

Context/Institutional Framework

All the pilot studies started with observations of the institutional framework in which research activity is implemented. It is important to understand the research environment not only at the macro level, but also include some of the meso-level characteristics (Balarin et al., 2016; Rakhmani et al., 2016) – such as the rules governing individual universities, or even departments. They also looked at elements of the context which have a direct or indirect influence on the research sector. These include elements that relate to rules and mechanisms that have been defined and established outside of the research sector *stricto sensu* – such as the dynamism of the job market; the type of political regime (Balarin et al., 2016), the existence of a national research strategy or agenda; the degree of international exposure/openness (Rakhmani et al., 2016); the existence of an administrative structure dedicated to research; and the clarity of legal and financial rules for consulting (Idrissa, 2016; Sovachana et al., 2016). Although the majority of teams identified the benefits of a strong institutional framework, this has to be balanced against the restrictions imposed by an overbearing bureaucracy (Balarin et al., 2016; Chattopadhyay et al., 2016).

Supply and Demand

Most of the researchers adopted a research supply/demand approach. One of the main elements characterizing research systems is the type of stakeholders involved. In some studies, supply actors are limited to public universities (Rakhmani et al., 2016), while others include ministries, think tanks, NGOs and donors (Sovachana et al., 2016). Unsurprisingly, international donors, and national and local governments constitute the core of the demand for research. Some of the studies in our pilot project describe the role of a national funding agency (Idrissa, 2016) as an effective channel of expression for civil society demand (indirect demand); and the role the private commercial sector (Potgieter et al., 2016) and international donors play in shaping demand for research. The link between demand and funding will be an important component of the assessments of research systems.

Knowledge Production Process

Like any production process, we find inputs and outputs, and mechanisms and rules of production responding to the project cycle. Here we address questions related to the management, productivity and quality of research. While inputs are made up of human and financial resources, the production process is characterized more in terms of effectiveness, efficiency and relevancy; outputs relate to the use of results, their influence on public policies or on collective practices, and their overall social utility. Generally, an incentive framework for productivity, promotion and performance remains a crucial mechanism for improving research systems in developing countries. This can take place at the government level, through authorities such as the Indian Council for Social Science Research

in India or the National Council for Science and Technology (CONACYT) in Paraguay (Chattopadhyay et al., 2016; Balarin et al., 2016).

Human Resources

Access to capacity building, peer review, methodology training and mentoring, was an important feature for the majority of teams in the pilot phase. Proper skills for research management, methodology and dissemination are instrumental to the production of high-quality research. Important elements of human resource management in research institutions include career development plans, incentives for doing research (Rakhmani et al., 2016), opportunities for hiring international students, the flexibility to contract lecturers and researchers, and of course, salary levels. The ability to foster and sustain research skills, through student grants or training opportunities during the first year of graduation also appear to be essential.

Financial Resources

For most of the pilot teams, funding is critical – both in terms of the amount and nature of funding. The level of funding for social sciences is relatively low, particularly compared to other disciplines such as the hard sciences, engineering and technology. The diversity of funding sources is also important. Funding is often donor-driven (Sovachana et al., 2016; Idrissa, 2016; Balarin et al., 2016), which creates pressure to align research with international agendas rather than national priorities. This also creates an incentive for researchers to focus on current trends, over which they have little influence, instead of questioning new definitions, underlying structural issues and theoretical approaches for more fundamental research (Balarin et al., 2016). The number of existing

grant schemes, the existence of a quality assurance body and quality norms for financial management were also identified as important determinants.

Research Implementation

In terms of the effective implementation of research, infrastructure is of critical importance. This is particularly true in poorer countries, which often lack well-equipped buildings and labs, a reliable electricity supply, well-stocked libraries and good-quality IT infrastructure. Other important determinants include access to databases and digital international journals (Potgieter et al., 2016), administrative support for writing research proposals and responding to calls for proposals; norms and rules for local publication; support for the management of financial resources for publication, a critical peer culture and a sufficient number of scholars promoting research projects (Rakhmani et al., 2016).

Outputs and Social Utility

Finally, there are a number of additional dimensions highlighted by the pilot studies that determine the outputs and outcomes of research, which are essential for a sustainable research system. These include elements related to the local dissemination of results, such as the number of journals for communicating findings for policymakers, the capacity of researchers to disseminate and communicate activities, access to research in local languages, the balance between publications in local and international journals, and mechanisms for evaluating outputs. Research findings should extend beyond academic networks to policymakers, NGOs, the media or the private sector. Presenting research in a form that is accessible to the general public is equally important, if it is to be of use to society.

2. Doing Research Assessment Framework

The Doing Research Assessment Framework (DRAF) is the main analytical tool for the Doing Research Assessments. The Framework is based on the results of the pilot studies, and reflects the fact that doing quality research requires a range of skills other than pure scientific expertise; and depends on a range of factors such as the socioeconomic, political and historical context; international dynamics; the characteristics of the research market; and supporting policies and services.

> Box 3: Three steps of the Doing Research Assessment method
>
> The Doing Research Assessments follow three specific steps:
>
> **Step 1 – Context Analysis:** an overall assessment of the economic, political, historical and international context for doing research.
>
> **Step 2 – Stakeholder Mapping:** the mapping of national research actors to identify research producers and users.
>
> Steps 2 and 3 are used to develop a deeper understanding of the context and stakeholders, which then inform the inputs for Step 3.
>
> **Step 3 – The Doing Research Assessment Framework:** The Framework provides a structured approach to analyzing the research system's functions and processes – specifically in terms of production, diffusion and uptake (see Table 1). A combination of secondary data, surveys and interviews is used to populate the DRAF (See Table 3).

2.1 Conceptualization of the Doing Research Assessment Framework

The context analysis is the first step in our assessment, and allows us to specify the main characteristics that drive the interplay between specific factors of the research system and the wider environment. In Step 2, we map the stakeholders to determine the main producers and users of research, and the nature of the working relations between them. The mapping can document which actors are in the best position to access research opportunities and translate their research into useful products for policy and practice, but also highlights the extent of the connection between research producers and users. In practice, these two steps can be used by researchers implementing the DRA to develop a better understanding of the context in which social science research takes place. The DRAF is then used to cross-tabulate the two defining features of the research system: its functions (production, diffusion and uptake), and its processes (inputs, activities, outputs and outcomes).

The emphasis on the research 'system' allows us to highlight features that are usually not measured in traditional country-level bibliometric analyses, such as the availability of local academic journals or the average duration of a research project. A 'systems' approach also reveals the different stages in the research process – which follows the standard project cycle, with inputs, activities, outputs and outcomes. Each of these four stages can be looked at in turn to determine the bottlenecks in the research process, and the particular strengths and weaknesses in the system. For example, examining the

inputs can provide information on access to basic resources such as infrastructure, the number of researchers or the amount of time allocated for research.

We then look at production, diffusion and uptake – three interrelated sub-systems of the research system. Production here relates to the generation of social science research mainly in the academic world – otherwise known as Mode 1 research. Integrating diffusion and uptake allows us to go a step further and examine Mode 2 research[8], something that all current metrics fail to assess. Diffusion looks at how communication, networks and discussions contribute to the research process, bringing non-academic actors such as think tanks and civil society organizations into the analysis. Uptake relates more to policy, and attempts to document the factors that facilitate links between research and policy. By analyzing all three functions of the research process, the DRAF provides a picture of the key factors that contribute to enabling quality research in a given context.
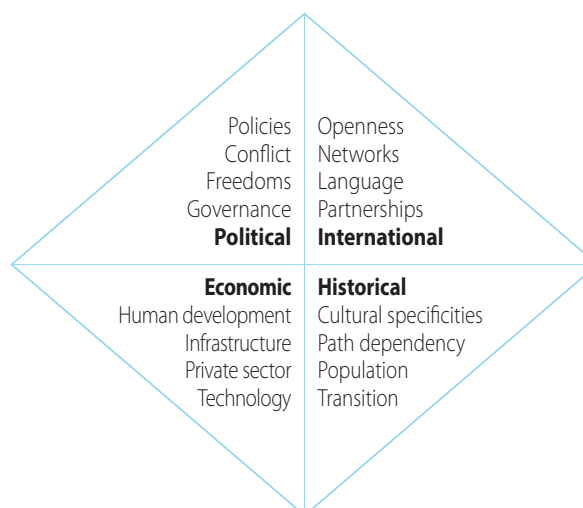
2.1.1 Step 1: Context Analysis

As mentioned earlier, our analysis of the general context in which research takes place and is used is made up of four elements: economic, historical, political and international dimensions. These are assessed from a qualitative perspective to determine the borders of our analysis, but most importantly they allow us to develop a contextualized reading of the subsequent

8. See Section 3.2 (National Research Systems) for further discussion on Mode 1 and Mode 2 research.

steps of the DRA method.

Figure 3: Elements of the Context Analysis

Policies	Openness
Conflict	Networks
Freedoms	Language
Governance	Partnerships
Political	**International**
Economic	**Historical**
Human development	Cultural specificities
Infrastructure	Path dependency
Private sector	Population
Technology	Transition

Documenting the context helps develop an understanding of the exogenous factors that impact the research system – such as the cultural specificities, the nature of the political regime, the level of human development or the access to technology. Since the practice of research is highly dependent on these contextual characteristics, documenting the context is critical for analyzing the indicators measured in Step 3 of the assessment.

Each of the elements of the context analysis are documented through a series of broader qualitative questions (detailed below). In addition, some quantitative indicators and proxy measures could be used, such as:

- GDP per capita
- Freedom of expression[9]
- Human Development Index
- Literacy rates
- Access to the internet

The following section details each element and the questions for documenting them, before progressing to Step 2.

9. Based on Freedom House's annual 'Freedom of the Media' and 'Freedom on the Net' reports

Political Context

The political context has a strong influence on a country's capacity to generate autonomous and independent social science research and the extent to which it can freely feed into the public debate. The mode of governance, the extent of the rule of law and the level of political freedom are analyzed to determine the degree to which they facilitate (or hinder) the work of researchers. The governance and regulatory frameworks – the structures and policies put in place by national and local governments – such as research councils, national funding agencies, or national research policies, have a significant influence on the production of academic knowledge. The questions used to document the political context are as follows:

- Are there policies in place to support the production and use of research, and how do these policies maintain a balance between research for addressing national priorities and an independent research agenda?

- Do political freedoms and the rule of law allow for a wider public debate on social and economic development that is free and critical?

- Do modes of governance allow the transparent use of all types of research, without favoritism or clientelism?

- Have any recent or on-going conflicts affected the capacity to produce academic knowledge?

Economic Context

The level of economic development is clearly a major determinant of a country's research system. Basic infrastructure and technological needs – such as access to electricity, and a computer or the internet – must be met before even considering doing research. Human development, particularly in terms of literacy, education and health, provides the social capital required for doing research. Finally, a strong private sector can provide opportunities for skilled researchers, as well as producers of non-academic knowledge, possibly in competition with other research producers. The questions used to document the economic context are as follows:

- Is there a sufficient level of human development to enable the active participation of researchers and research in society?

- Is there sufficient access to modern technology that facilitates doing research?

- Is the necessary physical infrastructure for conducting research (buildings, offices, laboratories, etc.) in place?

- Are there opportunities for social science researchers in the private sector?

- And, if so, what impact does this have on academic research?

International Context

The international dimension has an influence on the development and standing of research systems. The integration of national research systems into wider networks can foster academic exchange and collaboration, and increase work opportunities for researchers. Globalization entails elements of academic collaboration, and can be measured by the degree of openness and the extent of international partnerships. In addition, the dominance of the English language in the academic community has an impact on the capacity of researchers to disseminate their research and to publish in respected journals. The questions used to document the international context are as

follows:

- Is the country open to the international community, as measured by its participation in international organizations and trade openness indicators?

- Is the country a member of networks that can support the production, diffusion and use of research?

- Are there professional networks, scholarship programs and exchange programs with other countries which can support the production of research and the training of researchers?

- What is the level of English in the population and how does it contribute to the successful influence of locally-produced research?

Historical and Cultural Context

Historical antecedents have an influence on research, and the evolution (or the 'path dependence') of research systems is linked to recent or older events that have impacted research actors in the country. Culture also plays an important role and helps to shape the general interest in research as well as the types of people carrying out research. Cultural specificities such as religion, ideology or social hierarchy, can have a strong impact on the context in which research takes place. Demographics can also have an impact on research: more urbanized societies with a higher proportion of educated people aged between 25 and 50 years old are more likely to have an enabling environment for research. Finally, in countries in transition, the cultural changes in society often create a 'generation gap' between pre-transition and post-transition research actors, creating cultural conflict around issues of research and knowledge. The questions used to document

the historical and cultural context are as follows:

- How does recent history help explain the political, economic and organizational aspects of the research context?

- How do cultural specificities affect the organization of the research system?

- Is there a culture of evidence-based research?

- Is the country undergoing a transition? Does this create divisions between groups of research actors and affect the way research is undertaken and discussed?

This context analysis will be complemented by a detailed analysis of research actors, including producers and users of research, and the types of relations between them.

2.1.2 Step 2: Mapping of Research Actors

The mapping is conducted to better identify the research actors – producers and users – that make up the research system, and eventually to allow those undertaking the DRA to focus on particular categories of actors, depending on their focus of attention. The possible variants of the method are detailed in Section 4. The mapping is directed at a macro-level analysis as the aim is not necessarily to assess each and every university or funding agency, although this could be achieved as well by the mapping exercise. Here, we aim to identify and characterize the importance of the different groups of actors and the nature of the relations between them, and identify the main players within each group. This allows a more contextualized reading of the DRAF, and eventually, will enable researchers using the Framework to tailor its application to a particular type of actor.

We categorize the types of research actors according to the definition of social science research introduced in Section 1 (Box 1). Research actors are divided into four categories: higher education institutions (HEIs), government and funding agencies, industry, and civil society. These categories have sub-groups: HEIs, for example, can be divided into public and private universities which can be for-profit or non-profit organizations; industry includes for-profit think tanks and consultancies; and civil society includes NGOs, opinion leaders, non-profit think tanks and the media. Government and funding agencies is the most hybrid category; it includes national ministries and research councils, as well as public and private foreign donors.

Determining the types of organizations that make up the research system will be a first step toward identifying and analyzing actors in Step 3 of the DRA, but its main use is in helping to understand another element of context: the way the management and development of research organizations influences the research culture in a given country. Research leadership and the level of autonomy of research organizations are crucial points; they determine who sets the research agenda and how research organizations interact with other actors (such as policymakers and civil society). The characteristics of research actors and their networks help us to determine the main producers of research, how they compete or collaborate, the depth of the research culture, and the extent of a 'critical mass'.

The mapping exercise should be informed by the context analysis in order to understand the level of development of the research system from the point of view of organizations, and how the context has contributed to shaping the research community. It can be descriptive and qualitative, rather than analytical; it then feeds into Step 3, which constitutes the main analytical component of the DRA.

The questions used to document and map the organizational context are as follows:

- Who is responsible for research leadership and how does this contribute to the autonomy of research organizations and to their capacity to produce and diffuse research?

- What are the different types of actors producing social science research (in all its different forms) and how do they work with each other? What is the place of public universities in the research system?

- Are there any research networks for sharing information, discussing findings, facilitating exchanges between researchers and peer review?

- What are the incentives for researchers to publish and how do they affect promotion and career advancement?

The mapping of research actors will be used to categorize the types of institutions present in the system and their relative importance in terms of role and influence in the production, diffusion and uptake of research. This will take the form of a table describing the characteristics of these groups of research actors.

2.1.3 Step 3: The Doing Research Assessment Framework

Populating the DRAF is the final step in the implementation of the DRA. The Framework (shown in Table 1) describes the key determinants for each of the three main functions of the research system – namely the production, diffusion and uptake of research. Most of these indicators were used by the different teams in the pilot phase of

the project and in a few cases their direct impact on research output documented through econometric analysis.[10]

Factors that enable the generation of quality academic knowledge are described under 'production', and are associated with the creation of research, its output, and the

long-term objective of building a quality knowledge base and critical mass of people who value and understand research. In this sense, the 'production' column describes the factors that relate particularly to the academic community: from the necessary inputs (people and resources), to the publication of research articles and the role of research in education and training.

10. See for instance the Cameroon and Cote d'Ivoire studies which developed an Index of Doing Research in Social Sciences (although this only focused on the supply side).

Table 1: Simplified Doing Research Assessment Framework

	Research system functions →	1. Production	2. Diffusion	3. Uptake
Research system processes	Determinants of the research system	Process through which research is created by researchers and research organizations, including necessary inputs and activities which directly enter the production function.	Research-based products and the channels through which they are diffused to different audience groups (incl. academia, policymakers, civil society, the private sector) and discussed within these circles.	Action of exploiting and adopting research-based products for practical use, or applying research results and methods in specific and direct ways.
Inputs	People and resources needed to produce robust social science research	**1.1 RESEARCH INPUTS**	**2.1 ACTORS & NETWORKS**	**3.1 POLICY-FRIENDLY RESEARCH**
Activities	Set of rules, ethical principles, activities and interactions producing and promoting research	**1.2 RESEARCH CULTURE AND SUPPORT SERVICES**	**2.2 RESEARCH COMMUNICATION PRACTICES**	**3.2 RESEARCH-BASED POLICY MAKING**
Outputs	Tangible products of research including publications, communications & people trained in producing and using good research	**1.3 RESEARCH OUTPUT & TRAINING**	**2.3 RESEARCH COMMUNICATION PRODUCTS**	**3.3 RESEARCH-BASED POLICY TOOLS**
Outcomes	Policymakers, practitioners and the public actively support and use research-based evidence and knowledge in addressing societal problems	**1.4 OPPORTUNITIES & SUSTAINABILITY**	**2.4 POPULARIZATION OF SCIENCE**	**3.4 RESEARCH FOR BETTER POLICIES**

The second column, describes the function of 'diffusion' and the factors that enable the circulation of research and the discussion of research-based products within different audience groups in the wider society. The 'diffusion' column is therefore about sharing research products and understanding how research is mainstreamed, and the role it plays in society and the media.

The third column is about using research to support better policies, and reflects a view shared by many researchers and practitioners that it is desirable to strengthen the link between research and policy communities. This link is important, not only to enhance the contribution of research to policy ideas, but also to ensure that policymakers are able to understand research and value its capacity to address societal problems. The 'uptake' column is about understanding how research supports policymaking, both directly (when researchers are consulted or research is commissioned by policymakers), or indirectly by looking at factors that strengthen the research-to-policy nexus.

The proposed Framework follows a linear theory of change, which may well be a simplified version of reality, but is nonetheless useful for documenting the factors that enable the production, diffusion and uptake of social science research. We briefly summarize the theory of change in the following paragraphs. For a full list of indicators, please refer to Section 2.2 (Data and indicators).

Research inputs are the *sine qua non* for producing research. In addition to funding, one needs skilled people, time, quality data, infrastructure and access to the literature. This is facilitated by support services – for example, for capacity building or proposal writing – and a strong research culture, marked for instance by the existence of a national research policy or the quality of

mentoring in research institutions. With inputs and activities, research is produced. Two essential outputs are the publication of research in academic journals, and the use of newly gained research skills to teach research methods. The main outcome of a strong research system is to ensure that research production is sustainable in the long-term. This includes providing opportunities for researchers and promoting research skills both inside and outside academia.

We go one step further by looking at the research diffusion sub-system, to analyze how research is circulated within society and determine the main factors influencing this process. The first step is to have access to a range of skilled actors interested in research. This is largely related to the outputs and outcomes of the production sub-system, as these directly contribute to building a critical mass which encourages the development of networks and collaboration between a diverse range of research actors. Research actors use a number of research communication strategies – activities and structures that support the wider communication of research. This includes providing access to research on the web, in a local language journal, or through research networks and international exposure. The output of this will be seen in conferences and debates, as well as research products in the media and advocacy spheres. Finally, if research is widely diffused by a varied range of actors, using effective communication strategies and presented in the form of tangible outputs which foster debate and discussion, this will ultimately lead to the 'popularization of science', where science becomes an integral part of people's lives. We can measure this by the level of interest in popular scientific products, such as the purchase of social science books, the importance of science journalism, or the number of reviews of research products by

the broader public.

The final function that we analyze is research uptake. Here again, we look not only at the output – the actual use of research – but at the entire process that enables the production of quality research and its uptake by policymakers. An interesting feature of the Framework is that the dimensions in the production and diffusion sub-systems have an influence on the likelihood of research being adopted, directly or indirectly, in policymaking. Indeed, a well-established research production process is likely to attract attention, as is research that is widely-diffused and discussed; and is, in turn, more likely to be applied by civil society organizations and policymakers.

In terms of inputs for research uptake, we analyze two aspects: policy-friendly research products such as policy briefs, and the extent to which policymakers understand and value research. We then look at the extent to which research is part of the policymaking process, by documenting the involvement of researchers in consultations with policymakers or in parliamentary commissions. If policymakers are given the relevant skills and research inputs, and consult with researchers on policy-related issues, we would expect to observe the instrumental or symbolic use of research for policy. We measure instrumental use by examining research citations in policy documents, and symbolic use by looking at references to research in communications

Table 2: Detailed Doing Research Assessment Framework

	1. Production (*generation*)	2. Diffusion (*debate*)	3. Uptake (policy)
Inputs	**1.1 Research inputs** 1.1.a People 1.1.b Funding 1.1.c Infrastructure 1.1.d Data and literature	**2.1 Actors and networks** 2.1.a Critical mass, diversity of actors and collaboration 2.1.b International exposure 2.1.c National geography of research	**3.1 Policy-friendly research** 3.1.a Policy-relevant research 3.1.b Research-to-policy nexus
Activities	**1.2 Research culture and support services** 1.2.a Research management and leadership 1.2.b Peer review culture 1.2.c Capacity building 1.2.d Research support and administration	**2.2 Research communication practices** 2.2.a Local journals 2.2.b Online visibility of research 2.2.c Research communication skills	**3.2 Research-based policymaking** 3.2.a Formal collaboration: researcher participation 3.2.b Informal collaboration: researcher consultation
Outputs	**1.3 Research output and training** 1.3.a Academic output 1.3.b Research training	**2.3 Research communication products** 2.3.a Conferences and debates 2.3.b Media and advocacy	**3.3 Research-based policy products** 3.3.a Instrumental utilization 3.3.b Symbolic utilization
Outcomes	**1.4 Opportunities and sustainability** 1.4.a Researcher job market 1.4.b Research evaluations 1.4.c Research integrity	**2.4 Popularization of science** 2.4.a Social appreciation of research 2.4.b Research culture and society	**3.4 Research for better policies** 3.4.a Influence of research on policy outcome 3.4.b Political value of research

(such as speeches or blogs) from policymakers. The end result – the overall aim of the research system – is for research to play a role in developing more effective policies for the benefit of the wider society. Though this is highly abstract and depends on a number of factors outside the research system, we approach it by looking at the perception of the utility of research in society.

Following the introduction of our DRAF, Table 2 presents in more detail the key determinants of the research system performance. The indicators, proposed measurements and data sources are further detailed in Section 2.2 – Data and Indicators.

2.2 Data and Indicators

Data collection (for documenting the list of factors which we have defined) follows a mixed method approach, involving a combination of secondary data, surveys and interviews. An initial testing phase will allow us to refine the indicators (presented in Table 3) and experiment with data collection protocol. It will start with a desk review of the contextual elements and a mapping of research actors, followed by secondary data collection, key interviews and surveys of research actors. The results, along with additional observations, will be published, critiqued and challenged, allowing us to refine the indicators and improve the DRAF over time.

The sources of secondary data are varied and depend on the type of factors to be assessed. When looking at research systems in developing countries, there is clearly a lot of missing data, especially comparable data over time and countries. The analysis of research systems entails compiling a large dataset using a variety of different sources, complemented, where necessary, with data from surveys and interviews in each country. General data on Research and Development

(R&D), the pool of researchers in each country and the level of funding available, published by the UNESCO Institute for Statistics (UIS), the World Bank and AidData, will be complemented with national sources. In addition to traditional bibliometric indicators from Scopus, new bibliometric indicators such as Webometrics and Altmetrics will be employed by the country teams to measure outputs and publications. The latter will be particularly useful for measuring the visibility of research products and references to research publications in non-academic diffusion channels.

Missing data can be dealt with in a variety of ways. Firstly, working at the national level provides an opportunity to collaborate with national governments and ideally obtain data which is not currently available directly from national accounts. Secondly, the DRAF should support the efforts of the UIS, and provide an additional incentive for countries to participate in UIS initiatives. Thirdly, if none of these solutions are possible, we may be able to use the available data (if sufficient) to extrapolate the additional data necessary for the assessment; the testing phase will allow us to determine whether this is a viable option. In addition, primary data collected through surveys and interviews can help fill in the gaps and get around the problem of missing data.

A desk review will be undertaken in respect to institutional, historical and political contextual elements, along with the organizational characteristics of universities and other research actors. The desk review exercise fits naturally with the first two steps of our assessment – namely, the context analysis and the mapping of research actors. The full list of indicators to be assessed by the desk review is presented in Table 3.

Step 3 of the assessment – to document the national research system using the DRAF –

will be based on a combination of primary and secondary data collection, key interviews and surveys of the research actors identified in the previous steps. The key interviews will be conducted with important actors in the research system, such as deans, rectors and key policymakers. These actors interact with a large number of stakeholders and can provide us with information on the rules and practices, as well as the broader environment. This information will be collected using a detailed interview guide to be developed during the testing phase, and will be used to refine the qualitative indicators. The surveys, on the other hand, will help to document a number of quantitative elements related to researcher behavior, research activities, and perspectives on opportunities and incentives in the research system. The surveys will target the researcher population in universities and other research-producing institutions,

identified during the mapping stage. Full questionnaire templates will be prepared for surveys and interviews for the DRAs. An indicative list of qualitative and quantitative indicators based on the interviews and surveys is given in Table 3.

To provide a more accurate aggregate, multidimensional measure of social science research system performance, we need to weight the different components of the three functions of the DRAF. For production, inputs and activities are slightly more important; while for diffusion, activities and outputs have a higher weighting. For research use, the emphasis will be on outputs and outcomes. Each function of the research system will have an equal weight. The proposed weights are given in Table 3. Naturally, this too will be tested and a number of robustness checks will be carried out once the first DRAs have been

Table 3: Indicative List of Indicators, Types and Sources

FACTOR	INDICATORS	TYPE	SOURCES
1. Production (*generation*) (1/3)			
1.1 Research inputs (30% of the production score) People and resources needed to produce robust social science research.			
1.1.a People	# of researchers per million habitants % of researchers with PhDs	Ratio %	UIS data UIS data
1.1.b Funding	Government Expenditure on Research and Development (GERD) per capita and per researcher % of GERD for social sciences % of GERD financed from abroad	Absolute % %	UIS data UIS data UIS data
1.1.c Infrastructure and data	Use of internet/100 pop. Quality of access to data % of open access output Quality of research infrastructure	Ratio Rating % Rating	World Bank Survey / interviews Scopus (SciMago) Survey / interviews

FACTOR	INDICATORS	TYPE	SOURCES
1.1.d Time for research	Time allocated to research in universities	Ratio	Survey/ interviews

1.2 Research culture and support services (30% of the production score)
Set of cultural rules and principles, activities and interactions supporting the production of research.

FACTOR	INDICATORS	TYPE	SOURCES
1.2.a Institutions and policy	Existence of a social science research body Existence of a national research policy	YES/NO YES/NO	Desk review Desk review
1.2.b Peer review culture	Quality of mentoring Quality of access to peer review	Rating Rating	Survey /interviews Survey/interviews
1.2.c Capacity building	Availability of research and training services % of funding for Research Capacity Building	Rating Absolute	Global Competitiveness Report Desk review
1.2.d Research support and administration	Level of access to proposal writing support Average duration of a research project	Rating Absolute	Survey/interviews Survey/interviews

1.3 Research output and training (20% of the production score)
Products of scientific research (publications) and contribution of research to the higher education system (research training).

FACTOR	INDICATORS	TYPE	SOURCES
1.3.a Academic output	# of documents published in international journals/mill. inhabitants # of citations in international journals per document	Absolute Absolute	Scopus(SciMago) Scopus(SciMago)
1.3.b Research training	% of university staff with PhDs Duration of research training at university # of PhDs awarded by domestic universities	% Absolute Absolute	Interviews/desk review Interviews/desk review Surveys/interviews

1.4 Opportunities and sustainability (20% of the production score)
End result: there are skilled analysts working in all the main sectors, providing opportunities and an interest in the production of new locally-produced research.

FACTOR	INDICATORS	TYPE	SOURCES
1.4.a Researcher job market	Perceptions of career opportunities Quality of incentives system Number of researchers working outside higher education	Rating Rating Absolute	Survey Survey/interviews UIS data

FACTOR	INDICATORS	TYPE	SOURCES
1.4.b Research evaluation	Existence of a national research evaluation % of publication targets met	YES/NO %	Desk review / interviews Survey/Interviews

2. Diffusion (*debate*) (1/3)

2.1 Actors and networks (20%)
Diversity of actors, collaboration and networking necessary to foster healthy debate based on scientific evidence.

FACTOR	INDICATORS	TYPE	SOURCES
2.1.a Critical mass, diversity of actors and collaboration	Level of diversity of research actors Volume of cross-sectoral collaboration % of female researchers	Rating Rating %	Survey/interviews Survey OR interviews UIS data
2.1.b Research communication skills	# of communication trainings organized in a year Quality of research communication skills	Absolute Rating	Survey/interviews Survey /interviews
2.1.c National geography of research	Concentration of research centers (Gini or Herfindahl index)	Index/ratio	Desk review

2.2 Research communication practices (30%)
Activities and structures supporting the wide communication of research.

FACTOR	INDICATORS	TYPE	SOURCES
2.2.a Local journals	Number journals in social science in the region Number of national journals in the local language	Absolute Absolute	Scopus(SciMago) Desk review
2.2.b Online visibility of research	Index of web visibility # of HTML and PDF views	Index Absolute	Webometrics data Altmetrics data
2.2.c International exposure	% of international collaboration in social science # of international research projects membership in thematic research networks and international professional affiliations	% Absolute Absolute	Scopus(SciMago) Survey/interviews Survey/ interviews

2.3 Research communication products (30%)
Research products aimed at a wider audience.

FACTOR	INDICATORS	TYPE	SOURCES
2.3.a Conferences and debates	# of conferences organized in the previous year	Absolute	Survey/interview/ desk review
	# of public debates organized in the previous year	Absolute	Survey/ interview / desk review
2.3.b Media and advocacy	# of publications via public channels	Absolute	Altmetrics data
	# of citations of publications in media	Absolute	Altmetrics data

2.4 Popularization of science (20%)
End result: research-based evidence is valued by the public, who actively access a variety of popular science products.

2.4.a Social appreciation of research	# of reviews of publications by the broader public	Absolute	Desk review/surveys/ interviews
2.4.b Research, culture and society	# of science journalists in the country	Absolute	Desk review/surveys
	# of research books sold	Absolute	Desk review

3 Uptake (*policy*) (1/3)

3.1 Policy-friendly research (20%)
Products of research specifically aimed at supporting policymaking.

3.1.a Policy-relevant research	Share of non-academic publications	%	Desk review/Survey
3.1.b Research-to-Policy nexus	# of lectures and trainings for policymakers	Absolute	Interviews
	# of grants received from policymakers	Absolute	Survey/interviews

3.2 Research-based policymaking (20%)
Activities, rules and structures of policymaking which foster the use of research in the policy process.

3.2.a Formal collaboration: researcher participation	Share of researcher membership in bodies advising policy makers	%	Interviews/desk review/ survey
	Rate of researcher membership in parliamentary commissions	%	Interviews/desk review
3.2.b Informal collaboration: researcher consultation	# of journals specifically aimed at communicating with policymakers	Absolute	Desk review
	Frequency of interaction with policymakers	Rating	Policy Community surveys

FACTOR	INDICATORS	TYPE	SOURCES
3.3 Research-based policy products (30%) Policy products which have made use of research.			
3.3.a Instrumental utilization	# of research citations in policy documents	Absolute	Altmetrics data
3.3.b Symbolic utilization	# of reviews of publications by policymakers	Absolute	Desk review
3.4 Research for better policies (30%) End results: policies are based on independent, robust and transparence evidence.			
3.4.a Influence of research on policy outcome	Perceptions of the level of research utilization	Rating	Survey/interviews
3.4.b Political value of research	Level of independence of the research produced	Rating	Survey/ interviews
	Demand for research inputs into policymaking	Rating	Policy Community surveys

implemented. If the Framework is robust enough, the weights should have little impact on the benchmarking capacity – as other related studies have noted.[11]

The data used for assessing research systems (using the DRAF) will be made publicly available and presented in a flexible format so that users can select indicators according to the type of research, the type of actors, or the functions that they are interested in. All the information from the mapping of research actors in the first stages of the assessment will be disaggregated and categorized into groups of stakeholders (as far as possible and depending on the pool of respondents in each case). It is important to note that data collection and data treatment should follow the same protocols in each of the different country studies. This will ensure that the data is comparable across countries. Once the current approach has been tested, the data protocols will be further refined to

ensure the comparability and validity of data sources and indicators.

2.3 Implementation and Testing Phase

The DRAF will be implemented in three steps (described above). A multidisciplinary research team based in each of the study countries will handle the assessment, with general oversight by GDN. The research teams that participated in the pilot phase are already familiar with the project and could be a real asset during the implementation of the DRAF. The pilot phase research teams could act as 'local coordinators' for the assessments, or even be involved directly as assessors. The ultimate is aim is to compile a roster of researchers who can implement the DRAs.

The methodology will be further refined with launching the first assessments. The objective of this phase is to apply the methodology, and fine-tune the indicators and data sources used to assess research systems. It will involve between three to five DRAs in a

11. Williams, R. and De Rassenfosse, G., (2015). "Pitfalls in aggregating performance measures in higher education". Studies in Higher Education.

sample of countries, possibly building on the experience of countries which participated in the Doing Research pilot phase – which would benefit from a comparison of research systems and a benchmarking exercise. The testing phase itself will provide the initial results for benchmarking research systems, by conducting several studies using the same approach, and by aggregating the final scores of the DRAF.

After testing the proposed Framework, we will have the beginnings of a comprehensive database of Doing Research indicators, which we can use to conduct a number of robustness checks on the Framework. This will be done in a second stage following the initial assessment and the results will be presented by GDN in a working paper at the end of the testing phase. Once the Framework has been tested, refined and finalized, we will expand the roster of researchers and promote the DRAs to a wider range of actors involved in research and development.

3. Links to the Literature

It is worth noting that relatively little has been written about how social science research is produced in developing countries, compared to developed countries. While a number of authors such as Jamil Salmi (2009, 2011), Nico Cloete (2011, 2015), Manuel Castells (2009) and Johan Mouton (2009), as well as organizations such as IDRC, OECD and DFID, have published extensively on the development of universities, research excellence, higher education systems or research policies in Africa and other developing regions, there has been relatively little analysis of research systems, processes and outcomes in these regions, particularly for social sciences.

This can be partially explained by the fact that there is more research taking place in developed countries. As a result, developing country research is somewhat absent from the main rankings and measures of research performance. The poor level of research production, both in terms of quantity and quality, the lack of available data and the low levels of research capacity, make it difficult to study developing country contexts (Balarin et al., 2016; Langer et al., 2004; Sawyerr, 2004).

3.1 Research and Performance

Traditionally, research performance has been measured using an input-output approach, with an emphasis on quantity. This typically uses bibliometrics to measure the number of publications and citations, or the Hirsch's h-index,[12] which measures the productivity of researchers. The quality of research is assessed via a combination of peer review and citation counts. While this has worked well for the natural sciences, there is a general consensus that bibliometrics are not as suited to the social sciences. There are multiple reasons for this, ranging from the diversity of outputs not included in classic bibliometric analyses to the local and context-sensitive characteristics of social science research. We continue to use these measurements but complement them with process-related indicators and an analysis of the diffusion and uptake of social science research (as opposed to the traditional focus on production). Our country-level approach also allows us to highlight factors related to the local specificities of the country studied – which is particularly relevant for the social sciences.

12. The h-Index attempts to measure both the productivity and the impact of the published work of a scholar, group of scholars, a journal, a university or country. It is based on a set of the most cited papers and the number of citations that they have received. It is readably accessible, notably through the Scopus database maintained by Elsevier, which covers research work since 1995.

A number of authors mention the decline of social science research in developing countries, especially in Africa (Idrissa, 2016; Sawyerr, 2004; Urama, 2011). The small amount of research being produced, combined with low research capacities and the complex nature of the social sciences, make it difficult to provide an accurate assessment of research performance. It is not known how much of the social science research produced in developing countries is excluded from traditional bibliometric indicators. Therefore, the current measures of research performance are not sufficient for understanding the critical challenges, constraints and barriers to social science research in these contexts (Sawyerr, 2004). Without an understanding of the challenges it is difficult to design ways of building capacity to overcome them. It would therefore be useful to document the factors which influence the performance of research systems: the availability and accessibility of resources and infrastructure, the opportunities for networking, or the capacity to train and retain human capital for research and innovation. This is essential for understanding why developing countries perform poorly in research, and for looking at ways to improve their research systems – particularly in terms of producing quality, locally-produced research that can feed into important policy decisions.

3.2 National Research Systems

The study of research systems has been discussed in the academic and gray literature, but most often in relation to developed countries (Larédo and Mustar, 2001; Yudof, 2002). More research has been done on related topics such as innovation and higher education systems (Carayannis and Campbell, 2012; OECD, 2016; Williams et al., 2013). However, there is no clearly-defined framework for research systems in developing countries (the same is true for developed countries, despite some attempts at defining such a framework).

Figure 2: The Knowledge Triangle: Research, Innovation and Education Systems
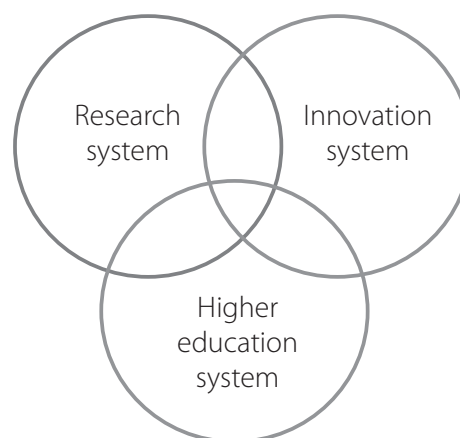
Source: EC (2009). Europe's regional research systems: current trends and structures.

The three functions of a research system in our Framework are directly inspired by the literature on national intnovation systems (NIS). This model defines a system of innovation as "constituted by elements and relationships which interact in the production, diffusion and use of new and economically useful knowledge" (Lundvall, 1992, p.2). The NIS concept has moved beyond the academic community, and has been widely adopted by governments to analyze and plan their national innovation strategies (Lundvall, 2007). We use the same three functions and apply them to social science research systems – an approach that was also adopted by several research teams in the Doing Research pilot phase.

Our Framework also relates to the literature on the 'knowledge triangle', which represents the relationship between higher education, research and innovation – three highly interrelated sectors. There is a similarity between innovation systems

and research systems, as both systems involve producers and users of knowledge and both are pluralistic in nature: they use existing knowledge and skills to create new knowledge and new skills (EC, 2009).

Several authors have made further contributions to the conceptualization of knowledge production. Gibbons et al. (1994) define two modes of knowledge production: a traditional form of scientific research based on disciplinary structures, hierarchical mechanisms and homogenous actors (Mode 1); and a more organizationally diverse, transdisciplinary, socially accountable and application-oriented form of research (Mode 2). As mentioned earlier, the Framework attempts to integrate and differentiate between these two different ways of doing research by linking the production function with traditional Mode 1 research and the diffusion and uptake functions with more applied Mode 2 research.

Table 4: Characteristics of Mode 1 and Mode 2 Knowledge Production

MODE 1	MODE 2
Problems proposed and resolved by a specific community Disciplinary Homogeneity Hierarchical organization Permanent Peer quality control Less socially accountable	Problems proposed and resolved in the context of applications and demand for research Transdisciplinary Heterogeneity Heterarchical organization Transitory Quality control by diverse actors More socially accountable and reflexive

Source: Gibbons et al. (1994).

There is a growing variety of organizations involved in research, resulting in a large heterogeneity of practice. The range of potential sites of research not only includes HEIs like universities and colleges, but also independent research centers, government agencies, industrial laboratories, think tanks and consultancies. These sites are linked through networks of communications, and research is conducted through mutual interactions. Research is resource intensive and heavily dependent on a range of enabling factors like the political and economic environment, governance and regulatory frameworks, financial resources and incentives, and infrastructure and spatial agglomeration.

This growing complexity has led to attempts at defining a 'research ecosystem' (Salmi, 2011) – or as in the case of the Doing Research Program, a 'research system' (Idrissa, 2016). This provides a useful theoretical background to the DRAs. For Salmi, the research ecosystem provides opportunities in the research sector for national universities, supporting the development of HEIs. The potential for building world-class universities in developing countries is therefore directly linked to the development of a strong research ecosystem. For Idrissa, it is the demand side of research that directly benefits from a stronger research system. More effective relationships and communication channels between researchers, users and funders facilitates research utilization, which in turn creates a 'pull factor' that incentivizes researchers to produce useful research. Developing research systems strengthens connections between research producers and users, which helps to better target capacities, training and funding – enabling the production and diffusion of useful research that feeds into public debate and policymaking.

Figure 3: The Research Ecosystem and its Key Elements
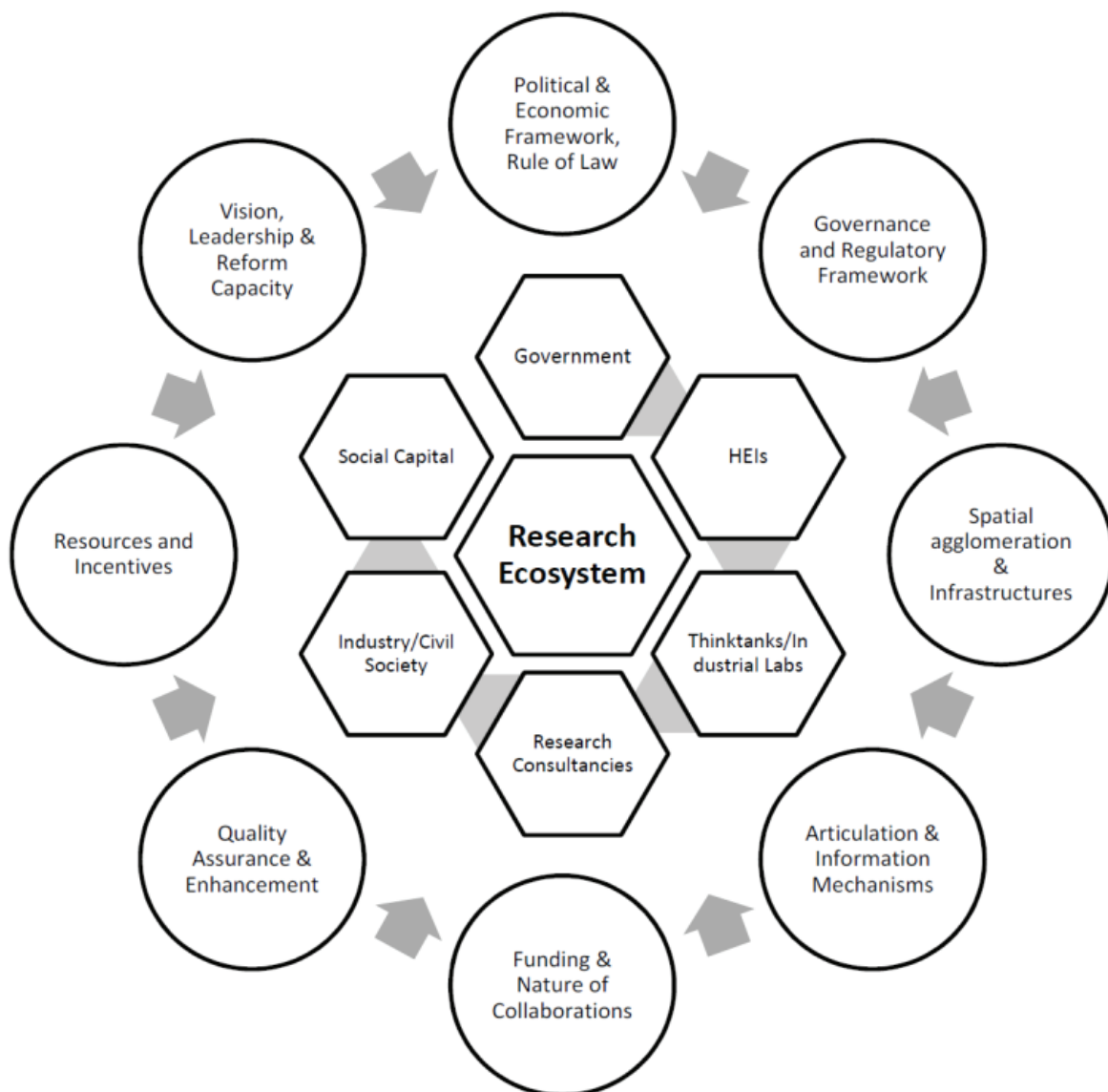
Source: Adapted from Salmi (2011).

4. Benchmarking, Variants and Flexibility of the Framework

The proposed Framework is highly flexible and context-sensitive, and can therefore be used for different purposes. The main purpose is to apply the three-step methodology to an in-depth analysis of a country's social science research system. However, GDN will also use the Framework to devise a benchmarking of social science research systems by drawing from it a comparable set of indicators, and measuring the performance of a country's research system against its neighbors and peers. In addition, the Framework can be tailored to a number of different applications. These 'variants' could be used by research actors

who have a particular interest in studying a specific aspect of the research system, a particular category of actors, or a more limited geographic or administrative area.

4.1 Benchmarking Research Systems

The second stated objective of the Doing Research program is to use this methodology to develop a benchmarking of national social science research systems. Benchmarking can help to create a virtuous circle of performance by enabling comparisons between countries and providing a basis for peer learning and positive competition – motivating countries to improve their performance ratings. This relies on an essential characteristic of the DRA: the assessments need to be comparable; in other words, the method needs to be highly standardized so that two different research teams who apply the same method to the same topic and context would get similar results.

A core set of indicators from the DRAF will constitute the basis for benchmarking. To avoid bias in comparisons, less importance should be placed on the context in the benchmarking exercise than for the in-depth country assessments. Again, the core set of indicators will be refined during the testing phase.

The aim of benchmarking is to enable comparisons across countries and eventually over time; to document global and regional trends in research production, diffusion and uptake; and to prompt action on enhancing the enabling environment for research. This will provide an important basis for a debate on the state of social science research between policy actors, civil society and the academic community. The benchmarking should be differentiated from the DRAs, but not independent – in the sense that the benchmarking is directly informed by

the results of the DRAs. In practical terms, once a research team has completed a country assessment, the findings will then be standardized by GDN and adapted for use in benchmarking. After a number of assessments have been completed, they will all be standardized and compared in the benchmarking exercise.

4.2 Alternative Applications of the Framework

The DRAF attempts to document the key factors impacting social science research systems in developing countries. In doing so, it uses a functional approach looking at research production, diffusion and uptake through the lens of the research process, using a combination of desk review, survey data, interviews and secondary data. The Framework is therefore characterized by its approach and by the defined boundaries of the research system. While the approach should be well-defined and the methodology applied consistently, the boundaries of the research system can shift according to one's particular interest within the larger social science research system.[13]

For example, it is possible to apply the Framework to a particular group of stakeholders in the research system, such as public universities, think tanks or NGOs – using information compiled during the stakeholder mapping in Step 2 of the assessment. Another example would be the Framework's ability to assess research systems at different levels: the country level, or at a local or regional level (although its primary application should be for country-level assessments). A research system can be defined as a country (e.g. the research

13. Note that if one applies a variant to the boundaries of the assessment, it automatically disqualifies the assessment from the benchmarking exercise given the difference in the scope of the research.

system of Cambodia), a specific region within a country (e.g. the research system of Uttar Pradesh, India), or a regional union of several countries (e.g. the research system of West Africa). The Framework allows us to define the contextual limitations of the research system and to map research actors in a second stage. Once the boundaries have been defined, the main Framework can be applied to any geographic or administrative scale using the same study protocol. A regional assessment can even be produced using national assessments of countries in the same region.

Conclusion

The Doing Research program aims to assess how the characteristics of a research system impact the capacity to produce, diffuse and use quality social science research as a key element of social and economic development. It will do so by implementing DRAs to produce a number of outputs such as in-depth country assessments, an interactive publicly-available dataset, a benchmarking of social science research systems, and a periodic global report on doing research in social sciences in developing countries. The Doing Research Assessment Framework, introduced in this document, acts as the core instrument for implementing DRAs.

There is a clear need for more targeted information to support the development of local capacities for social science research in developing countries. The lack of tools to assess social science research in developing countries, its role and its development, is inconsistent with the current debates on knowledge for development – particularly, in relation to implementing the SDGs. Further development of research capacities cannot take place without a better understanding of the factors influencing the development of research systems. Yet, there are currently no metrics for effectively assessing social science research system performance and identifying the main barriers to doing research – which could be used to inform better policies and support the translation of global goals into local research agendas.

The main challenge is in the breadth of the topic we are attempting to assess: we examine the professional social sciences sector not only from a knowledge generation perspective, but also include the diffusion and uptake of this knowledge. In addition, the assessment of systems and processes is

a relatively new approach. Traditionally, the focus has usually been on research outputs – which we believe ignores the processes and underlying structures which are fundamental to the development of an effective research system and a critical mass of researchers. However, the emergence of tools such as Webometrics, Altmetrics, Snowball metrics; and the initiatives of the OECD or of *Universitas 21* for assessing higher education systems, is a step in the right direction. The Doing Research program builds upon and complements these new approaches to develop a deeper understanding of the place of social science research in a country's political and social environment.

By framing research as a social and political process, the DRA allows researchers, policymakers, civil society actors and development practitioners to examine aspects of research that are usually not measured in traditional metrics. Research is often viewed as the professional activity of generating knowledge, but by also involving aspects of peer networking, policy relevance, communication and the popularization of social science research, the Doing Research program opens up new opportunities for understanding the role of research as a key component of locally-owned, social and economic development. The DRAs are now up for testing, feedback and revisions. This bold initiative has the potential to provide new incentives for social science researchers and transform the role of research: from generating pure academic knowledge to a social and political process of evidence-informed public debates and policymaking.

References

African Union (2015). Science, Technology and Innovation Strategy for Africa 2024 (STISA-2024). Addis Ababa: African Union.

Altbach P. (2009). *Peripheries and centers: research universities in developing countries.* Asia Pacific Education Review. Volume 10, Issue 1, pp 15-27.

Archambault E., Vignola Gagné E. (2004). *The use of bibliometrics in the social sciences and humanities.* Final report prepared by Science-Metrix for the Social Sciences and Humanities Research Council of Canada (SSHRCC).

Balarin M., Masi F., Vera M. (2016). The dynamics of social research production, circulation and use in Bolivia, Paraguay and Peru: a comparative study. GDN Working Paper Series. GDN Working Paper No. 91.

Carayannis E., Campbell D. (2012). *Mode 3 Knowledge Production in Quadruple Helix Innovation Systems.* Springer Briefs in Business 7.

Castells M. (2009). *The Role of Universities in Development: the Economy and Society.* Transcript of a lecture given by Manuel Castells at the University of the Western Cape, August 2009

Chattopadhyay S., Kumar Pathak B. (2016). Doing Research - Assessing the Social Science Research Environment in India and Bangladesh [India part]. Final Report.

Cloete N., Bailey T., Pillay P. (2011). *Universities and economic development in Africa.* African Minds.

Cloete N., Maassen P. (2015). *Roles of Universities and the African Context.* In: Cloete N., Maassen P. and Bailey T. (eds.). Knowledge Production and Contradictory Functions in African Higher Education. African Minds.

EC (2009). *Europe's regional research systems: current trends and structures.* Project financed by the 6th Framework Programme for Research, for the implementation of the specific programme "Strengthening the Foundations of the European Research Area".

Fomba B., Ahoure A. (2016). Evaluation of the Environment of Research in Social Sciences: the Case of the Cameroon and Ivory Coast. Final Report.

GDN (2016). Doing Research Pilot Phase: Final Evaluation Report. Report prepared by Jigsaw Consulting.

GDN (2016). *Doing Research Pilot Phase Synthesis.* Report prepared by the Centre for Research and Expertise on Education and Development (CREED).

Gibbons M., Limoges C., Nowotny H., Schwartzman S., Scott P., Trow M. (1994). The new production of knowledge: the dynamics of science and research in contemporary societies. London: Sage.

Hay K., Sudarshan R.M. (2010). *Making Research Matter in South Asia.* Economic & Political Weekly, Vol. XLV No. 3.

Hazelkorn E. (2012). *Assessing University-Based Research: Advocating Best Practice.* Presentation at the German Science Council Conference, Bonn, 21 September 2012.

HEFCE (2015). The nature, scale and beneficiaries of research impact: an initial analysis of Research Excellence Framework (REF) 2014 impact case studies. Report prepared by the King's College London and Digital Sciences.

Hicks D. (2004). *The four literatures of social science.* H. Moed (ed.), Handbook of Quantitative Science and Technology Research. Dordrecht, Netherlands, Kluwer Academic, pp. 476-496.

Huang M.H., Chang Y.W. (2008). *Characteristics*

of research output in social sciences and humanities: from a research evaluation perspective. Journal of the American Society for Information Science and Technology. 59(11), 1819-1828.

IDRC (2013). Excellence in the context of use-inspired research: Perspectives of the Global South. Report prepared by Singh S., Dubey P., Rastogi A. and Vail D.

Idrissa R. (2016). Wanting knowledge: social science research and the demand factor in a low-income country – the case of Niger. GDN Working Paper Series. GDN Working Paper No. 90.

Jongbloed B., Kaiser F., van Vught F. (2013). *U-Map and U-Multirank: profiling and ranking tools for higher education institutions.* Paper presented at the EAIR 35th Annual Forum in Rotterdam, the Netherlands.

ISSC, UNESCO (2010). World Social Science Report 2010: Knowledge Divides. UNESCO Publishing

ISSC, UNESCO (2013). World Social Science Report 2013: Changing Global Environments. UNESCO Publishing.

ISSC, UNESCO (2016). World Social Science Report 2016: Challenging Inequalities: Pathways to a Just World. UNESCO Publishing.

Kerr C. (1991). *The Great Transformation in Higher Education, 1960 –1980.* Albany: State University of New York Press

Langer A., Diaz-Olavarrieta C., Berdichevsky K., Villar J. (2004). Why is research from developing countries underrepresented in international health literature, and what can be done about it? Bulletin of the World Health Organization.

Larédo P. and Mustar P. (eds.) (2001). *Research and Innovation Policies in the New Global*

Economy. An International Comparative Analysis. Edward Elgar.

Leydesdorff L., Wagner C.S., Park H. W., Adams, J. (2013). *International Collaboration in Science: the Global Map and the Network.* El Profesional de la Información.

Lundvall B.-Å. (ed.) (1992). National Innovation Systems: Towards a Theory of Innovation and Interactive Learning. London, Pinter Publishers.

Lundvall B.-Å. (2007). National Innovation Systems – Analytical Concept and Development Tool. Industry and Innovation, 14:1, 95-119.

Mouton J., Waast R. (2009). *Comparative study on national research systems: findings and lessons.* In: Meek V.L., Teichler U., Kearney M.L. (eds.) Higher education, research and innovation: changing dynamics. Report on the UNESCO forum on higher education, research and knowledge 2001-2009.

Nederhof A.J. (2006). Bibliometric monitoring of research performance in the Social Sciences and the Humanities: A review. Scientometrics. 66(1), 81-100.

Noor, T. (2016). Doing Research - Assessing the Social Science Research Environment in India and Bangladesh [Bangladesh part]. Final Report.

OECD (2015). *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development.* The Measurement of Scientific, Technological and Innovation Activities. OECD Publishing. Paris: OECD.

OECD (2016). *Benchmarking Higher Education System Performance.* Background paper for the OECD Higher Education Stakeholder Forum, Paris, 17 June 2016.

Potgieter C., Bob U. (2016). Assessing the Environment for Social Science Research in

Developing Countries: The Case of South Africa. Final Report.

Rakhmani I., Siregar F. (2016). *Reforming Research in Indonesia: Policies and Practice.* GDN Working Paper Series. GDN Working Paper No. 92.

Salmi J. (2009). *The Challenge of Establishing World Class Universities.* Directions in development – Human development. Washington, DC: World Bank.

Salmi J. (2011). *The Road to Academic Excellence: Lessons from Experience.* In: Altbach and Salmi (eds.), The road to academic excellence: the making of world-class research universities. Directions in development – Human development, Washington, DC: World Bank, pp. 323-347.

Sawyerr A. (2004). *African universities and the challenge of research capacity development.* Journal of Higher Education in Africa. Vol. 2, No. 1, pp. 211-240.

Sovachana P., Work C., Nauen K. (2016). Doing Research in Cambodia: Making Models that Build Capacity. Final Report.

UKCDS (2012). *Research Capacity Strengthening: Learning from Experience.* Summary report of a workshop on research capacity strengthening in September 2011.

UNESCO (2009). *Higher Education, Research and Innovation: Changing Dynamics.* Meek L.V., Teichler U., Kearney M.L (eds.). Report on the UNESCO Forum on Higher Education, Research and Knowledge 2001-2009.

UNESCO (2013). *Rankings and Accountability in Higher Education: Uses and Misuses.* Marope P.T.M., Wells P.J., Hazelkorn E. (eds.). UNESCO Publishing.

Urama K., Swilling M., Acheampong E. (2011). Rethinking the research and research capacity agenda in African universities and higher institutions.

Williams R., de Rassenfosse G. (2013). *The determinants of quality national higher education systems.* Journal of Higher Education Policy and Management.

Williams R., de Rassenfosse G. (2015). *Pitfalls in aggregating performance measures in higher education.* Studies in Higher Education.

Wilsdon J. et al. (2015). The Metric Tide: Report of the Independent Review of the Role of Metrics in Research Assessment and Management.

Yudof, MG (2002). *Is the Public Research University Dead?* Chronicle of Higher Education (11 January)

The Global Development Network

The Global Development Network (GDN) is a public international organization that supports high quality, policy-oriented, social science research in developing and transition countries to promote better lives. It supports researchers with financial resources, global networking, and access to information, training, peer review and mentoring. GDN acts on the premise that better research leads to more informed policies and better, more inclusive development.

Through its global platform, GDN connects social science researchers with policymakers and development stakeholders across the world. Founded in 1999, GDN is currently headquartered in New Delhi.