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Evaluation of Sida's Model for Bilateral Research Cooperation



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The views and interpretations expressed in this report are the authors' and do not necessarily reflect those of the Swedish International Development Cooperation Agency, Sida.

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Foreword

Higher education and research is important for sustainable development and poverty reduction. A country's research capacity may improve living conditions and promote economic growth. This happens through several mechanisms, including improved human capital, exploration of development relevant findings and innovations, and evidence based critical analysis to inform national debates, policies and practices.

Sweden has been engaged in support to research of relevance for development since 1975 and in the strengthening of national research capacities in low income countries since the early 1980s. Altogether, Sida has had bilateral research cooperation programs in 25 countries. Currently, we are involved in Bolivia, Cambodia, Ethiopia, Mozambique, Rwanda, Tanzania, and Uganda, while potential research cooperation is explored in three new and fragile countries. The approach has evolved over time. From modest support of national research councils in partner countries, to the substantial *Research Training Partnership Programs (RTPPs)*, implemented in collaboration with numerous Swedish universities.

With its focus on long term collaborations, and individual and organizational capacity development of public universities and other national research and innovation institutions, the Swedish model for bilateral research cooperation is, indeed, unique. This strategic evaluation goes beyond previous program evaluations to look at the approach itself. It asks to what extent the Swedish model has contributed to building research capacities in partner countries. How relevant, effective, and sustainable is the approach? What are the overall results? Has the support built sustainable research capacity at the universities? To what extent have institutional structures, national policies, and financing of higher education and research been influenced by Sida's support?

We wish to express our great thanks to all individuals – the evaluators, Sida staff, and partner organisations – who have invested time and interest in this evaluation. The evaluation process has served as a learning tool for Sida and an opportunity to reflect on our approach to research cooperation. The evaluation has given rise to numerous discussions on the topic within the internal network for research cooperation at Sida, as well as with Sida's Scientific Advisory Council. It has informed Sida's in-depth review of the Strategy for research cooperation and research in development cooperation 2015-2021, a first step towards a new strategy in 2022.

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Abbreviations and Acronyms

AAU	Association of African Universities
ACE	World Bank African Centres of Excellence
AERC	African Economic Research Consortium
AFD	French Development Agency
AfDB	African Development Bank
ARU	Ardhi University
ASEAN	Association of Southeast Asian Nations
BITS	Board for Investment and Technical Support
BRC	Bilateral Research Cooperation
CAP	Cambridge Africa Programme
CARTA	Consortium for Advanced Research Training in Africa
CEO	Chief Executive Officer
CGIAR	Consultative Group of International Agricultural Research
CLACSO	Latin America Council of Social Sciences
CODESRIA	Council for the Development of Social Science Research in Africa
COSTECH	Commission for Science and Technology
DAC	Development Assistance Committee
DfID	Department of International Development
DIPGIS	Department of Research, Postgraduate Studies and Social Interaction
DIPCyT	Directorate of Scientific and Technological Research
DVC	Deputy Vice Chancellor
EDCTP	European and Developing Countries Clinical Trials Partnership
GCRF	Global Challenge Research Fund
GDP	Gross Domestic Product
HE	Higher Education
HEC	Higher Education Council
IDRC	International Development Research Center
IPR	Intellectual Property Rights
ISP	International Science Programme
ITC	Information Technology and Communication
IUCEA	Inter-University Council of East Africa
LGBT	Lesbian, Gay, Bisexual, Transgender
MDG	Millennium Development Goal

ABBREVIATIONS AND ACRONYMS

MEST	Ministry of Science and Technology
MFA	Ministry of Foreign Affairs
MoU	Memorandum of Understanding
MUHAS	Muhimbili University for Health and Allied Sciences
NFAST	National Fund for the Advancement of Science and Technology
NIE	New Institutional Economics
NORHED	Norwegian Programme for Capacity Development in Higher Education Research
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OSSREA	Organisation for Social Science Research in Eastern and Southern Africa
PCO	Programme Coordination Office
RBM	Result-based Management
RCD	Research Capacity Development
RUFORUM	Regional Universities Forum for Capacity Building in Agriculture
SAREC	Swedish Agency for Research Cooperation with Developing Countries
SDG	Sustainable Development Goal
SEK	Swedish Kroner
SGCI	Science Granting Councils Initiative
Sida	Swedish International Development Cooperation Agency
SSA	Sub-Saharan Africa
STEM	Science, Technology, Engineering and Mathematics
STI	Science, Technology and Innovation
TCU	Tanzania Commission for Universities
ToC	Theory of Change
ToR	Terms of Reference
UDSM	University of Dar es Salaam Institute of Marine Sciences
UIMS	University Information Management System
UMSA	Universidad Mayor de San Andrés
UMSS	Universidad Mayor de San Simón
UNESCO	United Nations Educational, Scientific and Cultural Organization
UR	University of Rwanda
URT	United Republic of Tanzania
WoS	Web of Science

Preface

The purpose of the evaluation is to provide an overall assessment of the extent to which Sida's model for bilateral research cooperation builds research capacity in low-income countries. The assessment will serve as input to the in-depth review for the strategy for research cooperation and research in development cooperation.

The report was prepared by the following team selected by NIRAS:

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NIRAS and the team would like to thank stakeholders at Sida, partner universities in Bolivia, Rwanda, Tanzania and Vietnam and Swedish partner universities for their time and support during the evaluation.

The findings and recommendation of the report are the responsibility of NIRAS and the evaluation team, and should not be taken as expressions of Sida policies or opinions.

Executive Summary

Background

Since the 1980s, Sweden has fostered bilateral institutional partnerships between Swedish universities and the Global South through long-term support to research-based universities. Sida's model has gone through different stages, with a 'holistic approach' combining institutional development and individual capacity development dominating since the mid-1990s.

In some cases, funding was provided for more than 40 years. To date, support has been given to 25 countries. Seven countries (Bolivia, Cambodia, Ethiopia, Mozambique, Rwanda, Tanzania, and Uganda) currently have active programmes with a number of Swedish partner universities.

The overall goal of Sida's current strategy for research cooperation (2015-2021) is to strengthen research of high-quality and relevance for poverty reduction and sustainable societies, with the specific objective of capacity development for research. In 2018, Sida allocated a total of SEK 928 million to research cooperation, of which SEK 331 million were allocated to bilateral research cooperation (BRC) programmes.

Purpose

The purpose of the evaluation is to provide an overall assessment of the extent to which Sida's model for BRC has contributed to strengthen research capacity in low-income countries. The evaluation process has served as an input to the in-depth strategy review and reporting conducted by Sida during 2019 and early 2020.

Objective and method

The objective of the evaluation is to assess the *relevance, effectiveness, impact* and *sustainability* of Sida's current model for bilateral cooperation. This "Sida model" consists of a System Approach and a Basic Logic, and rests on core Sida values of long-term commitment, donor coordination and ownership, an elaborate process of planning, monitoring and evaluation, and a substantial number of individual sub-programmes.

Following the terms of reference, the assessment is done from two perspectives: the System Approach and Basic Logic ("the Sida model") and how the implementation of the model has influenced results.

- The System Approach is based on the idea that linking support to regional and international research organisations, national research policies, research regulatory agencies, research councils, and university level research management and infrastructure will strengthen systems, structures, and research capacity in the partner country in a sustainable way.

- The Basic Logic underpinning the current Sida model is based on the idea that support to research training, and an environment conducive to research at the host university, will lead to more and better research, which, in turn, will contribute to research based teaching, knowledge frontiers, science-based policy-making and improved products and services – ultimately contributing to poverty reduction and sustainable societies.

The evaluation draws on:

- relevant literature on international research collaboration with low- and middle-income countries;
- a review of the four representative BRC programmes in Bolivia, Rwanda, Tanzania and Vietnam;
- evaluations of comparative donor approaches to research capacity development in low- and middle income countries;
- an exploration of the specifics of Sida's System Approach and Basic Logic in the BRC programmes.

Main Findings

- 1) **The Sida model has been implemented in a fairly generic way across countries.** All BRC programmes are ambitious and complex, operating at multiple levels, including all or most of the components of the model. They are seen by programme partners as important and generous compared to other programmes, but also challenging to relate to.
- 2) **The extent to which programmes have been successful in relation to their country and higher education contexts varies.** In authoritarian and developmental Rwanda and Vietnam the programmes have been more effective than in corporatist Bolivia and neo-patrimonial Tanzania. At the same time, university autonomy, academic freedom, and the space for engaged research dissemination is most pronounced in Bolivia. There is limited programme coordination with other donors.
- 3) **Links to international and regional level institutions (research councils, centres, or networks) are mostly initiatives by individual researchers or research groups.** One example is the regional network in mathematics between Tanzania, Uganda, and Rwanda. Still, the evaluation finds only a limited number of formal agreements and systemic links between such institutions and the BRC programmes in accordance with the System Approach.
- 4) **The relevance of the support to national level institutions (ministries, regulatory agencies, research councils, etc.) varies.** In Rwanda, relevant institutions actively regulate higher education and research, but are beyond the sphere of influence of the BRC programme. Relevant institutions have received substantial support but remain weak in Tanzania or are detached from universities that insist on their autonomy in Bolivia. In Vietnam, cooperation at the national level was discontinued when it did not function as planned, with the focus shifting to universities/research centres.

- 5) **Components for institutional capacity development are key to the BRC programmes.** They include university and programme management support, development of university policies and strategies, support to physical infrastructure and establishment of local PhD programmes.
- a. **The more tangible support for institutional capacity development includes ICT-systems, classical or e-libraries and laboratories and have generally been successful.** While some libraries continue to struggle with an underdeveloped reading culture, ICT is more generally embraced and used.
 - b. **As for support to policies and strategies, results vary.** Support is given to the development of university policies and strategies for management, research, human resources, gender, consultancies etc., but impact is largely determined by existing institutional structures. More concrete interventions, such as systems of financial management, quality assurance and smaller research grants, have given the most concrete results.
 - c. **More intangible conditions that affect the research environment are difficult to change from the outside.** They include the nature of relations of authority (academic rank, age, gender), relations of trust between colleagues and the space for critical exchanges and discourse. These are deeply embedded in national and university structures and processes and more difficult to alter through external interventions. While the programmes give ample attention to human rights and gender, less emphasis is given to the importance of academic freedom.
 - d. **Local PhD programmes, signifying ownership to research capacity development, have been slow to appear.** While local PhD programmes have a history in Tanzania (mainly by thesis only), full PhD programmes (coursework and thesis) are only recently established in all partner universities. They share challenges of general organisation, access to qualified professors and quality assurance. Many students still prefer to study abroad.
- 6) **Contributions to individual capacity development, in the form individual PhDs through partnerships between Swedish and home universities, is the most prominent aspect of the BRC programmes.** This is evident in Tanzania due to the number of PhD graduates, and in Vietnam due to the impact of qualified researchers on society at large. It is also the case in Bolivia due to the establishment of a critical mass of PhD researchers at universities where research has been assigned a minor role, and in Rwanda due to the increasing proportion of PhDs in tenured university positions. Individual research capacity is likely to be sustainable post-Sida support, in that the graduates return to their universities or take up positions in government or development related fields where they may use their competences.

- 7) **A common and urgent challenge is to transform individual research capacity into research of high quality and relevance.** The most consistent concern among interlocutors to the evaluation is the limited extent to which people are in positions to develop research of high quality and relevance following their PhD graduation. Researchers in general, and early career PhD candidates in particular, tend to be overburdened with administration and teaching responsibilities. Also, most graduates are not in a position or sufficiently qualified to develop new research proposals on their own. They often do not have the necessary experience to do so, and they usually do not have the necessary networks and support to lead research teams.
- 8) **As for research quantity and quality, the number of publications has generally seen an upward trend while quality remains a challenge in BRC countries.** Programme partners make substantial contributions to national research outputs. The average number of citations per publication/year and the share of publications in top international journals are relatively modest, indicating continued challenges with research and publication quality in these countries. This partly reflects the fact that the BRC programmes are located in low-income countries with weak systems of higher education, but also insufficient research leadership capacity and research networks.
- 9) **The collaboration with the Swedish partner universities is productive but rarely translates into institutional partnerships beyond Sida funding.** The engagement of Swedish partner universities is based on a combination of self-interest (funding, PhD graduates, publications, etc.) and a principled wish to contribute to capacity development among colleagues in the Global South. However, the cooperation is usually not leveraged into institutional partnerships that continue after Sida programme funding ceases.
- 10) **The major part of the research conducted has potential relevance for knowledge-based policies, products and services.** However, relevance does not automatically lead to impact. The case studies generally reveal few systematic institutional relations or links between the university researchers and the state and or the private sector. The main exceptions are individual researchers engaged as policy advisors or consultants.
- 11) **Most of the research done within the BRC programmes relates to issues of relevance for poverty reduction and sustainable societies.** However, this aspect of the BRC programmes is rarely systematically monitored. At the same time, it is increasingly acknowledged that contributions to key global challenges of economic development, environmental protection, human rights, health, poverty reduction, etc., require more attention to multi- and inter-disciplinary research.

Main Conclusions

Relevance:

- Sida's model for bilateral research cooperation is ambitious in its objectives, long-term in its commitments and generous in its funding, but has only partially and to varying degrees contributed to developing research capacity at national, university and individual levels in partner countries in the way anticipated by the model's System Approach and Basic Logic.

Effectiveness:

- The BRC programmes have reached tangible goals in terms of individual capacity-building (PhD graduates), an improved research environment at the partner university (management and infrastructure) and outputs in the form of academic publications. To some degree, they have also made contributions to more and better research, research-based policy-making, and improved products and services.

Impact:

- There are common challenges in the relatively limited extent to which the BRC universities and programmes have been able to move from institutional and individual capacity to the *application* of these capabilities. In particular, there is insufficient post-PhD research of high quality and relevance coming out of the BRC programmes and the programmes' impact on policy making, products and services for development is inadequate.

Sustainability:

- Should Sida support discontinue, the sustainability of institutional support at national and university level for research will largely depend on continued support and funding from governments and other donors. Funding has seen an upward trend but is unpredictable. Individual research capacity will continue to be used, but potentially only partially for research activities due to the programme's inadequate attention to research as practise and research networks, including with Swedish universities.

In sum:

- Despite Sida's long term-commitment to BRC and the results achieved, the evaluation concludes that the current Sida model does not work in a holistic and coherent way in accordance with its System Approach and Basic Logic. Hence, it does not sufficiently support the overall purpose of strengthening research of high quality and relevance expressed in the Swedish strategy for research cooperation (2015-2021).
- Key challenges lie in the inadequate interlinkages *between* the different discrete components of the System Approach/Basic Logic: (i) the relevant regional and national external institutions and the universities; (ii) the university research environment/research capacity and more and better research; and (iii) more and better research and contributions to knowledge

frontiers, science-based policy-making, improved products/services and ultimately to poverty reduction/sustainable societies.

Alternative Approaches and a theory of institutional change

Looking at alternative programmes for research capacity development, the evaluation compares the Sida model with four main modalities of research cooperation: (a) an individualised or small groups approach, often modestly funded but sometimes with long-term support emphasising links; (b) networks that bring together groups of researchers across institutions; (c) competitive funding linked to centres of excellence models; and (d) institutional approaches that focus on the university as a whole.

The two approaches with the greatest ambitions for the changes they will bring about (alternatives c and d) are implicitly underpinned by a logic of crafting a good institutional design that creates the right incentives (drawing on new institutional economics and rational choice theory) for the individual to act appropriately. In contrast, the network approach (alternatives a and b) places much more direct emphasis on research as a collective endeavour and of building trust and collaboration as vehicles to induce change both at the level of institutions and the research process.

The evaluation argues that the Sida model in its current iteration gives too much attention to *structural and institutional constraints and opportunities and individual capacity development* at the expense of a focus on research leadership, research groups, research networks and individual researchers as *agents of change*. Based on a theory of research as social fields, or as a ‘collective endeavour giving a key role to social actors or institutional entrepreneurs’, it is proposed that an understanding of institutions as rules and structures is married with the social dimensions of research.

The evaluation concludes that there is a need to articulate an explicit Theory of Change for BRC programmes, that would influence choices over strategies, inputs and activities that could plausibly lead to the desired goal of research of high quality and relevance for poverty reduction and sustainable societies. It would run as follows:

- If (a) a sufficient critical mass of qualified researchers come together under an entrepreneurial research leader around (b) a common research theme of social relevance and they (c) attract sufficient resources, they will be able to work together productively to provide (d) individual and collective benefits strengthening their research environment to (e) provide more and better research of relevance to society.

It is argued that such an understanding of institutional change would not only lead to a different programme design and dynamic, but also to a stronger emphasis on drivers of change, groups and networks. This may contribute to making the programme more sustainable beyond Sida’s support.

Recommendations

In terms of programme approach, the recommended option is a change of focus within the existing model. This would combine the need for basic technical capacity to alleviate bottlenecks in relevant higher education organisations at national and university levels, with added emphasis on research capacity-building and research as

practise. The main programme focus would shift to supporting research leaders, a critical mass of individual researchers, research groups, research networks, and collaborative research projects of high-quality and relevance. Such an approach would also, we argue, contribute to institutional change by strengthening the position and role of research within the universities.

Against this background, and with reference to the proposed Theory of Change, an updated Sida/BRC model for research capacity development could be adjusted in the following way:

- 1) Strengthen the use of context analyses in programme planning, implementation and evaluation.
- 2) Lower the ambitions of the holistic System Approach by making it more flexible and targeted.
- 3) Support national research organisations with shorter-term interventions of direct relevance for research capacity development.
- 4) Support partner university organisations with shorter-term interventions in administration and physical infrastructure when necessary to secure minimal support for research activities.
- 5) Move the focus of the Sida model and BRC programmes towards a stronger emphasis on research capacity development and research.
- 6) Increase the emphasis on research leadership, qualified researchers and research networks as collective actors.
- 7) Limit the number of research areas and themes in order to build strong research programmes and enhance the position of research.
- 8) Expand the alternative research funding base by supporting capacity to develop research proposals and secure research funds.
- 9) Support and encourage research as a collective enterprise within universities and with other relevant institutions in order to improve research environments.
- 10) Have a stronger focus on research dissemination and uptake in academia and the public and private sector.
- 11) Fund larger, longer-term and multidisciplinary research projects in order to contribute to research as practise.
- 12) Develop a simpler and more flexible monitoring and evaluation system that includes quantitative indicators as well as qualitative assessments.
- 13) Ensure that the programme organisation reflects and underpins the proposed Theory of Change.
- 14) Adapt the possible implementation of these recommendations to the different stages of development of the current BRC programmes.

1 Introduction

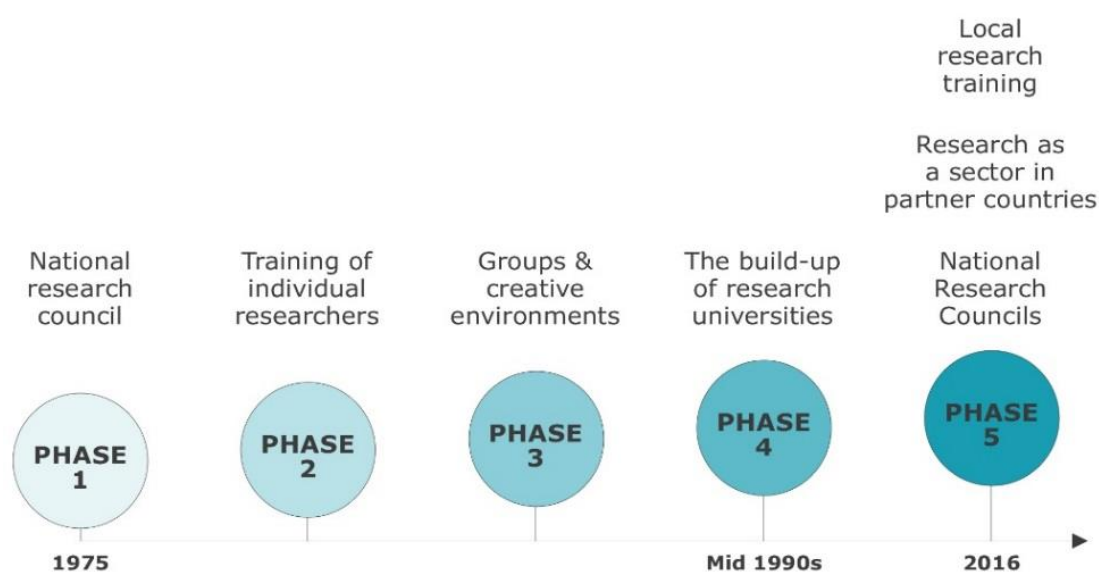
1.1 BACKGROUND

Higher education and research in low-income countries have long been regarded as key drivers of development, economic growth and social change (Bourguignon et al. 2017; Oketch et al. 2014; Adriansen et al. 2016). Donor support to this sector dates back to the 1950s and 1960s, but became more prominent from the early 2000s. Sweden has supported research capacity development (RCD) since the 1970s, for ‘public good’ reasons of strengthening ‘research of high-quality and of relevance to poverty reduction and sustainable development’ (Hydén 2016).

Sweden has been at the forefront of fostering institutional partnerships between the Global North and South by providing core long-term funding to research-based universities, in some cases for more than 40 years. Support has been given to 25 countries – usually to the major public university in the country concerned. Seven countries (Ethiopia, Uganda, Mozambique, Rwanda, Tanzania, Bolivia and Cambodia) currently have active programmes with a number of Swedish partner universities.

The intervention logic of the Sida model for bilateral research cooperation (BRC) has evolved through five phases. The first three took place from 1975, and the last two, which may be described as a “holistic” or “systemic” approach, began in mid-1990s (Figure 1).

Figure 1: Evolving Modalities of Sida’s Bilateral Research Cooperation



Source: Adapted from Sandström 2017

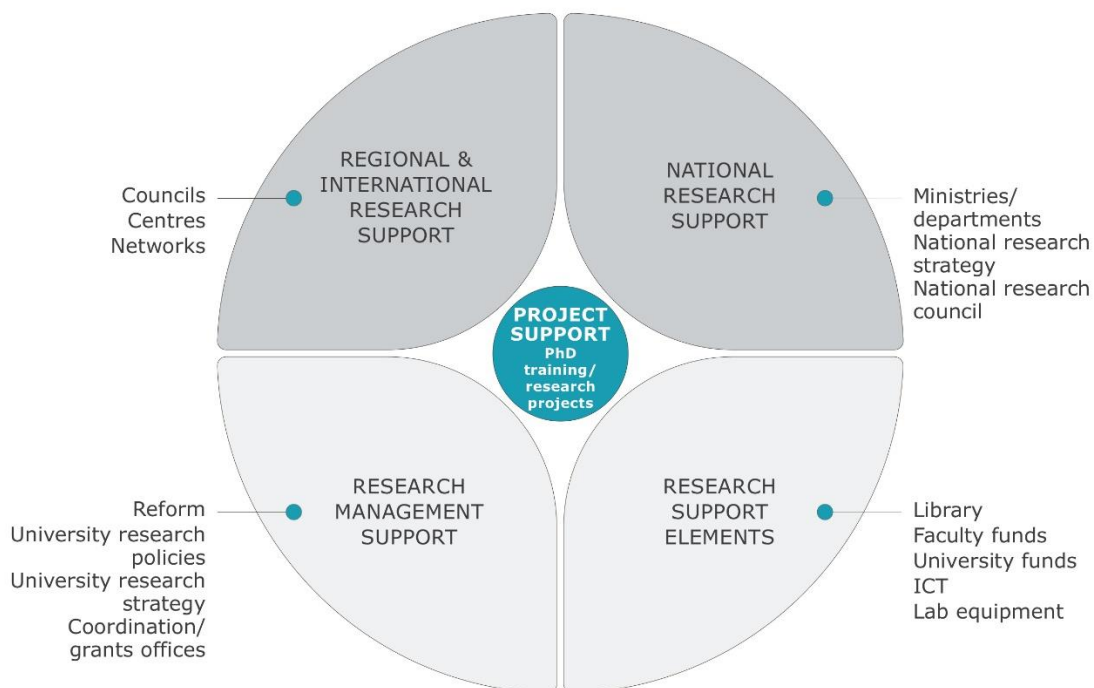
While the concrete modalities of cooperation have changed over time, key features/values of Swedish support to higher education have consistently:

- acknowledged that building research capacity takes time;
- put strong emphasis on ownership/equal partnerships;
- highlighted donor coordination and harmonisation.

The current Sida model for bilateral research cooperation and its System Approach and Basic Logic is defined as the evaluation object (Annex 1). The System Approach is based on the belief that a comprehensive model linking the different layers of organisations/institutions will dynamically strengthen systems and structures (Sandström 2017). The bilateral programmes have been extended to include support to regional and international research organisations, national research policies, research regulatory agencies and research councils – in addition to research management support and support to research infrastructure at university level (Figure 2).

The System Approach is not only described as a framework on which Sida's bilateral research cooperation (BRC) model is built. According to the Terms of Reference (ToR, Annex 1), it is also seen as a core value by itself, resting on the notion that sustainable research development cannot be established merely by research training of individuals. It also depends on support functions at regional, national and university levels, along with the advancement of an academic culture conducive to the promotion of research.

Figure 2: Sida's System Approach to Research Capacity Development

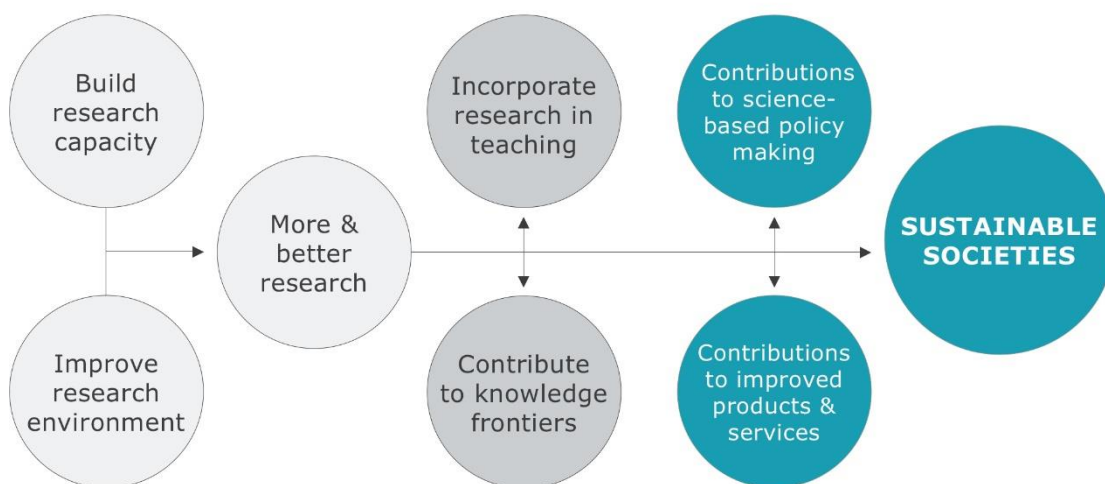


Source: Adapted from Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

The Basic Logic underpinning the Swedish model for research capacity development is (Figure 3): “Research training, as well as support to an environment conducive to research, leads to more and higher quality research. Better trained researchers

at the universities are expected to incorporate their findings into their teaching, leading to improved higher education, and contribute to scientific frontiers in their respective disciplinary fields. The research produced is expected to contribute to science-based policy-making, and improved products and services, contributing to sustainable societies” (Annex 1).

Figure 3: Sida’s Basic Logic in Research Capacity Development



Source: Adapted from Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

The Basic Logic of the Sida model has been specified by Sida to imply “a model and a Basic Logic that serves as an *implicit* Theory of Change (ToC), which has evolved dynamically over time” and represents the “basic idea that Sida programme managers know and internalise and that influence how individual programmes are set up in different countries”.¹

The Sida model is hence based on two main assumptions. The first is that a holistic/system approach is necessary to support research capacity development in a sustainable way. The second is that support to an improved research environment and individual research capacity development will lead to the benefits described above.

1.2 PURPOSE AND SCOPE

In accordance with the ToR (Annex 1) and as further developed in the Inception Report (Sida/NIRAS 2019), the primary *purpose* of this evaluation is to provide an

¹ Letter from Sida dated 25.09.2019.

overall assessment of the extent to which Sida's BRC model builds research capacity in low-income countries. This evaluation will serve as input to a new Sida strategy for research in development cooperation for the period 2021-2026. A secondary purpose is to provide a comprehensive overview of Sida's model for research cooperation that can be used as a basis for external communication.²

The primary *intended users* of the evaluation are Sida's Unit for Research Cooperation, Sida's Thematic Network for Research Cooperation and Sida's Scientific Advisory Council. Secondary intended users (of the country case studies) are relevant embassies and local and Swedish programme partners.

The *objective* of the evaluation is to assess "the relevance, effectiveness, impact and sustainability of Sida's model for bilateral cooperation" This is to be done from two perspectives: in terms of the System Approach and Basic Logic of the BRC, and in terms of how the implementation of the model has influenced results. In communication with Sida, the 'Sida model' has been specified to include both the Systems Approach (Figure 2) and the Basic Logic (Figure 3).

The *scope* of the evaluation is confined to:

- review of recent literature on international research collaboration with low- and middle-income countries;
- review of a sample of four BRC programmes on the basis of relevant documentation, stakeholder interviews and fieldwork;
- review of evaluations of comparative donor approaches to RCD in low-income countries; and
- exploration of the specifics of Sida's application of its System Approach and Basic Logic in the BRC programmes.

The *literature review* draws on studies and meta-level evaluations of support to higher education and research in low- and middle-income countries. It is used to inform the analysis of the BRC programmes, the alternative donor programmes and the assessment of the System Approach and Basic Logic. While the literature on research cooperation with the Global South is increasing and relevant, few studies take a broader, comparative view as done in this evaluation (Annex 6).

The four *BRC country programmes* selected as representative case-studies are Bolivia, Tanzania, Rwanda and Vietnam (Annex 2).³ They represent useful comparative cases as they are implemented under different political systems, highlighting the im-

² In line with communication with Sida (NIRAS 2019:8), this will be done by presenting an overall narrative account of the practise, achievements and lessons of Sida's model of research cooperation and be published in the form of a 'policy note' of approximately 10 pages under the responsibility of Sida.

³ The ToR called for 3-4 country case studies of which one should be in a country where the cooperation has been phased out, and the team originally suggested Bolivia, Rwanda, Vietnam and Tanzania or Uganda. The decision to include Tanzania was taken by Sida. One reason given was that BRC-Uganda would be discontinued in 2020 and hence not benefit from the evaluation.

portance of context. This selection also makes it possible to compare different programme modalities, programme time-spans and programme partners.⁴ The Tanzania programme is a long-term endeavor and has gone through all of Sida's research cooperation modalities including the System Approach and Basic Logic. The more recent BRC programmes in Rwanda and Bolivia are implemented with reference to the current System Approach and Basic Logic. The programme in Vietnam, which was discontinued prior to the current System Approach and Basic Logic, leaves options for assessing the impact of previous modalities.

The four *alternative/comparative case* modalities are the Cambridge Africa Programme (CAP), the Norwegian Programme for Capacity Development in Higher Education Research (NORHED), the World Bank African Centres of Excellence (ACE) and the African Economic Research Consortium (AERC) (see Annex 3). They were chosen from a list of 10 alternative programmes for having a design architecture in terms of goals, principles or values and modalities that appeared to either contrast, match or test those of Sida, and cover the main modes of research cooperation as defined by the team (Sida/NIRAS 2019).

The *System Approach/Basic Logic* is assessed for its relevance, effectiveness, impact and sustainability. Hence, its overall utility is assessed as an explanatory device for understanding how RCD happens in relation to its established goals. Working within the reasoning of the existing Basic Logic, we considered how a more elaborated causality map could be developed. We ended up reassessing the implicit assumptions within the Basic Logic about the nature of institutional change and provided an alternative and more explicit framework from which to develop a possible new programme approach and Theory of Change.

There were originally seven evaluation questions with 10 sub-questions listed in the ToR under the OECD/DAC headings *relevance, effectiveness, impact* and *sustainability* (Annex 1). During the inception phase (Sida/NIRAS 2019) another five evaluation questions were added to better cover the relevance of context, programme impact on policy-making, products and services and sustainability (as per the Basic Logic) and cross-cutting issues of human rights and gender (as per Swedish development cooperation policy). The evaluation questions are listed in Table 1 with references to the main chapters/sections where they are discussed and analysed, and revisited in the Conclusions (Chapter 6).

In addition, the team pointed out (Sida/NIRAS 2019) that the evaluation questions did not adequately relate to the overall objective of assessing whether, and to what degrees, the assumptions and implicit causal pathways in the System Approach and Basic Logic of the Sida model are supported by the evidence. For this reason, an ad-

⁴ This means that the programmes in Mozambique and Uganda are left out of the evaluation. The Cambodia programme would be too recent (Sida 2019) and the Ethiopia programme too different in its implementation to be relevant (Watts et al. 2018). As we shall return to, the most recent evaluations of the BRC programmes in Uganda and Mozambique show that they largely share the broad features and challenges identified for Bolivia, Rwanda and Tanzania (Kruse et al. 2014; Kruse et al. 2017).

ditional set of 11 evaluation questions (EQ 13-23) were developed specifically focusing on the causal links/transitions between the different discrete components of the System Approach and Basic Logic (Table 1).

Table 1 Evaluation Questions	
Evaluation Questions on Programme Relevance, Efficiency, Impact and Sustainability	Chapter/Section
Relevance	
EQ1: To what extent has Sida's model for bilateral research cooperation contributed to building research capacity in partner countries?	2, 3, 4, 5
EQ2: To what extent has Sida's support influenced national policies, institutional structures and financing of higher education and research?	3.1, 3.2
Effectiveness	
EQ3: To what extent is the model an effective instrument for building research capacity at the selected universities in partner countries?	2, 3
EQ3a: What are the major factors influencing the achievements or non-achievements of the model used?	2, 3
EQ3b: What risks/opportunities does Sida's model have on research capacity development in partner countries?	2, 3
EQ 4: What are the results in terms of scientific quality, quality of the research infrastructure developed, and the quality of the research environment in general?	3.3, 3.4
EQ4a: What is the general view on scientific quality resulting from Sida's model?	3.4
EQ4b: What is the general level of the scientific production, measured as international or national peer-reviewed publications?	3.4
EQ4c: With respect to research infrastructure, how well do administrative, library, lab and ICT-services function, and to what extent does this infrastructure contribute to a scientific research environment?	3.3
EQ4d: In terms of the general quality of the research environment, to what extent has Sida's model promoted a well-functioning academic culture, conducive for research?	3.3, 3.4
Impact	
EQ5: What is the overall impact, i.e., positive or negative effects, of the model for bilateral research cooperation in terms of direct or indirect, negative and positive results?	3
EQ5a (amended): What are the positive and negative aspects of participating in the bilateral research programme as seen by the Swedish universities involved?	3.3
EQ5b (amended): What are the implications of the proliferation of public and private universities in the partner countries for the partner university in the bilateral research programme?	3.2
EQ5c: What power relations are there between Swedish universities and partner country universities, and what are the effects of these relations?	2.3, 3.3
EQ5d: Has Sida's model for bilateral research cooperation influenced the balance between university autonomy in partner countries and the pursuit of research relevant for society?	3.1, 3.5
Sustainability	

EQ6: Provided Sida's model for bilateral research cooperation has contributed to intended outcomes, is it likely that the benefits of Sida's programmes are sustainable beyond the Swedish support?	3.6
EQ7: What are the major factors influencing long-term sustainability of research cooperation capacity and institution building results?	3.6

Added Evaluation Questions	Chapter/ Section
Relevance	
EQ8: To what extent, and how, is Sida's bilateral research cooperation taking human rights and gender equality into consideration in their programmes?	2.2, 3.1, 3.3
Effectiveness	
EQ9: To what extent, and how, is Sida's model for bilateral research co-operation affected by political, economic and socio-cultural context?	3.1
Impact	
EQ10: To what extent, and how, does Sida's model for bilateral research have impact on science-based policymaking, improved products and services and sustainable societies?	3.5
Sustainability	
EQ11: What is the best approach in terms of selecting one or a combination of the four modalities for building research capacity in low-income countries?	4, 5, 7.1
EQ12: What will be the best way to monitor and evaluate research quality and relevance in a future programme?	7.4

Evaluation Questions on the System Approach and Basic Logic	
EQ 13: To what extent is the evidence of research cooperation implementation consistent with the application of a holistic approach and its effects?	3, 4, 5
EQ 14: To what extent is there an integrated (synergies) programme and are its effects greater than the sum of its parts? To what extent is the approach institutionally and financially sustainable?	3.6, 5
EQ 15: What is the evidence that research cooperation builds capacities at individual and institutional level and how effective is it at doing this?	3.3, 3.4, 5
EQ 16: What is the evidence that research cooperation leads to environments conducive to higher education and research and if so what is its contribution?	3.3, 5
EQ 17: To what extent does improved research capacity and research environments lead to more and better research?	3.4, 5
EQ 18: Does improved research contribute to better teaching outcomes?	3.4, 5
EQ 19: Does improved research lead to improved knowledge contributions and how does this feedback into teaching?	3.4, 5
EQ 20: Does improved research and knowledge improve contributions to science-based policy-making? How is the discourse between academia and policy actors managed?	3.5, 5
EQ 21: Does improved research and knowledge contributions contribute to improved products and services? Are there impediments to the engagement by university researchers with the private sector?	3.5, 5

EQ 22: Do the above improvements contribute to sustainable societies (environmental protection, human rights adherence, gender equality, poverty reduction, etc.) and, if so, in what respects?	3.5, 5
EQ 23: What evidence is there to support the robustness of Sida's ToC, the causal connections between its elements, the validity of its assumptions and what do we learn from this?	5

1.3 METHODOLOGY

The BRC programmes under evaluation are varying in duration and magnitude, involving different country programme contexts and a large number of universities in the Global South and Sweden. The evaluation design (the structure that provides the information needed to answer the evaluation questions) has been operationalised into evaluation methods focusing on three levels of RCD:

Holistic/ system level	The context within which the universities/research institutions operate and their linkages/networks with sectors, policies and other institutions affecting their legitimacy and impact.
Institutional level	Relevant structures, processes and management systems in the universities/research institutions that affect the efficiency and effectiveness of organisational performance.
Human re- source level	The education and training of researchers, the competence for research, and how this is translated into actual research projects and products.

The methodologies used in the evaluation are outlined below, and their link to the evaluation questions appear in the Evaluation Matrix in Annex 4.

Context analysis: Carried out prior to and during fieldwork and based on readings, interviews and team members' own experiences from the countries concerned. The main focus was on: (i) the political space and scope for using research to underpin development policies, interventions and public engagement; (ii) the economic context and its implications for research uptake, investments, innovation, etc.; (iii) the socio-cultural basis for human rights adherence (including freedom of speech), social relations of authority/power, gender, class and ethnicity; and (iv) the position and capacity of institutions external to the university sector (key ministries, research councils, the private sector, etc.) to support higher education and research (Annex 2 and Annex 6).

Document review: Carried out prior to and during fieldwork and included (i) evaluations of Sida's and other donors' research capacity development programmes; (ii) BRC programme documentation (concept notes, programme proposals, Sida appraisals of intervention, programme plans and progress reports, etc.), and (iii) documentation (including policies and regulations) from relevant partner countries and institutions. Findings were juxtaposed with the team members' own extensive experience

from research collaboration with the Global South, as well as evaluations of other research cooperation programmes (Annex 2 and Annex 6).

Stakeholder interviews: A total of 315 stakeholders were interviewed, of which 15 percent were Swedish (Annex 5). The interviews were based on a pre-formulated Interview Guide to ensure comparability and were carried out with: (i) Relevant Sida units/departments; (ii) Swedish research coordinators and researchers; (iii) managers/team leaders of bilateral programmes in Sweden and partner countries; (iv) former and current PhD students in the partner countries; (v) public institutions (regulatory agencies, research councils, etc.) and private enterprises engaged with the universities/researchers; (vi) regional and international research organisations; and (vii) external observers, other donors and philanthropic funders involved in research cooperation.⁵

Bibliometric data analysis: Done primarily by using Elsevier's Scopus abstract and citation database, as well as SciVal, a tool for bibliometric analysis drawing on Scopus data; supplemented by data from the Clarivate Analytics Web of Science (WoS) databases. The analyses were done to investigate trends in, and differences between, regions in the Global South, the programme countries, and the individual programme universities. Publications from the BRC programmes themselves and alternative channels of publication (reports, briefs, internet, radio, TV, etc.) were identified during fieldwork.

Perception surveys and tracer studies: No survey was carried out for this particular evaluation, but the team has made extensive use of relevant and recent perception and tracer studies – including studies done by the team members themselves (Tvedten et al. 2018). These have been used (i) to capture possible differences in perceptions and experiences of the BRC programmes between Swedish and partner country stakeholders and between partner countries, and (ii) to capture the career path of PhD students post-graduation – including the extent to which they are in positions to continue with research endeavors (Annex 6).

Fieldwork, based on pre-established Fieldwork Indicators⁶ to ensure comparability, were carried out in Vietnam, Tanzania and Bolivia. The Rwanda case study drew on a recent evaluation done by the Team Leader of this evaluation (Tvedten et al., 2018) and was followed up through interviews and correspondence with key stakeholders. Fieldwork was carried out for approximately two weeks in each country by one core team member and one national consultant.

This is not an evaluation of individual BRC programmes *per se*. Rather, it is a formative and question-driven evaluation with the objective to ascertain the relevance

⁵ Interview notes have been written for each country case study, but in accordance with usual practise, these are not publicly available.

⁶ Covering data on regional HE and research, national HE and research, partner university organisation and policies, and BRC programme data.

and effectiveness of Sida's model for bilateral research cooperation – done by focusing on a select sample of Sida programmes, evaluations of comparative models of BRC and studies and theories of how research capacity development happens. Recommendations from the evaluation have been worked out in coordination with the Sida team, in order to facilitate ownership and applicability of the recommendations.⁷

1.4 LIMITATIONS

This comprehensive and complex evaluation involves a number of case studies, stakeholders and evaluation questions. Time has been a constraint, and has affected the extent to which the team was able to follow leads beyond the strict limits of the evaluation and engage with programme stakeholders and participants during the evaluation process.

While there is a general understanding of what the holistic 'System Approach' entails, the Basic Logic of the Sida model for research capacity building is generally not well established or understood, neither among key stakeholders/users of the evaluation, nor within the BRC programmes. While not affecting the evaluation in general terms, the limited institutional ownership of the Basic Logic – defined as the point of departure for the evaluation – has complicated the analysis and review process.

Out of six relevant BRC-programmes for this evaluation, the ToR requested that three to four be selected as case studies. While these have been selected to be as representative and useful as possible for the purposes of this evaluation, experiences and nuances of the Sida model may have been lost. However, recent evaluations of the two main alternative programmes from Uganda and Mozambique show that they share most of the broad features and challenges of the case studies included in the evaluation. The challenges of evaluating a programme retrospectively (Vietnam) were alleviated by the relevant team member's broad contact network in the Vietnamese university sector.

All case study programmes, except Vietnam, have recently been evaluated (2014-2018) resulting in 'evaluation fatigue' among some stakeholders. This may have contributed to challenges in obtaining even fairly basic information on outputs such as the number of PhD graduates. This also affected access to documents, such as formal agreements with other partners, making the team sometimes depend on oral statements.

The quality and credibility of data for monitoring and evaluation vary among the different bilateral programmes. This has at times made comparison between the case study countries difficult, particularly at output levels. For example, the results-based management (RBM) framework was well developed and carefully applied in

⁷ In accordance with a proposal from the team during the Inception Phase of this evaluation (Sida/NIRAS 2019), the draft report was submitted with key issues for discussion but no recommendations as such. Recommendations were discussed during a full-day seminar in Stockholm with Sida (16.09.19) between the draft and final report stages (see Chapter 7).

Rwanda, while it is under-developed and not consistently used in Bolivia. In Tanzania it is incomplete, often without baseline data.

The team was generally given access to institutions and people as requested, and interviewees were eager to present their cases and points of view. There are, however, differences between the four country case studies in the extent to which interviewees have been willing to discuss sensitive issues of university politics and relations of authority and power, human rights, academic freedom, gender equality, etc., that we believe are central aspects of research capacity development.

1.5 OUTLINE

The report is structured as follows: In **Chapter 2**, an overview of Swedish bilateral research cooperation (BRC) and of individual BRC programmes is provided. **Chapter 3** then assesses Sida's current model for bilateral cooperation with respect to its relevance, effectiveness, impact and sustainability. It concludes that while results have been achieved in institutional development and research capacity, the assumed causalities inherent in the model are not supported by the overall results of the BRC programmes. **Chapter 4** assesses comparative modalities of bilateral research cooperation, as a basis for a literature and theory-based reassessment of Sida's model in **Chapter 5**. These lead to a proposal for what is argued to be a more plausible Theory of Change for BRC. **Chapter 6** concludes the evaluation and **Chapter 7** presents a set of recommendations for the development of Sida's new strategy for bilateral research cooperation.

In order to facilitate the reading and use of the evaluation, the main report is written in an argumentative style with selected examples of evidence from the case studies. Additional background details and evidence are found in the four country case studies (Annex 2) and the four case studies of alternative/comparative donor approaches to bilateral research cooperation (Annex 3). In the former case, chapter headings in the main report match those in the country case studies to ease cross-referencing. References, under thematic headings, are collected in a separate list of references (Annex 6). References specific to each of the four BRC programmes assessed are listed in the relevant case study (Annex 2).

2 Swedish Bilateral Research Cooperation

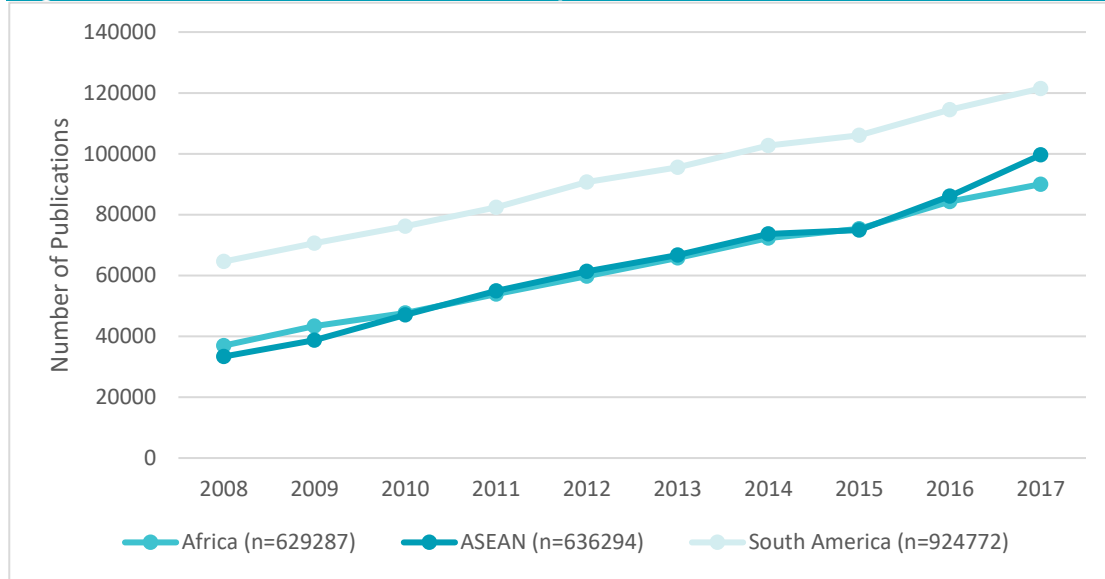
This chapter gives an outline of Sida's model for bilateral research cooperation: its position on the international scene; its background, its structural features and the organisational processes of the current BRC programmes – all as a basis for the analysis of the model's relevance, effectiveness, impact and sustainability in Chapter 3.

2.1 THE INTERNATIONAL SCENE

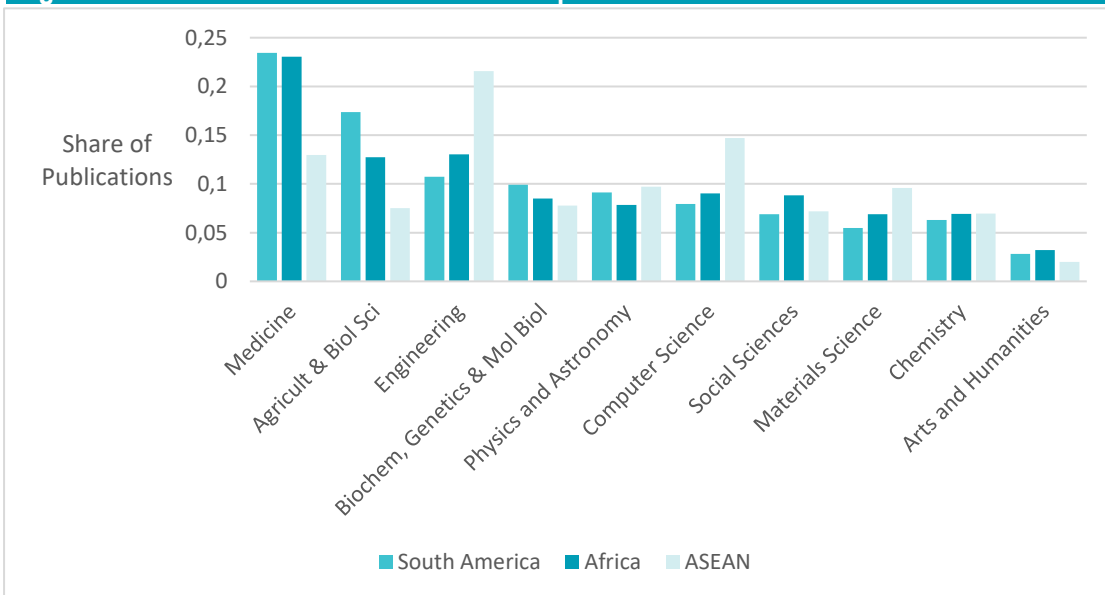
Official Development Assistance (ODA) to higher education and research has seen a strong increase since around year 2000 – following initiatives particularly by the World Bank to remedy past neglect of the sector (World Bank 2017). Higher education/research cooperation currently represents 3 percent of total ODA, with the highest share in Asia and the lowest share in Latin America. The largest donors to the sector (in USD millions)⁸ are Germany (1,330,147), France (888,873), Japan (285,937), United States (213,666) and Austria (132,276) (www.oecd.org/dac/stats). Among the Scandinavian countries, Sweden spends the largest share of its aid budget on higher education and research with 3.2 percent, allocating SEK 928 million (USD 94 million) to the sector in 2018 (www.sida.se).

Higher education and research in the regions in focus has grown in the last 20 years. Universities in South Asia score highest in international rankings, followed by Latin America and sub-Saharan Africa. The gross enrolment rate of young people in tertiary education is highest in Latin America (51 percent), followed by South Asia (25 percent) and sub-Saharan Africa (9 percent – an increase from 4 percent in 2000). In terms of publications, all regions have seen an increase in numbers during the period 2008-2017, with Latin America having the highest quantity and South Asia having seen the largest growth (Figure 4). Finally, as regards disciplinary focus, the social sciences and humanities dominate with over 70 percent of university graduates in sub-Saharan Africa, 51 percent in Asia and 42 percent in Latin America coming from these disciplines – but science, technology, engineering and mathematics (STEM), medicine and agriculture dominate in terms of publications.

⁸ The figures are taken from OECD-DAC Sector 11420: Higher Education. The team understands that Sida reports higher education/research allocations including BRC programme activities also to sectors for which research is being done (such as 23182 – Energy research) and Sweden may therefore be under-represented.

Figure 4: Global South Publications per Year 2008-2017

Source: SciVal

Figure 5: Global South Publications per Research Area 2008-2017Source: SciVal; Scopus; www.en.unesco.org/themes/higher-education; The Economist 10-16 August 2019).

There have been extensive debates for many years about the extent to which governments and donors in low-income countries should invest in research to drive socio-economic development. Those who are pro-research sometimes promote investments in research as an end in itself, and sometimes as a potential means to an end. Those who oppose research funding have argued that it is too difficult to demonstrate how research will lead to benefits and that money should be spent on more direct poverty reduction interventions (DfID 2014).

Empirical evidence suggests that higher education and research *can* have a significant effect on development and poverty reduction, mainly through four pathways: economic growth, human capital, pro-poor products and services, and as evidence to

inform policies and practice (Power et al. 2015; Oketch et al. 2014). However, the extent to which research-based knowledge guides development policies and interventions ultimately depends on the will and ability of decision-makers to absorb and use research-based knowledge (see also Adriansen et al., 2016; Steward 2014; Barry and Sawyer 2008; King 2004; Gaillard 2002).

2.2 SWEDISH RESEARCH COOPERATION

In 1975, the establishment of the Swedish Agency for Research Cooperation with Developing Countries (SAREC) institutionalised research aid and set the scene for a Swedish framework for the sector, which has largely persisted until today. The importance of science and technology for development was stressed along with the need for research capacity development.

The broad features of early Swedish research cooperation were (Nilsson and Sörling 2017; Sandström 2017):

- bilateral cooperation for capacity development through partnerships;
- support to global and regional research organisations; and
- research in Sweden of relevance to developing countries.

A funding structure/principle was established to ensure that 3 to 4 percent of government aid allocations go to research – divided into the following streams:

- 25 to 30 percent to bilateral support;
- 50 to 60 percent to global and regional organisations; and
- 10 to 15 percent to Swedish university research (Table 2).

Table 2: Swedish aid to research and main operational areas

	1976	1984	1994	2001	2005	2015
Swedish research	2.2/ 3%	13.9/ 9%	n.a.	76.1/ 10%	98.9/ 12%	130.7/ 14%
Bilateral	0.15/ 0%	37.4/ 23%	n.a./ 33%	216.4/ 29%	249.1/ 29%	270/ 28%
Regional/global	72.3/ 96%	101.9/ 64%	n.a./ 64%	448.9/ 59%	457.3/ 54%	551/ 58%
Total research aid	75	160	405	750	847	951
Aid frame	2,853	6,395	12,960	15,695	22,418	30,009
Research aid – % of aid frame	2.6%	2.5%	3.1%	4.8%	3.8%	3.2%

Source: Nilsson& Sörlin (2017)

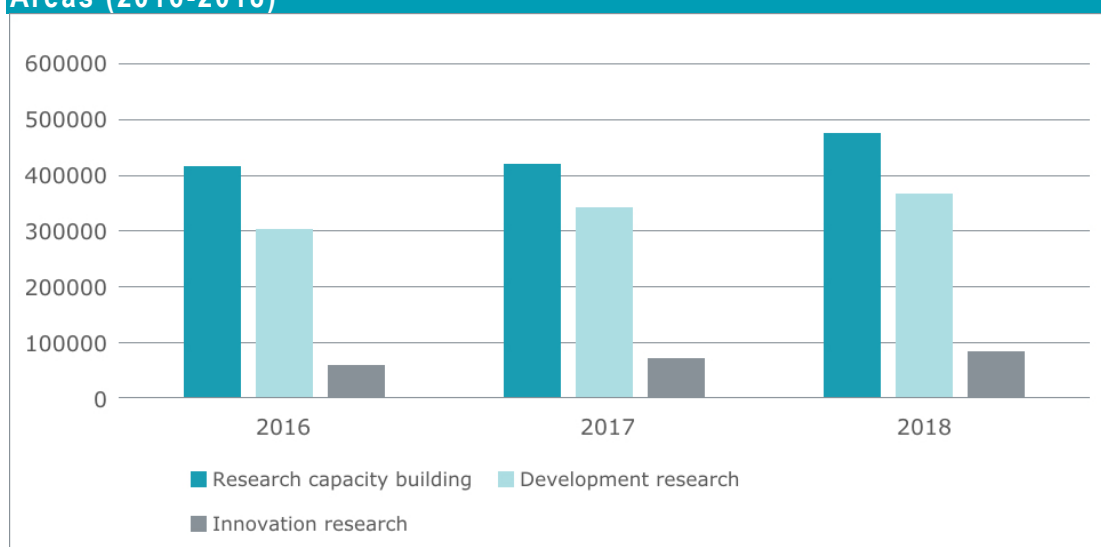
In practice, SAREC originally focused on multilateral support to global and regional research organisations, allocating 90 percent of research aid to international organisations in the late 1970s. Bilateral cooperation emerged later, and primarily focused on supporting National Research Councils in the Global South. By the mid-

1980s, SAREC reassessed its approach and gave research capacity development and training a more prominent place, reaching the initial objective of 25 to 30 percent of funds allocated to bilateral support. The SAREC ‘sandwich PhD model’ – in which students study at a Swedish university but retain close links with, and return to, their university of origin – was introduced in 1982 and is still at the core of the current approach to Sida’s support to research capacity development.

The current Swedish strategy for research cooperation and research in development cooperation (MFA 2015) has established the overall goal to be ‘research of high-quality and of relevance to poverty reduction and sustainable development’. The Swedish government has underlined three results areas to which Sida is expected to contribute (Figure 6):

1. Capacity development for research, primarily in low-income countries and regions
2. Global, regional and national research of relevance to low-income countries and regions
3. Promotion of research that, through innovation, can contribute to poverty reduction and sustainable development

Figure 6: Swedish Support to Higher Education and Research by Results Areas (2016-2018)



Source: Sida

The goals/results within RCD (the first results area) are further specified to be (MFA 2015:2):

- More partner countries have capacity to independently undertake research training and conduct high-quality research
- More women undergo research training and conduct research
- Improved conditions and capacity among national and regional research actors to participate in international research and research dialogue
- More partner countries and regional research actors have capacity to formulate and implement national and regional research strategies

- More partner countries and regional research actors have improved competence and strengthened infrastructure for scientific communication
- Strengthened capacity among universities in partner countries to communicate research findings that are potentially beneficial to the development of society

The different dimensions and values applied in Swedish BRC are specified to be (Annex 1, Sandström 2017):

Ownership: The notion of ‘ownership’ derives from the 2005 Paris Declaration on Aid Effectiveness and stipulates that development partners should set the agenda; donors should align with partners’ agenda and use partner systems; and the aid should be managed for results and mutual accountability.

Partnership: Partnerships between Swedish universities and universities in the Global South should be based on respect for ownership by partner countries and partner university institutions. The approach shall imply that programme content is not predetermined but grows out of an interactive process.

Donor coordination and harmonisation: In order to reduce fragmentation, overlap and resource waste. To the extent that other donors are ‘like-minded’ vis-à-vis the Sida model for bilateral research cooperation, other donors can also enhance the basic features of the model including long-term commitment.

Regional/international links: The participation of researchers in regional training and research activities will contribute to strengthening the home institutions. Regional networks will enhance research capacity. And, national research should be in a position to influence both global and regional research agendas.

Science focus: Research areas should in principle be prioritised by the universities in partner countries – although special attention sometimes has to be given to the need to emphasise social sciences in the dialogue due to its perceived controversial nature by governments.

Gender equality: Targeted measures aiming to ensure, or at least increase, participation of women in different programmes; research cooperation designed in a way that systematically reduces the gender gap and empowers women within the programme; policy dialogue for men and for women to be able to participate, lead, manage and benefit from research cooperation; and supporting research on gender and research where addressing gender disparities and differences is part of the methodology.

Together, the Sida model with its System Approach and Basic Logic and the Swedish/Sida values expressed above are assumed to lead to enhanced research capacity and contribute to knowledge-based development. These assumptions will be critically assessed and discussed in subsequent pages, after presenting the current organisation and main characteristics of the BRC programmes in the next section.

2.3 THE BILATERAL RESEARCH COOPERATION PROGRAMMES

The first bilateral research cooperation programmes were established in 1977 (Mozambique and Tanzania). Since then, a total of 25 programmes have been initiated (Table 3) involving a large number of Swedish and partner universities – with the norm for the latter being the largest public university in the country concerned. Seven BRC programmes are currently active (Ethiopia, Mozambique, Rwanda, Tanzania, Uganda, Cambodia and Bolivia).

Table 3: Bilateral Research Cooperation Programmes 1977-2019

Country	Period	Country	Period
Africa		Asia	
Botswana	End 1970s-1992	India	End 1970s-1992
Burkina Faso	2001-2010	Laos	2003-2011
Cape Verde	Ended 1992	Sri Lanka	1976-2007
Eritrea	1993-2002	Vietnam	1976-2011
Ethiopia	1979-ongoing	Cambodia	2018-ongoing
Kenya	Ended 1992	Latin America	
Mozambique	1978-ongoing	Bolivia	2000-ongoing
Rwanda	2003-ongoing	Cuba	End 1970s-1992
Tanzania	1977-ongoing	Honduras	2005-2011
Uganda	2000-ongoing	Nicaragua	1981-2011
Zambia	End 1970s-1992	Uruguay/Argentina	1986-1995
Zimbabwe	2002-ended		

Source: Sida

The basis for the establishment and termination of the programmes varies. Programme founding has been closely aligned with Swedish development cooperation policy and priorities, and countries with which Sweden has general cooperation relationships. This has usually implied the least developed countries with a primary focus on Africa – which historically have had the weakest systems of higher education and research.

The reasons for extending or ending programmes also differ. The norm seems to be very long-term, with the cooperation with Mozambique and Tanzania having lasted for more than 40 years. Some have been discontinued as Sweden has withdrawn from bilateral development cooperation (including Latin American and South-east Asian partners). Development aid to Vietnam, including the BRC programme, was phased out in 2011 ostensibly because the country reached ‘middle income’ status and became ineligible for Swedish aid. Few, if any, programmes have been brought to an end as part of a conscious exit strategy based on ownership and success – with the apparent exception of Uganda, which is planned to be phased out in 2020.

Sida’s research cooperation has involved a large number of Swedish universities over the years. According to Sida (Annex 1), the collaborations traditionally emerged

ad hoc: the programme built on contacts between researchers and universities in Sweden and partner countries, often with Sida in a match-making role. Non-Swedish universities and think tanks were not eligible for support.

A major change in the process of identifying Swedish university partners was the introduction of the Research Training Partnership Programme in 2012 (Sida 2018b). Its purpose was to give a stronger role for universities in the Global South to formulate research agendas based on competitive calls, and the partner universities generally agree that this has led to enhanced impact.

Budget allocations to the BRC programmes are presented in Table 4. Tanzania has had the largest allocation and Ethiopia the smallest among those active during the period 2014-2018. All programmes in this evaluation report underutilisation of funds with varying frequency and at various levels, usually with reference to bureaucratic hindrances and delays in programme implementation.

Table 4: Budget Allocations, Bilateral Research Cooperation 2014-2018

Partner Country	2014	2015	2016	2017	2018	Grand total
Bolivia	43,853	44,133	34,753	44,451	52,407	219,598
Cambodia		113	360	380	0	853
Ethiopia	30,000	-141	18,694	21,755	42,057	112,366
Mozambique	55,862	57,669	45,330	3,918	84,963	247,742
Rwanda	52,708	53,151	49,007	23,530	31,746	210,141
Tanzania	39,446	55,926	66,215	77,927	66,129	305,643
Uganda	38,632	38,435	47,519	42,278	54,200	221,064
Sub-total, bilateral support	260,500	249,287	261,878	214,239	331,502	1,317,407
Total, research co-operation	850,152	796,809	781,631	813,332	927,626	4169550

Source: Sida

In terms of overall organisation (Sida 2018), the BRC programmes are positioned within Sida's Unit for Research Cooperation. The programmes usually also have a responsible officer at the Embassy in each partner country. Sida/the Research Unit personnel repeatedly express that the BRC programmes are challenging and represent a considerable work-load (referring, for example, to IDRC that basically has the same mandate and budget but a considerably larger staff).

The *process of applying* for a new, or continuing an already existing programme, involves four steps (Sida 2018b).

- An invitation is sent by Sida to universities in target countries in the Global South to submit a Concept Note, outlining the long-term perspective of the target institution and how the BRC programme will fit in.
- A joint Letter of Intent is produced by the cooperating and collaborating partners.

- Following external assessments of quality and relevance by the Swedish Council of Higher Education, invitations are sent out to submit a Full Proposal assessed by Scientific Evaluation Committees.
- Sida writes a separate “Appraisal of Intervention” as part of the basis for a final decision.⁹

The application process is generally seen as thorough and professional, but also challenging, by the partner universities. The challenges can be exemplified by the fact that while the BRC-Rwanda partners followed the process according to time-schedule in the last call, BRC-Bolivia and their partners spent three years to produce Concept Notes that met Sida’s formal requirements. The final programme documents also vary in quality and level of detail, including their use of RBM-indicators (see Annex 2).

Sida typically signs three types of agreements: with the partner in the cooperating country, with the collaborating partner at the Swedish university, and with the International Science Programme (ISP) which is responsible for payment of the PhD students’ allowances. While Sida insists that the role of the Swedish universities is to *support* the cooperating partner, Swedish university interlocutors argue that the relation should be seen as one of ‘equal partnership’ in its professional/academic sense.

Programme implementation is governed by an agreement signed by the cooperating and collaborating partner, and is legally binding. The cooperating partner in the South assigns a unit or staff member as coordinator of the programme and sub-programmes. Sub-programme coordinators are responsible for the planning, implementation and monitoring of sub-programmes and research training as defined in the project documents. The collaborating partners (i.e., the Swedish universities) have their own coordinators, sometimes for the university as a whole and sometimes for each department/section involved.

The BRC programmes are structured around processes of regular bi-annual meetings and fixed reporting procedures. The reporting is to meet standard Sida administration requirements, but the ability/will to follow results-based management (RBM) procedures differ between programmes. There is an expressed concern, predominantly among the Swedish research partners, that the biannual planning and reporting meetings have become too ‘technical’ and focus on organisational and financial matters rather than professional/academic topics.

Looking at BRC programme content, the portfolio of each programme appears in Annex 2. They are generally listed under the headings of Research Management, Research Infrastructure and Research Training and contain from 20 (Rwanda) to 10 (Bolivia) individual sub-programmes – each with a Swedish partner institution and programme coordinators.

⁹ The appraisals written for BRC programmes are generally ‘bureaucratic’ in style and supportive of the proposals made – with the exception of the most recent appraisal of the Rwanda/UR programme that contains a good analysis of the contextual challenges for the programme (MFA/Sida 2019).

The research training programmes are generally biased towards the STEM disciplines, agriculture and medicine. This reflects the global/ Swedish emphasis on the instrumental use of research for development, the preferences/priorities among the Swedish and partner countries – as well as the controversies surrounding the social sciences in many, if not most, of the partner countries.

The BRC programmes also focus on basic/disciplinary research in their capacity development. This reflects the university system in Sweden and the partner countries as well as the nature of PhD programmes. However, with reference to the complexity of the 2030 Agenda/Sustainable Development Goals – to which Sida is committed (UN 2015) – there is currently a strong and increasing emphasis on the virtues of multi/interdisciplinary research, which the programmes have not given priority.¹⁰

2.4 SUMMING UP

Sweden has been a long-standing actor in international research cooperation under different modalities, with an overall goal of contributing to research of high-quality and relevance to poverty reduction and sustainable development. This has been done through global, regional and bilateral channels and institutions.

The bilateral programmes have represented around 30 percent of total allocations. Starting in 1975 with targeted interventions towards national research councils, training of individual researchers and research groups and creative environments, the bilateral model took a ‘holistic turn’ in the mid-1990s.

It has since been implemented with reference to an ambitious ‘Sida model’ consisting of a System Approach and a Basic Logic emphasising institutional development at national and university level and individual capacity development mainly in the sciences; a set of ‘core Sida values’ including ownership, long-term engagement and donor coordination; elaborate processes of planning, monitoring and evaluation; and a substantial number of individual sub-programmes.

The recent Research Training Partnership Programme has generally tilted the power-relations between Swedish universities and their southern partners in the direction of the latter. Still, the BRC programmes are seen as challenging to relate to and follow up both in their planning (Concept Notes, Letters of Intent, Full Proposals) and monitoring (biannual meetings, Result Based Management etc.). The articulated heavy work-load for Sida, the underutilisation of BRC programme budgets and delays in sub-programme implementation seem to indicate that the programmes may be overly ambitious in relation to existing resources and capacities.

¹⁰ A new Nordic Programme for Interdisciplinary Research states: “Inter-disciplinarity is widely acknowledged as essential to the generation of new and ground-breaking research results, and there is an increasingly urgent global demand for scientific research that dares to think across traditional boundaries between fields and disciplines and strives to create fertile ground for new approaches and insights. The integration of methods, data, perspectives, concepts, and/or theories from different scientific fields is crucial in the effort to expand the scope of collective human knowledge” (www.nordforsk.org/en/programmes).

3 Bilateral Case Study Findings

Following the outline of Sida's current model for bilateral research cooperation that is the evaluation object (Annex 1, Figure 1 and 2) and relating to the Evaluation Questions listed in Section 1.2, this chapter gives a summary and analysis of the main findings from the four country case studies presented in Annex 2.

3.1 CONTEXT

The four country case studies reveal the importance of context for the dynamics and results of the BRC programmes in relation to key issues such as economic and human development, political and civil rights, gender equality and poverty and well-being (see Table 5).

Table 5: Key Political, Economic and Social Indicators

Item	Tanzania	Rwanda	Bolivia	Vietnam
Population (million)	57.3	12.4	11.1	91.7
Urban population (%)	33.1	28.8	69.1	34.2
GDP per capita (USD)	1,050	773	3,548	2,568
Human development rank (of 188)	154	158	118	116
Gender Gap rank (of 126)	71	6	25	77
Political rights/civil liberties (of 100)	52	23	67	20
National poverty rate (%)	26.8	38.2	37.0	8.4
Mean years of schooling	5.8	4.1	8.9	8.2
Under five mortality rate /1000	57	38	35	21

Sources: UNDP (2019), World Bank (2019), World Economic Forum (2019), Freedom House (2019)

Authoritarian/developmental Vietnam and autocratic/ developmental Rwanda – scoring low on political rights and civil liberties – have been more effective in their implementation of the programme than corporatist Bolivia and neo-patrimonial Tanzania. In all four cases, the overall political economy and political ‘culture’ is reflected in the position of the university sector in society as well as in the functioning of the universities themselves.¹¹

¹¹ As noted above, the BRC programme partners are all the largest or among the larger public universities. At the same time, the university sector is going through substantial changes where the position and role of these universities is challenged. From 1990 to 2014, the number of public universities in Sub-Saharan Africa rose from 100 to 500, while private universities grew from 30 to more than 1.000. In 2000, about 10 percent of African students went to private institutions; by 2015 the share was 20 percent – with the share in Rwanda being 50 percent (The Economist 10-16 August 2019).

In Rwanda, UR is managed ‘top down’ and effective in reaching programme objectives. In Tanzania the three universities in the programme, UDSM, MUHAS and ARU are characterised by limited coherence and cooperation and programme ‘streamlining’. In Bolivia the ‘politicised’ nature of society is reflected in internal university strife at both UMSA and UMSS that hampers effectiveness. In Vietnam the state maintains strict political control and had a legacy of establishing research centres that were separate from teaching universities, which the programme (1986-2011) had to address.

At the same time, all systems/structures – including universities – are driven by a combination of structural constraints/opportunities and human agency/agents of change (Giddens 1984; Stephens 2009). Among the four case studies, the ‘academic space’ and room for agency for universities and researchers seems largest in Vietnam and Bolivia, and most limited in Rwanda and Tanzania (with recent authoritarian trends under President Magufuli). In Bolivia, the political culture of unionism and freedom of expression assert themselves in everything from lively debates between management, researchers and students to closure of the universities (as in 2015). In Vietnam, political space is limited but the room for academic agency is greater than one might think, and growing. In Rwanda and Tanzania, structural constraints seem to have a more inhibiting effect on academic agency and freedom.

Political constraints and room for agency also have implications for the extent to which, and how, research is used for economic development and poverty reduction. All four countries have ‘development’ and ‘poverty reduction’ high on the political agenda, but their ability and will differ in their pursuit of these ambitions. Vietnam has shown the most impressive results in turning the country from a poor and war-ridden nation to a knowledge-based middle-income economy – at least partly guided by research and innovation. Both Rwanda and Tanzania are currently attempting to initiate similar links between research and development but are affected by a ‘command-’ rather than a democratic/rights driven political economy and by high levels of donor dependence. Bolivia has gone through a number of political upheavals affecting the fabrics of society, until very recently with concerted efforts for equal development and poverty reduction under president Evo Morales – and signs of an increasing will to use research for development.

The four countries also differ in the extent to which they ‘embrace’ – and accept the intrusion of external donor values of human rights, gender equality and pro-poor development. While all four countries are affected by global and national processes of change in these areas, they also have deep historical and socio-cultural roots to which the programme largely has to relate – limiting contributions to research focus, student recruitment, etc. Bolivia has the least explicit focus on gender but also the highest female staff/student representation (see below). Tanzania has a strong (largely aid imposed) focus on ‘human rights’, but has seen this dismantled recently in key areas such as freedom of expression and LGBT rights. The four countries also differ in

their political and financial independence and will to strive for the Sida value of ownership and equal partnership (see Section 2.2) – with Tanzania and Rwanda probably being most affected by the aid-dependence syndrome.¹²

All this points to the importance of carefully relating the choice of partner countries, and BRC programme interventions, monitoring and evaluation, to the specific context in which they are implemented. The interventions in Tanzania have been strongly affected by the political and socio-cultural context, which has led to a situation where there are still challenges of sustainability after 40 years of support – 25 years of which with the sandwich programme. Rwanda and Bolivia are two very different countries and contexts, where the possibility for achieving programme results in terms of outputs and outcomes are best for the former – but where the basis for using the research for critical thinking and a driver of change seems best in the latter. The experiences from Vietnam show that research cooperation programmes like Sida's may have an impact, even under adverse political/structural conditions if done in a way that relates effectively to these conditions.

3.2 SYSTEM SUPPORT

Sida's holistic System Approach (Figure 2) is premised on the argument that different layers of research-related organisations/institutions will dynamically strengthen systems and structures; and that research support functions in the partner countries have either been non-existent or too weak to strengthen university research capacity development in a sustainable way.

Support to the **international and regional level** through research councils, research centres and research networks is an integral part of the Sida model for research capacity development (Section 2.2). The number and nature of such agreements within the BRC programmes at the partner universities has been difficult to ascertain (Section 1.4). Nevertheless, the case studies do reveal a limited extent of formal agreements and *systemic* links between such institutions and the BRC programmes. The reasons seem to be a combination of inadequate efforts from the BRC programmes/ partner universities and the limited attractiveness of low-ranked universities like the ones in question for potential regional partners (see Table 10 below).

In cases where such links do exist, the initiatives have usually been taken by individual sub-programmes/researchers. One example is the sub-programme in mathematics in Tanzania, that has regional links with Makerere University in Uganda and the University of Rwanda. However, links with global and regional institutions and networks – including those supported by Sida such as CGIAR (global), CLACSO (Latin America) and CODESRIA (Africa) – appear to be less formalised and 'systemic' than the System Approach envisages.

¹² Aid as percent of central government expenses is 71 percent (Rwanda) and 31 percent (Tanzania) respectively, with the equivalent figures for Bolivia and Vietnam being 17 and 11 percent in 2017 figures <https://data.worldbank.org/indicator/DT.ODA.ODAT.XP.ZS?view=chart>.

At the **national level**, the relevance and effectiveness of the ministries (for research policies and strategies), regulatory agencies, research councils, etc. vary between the case study countries (Annex 2). In Rwanda, the Ministry of Education, the Higher Educational Council and the National Commission for Science and Technology are well-established, actively regulate higher education and research and are beyond the ‘sphere of influence’ of the programme. In Bolivia the Vice Ministry of Science and Technology and in Tanzania the Commission for Science and Technology have received long-term and substantial support to strengthen research, research funding and research dissemination, but remain weak (Tanzania) or detached from universities that insist on their autonomy (Bolivia). In Vietnam, initial institutional cooperation with the Ministry of Education was discontinued when it did not function as planned – with the focus being moved to universities/research centres and individual research capacity development.

Key challenges include political, bureaucratic, human resource and financial constraints. In some cases there are also deficiencies in terms of transparency. This has led to limited direct interaction with the universities and implied that they do not form part of a coherent ‘system’ of research support as envisaged. In all three ongoing programme countries, the state funds physical infrastructure (including university premises) and running costs (including salaries) at the partner universities, but provides very little funding for research activities – with the partial exception of Bolivia where parts of a national carbon tax are allocated to research activities.

The Sida programme partner countries have all seen a proliferation of **public and private universities** (see Table 8 below). Still, the programme partner universities are either the only (Rwanda), the two (Bolivia) or the three (Tanzania) largest public universities in the countries concerned. In Vietnam, there was a larger range of universities (including specialised research centres and think tanks) involved in the programme. There is very limited cooperation between the Sida partner universities and other national academic institutions. One reason given by Sida, as well as the partner universities themselves, is the need to concentrate economic and human resources in order to get strong leading universities. However, the partner universities also lose academic staff (particularly to private entities that often pay better) and opportunities to cooperate/network with national colleagues – including think tanks that are often more experienced in applied and multi-disciplinary research (TTI 2014).

A final systemic set of actors at national level in the four BRC countries are **international donors** (Table 6 and 7). Sida is unique in its holistic approach to research capacity development, with other donors working at/relating to specific levels of intervention including higher level institutions, the universities, specific research programmes and individual capacity development (see Chapter 4). The donors in the four case study countries generally do not form part of a ‘systemic whole’, but tend to relate directly to the partner country/institution without or with limited coordination or harmonisation – thus also being out of step with the Paris Declaration on Aid Effectiveness and the Sida core value of donor coordination and harmonisation (Section 2.2). This is also the case where Sida is the dominant donor in higher education/research (Bolivia and Rwanda). There may be good reasons for this (each donor has its own approach, reporting systems, etc., and the partner institution may want to avoid

that donors become a dominant bloc), but the dearth of coordinated efforts clearly entails an opportunity lost for more systemic/coherent and sustainable support to research capacity development in the countries in focus.

Table 6: Institutional agreements of cooperation with donors (2019) *

University	Donor funded institutional agreements
Bolivia	
UMSA	Sida, COSUDE, AFD, JICA, UN, MABET, IDRC, CT-CONAN
UMSS	Sida, COSUDE, EU, SRC, VLIR, ECHO, IMTA, CORPOICA, CIUF-CUD, SEI, ARES
Rwanda	
UR	Sida, NUFFIC, ARES, IDRC, GIZ, Exim Bank, UCLA, World Bank, ADB, UN, EU
Tanzania	
UDSM	Sida, PEPFAR/MMC, IDRC, NORAD, DANIDA, EU, DFID, MFA Finland, IFRA
MUHAS	Sida, World Bank, VICRES, AAU, UNESCO, NUFFIC/MHO, NUFU, NORAD
ARU	Sida, World Bank, VICRES, AAU, UNESCO, NUFFIC/MHO, NUFU, NORAD, DANIDA, Carnegie, Habitat

Source: The individual universities * Ongoing, formal agreements with budget and substance.

Table 7: Most important donors/countries in higher education/research (2017)¹³

Country	Donor (five largest in terms of funding, USD millions, 2017)
Bolivia	Germany (2,158), Belgium (1,335), France (1,134), Spain (0,680), Switzerland (0,542)
Rwanda	Sweden (2,885), Japan (2,867), France (2,375), Germany (1,913), US (1,334)
Tanzania	Germany (1,998), Japan (1,692), Norway (1,437), Belgium (0,996), US (0,87)
Vietnam	Germany (27,273), France (23,114), Japan (17,063), South Korea (5,635)

Source: OECD/DAC, Sector: 11420 Higher Education

¹³ As noted above, the team understands that Sida reports higher education/research allocations – including the BRC programme – both to OECD/DAC Sector 11420 and the relevant thematic sector in which the research is based (i.e. sectors ending with 82). According to Sida, this implies that Swedish higher education/research allocations are underrepresented in Tanzania (adding up to USD 8.1 mill.) and in Bolivia (adding up to USD 4.4 mill.) – which would make Sweden the largest donor to the sector in both countries. Also, in some countries like Rwanda, regular development cooperation funding has been added to complement programme allocations.

3.3 INSTITUTIONAL DEVELOPMENT

By way of introducing the assessment of the Sida model's focus on institutional capacity development at the university level (see Figure 2 and 3), Table 8 presents key data on the main university of collaboration in Bolivia (UMSA), Rwanda (UR) and Tanzania (UDSM). These include university organisation, academic profile and gender of staff and students, and number of BRC sub-programmes, Swedish partner universities as well as number of programme-related local Master and PhD programmes (for similar information on the other partner universities, see Annex 2.) As seen, there are considerable variations in the structure and profile of the three universities, underlining the importance of the university setting for programme planning and implementation.

Table 8: Main characteristics of the BRC programmes in Bolivia, Rwanda and Tanzania

Item	Bolivia/ UMSA (2001-2018)	Rwanda / UR (2003-2018)	Tanzania/ UDSM (1995-2018)
Total number of universities	68	30	34
Public	15	1	12
Private	53	29	22
BRC partner universities	2	1	3
Programme establishment	2001	2003	1977 (1995)
University faculties/colleges	13	6	14
Research centres	49	9	26
Total academic staff	2,776	1,378	1,538
Proportion of women	26%	24%	26%
Academic staff with PhDs	6.5%	22%	40%
Total students	78,102	30,214	29,125
Proportion women	48%	33%	34%
Post-graduate students	1.8%	4.6%	16.5%
Swedish partner universities	6	15	9
BRC Sub-programmes	10	20	12
BRC Master programmes	6	22	7
BRC/Local PhD-programmes	1	3	10

Sources: Country programme documents

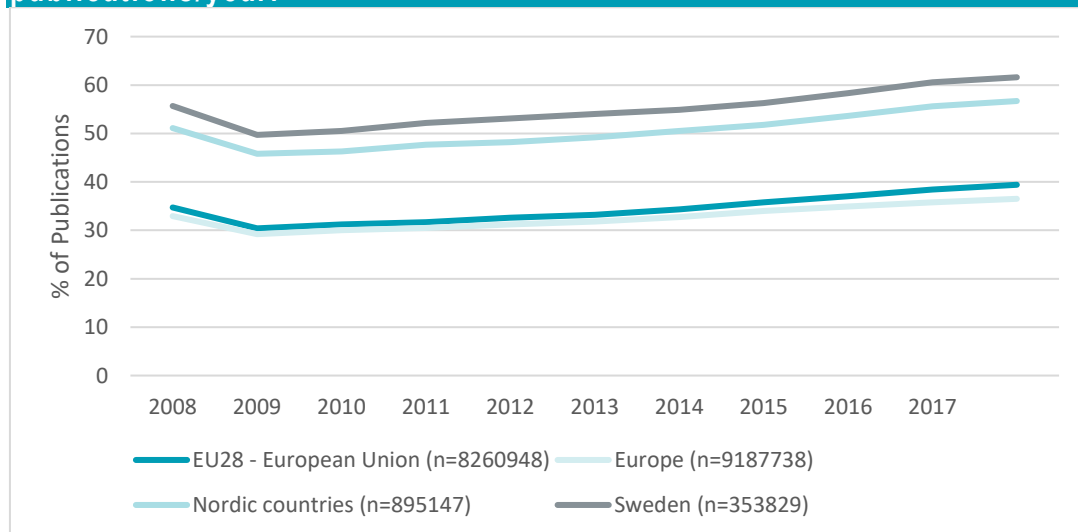
Swedish universities have a key role to play as partners in institutional development. At the individual level, this is based on a combination of self-interest (funding, PhD graduates, publications, etc.) and solidarity/a principled wish to contribute to capacity development among colleagues in the Global South. There are numerous examples of Swedish researchers who have maintained contact with specific countries and programmes for years and established good relations with students and researchers, even if research topics and research team composition may not be favourable for publications and academic careers in Sweden.

However, the support is usually not leveraged into institutional cooperation that continue after Sida programme funding ceases – despite the fact that Swedish universities score high on international collaboration (see Figure 8). In fact, this was one of the most consistent issues taken up by partner country interlocutors in all four BRC programmes and often seen to violate the core Sida value of ‘equal partnerships’ – most clearly expressed by Vietnamese researchers (see Section 2.2 and Annex 2).

At an institutional level, Sida money and its institutional overheads have been relatively easy to obtain for Swedish universities compared to competitive research funding through Swedish or international research councils. This may have made some institutions complacent and unwilling to pursue further cooperation with programme partners post-Sida interventions through normal research funding channels, when such relations may not be advantageous in acquiring alternative funding.

True ‘global universities’ require global partnerships. This is well exemplified by the fate of the relations between Swedish universities and their Vietnamese counterparts once the national programme was terminated in 2011. While Swedish universities have largely disappeared from the scene, their role have been taken over by a number of top international universities, including Oxford.

Figure 8: Swedish universities’ share of internationally co-authored publications/year.



Source: SciVal

Returning to the **BRC programme partners in Bolivia, Rwanda and Tanzania**, the programmes’ institutional support consists of a combination of university/programme management, physical infrastructure (ICT, library, laboratories, etc.) and intangible notions of support to the ‘research environment’ (see overviews over sub-programmes and programme partners in Annex 2). While considered a key aspect of the BRC programmes, none of the case study country interventions in this area seems to build on clear notions of how institutional change happens including the relative importance of ‘structures’ and ‘change agents’ – to which we will return in Chapter 5.

Management interventions do not include direct engagement with higher-level management of the universities, faculties and departments where key decisions are made.¹⁴ There are good reasons for this. Such structures are difficult if not impossible to change from the outside (as is most evident in the BRC programmes in Rwanda and Bolivia), and the programmes should aim to support ongoing local processes in order to fulfil the Sida value of ‘ownership’ – rather than seek to transform universities as institutions from the outside. Nevertheless, engaging directly with levels where management for change is most realistic, the short- and longer-term impact is likely to be stronger. The importance of this is exemplified by a recent change of rector (after a long and fierce election process) at UMSS in Bolivia. The focus on research – which historically has played a secondary role to education – improved immediately with significant consequences for the BRC programme.

Rather than targeting university management as change agents, all three ongoing BRC programmes have established and/or support **separate units of programme management** within the university structures (PCO in Rwanda, DIPGIS and DICyT in Bolivia and the Office of the DVC/Research at UDSM in Tanzania). There are no institutional management components in the programmes *per se* (ISP in Uppsala is the partner in ‘institutional advancement’ in some programmes, but with a more administrative/technical focus). While these programme units are important – even crucial – for programme implementation, they share characteristics of being only partially integrated into the overall university structures. They are all better funded, organised and hence more effective than the cumbersome university bureaucracy that surrounds them, which makes people – from finance officers to PhD students – deal directly with these units rather than the university structures to the extent possible.

The programmes do include **support to university policy and strategic interventions** (see Annex 2), including strategic plans, master plans, human resource policies, research policies, financial management policies, consultancy policies, gender policies, intellectual property rights policies and systems for quality assurance. Common for many of these policies is that their impact is determined largely by the existing institutional structures and relations of power/authority. The more tangible interventions (such as financial management, quality assurance and smaller research grants) seem to have given the most concrete results. At the same time, the cases of UMSA and UMSS in Bolivia indicate that institutions are perhaps most effectively changed from within: At the start of the BRC programme in 2000, research had a marginal role and position at both universities. Through concerted efforts by DIPGIS/DIPCyT and a limited number of PhDs/researchers (representing only 6.5 percent of the academic staff, see Table 5), research is gaining importance and research policies are in the process of being developed.

Physical infrastructure is at the core of institutional support for research capacity development, and has generally been successful in terms of outputs. All four BRC

¹⁴ One programme doing so is IDRC’s extensive work to build leading ‘Research-for-Development’ (R4D) organisations (Universalia 2018).

programmes have contributed to relatively well-functioning ICT systems, classical or e-libraries and laboratories for the science programmes – despite setbacks and challenges of maintenance. However, the case studies also show that the transition from physical infrastructure to its use/uptake in research is far from automatic: Libraries in some of the case study universities struggle with an underdeveloped ‘reading culture’, and access to and use of laboratories is affected by one’s place in the academic ‘pecking order’. ICT seems to be more universally embraced¹⁵, perhaps for being useful for research as well as part of a wider global phenomenon for younger academic staff, although connectivity is sometimes challenging.

As concerns more intangible aspects of the **research environment**, the social relations and culture of research cooperation depend on a number of concrete factors highlighted by our interviewees (see also Hannover Research 2014): Remuneration (generally being considered too low), unbalanced workloads (generally leaving insufficient space for research), unclear incentive structures for academic careers (not giving sufficient benefits for PhDs and publications), etc. Less explicitly expressed, but equally important, are the nature of relations of authority (academic rank, age, gender, etc.), relations of trust between colleagues and the space for critical exchanges and discourse. These issues are deeply embedded in national and university structures and processes, and are at the outset difficult to change through institutional development interventions from the outside.

The relationship between academic authority/rank and qualifications affects one’s position at the universities and differ between the different institutions. In Rwanda/UR there is a clear policy – and practice – with academic careers being based on a combination of seniority, academic degree and publications. This is not yet the case in Bolivia/UMSA-UMSS, where the large majority of academic staff do not have PhDs and where seniority still counts more. All the BRC programmes engage with issues of gender. This has had an impact on the recruitment of female students and affected the choice of topics/themes, but had limited effects on the overall gender balance in university managements in particular but also among academic staff (see Table 5).

The space for open, critical discussions at the university at large seems most developed in Bolivia, where the top management (including the Rector) is heavily engaged in public discussions and where students frequently organise manifestations when they are dissatisfied. In Tanzania, the scope for academic and policy debate is increasingly constrained making it more similar to the situation in Rwanda. Also at the level of individual programmes and projects, group dynamics and individuals matter. Research centres – where people gather around a common set of interests and goals – seem to be the most dynamic arenas. The success and sustainability of the Vietnam BRC programme was built exactly on the longer-term development of professional

¹⁵ At the same time, public universities seem to lag behind some of the private universities in the use of information technology – particularly those connected to international commercial HE organisations where much of the teaching and professor-student interaction is virtual (The Economist, 10th-16th August 2019).

and personal relations between colleagues from Sweden and Vietnam – largely in line with the prevailing Sida modality of ‘groups and creative environments’ at the time (see Figure 1) .

Also in this case, then, institutional change seems equally much to rely on ‘change agents’ in the university system than systemic change *per se*. Perhaps the main contribution of the BRC programmes in this respect has been the exposure of the PhD students and researchers to other context/universities – so far mainly limited to Swedish universities but with a (so far largely untapped) potential of international and regional institutions and networks.

3.4 RESEARCH CAPACITY DEVELOPMENT

Research capacity development is a core element of the Sida model for bilateral research cooperation (see Figure 3). Contributions to the production of individual PhDs are the most tangible (and arguably successful) aspect of the four BRC programmes¹⁶ – in Tanzania due to the large number of PhD graduates¹⁷, in Vietnam due to the impact of qualified researchers and research groups on society at large, in Bolivia due to the establishment of a small but critical mass of PhD researchers, and in Rwanda due to the increasing proportion of PhDs in tenured university positions (Table 9). Most of the universities (UMSA in Bolivia being the exception) offer secure employment after graduation and tracer studies show that the large majority continue to work at their home university after graduation (Tvedten et al. 2018; Felleson and Mälck 2017; Freudenthal 2014)¹⁸ – even though often not in researcher positions.

Students appreciate the **sandwich model** and the supportive research culture they find at Swedish universities (as opposed to the highly competitive ‘publish or perish’ culture in countries like the US and China for example). They also highlight the importance of being exposed to new/international country and academic contexts, and appreciate the option of maintaining contact with the home country and university. However, there are differences in opinion between the Swedish and partner country academic staff as to the effectiveness and quality of the PhD process. In a recent perception survey on the BRC-Rwanda cooperation, 78 percent of the UR respondents argued that they were ‘very satisfied’ or ‘satisfied’ with effectiveness and quality of

¹⁶ There are legitimate questions to raise as to the number of PhD graduates compared with the high costs of the programme (see Table 4 and 9), but programme efficiency is beyond the scope of this evaluation (for an assessment of costs for different PhD-training models, see Kruse et al. 2017).

¹⁷ The team has encountered problems obtaining consolidated overview of PhD students, graduates and dropouts in Tanzania – with no figures accessible for the last-mentioned category. Also, Kruse et al. (2014:12) state that the completion rates in Tanzania is very low, which is not reflected in the Sida figures in the table. The high number of PhD graduates at MUHAS, which is a university of ‘health and allied sciences’, reflects the efficiency of PhD programmes in medicine at the Swedish partner university (Ibid).

¹⁸ A tracer study of PhD graduates from the BRC-Bolivia programme is currently in a planning phase (Swedish Embassy, La Paz).

the research programme – with the equivalent proportion for the Swedish counterparts being 47 percent (Tvedten et al. 2018).

Table 9: PhD enrolment, graduates and drop-outs – BRC programme

	Enrolled	Still studying	Graduated	Not completed
Bolivia (2001-2018)				
UMSA	82	24	49	9
UMSS	76	21	44	11
Rwanda (2003-2018)				
UR	112	33	67	12
Tanzania (1995-2018)				
UDSM (1995-2018)	184	64	120	n.a **
MUHAS (2008-2018) *	102	30	72	n.a **
ARU (2008-2018) *	36	12	24	n.a.**

Source: Individual programmes.*MUHAS and ARU were originally parts of the UDSM, and it is uncertain to what extent the registered students originated from the UDSM cooperation. **Information on the number of PhD students not completed not available

There is limited emphasis on **teaching/pedagogics** in the sandwich programme, even though teaching will be an important part of the responsibility for most PhD graduates, with the exception of the relatively few who have ‘pure’ research positions/post-docs. The teaching traditions are also different, from interactive/critical methods in Bolivia to conventional lecturing in Rwanda/Tanzania. Nonetheless, many of our PhD interlocutors argue that they have changed their approach based on their Swedish experiences and that they more actively use research in their teaching – but they also acknowledge that the teaching culture at their universities/among older colleagues is difficult to change. The most concerted effort to teach and reach potential researchers is at UMSA in Bolivia, where the master programmes are divided into ‘professional’ and ‘science-based’ streams – with some students from the latter being incorporated into research groups/centres.

The main indicators of **research quantity, quality and impact** in the programme have been standard bibliometric data – that tend to favour the sciences (producing articles) at the expense of the social sciences/humanities (producing monographs). There are potential contradictions between ‘science’-based knowledge and the use of the metric of publications on the one hand, and socially informed and relevant knowledge on the other – which while not necessarily eligible for international publication, may still be important for research engagement. This speaks to the general point about the relative dearth of social science support in the BRC programmes (a key Sida value, see Section 2.2) and the effects of this on favouring a particular form of knowledge (see Chapter 5).

Overall, the BRC programme universities score low in international rankings of academic/research quality (Table 10). As noted above, Sida and the BRC programmes have made a deliberate choice to support low-income countries (even though Bolivia is an exception with its lower middle-income status), that usually also have less developed and lower-quality universities as per standard bibliometric

measures. From the point of view of Sweden's development cooperation priorities this makes sense, but it also implies that research capacity-building and impact in the classic academic sense will be a steeper and longer-term process.

Table 10: Rankings of BRC Programme Universities¹⁹

Partner university	Webometrics (World)	Webometrics (Regional) *
UMSA (Bolivia)	2,960	203
UMSS (Bolivia)	3,547	289
UR (Rwanda)	3,220	91
UDSM (Tanzania)	1,913	31
MUHAS (Tanzania)	2,997	76
ARU (Tanzania)	3,910	140

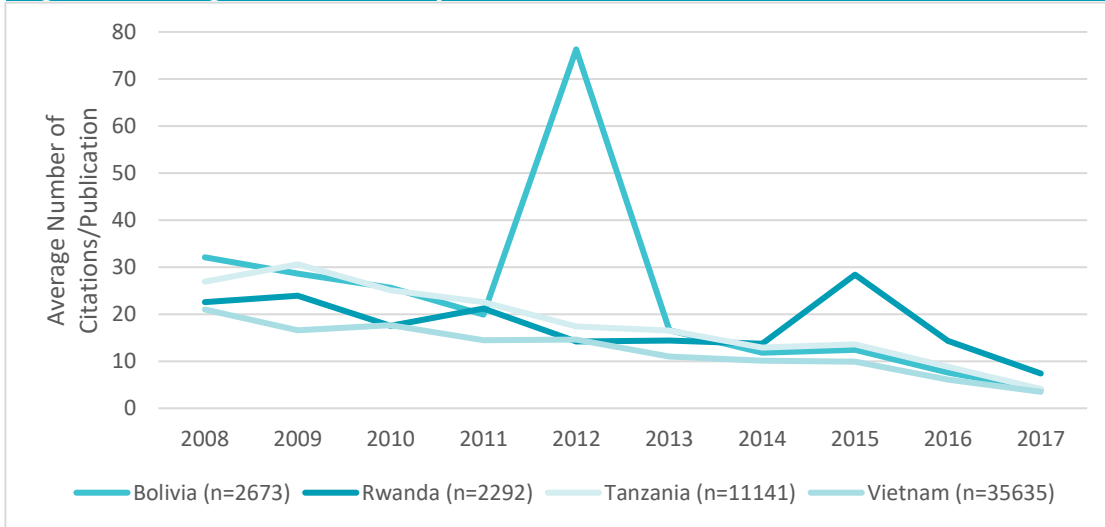
<http://www.webometrics.info/en/search/Rankings>. *Other global rankings, such as Times Higher Education (THE) and Shanghai/CWUR World University Ranking, only cover a restricted number of top universities among which the BRC universities do not find themselves. Regional rankings, such as QS Regional Rankings, would not allow for cross-regional comparisons.

Looking at publication outputs by country reflecting overall position and role of universities and research (Figure 9), the number of publications has seen the largest increase in Vietnam and remained relatively stable in Tanzania, Rwanda and Bolivia. In terms of performance/impact (Figure 10 and 11), the average number of citations per publication/year and the share of publications among the top 10 cited publications globally are relatively modest and strikingly similar across the four countries – but there are also cases of research excellence.

Among the projects highlighted by the BRC programmes themselves are the discovery of new species of bacteria in geysers of the highlands of Bolivia with potential industrial uses (UMSA); the PhD project “Child Survival in Rwanda: Challenges and Potentials for Improvement” (Rwanda/UR); an arsenic and fluoride water project in the Kilimanjaro region which could be translated it into a large-scale purification plant in Arusha (Tanzania/UDSM); and the “Integrated Farming Systems Research Project” in Vietnam (for more examples and details, see Annex 2).

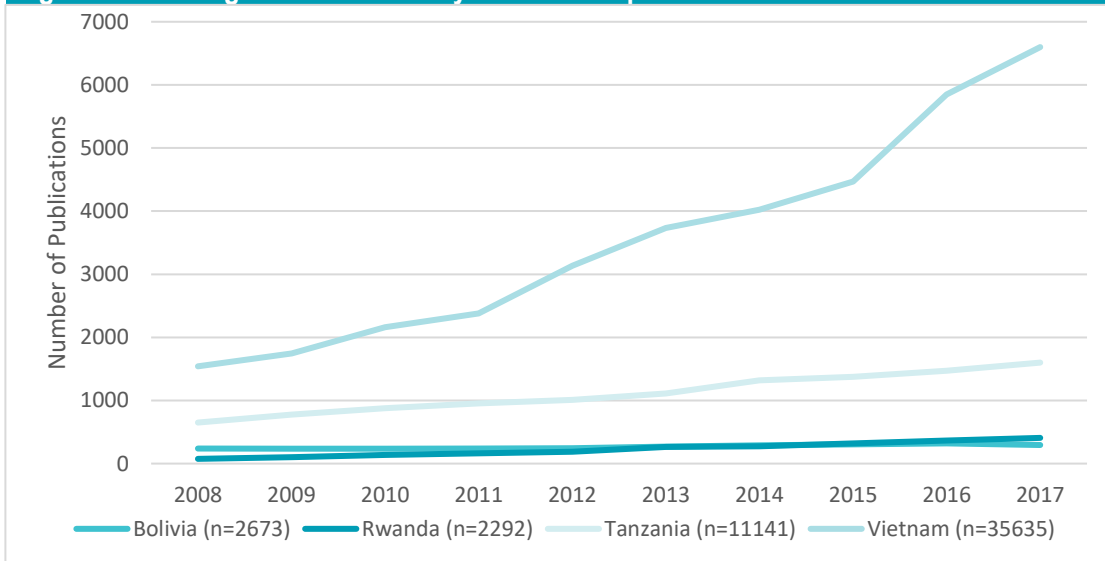
¹⁹ The world/regional ranking for Uganda/Makerere is 1129/14, and for Mozambique/Eduardo Mondlane is 2280/46.

Figure 9: Programme Country Publications 2008-2017

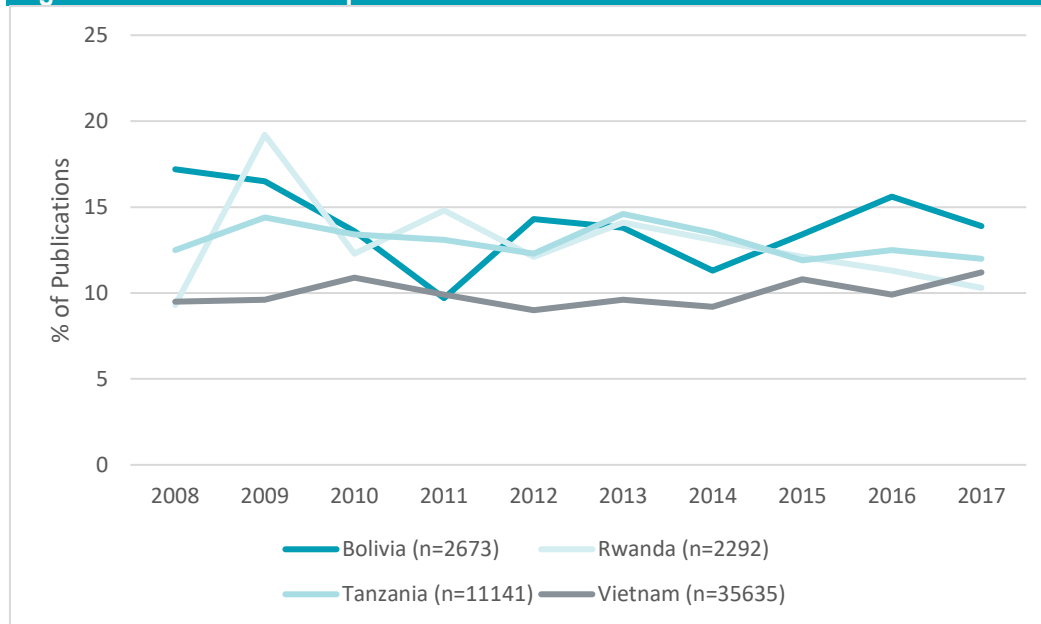


Source: SciVal. n=total number of publications 2008-2017

Figure 10: Programme Country Citations per Publications/Year



Source: SciVal

Figure 11: Share of Top 10% Cited Publications /Year

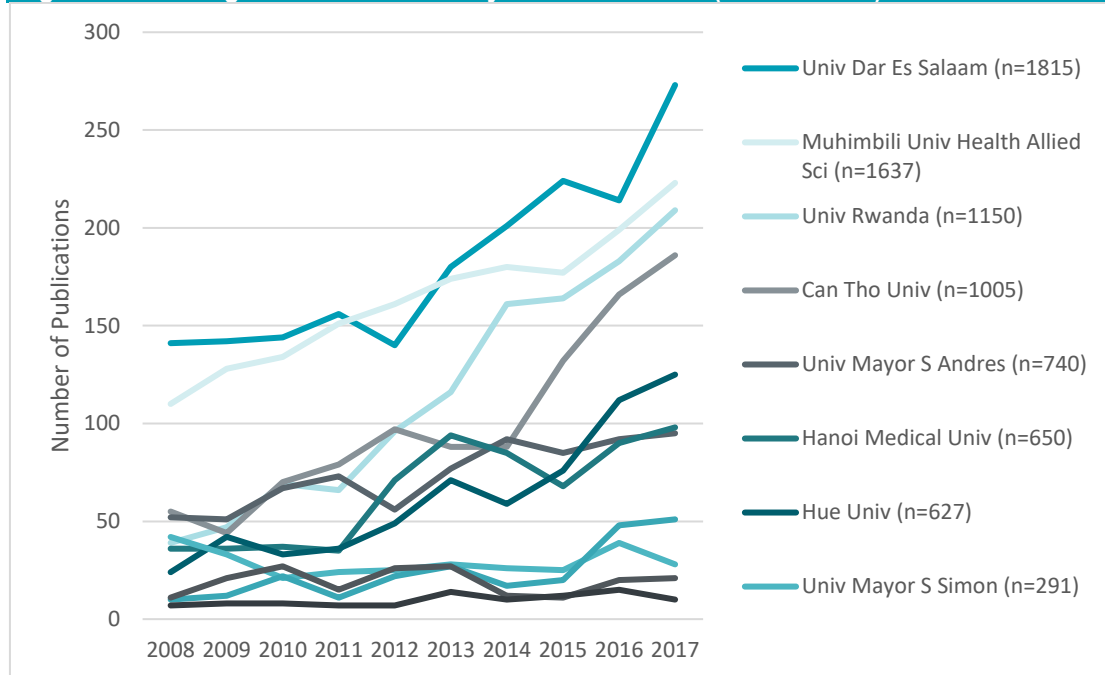
Source: SciVal

The BRC universities have shown more positive trends in the number of publications than the national figures indicate – at least partly due to the number of PhD publications (Figure 12).²⁰ There is also a relatively high level of international collaboration measured as publications with international co-authorship, with the highest share in Bolivia and the lowest in Vietnam. Much smaller shares of publications are done on the basis of national, intra-institutional (i.e. university) co-authorship or as single-author publications (Figure 13).

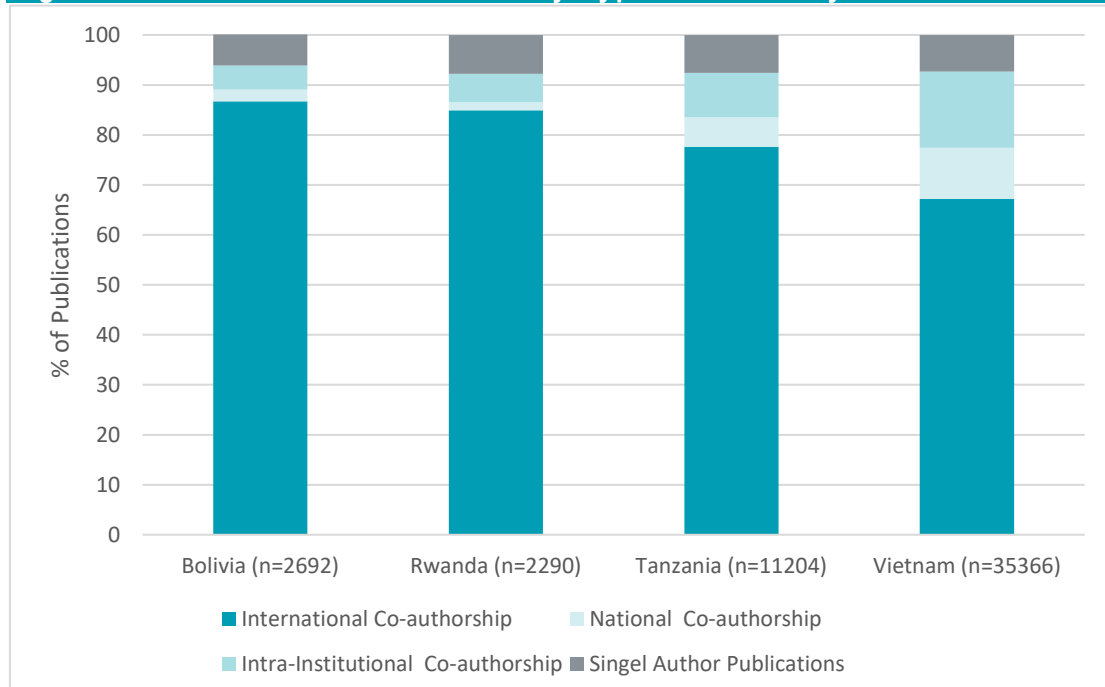
One way to interpret this is that the researchers in the four countries depend on international collaboration, and that the research milieus in each country/at each institution are still too weak to produce/publish research independently. It is not possible to ascertain the extent to which researchers from the four countries are ‘principal investigators’,²¹ but the qualitative evidence obtained through the interviews carried out with students and researchers clearly suggests that few researchers are in positions to develop and lead research projects except for their PhD related publications. The graph also seems to confirm that Vietnam has the strongest and Bolivia the weakest research environments and researchers among the four countries.

²⁰ As noted in Table 5, there are a number of public and private universities in the countries concerned, but the BRC programme universities are among the few that are research based. They represent between 35 percent (Tanzania) and 60 percent (Rwanda) of total national research output (see Annex 2).

²¹ Co-authors are variously listed with lead author first, alphabetically or with lead author last.

Figure 12: Programme University Publications (2007-2018)

Source: SciVal and Scopus

Figure 13: Research Collaboration by Type and Country

Source: SciVal

The team has not been able to obtain full overviews over the publications by the PhD graduates – with the exception of Rwanda/UR. The standard requirement for PhD students in Sweden is 3-4 peer reviewed articles, which with a total number of graduates of 376 (see Table 9) should entail between 1,130 and 1,500 articles. They

are published in accredited peer-reviewed journals, and there are few examples of (mis)use of open-access predatory equivalents.²²

The use of alternative channels for publishing findings from research activities (reports, briefs, other media outlets) is not common, despite programme objectives of wider impact on society – with the main exception of Bolivia. UMSA is actively using its own TV and radio stations, newspaper bulletins, reports, briefs, the web, etc. for ‘social interaction’, and academic staff is expected to spend 30 percent of their time on such activities.

Common for all three ongoing BRC programmes under evaluation is the limited extent to which research capacity development has been transformed into **research of high quality and relevance**²³ – affecting not only the realisation of the goals of ‘more and better research’ and ‘contributions to knowledge frontiers’ but also contributions to ‘science-based policy-making’ and ‘improved products and services’ (see Figure 3).

The most obvious reasons for this are that researchers in general and young PhD graduates in particular tend to be overburdened with research management and teaching responsibilities. In a recent tracer survey among BRC-R graduates at the UR (Tvedten et al. 2018), the respondents spent 50 percent of their time on teaching, 25 percent on management, administration and supervision and 25 percent on research. This allocation is understandable from the point of view of the universities, where well qualified teachers and research managers are in demand – but makes it difficult to fulfil the common objective of becoming research-based universities. There are also issues of internal power struggles where older/senior staff do not give sufficient space to younger (often better educated) staff.

Equally important, however, most graduates are not in positions/sufficiently qualified to develop new research proposals/programme on their own. They often do not have the necessary experience to do so, and they usually do not have the necessary networks and support/tutors/mentors to take own initiatives or form part of research teams. There are no systematic attempts within the BRC programmes to extend the research network beyond the Swedish universities – be they international universities or other types of institutions (think tanks, multi-disciplinary research centres, etc.). There are examples of regional cooperation/networks in Rwanda and Tanzania, but these usually do not have the necessary muscle either academically or financially to compete for larger research funds on their own.

Some attempts have been made to establish separate thematic research centres in all the collaborating universities – with BRC-Bolivia being most explicit in arguing

²² Such publications are mainly identified in the Rwanda/UR programme, but most probably because the university/programme has made concerted efforts to deal with the problem (Tvedten et al. 2018). Although appearing in a predatory journal does not necessarily reflect poor quality, such articles usually require payment and have not undergone the standard review and quality control processes.

²³ The need for a stronger focus on research as *practise* has been one of the main recommendations in the most recent evaluations of the Rwanda (Tvedten et al. 2018), Bolivia (Millard et al. 2017) as well as Tanzania (Kruse et al. 2014) programmes.

for their importance – but so far with limited tangible results. In Vietnam, teaching universities and research universities/centres were largely separated already in the 1980s with the latter being the focus of attention of the BRC-Vietnam programme. As noted, the success of the Vietnam programme – both before and after Sida’s withdrawal – can be attributed to the focus on ‘research groups and creative environments’ in line with the Sida model at the time (see Figure 1 and Annex 2).

An additional implication of the limited options for developing research capacity beyond PhD-graduation is the insufficient number of highly qualified academic staff (professors) and hence a basis for establishing local PhD programmes. Local PhD programmes are seen by Sida as well as the universities as a sign of academic maturity and autonomy (see Figure 1). Such programmes have a history in Tanzania (mainly thesis only but also coursework and thesis), in Rwanda three full PhD programmes have recently been established, and in Bolivia the first full programme is in the process of being established (Table 8 and Annex 2). While the experience is relatively recent and limited, there seem to be agreement among our interlocutors – in particular the Swedish ones – that the local PhD courses experience challenges related to general organisation, a critical mass of PhD holders/professors for teaching, quality assurance systems and the process of awarding PhD degrees – in short, of quality.

All this further underlines the importance and relevance of research relations/networks for being able to do research as well as for the ability to develop academic/research career beyond support by Sweden/Sida. The Vietnam case is a good illustration of how researchers coming out of the BRC programme have been able to establish/use such networks, build research careers and take on research management positions – albeit without the support of the Swedish programme (see Chapter 4).

3.5 IMPACT

Research of relevance for society – i.e. science-based policy making, improved products and services and ultimately poverty reduction and sustainable development – is a key aspect of the Sida model and its Basic Logic (see Figure 3). As noted above, an increasing part of the research being done in the BRC programmes is relevant in the sense that the topics are systematically related to central development challenges in the countries concerned as expressed in development policies and strategies. However, relevance does not automatically lead to impact.

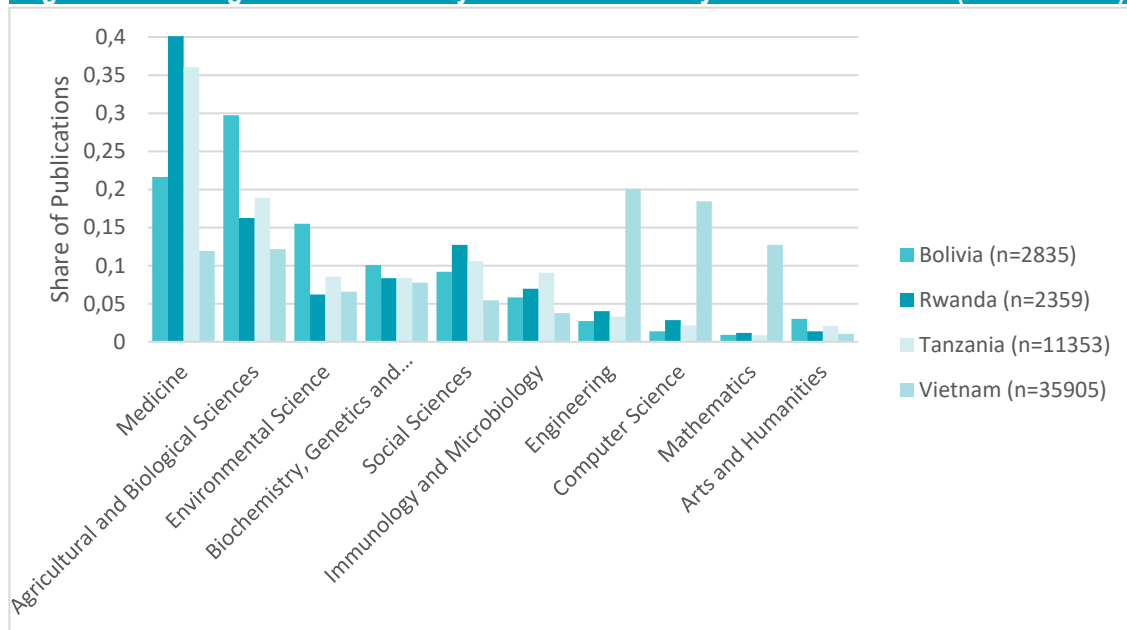
In fact, the four case studies generally reveal few systematic relations/links between the university/ researchers and the state (for policy advice) and private sector (for improved products and services). The main exceptions are individual former BRC students in public office (including a number of Government Ministers) and (usually senior) researchers who are engaged as policy advisors or employed by the private sector as consultants – usually in their private capacity without institutional links (attempts to establish university-based ‘consultancy services’ at the universities have usually failed).

The limited real impact of the Sida model/BRC programmes on issues of development and poverty reduction is partly linked to the disciplinary/thematic focus and the

concomitant **dearth of multi/-disciplinary research**. The increasing international attention on the merits/importance of multi/interdisciplinary research for solving central development challenges does hence not really have an institutional basis in the discipline-based BRC programmes – which is further underlined by the focus on STEM disciplines and the limited role of the social sciences as measured in publication outputs (Figure 14).²⁴

There are relevant recent initiatives in the form of sub-programmes on innovation, ‘clusters’, etc. in the BRC programmes under scrutiny (see also Sida 2015b). In Rwanda, a new programme is planned named “Fostering innovation and entrepreneurship for increased relevance of University of Rwanda to the country” – even though multi-disciplinary research is not particularly highlighted (UR 2019). In Bolivia, two ‘clusters’ on wood resources (UMSA) and leather and food (UMSS) included a large number of actors from the university and public/private sector and aimed to develop mechanisms to promote innovation. While the latter was more successful than the former, both were affected by the limited institutional base, experience and qualifications in multidisciplinary research and innovation (see also Millard et al. 2017).

Figure 14: Programme Country Publications by Research Area (2008-2017)



Source: SciVal

²⁴ Research networks and think tanks often give stronger emphasis to interdisciplinary research (see Christoplos et al. 2015 and 2019), but these are as noted not part of the Sida model and BRC programmes.

An additional factor limiting the Sida model/BRC programme impact seems to be the **large number of different sub-programmes, themes and projects**. An alternative focus, followed by the Vietnam programme in the last decade of its existence, is to narrow down the alternatives and focus on a limited number of research areas that are prioritised in the country concerned and for which there is an academic basis both in Sweden and in the partner countries. The focus in the last phase of the Vietnam programme was on one health and one agricultural programme, involving three Swedish universities and three partner universities in Vietnam – both with successful outcomes (see Annex 2).

The challenges for research to have ‘impact’ are also related to the nature of **interaction between the universities and the external institutions** of (potential) cooperation. The case studies show that public and private sector institutions generally remain unconvinced about the relevance and utility of the locally based research being done, either because they do not consider it ‘good enough’ (compared to international research in the relevant field), because they are unsure about the ‘real intentions’ of the researchers involved – or because they do not know how to engage with the university on their own terms.

The examples of successful research impact in the four country case studies seem to share one or both of the following characteristics: The research has either ‘gone public’ by showing/demonstrating its importance to powerholders/the general public and hence made it ‘unavoidable’ (such as the research on water contamination by UMSS in Cochabamba), or it has proven its merits by being useful for specific parts of the population/target groups (various examples from health/medical research). A relevant example from Tanzania is the sub-programme on dental fluorosis, which is prevalent in the Kilimanjaro region.

As noted in the beginning of this chapter, the impact of research as **engaged/critical voice in society** at large varies with political limitations to academic freedom and public expression in each of the four BRC countries. Research – both in its instrumental and critically engaged sense – is by its very nature ‘political’ through its prospective use not only for economic development and poverty reduction, but also for a better informed/critical general public.

Sida/programme calls for a focus on issues of ‘human rights’, ‘gender equality’, ‘pro-poor development’, etc. are followed up in terms of selection of research topics. This includes work in the BRC-Rwanda programme on the genocide against the Tutsis, in the BRC-Bolivia programme on maternal health, and in the BRC-Tanzania programme on the plight of persons with albinism (whereas research on LGBT+ sexual minorities is taboo). However, the team has not come across examples where BRC projects have contributed to changes in such areas through research-based engagement with the general public – with the extensive use of media to disseminate research findings at UMSA-Bolivia as a partial exception.

3.6 SUSTAINABILITY

While the governments in all the case-study countries are likely to sustain the universities as institutions of higher learning, the commitment to fund and sustain free/critical research is not equally obvious – as indicated by the fact that research has largely been donor funded in the same countries.

All partner universities in the ongoing BRC programmes - including the long-term partners in Tanzania – state that research capacity development and research will depend on external/donor funding and partnerships for the foreseeable future and that a termination of the Sida programme will have immediate effects for training and research activities.

The institutional capacity development components of the BRC programmes – for university/programme management and tangible support for physical infrastructure including ICT, library and laboratories – seem sufficiently integrated into university structures to be sustainable post-Sida support, provided sufficient funding. The individual research capacity built should also be sustainable post-Sida, in the sense that the majority of the graduates return to their universities to work and some enter other development-related professions where they may use their competence.

However, the case-studies – supported by tracer-studies – also show that only a small number of people will be in positions to sustain and further develop their competence and capacity for research of high quality and relevance – which is the ultimate objective of Sida’s bilateral research cooperation programme. To sustain the capacity *as researchers* requires continued access to research funding, enhanced competence to develop and lead research projects and research networks.

There are relatively few examples of BRC-programme related research that has led into concrete research based policies, products and services – even for programmes such as that of Tanzania which has lasted for several decades. Also, the current monitoring system of the programme does not give a good basis for assessing their sustainability.

The long-term rationale for the Sida model and BRC programmes is to have a sustainable impact on poverty reduction and ‘sustainable societies’. As noted in Chapter 2, the uptake and use of research for development ultimately depends on the quality and relevance of the research being done and the will and ability of decision-makers and the general public to absorb and use research-based knowledge.²⁵

²⁵The BRC programmes in Uganda and Mozambique seem to share most of the broad features and challenges identified in the selected case studies – despite the fact that the relevant universities are very different. While the University of Eduardo Mondlane had started from ‘scratch’ in 1975 following the exodus of the Portuguese who had practically made up the entire academic staff, Makerere University had a long and strong history as an academic institution.

The Uganda programme with Makerere University was initiated in 2000. The most recent evaluation (Kruse et al. 2014: 11-15 – period 2010-2014) concludes that there were (i) weak efforts to influence

3.7 SUMMING UP

The Sida model and BRC programmes are ambitious and complex, operating at multiple levels. Relevance and results have varied and have been influenced by the specific national and university contexts in which each programme has been implemented. This also relates to human rights (including gender and academic freedom), the level of ownership and the quality of partnerships.

Still, the model has been implemented in a fairly generic way with each BRC programme encompassing all or most of the discrete components of the System Approach and Basic Logic at national and university levels, except for the now discontinued Vietnam programme where it was more dynamic and flexible with a focus on research groups and creative environments.

The Sida model and BRC programmes have reached many of the stated tangible goals of individual capacity development (PhD graduates), an improved research environment (management and infrastructure in the form of ICT, libraries and laboratories), and outputs in the form of academic publications. Swedish universities and researchers are seen as good partners, but cooperation tends to discontinue when a BRC programme ends.

The basis for, and ability to do, research post-graduation has been limited due to other responsibilities and inadequate competence and networks to develop new research proposals and programmes. Contributions to science-based policy-making, products and services have been limited, albeit with important exceptions.

In sum, the sustainability of BRC programme interventions is fair at the institutional/university level and relatively good at the individual/researcher level and— but modest in terms of the longer term development and sustainability of the university research environments and capacity to do research.

national policies, institutional structures, financing of research and donor coordination; (ii) institutional reform processes had triggered changes including decentralised decision-making; (iii) ICT and library interventions were effective; (iv) training outputs were modest in terms of doctoral graduates and low in terms of master graduates; (v) outputs in terms of publications were low (except for the health sciences sub-programme); and (vi) research innovation systems and clusters were found to be particularly relevant programme interventions. A central recommendation was the need to 'establish a joint research programme in cooperation with other donors'.

The programme in Mozambique was established in 1977, and implemented under the current Sida model since the mid-1990s. The most recent evaluation (Kruse et al. 2017: 11-17 – period 2011-2016) concludes that i) the impact of efforts to strengthen institutional capacity have been 'small' and 'varying' with limited donor coordination; (ii) ICT and library interventions have been 'significant', 'relevant' and 'useful'; (iii) PhD training had seen significant delays and with 'a relatively small number' of graduates; (iv) the number of publications had increased (albeit from a low point of departure) and quality was found to be good (even though the number of non-indexed articles was high), and (v) opportunities for research post-graduation were limited with only 35 percent of graduates having published academic articles two years after their graduation. A central recommendation was to 'move from research training to funding research'.

At the same time, our analysis has identified a set of common challenges that relate to assumed causalities between the components of the System Approach and Basic Logic. In reality, the BRC programmes have largely implemented and monitored the model on the *assumption* that goal fulfilment in one will lead to the realisation of the goals in the other.

We have located the key programme challenges exactly in the limited interlinkages between (i) the relevant regional and national external institutions and the universities; (ii) the university research environment/research capacity and more and better research; and (iii) more and better research and contributions to knowledge frontiers, science-based policy-making, improved products/services and ultimately to poverty reduction/ sustainable societies.

The holistic System Approach, initiated in the mid-1990s, has given too much attention to *structural/institutional constraints and opportunities and individual capacity development* at the expense of a focus on research management, research groups/networks and individuals researchers as *agents of change*. Such a focus, we postulate, will not only lead to a different programme focus and dynamic, but to greater attention to drivers of change, groups and networks. It may also contribute to making the programme sustainable beyond Sida support – as demonstrated in the case of Vietnam.

Before pursuing this argument with reference to a reassessment of Sida's current System Approach/Basic Logic (Chapter 5), we will outline lessons from alternative/comparative international approaches to research cooperation and capacity-building (Chapter 4) – all in order to broaden the basis for our final conclusions (Chapter 6) and recommendations (Chapter 7).

4 Models of International Support to Research Cooperation

This chapter first reviews the recent history and focus of international support to research cooperation. Then drawing on four comparative case studies of models of research capacity-building (see Annex 3), lessons are drawn on their differences, strengths and weaknesses in relation to the Sida approach treated in Chapter 2 and 3. The chapter concludes with broader reflections on the nature of institutional change in research organisations and universities, which leads into chapter 5 and our assessment of Sida's programme Basic Logic and System Approach upon which the current Sida model is based.

4.1 MODALITIES OF SUPPORT

4.1.1 Recent History and Approaches

With the transition to the post-developmental state era from the 1980s, the value of research and higher education was downgraded by international funders (e.g. the World Bank) in favour of primary and secondary education (King 2009). The view was that support to higher education and university level research was a luxury that could not be afforded. The consequences were a general reduction in support for research and higher education in the Global South.

This has particular effects for sub-Saharan African universities, as simultaneously processes of structural adjustment combined with the increase in numbers of developing countries universities led to a rapid decline in support for their national universities and the value of salaries, with negative consequences for research environments (Shaeffer and Nkinyangi 1983). The outcome was a rapid decline in the quality of university education and research capacities (Association of African Universities and World Bank 1997).

Towards the end of the 1990s international support, particularly by the World Bank, returned to higher education as the consequences of its neglect became clear. In part, this was fueled by a much more instrumental view about higher education and its contribution to development. Underpinning this position was a framing of human

capacities as capital that create value, thus supporting attempts to measure human capacities as stock (in neo-classical economic terms) and relate capital stock to economic outcomes and benefits both for the individual and for countries.²⁶

From there it has been a short step to the position that the new knowledge economy requires investment in human skills and capital to support its development. Increasingly global challenges such as environmental sustainability, climate change, pandemics, food insecurity and poverty have been framed in a way that makes them responsive to technical interventions.

This, in turn, has justified support for a focus on STEM, agriculture and health-related disciplines. This is not an unchallenged view of the role of higher education. Others (Wolf 2002) have argued strongly for recognising wider values in education and have questioned the assumed links between investments in education and economic growth. And some donors, including Sida, have called for a stronger position of the social sciences (see Section 2.2). Nonetheless, the justification for investing in and supporting research and higher education has become increasingly instrumental, linked to specific results and outcomes

The World Bank has recommended accelerated support to research and research-based education in Africa to build the necessary human capital to further increase research on solving African problems (World Bank and Elsevier 2014). This includes continued international collaboration and scaling-up within STEM, agriculture and health subjects, scaling-up post-graduate education in Africa (possibly through regional collaboration) and continued scholarship funding for studies in Africa, possibly through sandwich programmes to ensure international exposure and include funding to raise the quality of the African post-graduate programmes.

However, despite the dominance of the World Bank the range of actors and approaches in international research cooperation is large and varied and use diverse elements of support. Implicitly within them are embedded different assumptions and models of how institutional change happens. As discussed later, these models often, but not always, use what has been termed a new institutional economics (NIE) perspective. While thus retaining the neo-classical axioms of methodological individualism, it is premised on the view that institutions function to reduce uncertainty in human exchange even if individuals make choices on the basis of their differing mental models (North 1995).

²⁶ This has its origins in the work of Becker, G (1964) *Human Capital*. Columbia University Press, New York. See also Power, L., Millington, K. A. and Bengtsson, S (2015) *Building Capacity in Higher Education Topic Guide*. Report to the Health and Education Advice and Resource Team (HEART) of the Department of International Development, (Dfid), UK.

4.1.2 Alternative Modalities

We propose that **four modalities** or emphases of approach can be identified.²⁷ These four modalities may be characterised as:

- an individualised or small groups approach, often modestly funded but possibly long-term support, often emphasising links
- networks that bring together groups of researchers across institutions
- competitive funding/centres of excellence models
- institutional approaches that focus on the university as a whole.

These are in a sense ‘ideal’ types. These are not mutually exclusive modalities and funders may deploy combinations in different mixes and weights and operate at university, country or regional level. Sometimes (as with Sida, see Chapter 2) a funder may support all four modalities although not necessarily all in one specific intervention (e.g. a BRC programme). Others may emphasise one modality over the others.

On the first (**Modality A**), the core of a low-key individualised approach has traditionally been scholarship based, offering opportunities for higher degree training or the building of research groups. There is limited emphasis on direct interventions at the institutional level, although modest funding of research infrastructure has happened. An example of the individualised approach has been the Chevening Scholarships programme of the UK government,²⁸ the previous British Council Links programme, which ran for 25 years (Stephens 2009) and the current British Council scholarship programme.²⁹ There are likely to be other comparable examples from other European countries and the US. An example of a group-based approach has been the Sida-funded International Science Programme (ISP), which was started in 1961 and developed a model of support through recurrent modest three-year grant cycles for the building of basic science research capacities (Pain et al. 2016).

Modality B is more of a networking approach, which ranges in scope from a central hub with spokes to one that is more decentralised with multiple hubs and spokes. The Cambridge-Africa programme discussed below could be seen as more of a central hub and spokes approach as is the African Economic Research Consortium (AERC). As a Royal Society (2011) report notes, research networks of collaboration increasingly characterise global research endeavors linking the global north and south into research partnerships. These might be seen as one of multiple hubs and spokes. This is also an aspect of Sida’s wish to link research that it supports at university, regional and global levels.

²⁷ Drawing in part on Hydén, Göran (2016). “The Role and Impact of Funding Agencies on Higher Education and Research for Development”. In: Halvorsen, Tor and J. Nossun (eds). *North-South Knowledge Networks. Towards Equitable Collaboration between Academics, Donors and Universities*. Cape Town: African Minds.

²⁸ <https://www.chevening.org>. This programme is targeted to what are seen as future leaders and influencers from all over the world to develop professionally and academically, network extensively, experience UK culture, and build lasting positive relationships with the UK.

²⁹ <https://study-uk.britishcouncil.org/scholarships>

The third modality (**Modality C**) is the use of competitive funding mechanisms that have been linked to building centres of excellence around specific themes or topics. Competitive funding has been central to Western research culture and the foundation of building strong research groups, individual, departmental and university reputations. A recent example is the Africa Centres of Excellence programme funded by the World Bank, which incorporates certain elements of institutional support as well.

The fourth modality (**Modality D**) emphasises more an institutional approach, focusing on the university as an organisation and seeking to bring about systemic change. This is likely to incorporate support to individuals and specific research foci, but it seeks synergies between these inputs to overall institutional development. Sida would recognise this as at the core of its approach, and this is also claimed for the Norwegian Programme for Capacity Development in Higher Education and Research for Development (NORHED).

There are other variables to consider. One is the duration of funding and support. Competitive funding by definition tends to be shorter term than institutional approaches, while networking might be somewhere in between. But then, as in the case of the ISP, low key can also be long-term. A second is the 'level' of intervention at each university. Some (including IDRC's Contributions to Building Leading Organisations) focus on university/research management and change management, while others focus on individual researchers. A third variable is that of the interest and motivation of the funder. For Sida, specific beliefs and values underpin its commitment to institutional support (see Chapter 2). The World Bank approach speaks to its fundamental belief in market approaches, the determinants of economic growth and its benefits. The UK Global Challenge Research Fund (GCRF) is instrumental in seeking to bring to bear (and benefit) UK research capacity in addressing global problems in partnership with research groups in the south (Itad and Technopolis 2018).

However, questions arise as to the core differences and similarities between these modalities in terms of their assumption of what changes they will bring about, how this will happen and with what effects. We draw on a number of case studies to explore these issues with a specific focus on (i) World Bank Centres of Excellence (ACE); (ii) Cambridge Africa Programme (CAP); (iii) Norwegian Programme for Capacity Development in Higher Education Research for Development (NORHED); and (iv) African Economic Research Consortium (AERC) (see Annex 3 for more details).

4.2 LESSONS FROM DIFFERENT MODALITIES

4.2.1 Modality A: Individual research support

No specific case study was selected in this evaluation for examination of this modality, although it is a common element of many donor-funded programmes – including all four alternative programmes assessed here. However, in the past a focus on graduate training overseas often constituted the major element of support.

Many of the early donor-funded scholarship programmes simply funded overseas graduate training on a topic not necessarily relevant to the student's home country.

This came to be seen in some quarters as contributing to a brain drain and not supporting the development of national universities. The classic sandwich PhD training of Sida's BRC, provided at a time when Sida did not have broader ambitions of working explicitly at the institutional level, was essentially an individual scholarship approach (see Figure 1 and Chapter 2).

However, the Sida programme had the refinement that field research for the degree was usually done in the student's home country, even if the degree itself was awarded in Sweden. Many of those trained earlier under scholarship programmes wholly out of their home country and most of those under the Sida sandwich programme have returned to their home country universities,³⁰ and some have risen to senior positions in the university.

Equally, the long-term support (in some cases up to 40 years) to small research groups through the Sida ISP programme (Pain et al. 2016), which has focused on support to basic science capacities, has contributed to the gradual development of strong research groups. In Cambodia, these groups have provided the core of research capacity and leadership around which the new Sida BRC with Cambodia/Royal University of Phnom Penh has been anchored (Sida 2019).

In effect, this individual support had the potential to build future research leaders and the development of nationally based master's and PhD programmes. The development of nationally based graduate programmes (master's and PhD) has been a long-term strategy found in all 4 country case studies – albeit with a limited number of actual programmes established (see Chapter 3). At the same time, an explicit strategy of research leadership building is not as visible. In aggregate terms, the trained individuals can become a critical core or mass of researchers in a university with institutional consequences as seen in the case of the Vietnam Health Research programme (see Annex 2).

It is open to question as to whether or not the ongoing shift from a sandwich model to a home-based model of PhD programmes will have effects on the ability of individuals to come together as a critical mass to bring about institutional change. One strength of the overseas model of training (not to be underestimated) is the exposure it provides to different research and teaching cultures. As argued in Chapter 3, a premature development of PhD programmes in weak research and teaching cultures will not provide this and may induce a degree of in-breeding within the institution with long-term adverse effects on quality.

In sum, while there has been an implicit assumption that individual and small-group training and support would help build research capacities in universities and have higher level effects, this has rarely been explicit or routinely monitored and examined. The anecdotal evidence suggests that it may make a contribution to institu-

³⁰ See the tracer studies done by Solveig Freudenthal in Tanzania (2014, *Tracing Research Capacities in Tanzania: A Study of Tanzanian PhD Holders Trained within the Tanzania-Sweden Research Cooperation*) and Vietnam (2009, *Tracing Research Capacities in Viet Nam. Contributions of the Viet Nam-Sweden Research Cooperation Programme*).

tional change, through individuals acting as change agents and pushing for institutional change with research networks and collaboration arising out of it, given the right support.

4.2.2 Modality B: Research Networks

Networks by definition connect people, research groups, departments and across universities. They can vary in substance and function and from those that are more hierarchical to those that are flatter. The evidence shows (Royal Society 2011) that knowledge networks are an increasing part of global science ‘largely conducted through bottom-up, informal connections’ even if ‘top-down solution-orientated initiatives are also helping shape the research landscape’ (Royal Society 2011:6). The development of communication technologies has played a key role in supporting such networks.

Two programmes that have a network approach in terms of research capacity development were reviewed: the Cambridge Africa programme (CAP) and the African Economic Research Consortium (AERC) and they provide an interesting contrast. CAP was initiated by a UK university explicitly to support the next generation of research leaders in Africa in a range of subjects, with Cambridge University taking the lead in securing funding. The AERC is Africa-based, has been dependent primarily on donor funding and has worked entirely within the economics discipline. Both programmes work primarily at an individual level and with research groups rather than at an institutional level. The AERC has been instrumental in stimulating selected African universities to establish joint sub-regional programmes in economics and has provided fora for policy dialogues. The CAP has provided support at an organisational level to research management.

Core points of contrast are that CAP has a strong element of post-PhD support for early career researchers (reflecting some of the strengths of the Sida-funded ISP) while the AERC has focused primarily on supporting PhD and master’s training in partner African universities. Implicit within CAP is a long-term focus on institutional development but through building a critical mass of researchers and the next generation of research leaders. Although recruitment into the network is largely based on academic excellence, the network is effectively maintained through the building of relations of trust over time based on performance. Moreover, the key role of Cambridge University in initiating the programme and acting as a broker for it, both by providing funding and securing additional resources, provides a strong contrast with the behaviour of Swedish universities under Sida’s BRC (see Chapter 3). CAP strongly emphasises the mutuality of benefits to both its partners and Cambridge.

Established in 1988 and headquartered in Nairobi, Kenya, the mandate of the AERC has been to build capacity in economics at universities and government institutions in sub-Saharan Africa. It was founded by a small group of Africanists and African scholars to address the disconnect between economics research and policy-making and the frequent lack of relevance of global research results to the African context. Its activities center on research, training and policy outreach. The research is thematic and collaborative, aiming to improve technical skills of local researchers, allow

for regional determination of research priorities and help strengthen national economic policy research institutions. The training has supported postgraduate studies in economics and agricultural economics to strengthen the departments of economics in African public universities. In the interest of outreach and evidence-based policy-making, workshops are organised in a variety of policy fields, where researchers and policy-makers interact, complemented by written policy briefs.

Over the years, its programmes have been funded by multiple donors including the African Development Bank, the World Bank, the Bill & Melinda Gates Foundation, the Canadian International Development Research Centre, the Norwegian Agency for Development Cooperation, Sida and USAID.

The AERC is more policy- and action-orientated within a specific discipline than Cambridge, playing a higher profile role as a public actor and networking economists within the continent. Cambridge is academically orientated and broader in scope with a clear focus on developing research leaders. Cambridge offers an approach to engagement that appears, if the lapse in institutional relationships between Swedish and Vietnamese Universities after Sida funding ended evidences a more widespread feature, to be largely lacking from Swedish universities. The AERC occupies a position as a hub in a network of African economists with research-capacity support dimensions. Both of them clearly see themselves engaged for the long term and committed to securing funding to be able to do this while building on their reputation and position. Both include elements of individual research training but within a broader setting of networks of relationships.

However, neither applies a formal theory of change as such. Nor do there appear to be formal processes of monitoring in place that assess the effects of their programmes at a higher level to gauge institutional effects beyond strengthening the competence levels of some institutions, e.g. central banks in the case of the AERC. Nonetheless, both, in effect, provide important support through networks of relationships to early career researchers. The AERC also forges institutional relationships in clusters of African universities, especially in joint PhD training programmes. In contrast, the career support of trained PhDs is largely absent in Sida's BRC programmes.

4.2.3 Modality C: Competitive Funding and Centres of Excellence

The World Bank African Centres of Excellence (ACE) initiative was launched in 2014 with USD 165 million in loans (Nordling 2018). The money was used to create 22 ACE in West and Central African nations including Nigeria, Benin and Togo. The centres were competitively chosen in partnership with the governments, which took on loans to support them. Two years later, the Bank approved USD 148 million in loans to create a similar set of 24 centres in Eastern and Southern African countries including Zambia, Mozambique and Rwanda. The third and final round (the programme is due to end in 2024), announced in 2018, has raised the World Bank's total investment past USD 500 million, making the project one of the biggest-ever science-supporting programmes on the continent. It once more targets West and Central Africa and may eventually include an extra USD 50 million from the AFD, French development agency. In total 46 ACEs have been set up in 16 countries.

Underlying the programmes are three core assumptions. First, development is largely associated with economic growth in a competitive global economy with industry and enterprise development as the key motor of growth. Second, in emphasising Centres of Excellence there is a strong emphasis on ‘high’ science and technology and enclaves of elite expertise. Third, the idea of regional centres speaks to practices of network and partnership between them and the global north and assumptions of shared goals and ideas of progress.

The ACE programme (Harrison 2018) has two stated goals: ending extreme poverty; and promoting shared prosperity. Its objectives in the selected universities through regional specialisation in STEM, agriculture and health-related disciplines to increase:

- the quantity of students enrolled in postgraduate programmes;
- the quality of postgraduate programmes to ensure that students acquire the necessary theoretical knowledge and applied skills upon graduating; and
- the development impact of post-graduate education.

The priority and pre-identified thematic areas have included water, ICT, energy, housing, urban design, coastal degradation, education, sustainable agriculture, health and the environment.

In comparison with Sida’s BRC, the ACE programme is relatively short-term with each phase lasting 4-5 years and strongly driven by a results-based framework on which continued funds dispersal is based. The disbursement-linked indicators relate to student enrolment numbers (including from the sub-region), quality and relevance of educational and research activities, publication record, development impact, institutional relevance, fiduciary improvements and institutional impact.

The ACE programme does not include an elaborated formal ToC, although it can be deduced from the argumentation that defines the problem and offers the solution in the project appraisal document. Essentially, the narrative offers the reinterpretation of the scientific domain through a development lens in which economics and the need to stimulate the economy through conventional markets is the focus (Ferguson 1994). The solution to the problems becomes the already established ‘model’ of Centres of Excellence, which is to be pursued through a regional approach. The emphasis on a results-based model, within a relatively short time period, essentially frames the incentives to drive institutional change in terms of money and those changes are largely expressed in terms of what can be measured as outputs – enrollment numbers and reports. This differs from the modalities and values that Sida is committed to in its bilateral support (see Chapter 2). There are likely to be major challenges of long-term funding by governments beyond the ACE project period.

4.2.4 Modality D: Institutional Approaches

The Norwegian Agency for Development Cooperation (Norad) launched the Norwegian Programme for Capacity Development in Higher Education Research for Development (NORHED) in 2012, merging two previous initiatives (Technopolis 2018). It was designed to build capacity of higher education institutions in the Global South to address the social, political and environmental issues facing the participating countries. Currently, around 45 projects are ongoing in 25 countries across Asia, Africa,

South America and the Middle East. All projects have a partnership between at least one higher education institution in a low- or middle-income country and one in Norway. The core objectives of the NORHED programme are not dissimilar to those of Sida. It seeks to contribute to an increase in the capacity of higher education institutions by producing more and better qualified graduates and research in priority areas, increasing the in-country pool of knowledge, enlarging the skilled workforce, facilitating evidence-based policy- and decision-making and promoting gender equality in higher education and research. NORHED-funded projects cover six areas:

- education and training
- health
- natural resource management, climate change and the environment
- democratic and economic governance
- humanities, culture, media and communication
- capacity development in South Sudan (the only geographically-defined area)

It is ideally demand-driven by southern stakeholders, though within the six broad areas, in practice the Norwegian partners often dominate, particularly in the design phase. The individual NORHED projects typically have five-year time horizons that are renewable, and the duration of partnerships tends to be medium term.

The applications to NORHED do not require an explicit ToC. It is assumed implicitly that enhanced capacity will result from project outputs. Institution-building aspects are often neglected in practice. Even when a ToC is included, there is often a lack of baseline data against which outputs and outcomes can be measured and the complexity of the interventions is not captured by key performance indicators. In addition, there are attribution problems for impacts within the ToC, given the parameters external to the intervention itself.

In terms of objectives and design, the NORHED programme thus in many ways resembles the Sida's BRC programme. However, without a well-developed ToC and being less consistent and rigorous in its implementation, the NORHED programme exemplifies some of the challenges and possible pitfalls in this type of large and comprehensive institutional approach.

4.3 SUMMING UP

All four modalities, some more explicitly than others, over different time horizons and working at different levels, are seeking to increase research capacity. They all focus mainly on the STEM, agriculture and health related disciplines. Some are more intentional and interventionist, others operate through more organic and incremental processes. All justify the support for instrumental reasons. But no specific conclusions can be drawn as to which is the most effective way to proceed for reasons of lack of comparable evaluative evidence.

Strikingly, all of the above cases examined show the lack of an explicit Theory of Change and a monitoring framework that critically assesses and learns from what they achieve. There is also a general lesson facing funders of higher education and research of "the need [to develop] more appropriate methodologies and well-managed

monitoring and evaluation systems, at both programme and project levels, from which evaluations of external investments in HE can draw their data” (Power et al., 2015)

The deeper challenge lies with the Theory of Change in that there are no explicit theoretical frameworks that justify the intervention approach in any of the four modalities – as is the case with Sida’s BRC programme. Two approaches, the competitive funding and institutional models reflected in ACE and NORHED programmes, respectively, have the greatest ambitions for the changes they will bring about as they are implicitly underpinned by a logic of crafting a good institutional design that will create the right incentives (drawing on rational choice theory) for the individual to act appropriately. But their ambitions lead to broad and multiple goals which do not necessarily lend themselves to the same ToC as will be discussed in the next chapter.

In contrast, the network approach, reflected in Modality B and to some extent also in Modality A, places much more emphasis on building trust and collaboration as a vehicle to induce change in part reflecting the duration of the programmes. As we will argue in the next chapter, this addresses the social and collective enterprise of research.³¹ Thus, to take account of processes of change, both the structural elements that constrain choice and action (and also offer opportunity) and the action of agents to circumvent such constraints are central to understanding the possibilities for and actual processes of change.

³¹ Among Sida-supported research cooperation programmes, the Consortium for Advanced Research Training in Africa (CARTA) seems to be the one that adhere closest to such an approach (Christoplos et al. 2015).

5 Assessing the Sida Model's Basic Logic and System Approach

This chapter assesses the Sida model's Basic Logic and System Approach. It draws from the country case studies of Sida BRC programmes discussed in Chapter 3 and the contrasting approaches to RCD investigated in Chapter 4. We emphasise that the focus of the chapter is on the validity and usefulness of the Basic Logic underlying the BRC as a framework or tool to plan, monitor and explain differences in outcomes from the country specific programmes. Sida identifies this logic as “the basic idea that Sida programme managers know and internalise and that influence how individual programmes are set up in different countries” (Chapter 1).

The chapter first assesses how robust the Basic Logic is. This assessment points to a need for clarity and detail about the causalities within the Basic Logic itself. Working within the structure of the existing logic, the chapter then considers if a more detailed and explicit causality map could be developed. However, we find that even with more elaborated explanatory mechanisms the evidence from the sites of enquiry and other sources, questions the existing Basic Logic as a useful model to understand, clarify and determine how change happens in relation to the goals.

This in turn brings into question the implicit assumptions within the logic about the nature of institutional change, which appear to be drawn from new institutional economics and a choice theoretic framework. We argue that this is challenged by the evidence on the role of individual social actors and collective action in driving institutional change processes in research capacity development. We draw on a theory of fields (Fligstein and McAdam 2014) to provide a more explicit Basic Logic and theoretical framework than the current Sida model represents. This provides the basis from which to elaborate an approach and develop a more formal Theory of Change (ToC).

5.1 THE BASIC LOGIC

The role of the Basic Logic, as an active tool for learning, is essentially to make sense of what and how things happen, thus underpinning planning, strategising and learning. In turn, this should provide the basis for a theory-based evaluation. It can also be an important tool for communication. The Basic Logic should ideally be developed prior to decisions on how and where to intervene to support or promote desired processes of change at key points of leverage.

In reality it would appear that the development of Sida's System Approach and Basic Logic in its historical and current form (see Figure 1, 2 and 3) have emerged incrementally out of programme practice and probably in tandem. Undoubtedly, they

have drawn from experience, learning and experimentation and as attempts to clarify the rationale of the programme and develop it. However, both the Basic Logic and System Approach are relatively under-specified in terms of providing detailed explanatory mechanisms of how change will come about and what drives it or what exactly the system is. This is supported by the fact that no programme evaluations have been theory-based or have critically examined the 'system'. Rather, they are pursued with reference to sets of predefined goals and results within the logic of various versions of results-based management.

Nevertheless, as a starting point for an assessment of the Basic Logic one can judge the extent to which it has as an explanatory mechanism of what happens as research capacity develops. This may provide a guide to the effects of Sida support. Thus, to what extent has the Basic Logic been relevant, effective, achieved the desired impact and therefore contributed to sustainability?

In terms of *relevance*, this asks the question whether the Basic Logic is applicable to specific university contexts and whether the System Approach in the cases where it has been applied (e.g. Bolivia, Rwanda and Tanzania) has been appropriate. Our judgement, based on the generic nature of the Basic Logic and the System Approach, their under-specification (i.e. relatively abstract nature) and our findings presented in Chapter 3, is that the Basic Logic has not been specifically relevant to context and there is little explicit evidence that the approach has been attuned to circumstances. It does not, as we have shown, account for the relative pace of change in Tanzania, in contrast to that of Rwanda. It also does not engage with the differences of the two Bolivian universities, or help explain the specific nature of institutional change in Vietnam and how a System Approach would have engaged with it.

Inevitably, if there are doubts about the relevance of the Basic Logic and System Approach to specific university contexts, then this brings into question the *effectiveness* of the Basic Logic in capturing and explaining change processes within the universities themselves and as a reliable guide to intervention. We saw this in the limited extent to which the Basic Logic can be used to explain the (lack of) interconnections between interventions to improve the research environment and support research capacity and more and better research and contributions to knowledge frontiers. For this reason we believe that in its current formulation the Basic Logic is not effective as an explanatory mechanism.

In terms of the utility of the model and approach, our view is that it primarily functions as a heuristic device, serving more a function of explanation or justification than as a robust tool to guide intervention and monitor change and learning. In part, this conclusion is reflected in the absence of monitoring indicators that seek to capture the Basic Logic framework systematically at an integrated level or to explain effects from interventions at different levels of 'the system'. Thus, it is unlikely that the Basic Logic is a sufficient guide to contribute to sustainable change. In sum, we are not convinced that the Basic Logic has sufficient substance as a thinking tool to guide understanding of institutional change, nor that it can account for the diverse trajectories of change and outcomes that the country case studies show.

It should be emphasised, again, that the above comments specifically speak to the validity and utility of the Basic Logic and System Approach. They do not challenge

the findings of the effects of specific programmes with respect to system support, institutional development, research capacity development and research impact discussed in Chapter 3. This is primarily for the reason that we do not think that the Basic Logic or System Approach have, in any 'systemic' way, guided practice, even if the basic objectives have been central to the BRC.

5.2 DEVELOPING THE BASIC LOGIC

There is room to develop and specify in greater detail the explanatory mechanisms of the Basic Logic and elaborate them into a formal ToC. For example, the intermediary steps between (a) *Building research capacity* and (b) *Improving the research environment* leading to (c) *More and better Research* could be made explicit along with the assumptions informing the logic of the connection. Thus, it can be concluded that *Greater Research Capacity + More Research Resources* leads to *More Time being allocated to Research*, which in turn leads to *More and Better Research*. The assumption would be that better trained individual researchers are in a position to allocate more time to research. However, this would be challenged by the evidence from the case studies given the administration and teaching burdens on newly qualified staff.

The higher up the causality chain one goes, the more elaborated the causal connections and assumptions being made about the relations between the individual links in the chain become. It is one matter to make clear and detailed assumptions linking changes in individual research capacities to institutional changes within the university research environment. Linking changed institutional capacities to informed policy-making, improved contributions to products and services and contributions to sustainable societies may be more difficult to attain. Aspirations of what changes one would like to see happen are not a good guide to actually making them happen.

A more fully elaborated Basic Logic for each specific programme might make clearer some of the assumptions and necessary causal connections. The elaborated UK Global Challenge Research Fund (GCRF) ToC³² indicates a route that could be pursued. But there is the considerable danger that the more one seeks to specify the logic and elaborate the assumptions, the more one becomes overwhelmed by the detail, creating a causality map (and monitoring framework) that in practice is difficult to test or monitor and is therefore not useful. The GCRF ToC possibly falls into this trap.

One could certainly add to the existing Basic Logic a more specific recognition of spheres of influence. A Sida programme is likely to have more influence and generate stronger input-output relations at the start of the Basic Logic, e.g. developing research capacity as the BRC-Vietnam programme illustrates well. The strength of these connections become more attenuated (both in terms of attribution and time dimensions)

³² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810137/GCRF_Evaluation_Foundation_Stage_Final_Report.pdf p.2.

the further along the causal chain you move. Equally, the further up the system level you move the more diffuse and less certain will be the influence that can be exerted.

There is a further issue developed below. While undertaking RCD to strengthen the performance of a university and develop a formal ToC to that goal can be done, we have not seen evidence that the same ToC and its underlying assumptions and theoretical underpinnings are applicable in the move from new knowledge to uptake in policy or improved products and services – let alone for that to contribute to sustainable societies. These ambitions for the contribution of RCD lead to unrealistic goal setting, under-specification of intended outcomes and lack of articulation of robust change pathways leading from RCD to desired outcomes in theoretically informed and credible ways.

There is scope to specify more clearly what exactly is meant by the System Approach. As currently constructed, it relates to specific interventions as particular levels – individual research capacity, research infrastructure and research management at the university level and research strategy and funding at the supra-university level. While in a descriptive and practical way these can all be seen as part of a university system and the terminology of ‘systems’ captures multi-level interventions, it does not amount as such to a formal System Approach which the use of the term could be seen to imply. This may not matter, but the moment one starts using the language of systems, one has to address inter-relations, interdependence, synergies, structures, feedbacks, system behaviour, complexity and scale, for example. Questions of timing and where best to intervene become important. Simply intervening at different levels without that understanding does not amount to a System Approach – but rather a multi-level intervention, which is not quite the same thing. The challenges of elaborating exactly what the system is and how it functions are considerable. Equally, the empirical evidence from the case studies (Chapter 3, Annex 2) raises major questions as to whether the very notion of a system is appropriate to describe how things work at university levels, let alone at the national, regional or even international levels.

In sum, we think that the explanatory mechanisms that are implicit within Sida’s current Basic Logic are insufficiently elaborated. But we also consider that the evidence does not support this explanatory model, even in its outline form, of how institutional change happens. We therefore do not find the Basic Logic plausible.

5.3 QUESTIONING THE BASIC LOGIC

What underlies this lack of plausibility? We see it as lying in two main areas. Firstly, it is in terms of the goals that have been set for RCD, and this is returned to later in the chapter. Secondly, to be clear about the goals there needs to be a prior discussion on the theory that underpins the Basic Logic.

Theories operate at different levels of abstraction and precision and programme logic or ToCs are not intended to offer anything more than a plausible account to understand and clarify what happens and why. Nevertheless, a programme logic should be informed by an explicit cognitive lens (a set of meta-theoretical principles) through which the world is seen, that guides how reality is perceived and should be explored.

The Sida Basic Logic should, as we understand it, be seen as an entirely practical and generalised account (see Chapter 1). However, as a practical account it would need to be further specified to actually guide practice or explain why it will work or account for why it might not. This may also enable it to account for the different outcomes observed. Our judgement, drawing in part on Sida's elaboration of a System Approach, is that the Sida Basic Logic is largely if somewhat tacitly informed by the principles that underlie new institutional economics (NIE).

The strengths of NIE lie in its capacity to illuminate the micro-foundations and dynamics of institutions and organisations. It emphasises the role of institutions in reducing uncertainty in human exchange and lowering transaction costs. It therefore emphasises the structures that may constrain or offer opportunities and the micro-institutional foundations of change. It is based on the basic assumption of rational self-interested actors in its choice-theoretic framework. We do not believe that this accurately portrays the nature of the research enterprise, the key role of social actors and collective action within research and the effects these have in bringing about institutional change.

5.4 TOWARDS A FORMAL THEORY OF CHANGE

5.4.1 The role of social actors and collective action

Evidence from the country case studies draws attention to the ability of key social actors to develop and lead strong and effective research groups and negotiate the structural constraints and opportunities they face. The examples all point to key elements of research leadership, collective action, power relations and networking in research performance.

In Vietnam, in both the health systems research and in agriculture, key graduates from the former Sida BRC have in different ways brought innovation and change into their respective university system establishing new research groups. In health, doctors have found ways to put pressure on health systems through initiatives outside it. In Hue, key actors have established new programmes as in rural development, and used these to broader networks of collaboration in Vietnam. Two research studies on the nature of the research system in Vietnam (Zinc 2013; Anh 2013) point to the significance of social networks within research providing both constraints and opportunities.³³

In Bolivia, the relations between the Department of Chemistry at UMSA and LAFAR Pharmaceutical Laboratories have developed over years, with the head of the department (a former BRC-Bolivia student) and the owner of LAFAR having a common interest in studying the possible use of Bolivia's vast array of traditional medical

³³ In Cambodia, the development of a research group in physics developed over time with Sida ISP support has been one of the most successful groups in terms of publications and its leader, previously informally and now formally, has become a key player in the development of the Royal University of Cambodia leading key processes of institutional change (Sida 2019).

herbs. The first tangible product (an anti-inflammatory and analgesic unguent) has given AFAR a commercial success, UMSA funds and incentives for further research – and a source of income to those in the local communities collecting the plants.

At UMSS, a strong research group has developed around the issue of water resource management. The group is led by a professor and former BRC-Bolivia student, and is the basis for the first local PhD programme. The strength and impact of the group is based on a combination of keen academic interest of the researchers involved, a shared understanding of the critical nature of water quality for Cochabamba and early contacts between the university and relevant municipal authorities.

As the BRC programme in Rwanda shows, the importance of change agents is also related to the ability of key actors to maneuver under structural/institutional constraints and opportunities. The long-term head of the BRC-Rwanda programme office has an academic interest in institutional change, and has combined this with developing practical insights and social networks in a way that has made the UR programme efficient in terms of outputs.

Actual or potential change agents may also be found among people at the 'lower end' of university hierarchies. One student (in the Economics and Management sub-programme where entrepreneurship is actively encouraged) in the BRC-Rwanda programme has combined academic excellence with mobilisation of student participation, performance, leadership, professionalism, and community participation – giving him the international "Global Leader Academic Excellence Award" and preparing him well for an influential academic career.

In Tanzania, a research group under the leadership of the principal investigator has succeeded in developing a promising water purification technique that will help solve the widespread dental fluorosis problem. Beyond the research results *per se*, the group's leader, through his networks and connections with the government, has been involved in the planning process towards the construction of a water purification plant in Arusha as a public utility with funding from the African Development Bank.³⁴

Our own experience of working within universities in different national contexts, both in the West and in the Global South, offers both examples of successful research leaders, research groups and departments as key players and change-makers at departmental, faculty and university level. This experience also offers examples of unsuccessful research leaders, weak research groups and departments that can often only be turned around by bringing in new leadership. And, the increasing importance of networks of collaboration in global science (Royal Society 2011) emphasises the significance of collective action and networking by social actors.

In sum, we suggest drawing on the above evidence that a theory of university institutional change has to incorporate a role for social actors, agency and collective action often through networking that is not just driven by individual utility maximisation but by other motivations as well which we discuss below. It also has to engage

³⁴ The complex issues of IPR remain unresolved due to the involvement of multiple stakeholders. Ultimately, the Tanzania Food and Drugs Authority must certify the water quality after purification.

with the NIE understanding of how organisational and bureaucratic structures work (North 1995) and the inter-relations between actors and structures.

5.4.2 A theory of fields: understanding social change and order in universities

If we accept the evidence on the role of social actors in supporting change, it invites a theoretical perspective that draws on Bourdieu (1977) and Giddens (1984) and their respective positions on the duality of agency and structure. Both, however, focus more on how individuals engage with other actors and social structures but do not clearly address questions of collective action, competition and cooperation and of linkages between specific actors and their fields with other fields. Drawing on a theory of fields (Fliegstein and McAdam 2012), that has its roots in Bourdieu's and Giddens's theories, we suggest that greater attention is needed to the performance of research groups and their leaders as strategic action fields.

We outline here, drawing from this theory of fields, **a set of meta-theoretical principles, which could inform a developed ToC** of how institutional change in universities comes about. It is emphasised that this is not seen to substitute for a more institutional approach on which the current Basic Logic rests. Rather, it seeks to incorporate a social element to the theory and address more clearly *how* institutional change comes about. The optic focuses on research as a social field, as a collective endeavor giving a key role to social actors or institutional entrepreneurs. It marries these social dimensions with an understanding of institutions whether formal or informal, as rules and structures. It incorporates key concrete concepts such as power, context, discourse, structure and agency (and unintended consequences of purposive action) that help us understand the ways in which universities work and change.

Universities are bureaucratic hierarchies with both formal and informal elements, which, in turn, are embedded to varying degrees in higher-level structures or authority, particularly if they draw on public funding as all the Sida BRC partner universities do. Within universities, there are hierarchies of authority from the Vice-Chancellor downwards through university boards, faculties, schools, departments and units. They are a constructed social order and they contain social actors at all levels. To understand what confers stability and change, we need to unpack the way things work.

Research groups more often than not, particularly in science subjects, are comprised of two or more members and are therefore a collective enterprise. These are socially constructed arenas characterised by both cooperation and competition. Members of the collective have a general shared understanding of what is going on and where matters are settled even though some members may have more power than others. There is likely to be a shared understanding of the rules by which the field operates.

The sources of stability, conflict and change are to be found in the roles that social actors play. On the one hand, there are *incumbents* who may have a strong interest in the status quo, yield disproportionate influence and seek by whatever means to maintain their position. Then there are *challengers* who may have a different view on how things should be and may challenge the order of things in a low-key way or through more direct action and conflict. Both challengers and incumbents will draw on the internal governance units that exist to ensure compliance with the rules and the

smooth running and reproduction of the system. Both have an ability to understand and negotiate on a daily basis the rules and constraints (e.g. manage context), even to the point of slightly bending the rules. This is more difficult for external actors, including donor organisations such as Sida and external partner universities, who may have the ability to change the formal rules but not necessarily implementation practices.

The rules are usually stacked or interpreted in favour of the incumbent who may exercise power and authority through coercion, competition or cooperation, or often elements of all three. Stable fields, effective research teams and strong departments are usually an outcome of cooperation, which provides both material and 'existential' benefits to its members. By existential we refer to the social benefits of belonging, a belief in the enterprise and values of the group and membership within it.

However, the key element of stability and change within a given strategic field is the role of social skills exercised by people who might be termed as *institutional entrepreneurs*. These are the research leaders (or collective actors) who 'possess a highly developed cognitive capacity for reading people and environments, framing lines of action and mobilising people in the service of broader conceptions of the world and of themselves' (Fliegstein and McAdam 2014:17).

Their relationship with other fields is central to understanding the constraints and opportunities for change. The room for maneuver for institutional entrepreneurs depends enormously on context as the contrast between Rwanda and Bolivian universities show. A distinction can be made with those 'other' fields that are close or *proximate* and have direct and recurring ties to the field in question (e.g. a research group within a department) to a *distal* or far-off field that lacks ties and have limited capacity to influence a strategic action field. Sida's Unit for Research Cooperation might tentatively be characterised more as a distal field to the departments and universities that it is funding, but with potential regulatory powers through the control of funding.

A distinction can also be made between *dependent* and *interdependent* fields and those that are *independent*. Within a formal hierarchical university structure lower-level research groups and departments could be seen to be dependent on higher-level systems. To an extent that may be true, particularly where coercive practices to ensure compliance are more prevalent both within the university and from control by outside authorities over the university. But in practice there is often more interdependence between strategic action fields even if they exist within a hierarchical structure. In part, this is so because research groups can have bilateral relations and networks outside the university which can give them authority and because higher-level authorities in a university will often depend on strategic support from strong social actors, research groups and departments which are formally lower in the hierarchy. Much will depend on the authority structures within and outside the university.

So how does change at a university level come about? Given the interdependence of fields, there are rarely moment of crisis and rupture although this can happen (see Bolivia) and these are largely a result of internal crises or exogenous shocks. Rather, the theory Fliegstein and McAdam (2014: 83-112) (and we) suggest it is key so-

cial actors (or groups) working at various levels who are able to mobilise around opportunities and threats to create new ways of working or manage disturbances and contention. Indeed, the anecdotal evidence derived from Sida's research programme officers at the country-level on how they work with key social actors, is entirely consistent with this account.

On this background, a possible ToC to strengthen the capacity to do research of high quality and relevance within the BRC programmes would run as follows: if (a) *sufficient critical mass of qualified researchers* come together under an *entrepreneurial research leader* around (b) a *common research theme* of social relevance and they (c) *attract sufficient resources*, they will be able to work together productively to provide (d) *individual and collective benefits thereby strengthening their research environment so that they will* (e) *provide more and better research of relevance to society*.³⁵

5.5 SUMMING UP

In summary, this section has outlined a theory of fields that theorise the role of social actors within university institutional structures. This provides a lens through which we can understand how universities as institutions work and a way to explore specific university settings. It follows from this social account that key explanatory mechanisms that will help clarify what is happening in university environments will focus around acting space (how structural conditions actually condition people's ability to act), social trust, stratification, social institutions and social divisions (e.g. gender, age).

We have concluded that the Basic Logic about how institutional change comes about that underlies Sida's BRC model is not supported by the evidence of the outcomes of specific country programmes. We have questioned the ambitions of Sida's model (and of other interventions, see Chapter 4) in terms of their goals both in relation to the context of the intervention and the scale of programming inputs. While these concerns are not just based on a lack of precision of objectives and partially rooted in a limited account of specific university contexts, a clarification and narrowing of the focus of the approach and goals might help encourage a closer analysis of the degree to which programme changes are realistic relative to context.

³⁵ We have not developed a separate, revised ToC for the wider ambitions of Sida's Basic Logic beyond strengthened university capacities mentioned above. This is partly, as we have argued, because ToCs for these outcome levels quickly become very complex and difficult to follow up and monitor. It is also because, as with capacity change, it needs a robust theoretical scaffolding to justify the assumed causal changes. What we will argue for is the need for a critical and careful analysis of the political, institutional, economic and socio-cultural contexts under which programmes are implemented and how this may lead to enhanced impact on policies, products and services

We agree that an institutional approach that is implicit within the Sida model and its Basic Logic will need to be a component of an elaborated BRC approach. However, we have argued that it needs to be complemented with a more social and agentic perspective that addresses how change comes about. It is at this point that there is a need to articulate Theories of Change, which would then influence choices over the types of activities, inputs, and strategies that could plausibly lead to the desired outcome or effect. If, as the theory suggests, institutional change comes about through the development of strong research groups – thereby in some way reflecting the Sida model's 3rd phase with a focus on 'research groups and creative environments' (see Figure 1) – the key theory to develop a ToC would be theories of fields.

6 Conclusions

These conclusions draw on Chapter 2 (the structure and organisation of Sida's bilateral research cooperation), Chapter 3 (the findings from the BRC programme case-studies), Chapter 4 (lessons from alternative models of international support to bilateral research cooperation) and Chapter 5 (the theoretical assessment of the Sida model's Basic Logic and System Approach). The conclusions are made with reference to the Evaluation Questions (EQs) outlined in Section 1.2.

As noted, the EQs are of two main types: The first set (EQs 1-12) refer to the relevance, effectiveness, impact and sustainability of the individual BRC programmes under study. The second set (EQs 13-23) focus on the links *between* the Sida model's discrete component and hence whether and to what degrees the assumptions and explicit causal pathways in the System Approach (Figure 2) and Basic Logic (Figure 3) are supported by the evidence.

6.1 RELEVANCE, EFFECTIVENESS, IMPACT AND SUSTAINABILITY

Relevance: The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs and partners' and donors' policies).³⁶

EQ 1: To what extent has Sida's model for bilateral research cooperation contributed to building research capacity in partner countries?

- Sida's model for bilateral research cooperation is ambitious in its objectives, long-term in its commitment and generous in its funding, but has only partially and to varying degrees contributed to developing research capacity at national, university and individual levels in partner countries.
- The Sida model has gone through different stages with initial focus on research funding/councils, training of individual researchers and research groups and crea-

³⁶ The definitions are taken from Sida's «Looking Back, Moving Forward. Sida Evaluation Manuel» (Sida 2007).

tive environments. The ‘holistic turn’ since the mid-1990s, combining institutional development and individual capacity development, has generally reduced the focus on research capacity development as *practice*.

EQ 2: To what extent has Sida’s support influenced national policies, institutional structures and financing of higher education and research?

- The extent to which Sida support has influenced national systems of higher education and research is generally limited and vary between the case study countries, their political context and initial institutional role and capacity.
- The influence seems to be highest in ‘weak-state’ Tanzania (where such institutions were frail or not in place) and lowest in ‘strong-state’ Rwanda (with already functioning institutions) – but the actual relevance of such institutions for research capacity-building may still be limited as the case of COSTECH in Tanzania shows.
- Public financing of higher education and research has seen improvements in all case study countries, at least partly attributable to BRC programme presence – most prominently in Bolivia through the national carbon tax contributions. However, public funding for higher education and research is unpredictable and donor dependence remains high.

EQ 8: To what extent and how is Sida’s bilateral research cooperation taking human rights and gender equality into consideration in their programmes?

- There is considerable attention to human rights and gender equality in BRC programme policy, planning, monitoring and evaluation – but more limited attention to the key issue of academic freedom and its implications for programme implementation and results.
- The extent of real ownership to human rights and gender equality issues varies between programme countries and socio-cultural context. Countries scoring lowest on human rights rankings (Rwanda and Vietnam) are least receptive to external interference/ intrusion while corporatist Bolivia has a strong tradition for human rights struggles – including academic freedom.
- The programme’s direct impact on human rights/gender equality is most prominent in terms of student recruitment (gender) and choice of research themes for the PhD programme (human rights broadly understood) – with results largely reflecting the overall political context and space for such issues.

Effectiveness: The extent to which the development intervention’s objectives were achieved, or are expected to be achieved, taking into account their relative importance.

EQ 3: To what extent is the model an effective instrument for building research capacity at the selected universities in partner countries?

- ‘The model’ (i.e. the System Approach and Basic Logic) is comprehensive and ambitious, but perceptions about what it actually entails and the extent to which it has been applied in planning, implementation and monitoring varies between the different country programmes, the partner universities in Sweden and the Global South as well as among individual researchers.
- The model’s achievements have been based on Sida’s long-term commitment to bilateral research cooperation in the countries of cooperation, the generous programme funding, and the confidence between universities/researchers in Sweden and partner countries (EQ3a).
- Non-achievements are related to the complexity of the institutional contexts within which the programme is implemented, the lack of clear/joint understandings of the interlinkages between the model components, and insufficient attention to the outcomes of the programme’s research capacity-building in terms high quality and relevant research (EQ3a).
- The main opportunities inherent in the model are to contribute to national systems of research capacity-building and research in the Global South that enhances the options for longer-term sustainability of research institutions and research for poverty reduction and sustainable development (EQ3b).
- The main risks identified are the flip-side of the above: that such a comprehensive and generous model/programme may create complacency and dependence, with universities/researchers not developing sufficient ownership and capacity for further institutional advancement and research capacity post-Sida support (EQ3b).

EQ 4: What are the results in qualitative terms of the model for bilateral research cooperation, both in terms of scientific quality, quality of the research infrastructure developed, and the quality of the research environment in general?

- Contributions to improved university management are limited at higher levels of decision-making that have not been targeted in the programme, but good at the level of programme management units.
- Contributions to research administration have included support to research administration units as well as financial administration, quality assurance, research funds etc. They are generally good, but often not sufficiently integrated into overall university structures.
- Contributions have also been made to the development of university policy- and strategy documents, with results being affected by existing institutional structures and power-relations that are difficult to change from the outside.
- Contributions to tangible aspects of the research environment in the form of ICT, library and laboratories are generally good – even though their actual use is affected by ‘academic culture’ (libraries) and challenges of maintenance (labs). ICT is more universally embraced and used (EQ4c).

- Contributions to national research councils have been limited due to cumbersome bureaucracies and inadequate relations/transparency with research communities, while contributions to smaller university grants have been useful for funding smaller research projects.
- Contributions to outputs/outcomes in research capacity-development (PhD graduates, publications, etc.) are generally good taking the educational background of the students and institutional constraints into consideration, but still limited in relation to total academic staff at the partner universities (EQ4b).
- Contributions to more and better research/knowledge frontiers post-graduation are generally limited, with few researchers in positions to continue their research due to university hierarchies, inadequate funding, limited experience in heading research programmes and limited research networks (EQ4a).
- The number of international publications from the partner universities and the BRC programmes has generally increased, but there are limited changes in bibliometric indicators of quality and impact.
- In terms of authorship, there is a high level of international collaboration and limited regional and national cooperation and single-authored publications. This may indicate limited local capacity to lead research projects beyond PhD projects.
- There are few national or university-based publications outlets (local publishers, report series, briefs etc.) in the partner countries and they are generally given low priority and limited credentials – with the exception of Bolivia.
- University careers are generally based on a combination of length of tenure and academic credentials with the former still given a weight that reduces the relative importance of PhD degrees – with the exception of Rwanda where academic credentials are favoured.
- Intangible aspects of the research environment in the form of relations of trust, co-operation and room for academic freedom/critical research are supported by the exposure of students to other research environments (in Sweden) – but hampered by established university structures/cultures of power and authority that are difficult to change from the outside (EQ4d).

Impact: Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.

EQ5: What is the overall impact, i.e. positive or negative effects, of the model for bilateral research cooperation in terms of direct or indirect, negative and positive results?

- The impact on national level policies, institutional structures and financing relevant for higher education/research capacity building has been limited, either because such institutions have functioned well prior to programme (Vietnam, Rwanda) or because they have not taken on support functions as envisaged (Bolivia and Tanzania).

- The impact of the programmes on the universities has been good by having contributed to building institutional research structures and enhancing the position of research, but weaker in turning institutional competence into capacity to actually carry out research of high quality and relevance.
- The impact of the programme on individual PhD students and researchers has been high, as the large majority become members of the partner university staff and some work with the public/private sector – but there is limited space and capacity to continue to do research of high quality and relevance post-graduation.
- For the Swedish partner universities, the programme has strengthened the options for research collaboration with the Global South. At the same time, the Swedish universities and researchers tend to discontinue the collaboration post-Sida funding in an increasingly globalised and competitive research-funding environment (EQ5a).
- The impact of the programme on the relationship between Swedish- and partner universities has moved towards a stronger position of the latter in terms of research planning and implementation – but there are concerns among Swedish stakeholders about the academic basis for establishment of local PhD programmes (EQ5c).
- The implications of the proliferation of public and private universities and think tanks in the partner countries for the partner university have been limited, as there are few systematic attempts of collaboration with other national research institutions. Some partner universities lose academic staff to private universities (EQ5b).
- The BRC programmes have strengthened the partner universities as institutions and the position of research, but university autonomy is largely a reflection of existing political structures and rights (incl. academic freedom). While Rwanda scores on the instrumental value of research, Bolivia scores higher on research as public engagement (EQ5d).

EQ 10: To what extent and how does Sida’s model for bilateral research cooperation have impact on science-based policy-making and improved products and services?

- The impact on policy-making and products and services has been limited at the institutional level (between universities and government, private sector and civil society organisations), but there are a number of cases of impact through individual engagement in the public and private sector.
- The longer-term effects of the programme on policies, products, services are difficult to ascertain, due to a combination of inadequate monitoring and evaluation tools and the time needed to assess such changes. Preliminary results indicate that the impact on specific products and services is stronger than on development policy making.

Sustainability: The continuation of benefits from a development intervention after major development assistance has ended. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.

EQ 6: Provided Sida’s model for bilateral research cooperation has contributed to intended outcomes, is it likely that the benefits of Sida’s programmes are sustainable beyond the Swedish support?

- Key components of the programmes related to institutional development and individual research capacity are established and likely to be sustainable, but further development and sustainability of high-quality and relevant research is inhibited by the limited BRC programme focus on research as practice and research networks.
- All three ongoing BRC case-study programmes will have challenges maintaining their research activities should the Sida programme discontinue. The experience from Vietnam after the termination of the Sida BRC programme demonstrates the importance of broad research networks for sustainability (EQ3b).

EQ 7: What are the major factors influencing long-term sustainability of research cooperation capacity- and institution-building results?

- Long-term sustainability of results will be influenced by political developments in the partner countries, the level of research funding by national governments and other donors and the status and role of research-based knowledge in the partner countries.
- The fulfilment of the ultimate goal of contributing to research-based knowledge for poverty reduction and sustainable development will also depend on the commitment by national governments to pursue such policies and the ability and will of the research institutions and researchers to relate to and engage critically with such issues.³⁷

6.2 THE BASIC LOGIC AND SYSTEM APPROACH

EQ 13: To what extent is the evidence of research cooperation implementation consistent with the application of a holistic approach and its effects?

The ‘holistic approach’ to institutional change has been applied in a generic manner, with limited systematic attention to differences in political, economic and socio-cultural context. While all main components of the System Approach have usually

³⁷ EQ 11 (What is the best approach in terms of selecting one or a combination of modalities for building research capacity in low-income countries?) and EQ 12 (What will be the best way to monitor and evaluate research quality and relevance in a future programme?) will be related to in the concluding Chapter 7.

been deployed for institutional development, the national institutions (ministries, regulating bodies, research councils) and partner universities differ in size, structure and capacity. This has had consequences for the relevance and effects of the research co-operation interventions. Some national institutions and universities have had rather rigid structures that have not been open to change, some do not fulfil the role they are supposed to in the system – and some have benefited from the programme mainly through tangible interventions in administration, finance, quality assurance etc. There are few if any cases where fundamental research policies and practices at national and university levels have changed significantly.

EQ 14: To what extent is this an integrated programme with synergies and are its effects greater than the sum of its parts? To what extent is the approach institutionally and financially sustainable?

The System Approach is unique in approaching research capacity development through interventions at international, regional, national and university levels. But the links between the System Approach and Basic Logic and its assumed interrelations between institutional and individual research capacity development, more and better research and development impact are not clear. In particular, we have identified gaps in the logic between support to formal national and university systems and structures on the one hand and the focus on individual research capacity development on the other – with limited attention to the role of research as practice. The System Approach has contributed to enhanced institutional capacity and competence, but sustainability will depend on the extent to which relevant governments take responsibility for research. Sustainability is also affected by the limited attention to donor coordination in the BRC programmes.

EQ 15: What is the evidence that research cooperation builds capacities at individual and institutional level and how effective is it at doing this?

A core and successful element of the BRC programme has been to build individual academic research capacities and provide exposure to alternative research environments (Sweden) – although questions could be raised as to how efficient this approach has been in terms of number of PhD graduates produced. However, while the impact of this training on the PhD graduates home university and on the research environment has been good in terms of administration, teaching and individual careers it has not been realised in terms of continued research activities and research outputs. This has been due to limited resources for doing research, limits of capacity and networks for developing new research projects.

EQ 16: What is the evidence that research cooperation leads to environments conducive to higher education and research and if so what is its contribution?

The most important contributions to the research environment have been the (in)direct effects of a long-term and comprehensive capacity development and research programme at universities aspiring to become research based. This has been provided through administrative support to university policies of particular relevance for the programme (programme coordination), investments in physical infrastructure

(ICT, libraries, laboratories) and some university-based research funding that have secured a sufficient level of research support. Less emphasis has been given to changing management processes and addressing the institutional and structural constraints related to power and authority.

EQ 17: To what extent does improved research capacity and research environments lead to more and better research?

Improvements in research environments and capacity have been important for enhancing the position and role of research at partner universities. But the translation of this into ‘more and better research’ has been negatively affected by a combination of institutional constraints (funding, teaching, administration), the inadequate capacity of young researchers to develop independent research proposals and the dearth of research networks for financial support and academic collaboration. Exceptions have mainly been identified in cases where space for pursuing research activities and relations have been created in individual departments and special research centres.

EQ 18: Does improved research contribute to better teaching outcomes?

While teaching or pedagogics are not an integrated part of the BRC programmes, the exposure to alternative forms of teaching and research experience have influenced individual teaching practices. However, changes in overall university teaching practices and professor-student relationships (embedded in academic and socio-cultural practices specific to partner countries and universities) have been slower to appear particularly at universities where teaching is effectively prioritised at the expense of research and research impact.

EQ 19: Does improved research lead to improved knowledge contributions and how does this feedback into teaching?

The programme has led to limited contributions to ‘knowledge frontiers’ in a global or academic sense, with exceptions being BRC programme researchers who are part of larger international research groups. PhD research projects have been based on national development challenges and priorities and important contributions have been made to ‘national’ knowledge frontiers and teaching. But wider impacts have been affected by the limited access to research funding (competitive funds and grants) and the limited tradition in most partner universities of active dissemination of research findings.

EQ 20: Does improved research and knowledge improve contributions to science-based policy-making? How is the discourse between academia and policy actors managed?

Contributions to policy-making are primarily accomplished through individual rather than systemic interaction with the state. The BRC programmes’ understanding of ‘contributions to policy making’ seems to rest on its practical and instrumental linkages to policy outcomes rather than contributions to science-based critical analysis

and public debates. However, there are differences in the extent and nature of research dissemination between the different partner countries and universities – largely attributable to the overall political context.

EQ 21: Do improved research and knowledge outcomes contribute to improved products and services? Are there impediments to the engagement by university researchers with the private sector?

The Sida model/BRC programmes' capacity to contribute to improved products and services is hampered by a private sector that often does not trust the quality of local research compared to international alternatives. The private sector may also be unwilling to pay for services, and universities are usually not sufficiently professional in terms of selling new ideas, products and services. Exceptions mainly rely on individual relations between change agents in the private sector and at the universities – even though there are promising developments related to recently established centres of innovation. Lack of career incentives for university staff to engage with the private sector also inhibit the production of new products and services.

EQ 22: Do the above improvements contribute to sustainable societies (economic development, environmental protection, human rights adherence, gender equality, poverty reduction, etc.) and, if so, in what respects?

The monitoring and evaluation of the BRC programmes' contributions to sustainable societies is complicated by the time needed for such change to appear and the inadequacy of the RBM indicators for capturing intangible dimensions of development. Much if not most of the research done within the programme relates to, but do not systematically monitor, the impact on economic development, human rights, the environment, poverty and gender in one way or the other. At the same time, it is increasingly acknowledged that contributions to key global challenges of economic development, environmental protection, human rights and poverty reduction require a stronger focus on multi- and interdisciplinary research – which so far has been given limited attention in the BRC programmes. The sustainability of universities as institutions will ultimately depend on the extent to which universities are given sufficient funding and academic space and the ability of university managements, researchers and their networks to produce relevant and high-quality research.

EQ 23: What evidence is there to support the robustness of Sida's Basic Logic, the causal connections between its elements, the validity of its assumptions and what do we learn from this?

Sida's System Approach has helped frame contributions to improved research structures/environments and been successful in increasing individual research capacity through the sandwich programme. However, there is less evidence that the envisaged outcomes of the Basic Logic have been realised. The BRC programmes have primarily focused on delivering tangible 'products' in the form of PhDs, physical infrastructure, research projects etc. as measured by results-based management frameworks, with less focus on institutional changes in structures and processes and the role of individual researchers and research groups as agents of change. The results are

inadequate – even after long-term cooperation – in terms of transforming the partner institutions, research norms and research relationships in ways that enhance the longer-term options for research of high quality and relevance for poverty reduction and sustainable development.

7 Recommendations

In writing these recommendations, our points of reference are, i) the findings about the relevance, effectiveness, impact and sustainability of Sida's BRC programmes (Chapter 2 and 3); ii) lessons learnt from alternative donor programmes for bilateral research capacity development (Chapter 4); iii) the relevance of the BRC programme's System Approach and Basic Logic to research capacity development (Chapter 5); and iv) feedback from Sida about the kind of changes that are possible within the existing institutional priorities and constraints.³⁸ The recommendations respond to the conclusions that the evaluation team has presented in the preceding chapter.

7.1 ALTERNATIVE SCENARIOS

Three alternative scenarios for a possible new Sida model and BRC programme approach are proposed.

Scenario 1: *Radical change*

This would explicitly focus on RCD and research. The programme would be based on extensive research networks as under scenario (a) and (b) presented in Chapter 4. However, with Sida's principle of working with low-income countries that often have weak higher education and research systems, this would imply that at least parts of the organisational framework would not be able to offer the minimal support necessary for RCD and research.

Scenario 2: *Incremental change*

This would be an *incremental change* within the existing programme model. This may leave Sida as the only donor approaching RCD through a holistic system model, and would focus on multi-level organisational change, research capacity development as well as research for excellence, development and poverty reduction. However, this evaluation has identified sufficient challenges with the existing model to render this option problematic – in terms of its high level of ambition as well as the limited extent to which the institutional and individual capacity development leads to the desired research outcomes.

³⁸ Recommendation Meeting, Sida Stockholm 16.09.19.

Scenario 3: *Change of focus within existing model*

The third option is a *change of focus within the existing model*. This would combine the need for basic technical capacity in relevant higher education organisations at national and university levels with a stronger focus on RCD and research. The support to the research system at national and university level research organisations would target bottlenecks of relevance for research rather than whole institutions. The main programme focus would shift to support research leaders and a critical mass of individual researchers through PhD training, research groups and research networks and supporting collaborative research of high-quality and relevance. We have argued that such an approach would also contribute to institutional change by strengthening the position and role of research within the universities.

Partner universities in the Global South – current as well as possible future ones – will find themselves at different junctures both in terms of their competence and capacity. This would have to be considered when (re)designing programmes and defining baselines and benchmarks for planning, monitoring and evaluation.

7.2 ORGANISATIONAL LEVEL SUPPORT

Recommendation 1: Strengthen the use of context analyses in programme planning, implementation and evaluation.

This evaluation has shown how political, economic and socio-cultural context matters for BRC programme implementation and results. Decisions about establishing new programmes or continuing existing ones should be based on thorough analyses of context, including outlining implications for the different stages in the programme. This should address the recruitment and capacity development of researchers, the building of research support services, pathways for research dissemination through relations with policy-makers and the private sector and public engagement. In particular, programme sustainability beyond support from Sida needs to be programmed in. Such an analysis should be an integral part of the Concept Paper or Programme Document developed by the partner institutions, as well as annual reports and evaluations. The purpose is to relate programme interventions to relevant aspects of, or changes in, the overall context in order to reach the larger objective of high quality and relevant research for poverty reduction and sustainable development (Figure 15).

Recommendation 2: Lower the ambitions of the holistic System Approach by making it more flexible and targeted.

We recommend that Sida model's multi-level system support at international and regional levels be discontinued as we have concluded that this is best addressed through support to research and research networks (see below). The support at national level needs to be more flexible taking different contexts and organisational strengths and weaknesses into consideration in the planning, implementation and monitoring and evaluation of the programme. As a 'model', the overall approach should be loose, implicit and less systemic than the current System Approach – with a ToC only being explicitly developed at the programme level of RCD. The support

should be tangible, short-term and of direct relevance for RCD – on the notion that institutional absorption and use will best be facilitated as part of RCD and research processes. To account for this change, we suggest that the term ‘System Approach’ is substituted with the less ambitious and committing ‘Organisational Level Support’ (Figure 15).

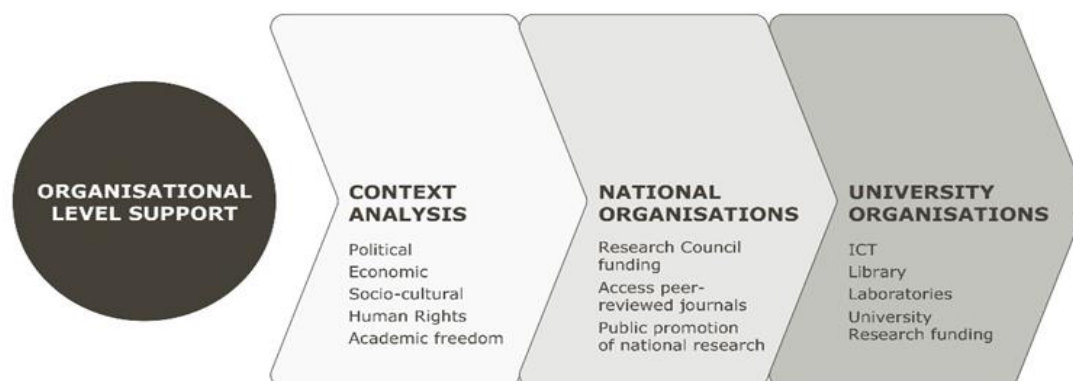
Recommendation 3: Support national research organisations with shorter-term interventions of direct relevance for research capacity development.

The evaluation has shown that the quality and relevance of research organisations at national levels differ considerably between the various BRC programmes. Their roles range from restricting open or critical research through various control mechanisms to facilitating research through funding and active demand for research-based knowledge. Some institutions remain politicised and ineffective after years of support. The most relevant organisations at national level are ministries (for research policies, strategies, regulations etc.), and education and research councils (for education and research programme accreditation, research funding etc.). These are essentially the responsibility of the governments in partner countries, and without government engagement and investments they will not be sustainable. The BRC programmes should, after careful assessments, support selected features of these organisations with shorter-term interventions – either because they represent specific bottlenecks or have particular relevance for research capacity development (Figure 15).

Recommendation 4: Support partner university organisations with shorter-term interventions in administration and physical infrastructure when necessary to secure minimal support for research activities.

As emphasised in this evaluation, universities are complex organisations with their own histories, authority structures and bureaucratic constructions that are difficult if not impossible to change from the outside. Support to formal university policies and strategies (for research, gender equality, consultancies etc.) have been enmeshed in university politics and practise and mainly aided ongoing processes rather than led to fundamental changes. Administrative support and tangible or material interventions in library, ICT, labs etc. have been important for facilitating ongoing research activities but have not fundamentally changed the research environment for example in terms of reading culture. The BRC programmes should continue to support selected features of the partner university organisation and physical infrastructure in order to bring it up to minimum standards, while acknowledging that it is only through the active engagement with these facilities as part of research processes that the research environment will fundamentally change (Figure 15).

Figure 15: Organisational Level Support



7.3 RESEARCH CAPACITY DEVELOPMENT

Recommendation 5: Move the focus of the Sida model and BRC programmes towards a stronger emphasis on research capacity development and research as practise.

A key finding in this evaluation has been that the implementation of the Sida model has led to programmes that mainly focus on support to institutional structures and individual training, but less on agency or the ‘glue that binds’ those levels together. What needs to be given stronger emphasis is the ‘missing middle’ relating to theories of individuals and groups as agents of change and their impact on research environments and institutional development. We believe that such a focus will make the programme more effective, relevant and sustainable. This represents a shift of focus from the current System Approach and Basic Logic where multi-level institutional support and RCD is *assumed* to lead to more and better research of quality and relevance to society, to a focus on the research process. In order to accomplish this shift, there is a need for a suitable Theory of Change as the basis for planning, implementation and monitoring of programme and sub-programme activities. We suggest that this can be drawn from the theory of social fields. In outlining related recommendations below, our point of reference will be the ToC presented in Chapter 5 and Figure 16. For each sub-programme, the more explicit baseline indicators, programme interventions and programme targets must be adjusted to the specific context and circumstances of each partner country/university – depending on where they are in terms of overall competence and capacity.

Figure 16: Theory of Change: Research Capacity Development



Recommendation 6: Increase the emphasis on research leadership, qualified researchers and research networks as collective actors.

The BRC programmes have focused on individual capacity development, contributing to increase the number of PhD researchers primarily in STEM, agriculture and medicine. The suggested alternative approach proposes to i) have a system for PhDs/ individual research capacity development that is flexible and maximises output and ii) give stronger emphasis to supporting research leaders with entrepreneurial qualities for building research groups and networks – both on the assumption that this will lead to more and better research and enhanced wider-scale impacts. A new Sida model and BRC programme approach should:

- a) Continue to support PhD students through the sandwich programme in partner countries where that is necessary in order to have a critical mass of researchers in selected areas of research (see below).
- b) Be more flexibility in terms of supporting PhD studies at other universities/ through other programmes where that is warranted, such as at quality universities in South Africa and Latin America.
- c) Support post-doc scholarships at Swedish or other international universities of special quality/relevance.
- d) Identify and support strong research leaders for building research groups in identified priority areas (see below), preferably at partner universities but alternatively in cooperation with other national and regional institutions/networks.

Recommendation 7: Limit the number of research areas and themes in order to build strong research programmes and enhance the position of research.

The individual capacity development and research component in the BRC programmes have focused on a broad range of disciplines and themes deemed relevant by the partner country governments and universities. It has also focused on STEM, agriculture and medicine at the expense of social sciences – despite increasing attention to the merits of multi-disciplinary research. The proposed alternative approach is to focus on a limited number of research areas, themes or programmes of social relevance (as was the case in Vietnam). This will help support the establishment of stronger research programmes with competent research leaders. It will also help create a critical mass of researchers with capacity to enhance the position of research and influence the research environment. A revised Sida model/BRC programme approach should:

- a) Give primary priority to research themes of global or regional importance and relevance, to be able to link up with international research and publications and be relevant for regional academic partners.
- b) Give secondary priority to research on more particular local development challenges, in order to enhance relevance for public policy makers, the private sector and as a basis for public engagement.
- c) Give emphasis to multi- or interdisciplinary research groups and research, in order to best relate to global and national challenges as expressed in the

2030 Sustainable Development Goals. This should include a greater engagement with social sciences.

Recommendation 8: Expand the alternative research funding base by supporting capacity to develop research proposals and secure research funds.

The BRC programme partner universities have been highly dependent on Sida and other donor funding, to the extent that very few partner universities or research groups are sustainable without such external support. To strengthen the basis for good, relevant and sustainable research activities, a revised Sida model and BRC programme should develop a broader funding base as part of ongoing programmes.

- a) A higher share of Sida's funding should be allocated to national competitive research funds, supported by a combination of national governments, donors and international foundations.
- b) Sida funding for university-based research funds should be kept for smaller programmes and projects – with priority given to PhD-graduates and younger researchers as a learning process for project development.
- c) BRC programme related research groups should be expected to seek alternative funding sources (national, regional, international research councils) as part of research programme development.
- d) Swedish partner universities should be expected and encouraged to include researchers from the Global South more systematically in applications for international research funding.

Recommendation 9: Support and encourage research as a collective enterprise in order to improve research environments.

The BRC programmes have largely focussed on individual researcher capacity development and publications. Less attention has been given to the role of research groups and the nature of collective and collaborative action in generating benefits for the individual, for the group and for the universities as institutions. While these are in effect outcomes of stages 1 to 3 outlined in the above ToC, a new Sida model and BRC programme should further encourage collective and collaborative action by facilitating and funding linkages between research groups and networks. An adjusted programme should:

- a) Give stronger emphasis to, and fund research, in research units, research centres and research groups constituted by a combination of entrepreneurial research leaders, senior researchers, recent PhD graduates and PhD students in order to create space to focus on research.
- b) Support secondments to international and regional research organisations (including multi-disciplinary think tanks), participation at conferences and other initiatives that will strengthen the research groups and their networks.
- c) Identify and involve Swedish partner universities, emphasising research leadership qualifications, access to global and regional research networks and experience in research cooperation with the Global South.

Recommendation 10: Have a stronger focus on doing research of relevance for society, and its dissemination and uptake in academia and the public and private sector.

While the BRC programmes have been relatively effective in contributing to institutional development and individual capacity development, the impact on more and better research, knowledge frontiers, science-based policy-making and improved products and services has been more limited. Stronger, focused and well-funded research teams and networks will contribute to reach these goals and should be supported in ways that further facilitate research quality and relevance, such as:

- a) Support to interdisciplinary and applied research centres or projects at the partner universities to better relate to the complexity of central research challenges.
- b) Developing alternative modes of targeted research communication (media, internet, briefs etc.) in order to reach key decision-makers in the public and private sector.
- c) Emphasising research communication for public engagement by taking active part in public communication channels and arenas.

Recommendation 11: Fund larger, longer-term and multidisciplinary research projects in order to contribute to research as practise.

One possible BRC programme intervention to facilitate/support all the stages of the TOC in a practical way is to fund long-term (2-4 years), large and multidisciplinary research programmes possibly built around the Sida notion of 'Reality Checks'. Each programme would start by defining geographical area(s) of focus (e.g. one rural and one urban formation). The programme would then select one or two broad themes of inquiry (e.g. climate change, poverty and inequality, physical infrastructure, education, health etc.). The theme(s) would at the outset be approached from different disciplines and research groups, but in close cooperation and coordination with each other and with components of interdisciplinary research. Outputs would be a combination of single, interdisciplinary peer-reviewed publications, multidisciplinary applied reports for public and private sector stakeholders, and public engagement with the local population under study as well as the general public. The programmes should be adaptable and flexible, with continued involvement depending on performance in relation to agreed performance indicators. In addition to Sida, funding should also be sought from other sources for components of the programme.

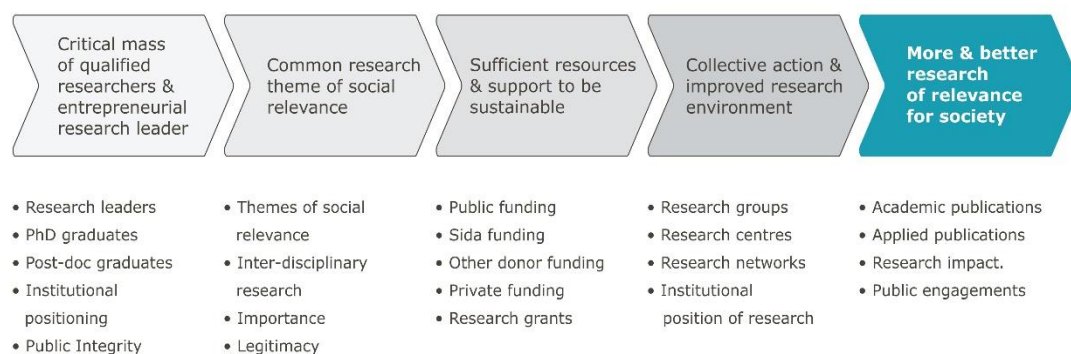
7.4 MONITORING AND EVALUATION

Recommendation 12: Develop a simpler and more flexible monitoring and evaluation system that includes quantitative indicators as well as qualitative assessments.

The monitoring and evaluation of the BRC programmes have been built on an elaborate system of annual plans and reports at country programme, sub-programme and project levels in addition to reporting requirements within the individual Swedish and partner universities involved. The basis for the reporting process is RBM systems

related to country programmes as well as individual sub-programmes, but as shown these are usually not systematically adhered to. The system of reporting, monitoring and evaluation should be simplified, more interactive and focused more on substance than technical/financial issues. The monitoring system should be closely linked to the different stages in the proposed TOC for research capacity development. Also, progress and result indicators should combine quantitative/bibliometric data with qualitative assessments. There is ongoing work on research quality dimensions beyond bibliometric data – focussing on issues such as research integrity, research legitimacy, research importance and positioning for use – that would be of relevance (IDRC 2016, see also Hanover Research 2014). It is beyond the scope of this evaluation to suggest specific targets or indicators for each sequence or component of the proposed TOC. These will vary between the different programmes, but they should contain both quantitative indicators and qualitative assessments around the following broad indicators (Figure 17):

Figure 17: Categories of indicators for monitoring and evaluation



A common concern raised by programme stakeholders at the Sweden universities as well as their partner universities is the lack of arenas to discuss progress and challenges in qualitative terms pointing to the rather ‘technical’ focus at the joint bi-annual planning and reporting meetings. One possible tool to facilitate qualitative monitoring (used in the Rwanda programme) is to discuss progress/lack of progress with reference to a ‘traffic light system’: On the basis of group discussions (for each sub-programme) and plenary debates (for the country programme as a whole) the options for reaching the defined target is ranked the following way (Figure 18):

Figure 18: Qualitative ‘traffic light’ monitoring.

Will be met	May be met	Unlikely to be met	Will not be met

The agreed probability of reaching the defined targets/indicators should be accompanied by short (also agreed) written statements, firstly, about the main reasons for the awarded ‘traffic light’ to the target. Secondly, the statement should indicate the main steps to be taken in order to meet the set target on time. The exercise could be followed up either at each bi-annual meeting (i.e. planning and reporting) or at the annual planning meeting.

7.5 PROGRAMME ORGANISATION

Recommendation 13: Ensure that the programme organisation reflects and underpins the proposed ToC.

Sida has a long history of research cooperation with the Global South, and there is a strong sense of pride in and ownership to the Sida model and BRC programmes. Sida and its Research Unit perceives the holistic System Approach, the long-term engagement, ownership by collaborating partners and the Basic Logic to be unique. At the same time, Sida and its Research Unit underlines the fact that the programme is demanding, both in terms of financial resources and workload, for the staff involved. The Research Unit also points out that Sida’s current funding situation makes it unrealistic to get a larger share of the overall Sida-budget for research cooperation and the BRC programme. Taken together, these two factors imply that there is limited space for larger changes in programme organisation. There are also more specific aspects of the current BRC programme that appear to be ‘non-negotiable’. These include: a focus on low-income countries; a principle of cooperating with public universities only; and a commitment to work with Swedish university partners. Against this background, and with reference to the proposed TOC, a possible new Sida/BRC programme on research capacity development could be organised the following way:

- a) Continue to focus on low-income countries and their universities, but with links to middle-income countries and/or regional universities/think tanks³⁹ when relevant for research quality.
- b) Continue with long-term engagements, but with clear time horizons and exit plans for donor funding and gradual transitions to other international/regional/domestic research funding channels.
- c) Continue to work with the principal public university(ies) in partner countries, but with possibilities for including other public universities should that be warranted for quality and relevance.

³⁹ For an overview: https://repository.upenn.edu/cgi/viewcontent.cgi?article=1018&context=think_tanks.

- d) Continue to focus on Swedish partner universities but prioritise universities and departments with strong international relations to extend research networks for partner universities.
- e) Move the focus towards building strong research groups and doing research in order to enhance the options for reaching higher-level goals of knowledge frontiers, contributions to policies and services, and ultimately poverty reduction and sustainable societies.

Recommendation 14: Adapt the possible implementation of these recommendations to the different stages of development of the current BRC programmes.

The possible implementation of these recommendations will depend on the room for manoeuvre at Sida/the Sida Research Unit in a situation where i) a new bilateral research cooperation approach/Sida model may be developed and ii) the individual BRC programmes are at different stages of development. With reference to these conditions, prioritised decisions related to the Sida model/the BRC programmes should be developed in close coordination between Sida and stakeholders in the partner countries and universities in Sweden and the Global South. A possible sequence could be:

- a) Assessments and prioritisations of the evaluation recommendations in terms of programme organisation (Recommendations 1, 2, 3, 4 and 13).
- b) Decisions on the future of ongoing programmes beyond their ongoing phase, and identify possible new BRC programmes, in order to facilitate planning for the stakeholders.
- c) Identification of more explicit implications of the recommendations for each individual BRC programme during the current phase, as well as for a possible next phase (Recommendation 5 to 12). The following general points may apply for the ongoing BRC programmes:

Bolivia (UMSA and UMSS), where basic organisational structures for research are still not in place and research is still in its embryo, should still be eligible for continued organisational support and capacity development at PhD level.

In Rwanda (UR), where organisational structures are well developed and several areas of research have a critical mass of academics, the focus should move towards using this capacity for actual research programmes and projects with special attention to issues of dissemination and public engagement.

In Tanzania, where the cooperation has lasted for a long time with mixed results in terms of organisational development and a critical mass of researchers, a possible continuation should carefully select the universities/research groups in the best position to use their capacities for high-quality and relevant research for continued support.

In Uganda (Kruse et al., 2016) continued support would tentatively be in line with what is suggested for Rwanda. In Mozambique (Kruse et al., 2017) possible continued support would be in line with what is proposed for Tanzania.

Annex 1: Terms of Reference

Case No.: Date
18/000883 2018-11-12

Terms of reference/Requirements specification – Evaluation of Sida’s Bilateral Research Cooperation

1. Background

1.1 Information about Sida

Sida, the Swedish International Development Cooperation Agency, is a government authority. Our goal is to contribute to enabling poor people to improve their living conditions.

As other Swedish government agencies, Sida works independently within the framework established by the Swedish Government and Parliament. They decide on the financial limits, the countries with which Sweden (and thus, Sida) will cooperate, and the focus and content of that cooperation.

For additional information, please visit Sida’s website, www.sida.se

2. The Assignment

2.1 Evaluation object and scope

The evaluation object is Sida’s current model for bilateral research cooperation, where the aim is to build research capacity in low-income countries. This follows from the overarching goal of Sida’s strategy for research cooperation, which is to “strengthen research of high-quality and of relevance to poverty reduction and sustainable development”, and the specific objective of building capacity for research.⁴⁰ In a larger context, the idea is that countries need local research capacity both to en-

⁴⁰ The strategy specifies four specific objectives: 1) building capacity for research in low-income countries and regions; 2) supporting global, regional, and national research of relevance to low-income countries and regions; 3) promoting research that through innovation can contribute to poverty reduction and sustainable development; 4) supporting Swedish development relevant research; the fourth area is which however is the task of the Swedish Research Council, not of Sida (Strategy for research cooperation and research in development cooperation 2015-2021, Ministry of Foreign Affairs).

sure a well-functioning university and education system, and more generally to promote development; the research cooperation is to “contribute to science-based critical analysis and public debate, to national knowledge-based policy to reduce poverty” and to “sustainable societies”.⁴¹

For this purpose, Sida takes a systems approach, which includes the universities’ research management, research infrastructure (such as laboratories and equipment, and access to scientific information through ICT and libraries), and research training. Research training is pursued partly through collaborative research projects, but foremost through the training of PhD-students in so-called “sandwich programmes”: PhD-training anchored at the university in the partner country (for problem formulation, empirical work, and data collection), and supervision and course work at a Swedish partner university.⁴²

The long-term ambition for the bilateral research cooperation is to promote at least one university with capacity to conduct high-quality research training and research in a partner country. This university is viewed as a vehicle for national research capacity and a hub in a strengthened national research system. But Sida’s systems approach also includes other types of interventions, for example support to research regulating agencies and national research councils in individual countries, as well as support to regional and international research organisations. Ideally, at these organisations researchers from the Sida-supported universities and countries are given an opportunity to participate on equal terms in global research collaborations.

The basic logic, or the “theory of change”, of this model is that research training, as well as support to an environment conducive to research, leads to more and higher quality research. Better trained researchers at the universities are expected to incorporate their findings in their teaching, leading to improved higher education, and to follow and contribute to scientific frontiers in their respective disciplinary fields. The research produced is expected to contribute to science-based policy-making, and improved products and services, contributing to sustainable societies. The advancement of a research community moreover empowers countries to participate in evidence-based global negotiations, and to interact with foreign actors interested in carrying out research in low-income countries.

The model has evolved gradually since the 1980s.⁴³ At first, the main objective was to train the PhD candidates through the sandwich model. In the 1990s, the com-

⁴¹ Ibid, p 3.

⁴² See “Guidelines for partners. Sida’s support to national research systems”, Sida 2018, for an overview of the main components of the model as it is currently applied.

⁴³ Support to research capacity development and development relevant research began in the 1970s. It was the responsibility of a separate Swedish agency, SAREC, up until 1995 when this agency merged with the Swedish international development agency, Sida. SAREC remained the name of the department for research cooperation until 2008.

prehensive support to universities (research management and infrastructure) was introduced, to ensure that the university environments, where the trained researchers were to return, were conducive to research. The model is generic, but has been adapted and modified to different contexts and circumstances in the various partner countries and university systems.⁴⁴

The model rests on some core values that are crucial to promote a system for research. One such value is ownership: the researchers, the universities, at times the research organisations, and/or the countries, determine the content and structure of the research systems being built, including research content. Ownership, naturally, means different things for different stakeholders in and beyond the university system. The model must adapt to different contexts and priorities, and has different features in different countries. Another value is that Sida's engagement in research support is long term: research capacity-building takes time, which requires Sida's long-term commitment.

The systems approach by itself is yet a core value for the model: it rests on the belief that sustainable research capacity cannot be developed merely by research training of individuals, but is dependent on supporting functions at university and national levels, along with the advancement of an academic culture conducive to promoting research..

Yet a fundamental value is donor coordination and harmonisation, in order to reduce fragmentation, overlap, and resource waste. To the extent that other donors are 'like-minded' vis-à-vis the Sida model for bilateral research cooperation, other donors can also enhance the basic features of the model, resting on values such as ownership, and long-term commitment.

Altogether, Sida has had bilateral research programmes in 25 countries (see Annex B). Currently there are six ongoing programmes: in Ethiopia, Uganda, Mozambique, Rwanda, Tanzania and Bolivia. In addition, Sida is exploring research cooperation with Cambodia, where an initial pilot phase is currently being implemented, and with Palestine and Somalia, where the cooperation is very much in its infancy. Moreover, Sida primarily focuses its resources on one university in each country, and this university has without exception been a public university, thus making research cooperation part of state-to-state agreements.

Sida's research cooperation has over the years involved a large number of Swedish universities. Traditionally, the collaborations emerged ad hoc: the programme built on contacts between researchers and universities in Sweden and partner countries, often with Sida in a match-making role. A major change in the process of identifying Swe-

⁴⁴ Anita Sandström's report, "Sweden's Support to the Strengthening of National Research Capacity within Bilateral Cooperation. Brief summary of the developments over the last 40+ years"; 2017-09-29 (final draft) accounts for the ideas behind, and the development of the model over the years.

dish partners in the bilateral research programmes was the introduction of the Research Training Partnership Programme in 2012. In this programme, partner universities formulate their overall research agenda in a concept note. This note frames programme proposals from Swedish and partner university faculties and researchers in a competitive call. The purpose is a more transparent and competitive process, which broadens the pool of potential partners in Sweden and in the partner countries. The pilot countries for the RTPP (Bolivia and Rwanda) were evaluated in 2014.⁴⁵

The scope of the evaluation, in terms of the time period studied and which country cases should be included, as well as the intervention logic/theory of change of the model shall be further elaborated by the evaluator in the inception report.

2.2 Evaluation purpose: Intended use and intended users

The purpose of the evaluation is to provide an overall assessment of the extent to which Sida's model for bilateral research cooperation builds research capacity in low-income countries. This assessment will serve as an input to the in-depth strategy review for the strategy for research cooperation and research in development cooperation, which is to take place during 2019. A secondary purpose is to provide Sida with a comprehensive overview of Sida's model for bilateral research cooperation that can be used as a basis for external communication.

The primary intended users of the evaluation are Sida's unit for research cooperation, Sida's thematic network for research cooperation, and Sida's Scientific Advisory Council. As one of the methodologies of the evaluation will be case studies of Sida-funded bilateral research programmes in some of the current partner countries within research cooperation, i.e. Rwanda, Ethiopia, Uganda, Mozambique, Tanzania and Bolivia, Sida's programme managers and Embassies, as well as the local and Swedish partners for these programmes are intended users of the case studies. Sida's partners in bilateral research cooperation, in particular Swedish universities, are secondary intended users as well.

The evaluation should be designed, conducted and reported to meet the needs of the intended users. Tenderers shall elaborate on how this will be ensured during the evaluation process.

Other stakeholders that should be kept informed about the evaluation include the Ministries of Education in the countries where case studies will be conducted and the Ministry of Foreign Affairs in Sweden. During the inception phase, the evaluator and the users will agree on who will be responsible for keeping the various stakeholders informed about the evaluation.

2.3 Evaluation objective and questions

The objective of the evaluation is to assess the relevance, effectiveness, impact, and sustainability of Sida's model for bilateral research cooperation.

⁴⁵ See Kenneth Arvidsson, "Towards an open, transparent and competitive process of research funding for capacity building. An evaluation of the launching of Sida Bilateral Research Training and Capacity Building Programme – Bolivia and Rwanda 2012. Memo, December 2014, Sida.

The evaluation should assess the model from two basic perspectives: firstly, in terms of its assumed theory of change, and secondly, how the implementation of the model has influenced results. The evaluators' assessment should be informed by a critical review of recent literature on international research collaboration with low- and middle-income countries, including findings in evaluations of Sida's research capacity support, and evaluations of other donors' approaches to research capacity strengthening in low- and middle-income countries.

Some questions that may guide the evaluation are indicated below.

Relevance

- To which extent has Sida's model for bilateral research cooperation contributed to building research capacity in partner countries?
- To what extent has the support influenced national policies, institutional structures, and financing of higher education and research?

Effectiveness

- To what extent is the model an effective instrument for building research capacity at the selected universities in partner countries?
 - What are the major factors influencing the achievements or non-achievements of the model used?
 - What possible risks/opportunities does Sida's model for bilateral research cooperation have on research capacity development in partner countries?
- What are the results in qualitative terms of the model for bilateral research cooperation, both in terms of scientific quality, quality of the research infrastructure developed, and the quality of the research environment in general?
 - What is the general view on scientific quality resulting from Sida's model?
 - What is the general level of the scientific production, measured as international or national peer-reviewed publications?
 - The evaluation is not expected to pursue an in-depth assessment of scientific quality, but should gather information on quality from the participating parties (in partner countries and at Swedish universities), as well as from existing evaluations.
 - With respect to research infrastructure, how well do administrative, library, lab and ICT-services function, and to what extent does this infrastructure contribute to a scientific research environment?
 - In terms of the general quality of the research environment, to what extent has Sida's model promoted a well-functioning academic culture, conducive for research? Such overall assessment may include items such as the following:
 - the review processes for grants and research proposals;
 - financial and other incentives for research;
 - career structures;
 - gender equality;
 - academic freedom.

Impact

- What is the overall impact, i.e. the positive or negative effects, of the model for bilateral research cooperation in terms of direct or indirect, negative and positive results?

- What is the impact of the model for bilateral research cooperation on participating Swedish universities?
- What is the impact of the model on universities in partner countries not participating in the cooperation?
- What is the impact on Swedish universities or research units not engaged in the cooperation?
- What power relations are there between partner country universities and Swedish universities, and what are the effects of these relations?
- Has Sida's model for bilateral research cooperation influenced the balance between university autonomy in partner countries and the pursuit of research relevant for
- society?

Sustainability

- Provided Sida's model for bilateral research cooperation has contributed to intended outcomes, is it likely that the benefits of Sida's programmes are sustainable beyond the Swedish support?
- What are the major factors influencing long-term sustainability of research cooperation capacity- and institution building results?

Questions are expected to be developed in the tender by the tenderer and further developed during the inception phase of the evaluation.

2.4 Methodology for data collection and analysis

The evaluation has two main components. The first is a literature review, focussing on international research collaboration with low and middle-income countries, including findings in recent evaluations of Sida's research capacity support, and evaluations of other donors' approaches to research capacity strengthening in low- and middle-income countries.⁴⁶ The second is the exploration of the specifics of Sida's model of bilateral research cooperation, based on documentation, interviews, and case studies. The findings from these two components should inform an assessment of the merits of Sida's model for bilateral research cooperation to build research capacity in low-income countries.

The evaluation should make use of three or four case studies. At least two of these cases should be in countries where Sida's bilateral research cooperation is ongoing, while at least one should be a country where the cooperation has been phased out. The case studies should be based on existing evidence from other evaluations and documentation, and field visits applying appropriate methods for data collection.

The evaluator shall suggest an approach to the case studies in the tender, but the final decision on if and where field visits will take place will be decided during the inception phase.

⁴⁶ See Annex A for references; this list is however not exhaustive for the literature review.

A rigorous impact evaluation is not required, but the evaluator is expected to propose a method (qualitative, quantitative, mixed) to ensure a systematic assessment of attribution effect in the tender.

The tenderer shall develop and justify the methodology and methods for data collection in the tender and propose how evaluation questions are to be responded to. It is expected that the final evaluation design, methodology and methods for data collection and analysis are refined during the inception phase, and fully presented in the inception report.

Sida's approach to evaluation is utilisation-focused, which means that the evaluator should facilitate the evaluation process, carefully considering how the actions taken in the evaluation will affect the use of the evaluation. The evaluators, in their tender, shall present i) how intended users are to participate in and contribute to the evaluation process and ii) methodology for data collection that create space for reflection, discussion and learning between the intended users of the evaluation. The approach to utilisation is to be refined in the inception phase and presented in the inception report.

The evaluators should take into consideration appropriate measures for collecting data in cases where sensitive or confidential issues are addressed and be sensitive to how information that may be harmful to some stakeholder groups is presented (if at all).

2.5 Organisation of evaluation management

This evaluation is commissioned by Sida's Unit for Research Cooperation in cooperation with Sida's Unit for Evaluation. Representatives for these two units will form a steering group for the evaluation. The role of the steering group is to approve the inception report and the final report of the evaluation. Prior to approval, the inception report and the draft final report will be read and commented on by a reference group, with members from Sida's thematic network for research cooperation, Sida's Scientific Advisory Council, and possibly other stakeholders.

In the case studies, local reference groups consisting of Sida's programme managers, Swedish coordinators for the programmes as well as representatives for the local universities will be formed. An appropriate reference group for the country where the research cooperation has been phased out will be determined jointly by the evaluation team and the steering group. These reference groups will be participating in the start-up meetings of the field studies of the evaluation as well as in the debriefing workshops where preliminary findings and conclusions are shared and discussed.

2.6 Evaluation quality

All Sida's evaluations shall conform to OECD/DAC's Quality Standards for Development Evaluation.⁴⁷ The evaluators shall use the Sida OECD/DAC Glossary of Key Terms in Evaluation.⁴⁸ The evaluators shall specify how quality assurance will be handled by them during the evaluation process.

The evaluator shall ensure that any of any of its employees, agents and sub-contractors, as well as any informant to the evaluation, whose personal data are transferred to Sida, promptly receive and take note of the information provided in Sida's Privacy Policy: <https://www.sida.se/English/About-us/about-the-website/privacy-notice/>. The evaluator shall promptly inform any of its informants that their names and organisational affiliation will be included and published in the final report of the evaluation, which will be made available in Sida's publication database and in Open Aid, a web-based information service about Swedish international development cooperation.

2.7 Time schedule and deliverables

It is expected that a time and work plan is further detailed in the inception report. The evaluation shall tentatively be carried out 15 January to 15 August 2019, when a draft evaluation report should be submitted to Sida and thereafter finalised and submitted to Sida by 30 September 2019. The timing of field visits need to be settled by the evaluator in dialogue with the main stakeholders during the inception phase.

The table below lists key deliverables for the evaluation process.

Deliverables	Participants	Tentative dates
Start-up meeting in Stockholm	Tenderer and steering group	1 February 2019
Draft inception report	Tenderer	1 March 2019
Comments on draft inception report	Steering and reference groups	1 – 15 March 2019
Inception meeting	Tenderer and steering group	15 March 2019
Final inception report	Tenderer	30 March 2019
Debriefing of preliminary findings	Tenderer and steering group	15 June 2019
Draft evaluation report	Tenderer	31 August 2019

⁴⁷ DAC Quality Standards for development Evaluation, OECD 2010

⁴⁸ Glossary of Key Terms in Evaluation and Results Based Management, Sida in cooperation with OECD/DAC, 2014

Comments on draft evaluation report	Steering and reference groups	1-15 September 2019
Meeting for discussing draft report	Tenderer and steering group	15 September 2019
Final evaluation report	Tenderer	15 October 2019
Communication event at Sida	Tenderer	31 October 2019

The inception report will form the basis for the continued evaluation process and shall be approved by Sida before the evaluation proceeds to implementation. The inception report should be written in English and cover evaluability issues and interpretations of evaluation questions, present methods for data collection and analysis as well as the full evaluation design. A specific time and work plan for the remainder of the evaluation should be presented which also caters for the need to create space for reflection and learning between the intended users of the evaluation.

The final report shall be written in English and be professionally proofread. The final report should have clear structure and follow the report format in the Sida Strategic Evaluation Report Template (see Annex C). The methodology used shall be described and explained, and all limitations shall be made explicit and the consequences of these limitations discussed. Recommendations should be specific, and directed to relevant stakeholders. The evaluator shall adhere to the Sida OECD/DAC Glossary of Key Terms in Evaluation.⁴⁹

An event to communicate the evaluation findings shall be held at Sida with participation of the evaluation team. The arrangement of this event will be elaborated jointly by the evaluation team and Sida's steering committee.

The evaluator shall, upon approval of the final report, insert the report into the Sida Strategic Evaluation Report format and submit it to Nordic Morning (in pdf-format) for publication and release in the Sida publication database. The order is placed by sending the approved report to sida@nordicmorning.com, always with a copy to the Sida contact person Lisa Román, as well as Sida's Evaluation Unit (evaluation@sida.se). Write "Sida evaluations" in the email subject field and include the name of the consulting company as well as the full evaluation title in the email. For invoicing purposes, the evaluator needs to include the invoice reference "ZZ980601S", type of allocation "sakanslag" and type of order "digital publicering/publikationsdatabas".

2.8 Resources

The maximum budget amount available for the evaluation is 3 million SEK.

⁴⁹ Glossary of Key Terms in Evaluation and Results Based Management, Sida in cooperation with OECD/DAC, 2014.

The contact person at Sida is Lisa Román, Research Advisor, Unit for Research Support, Department for Partnerships and Innovation. The contact person should be consulted if any problems arise during the evaluation process.

Relevant Sida documentation and contact details to intended users of the evaluation will be provided by Lisa Román. The consultant will be required to arrange the logistics for preparing the case studies. Contact persons at the respective Embassies and Sida HQ are:

- Bolivia: Veronica Melander, Stockholm; veronica.melander@sida.se;
- Ethiopia: Alexander Sellerholm, Addis Abeba; alexander.sellerholm@gov.se;
- Mozambique: Claire Lyngå, Stockholm/Maputo; Claire.lynga@gov.se;
- Rwanda: Emilia Molnar, Kigali; emilia.molnar@gov.se;
- Tanzania: Johan Hellström, Dar-es-Salaam; johan.hellstrom@gov.se;
- Uganda: Gity Behravan, Kampala; gity.behravan@gov.se.

Annexes: List of key documentation/references

Annex B: List of past and ongoing bilateral cooperation programmes

Annex C: Data sheet on the evaluation object

Annex D: Sida Strategic Evaluation Report Template

Annex A: List of some key documents

Abrahamsson, K. (2014) Towards an open, transparent and competitive process of research funding for capacity building. An evaluation of the launching of Sida Bilateral Research Training and Capacity Building Programme – Bolivia and Rwanda 2012.

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Annex 2: Country Case Studies

BOLIVIA

1. Background

1.1 *Sida's bilateral research cooperation*

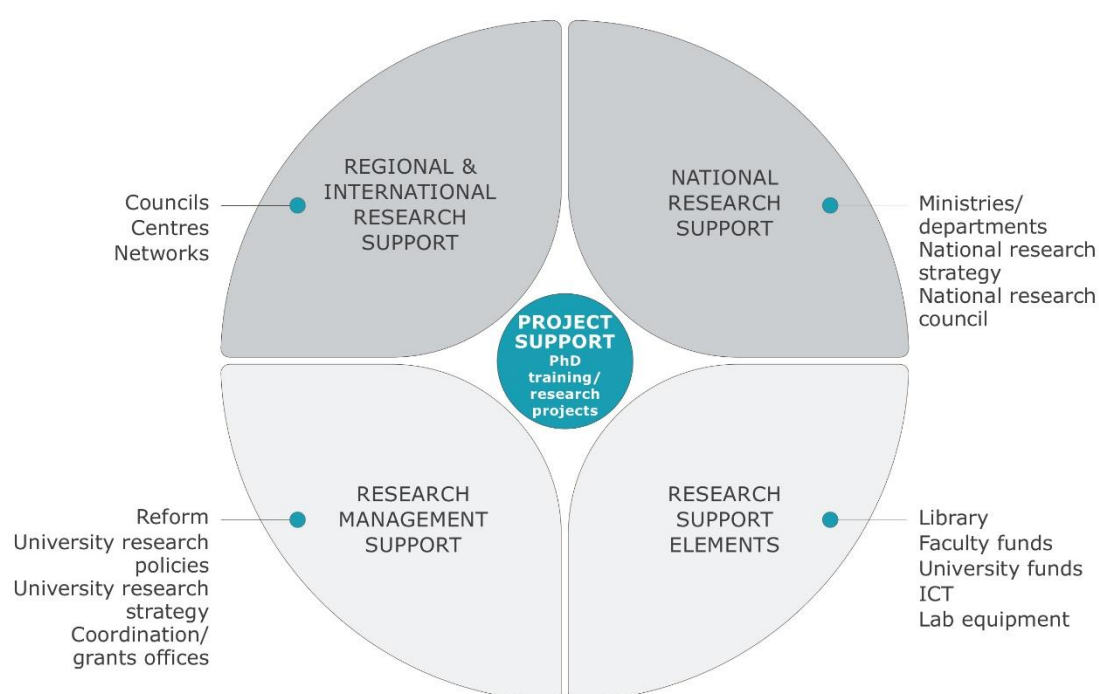
- Sweden/Sida has had bilateral research cooperation with Bolivia since 2000 (MFA 2016), selected as one of three Latin American partners at the time (the co-operation with Honduras and Nicaragua ended in 2011). The two universities in the programme (Universidad Mayor de San Andrés, UMSA and the Universidad Mayor de San Simón, UMSS) are the two largest public universities in the country.
- The overall objective of the support has been to strengthen Bolivian research capacity to increase the country's ability to plan, conduct and utilise research to reduce poverty and support the country's development. Total allocations to the programme (2000-2018) has been 520 million Swedish Kronor.
- The programme has formally been through three phases (2000-2006, 2007-2012, 2013-2017) – with current activities being implemented as extensions of the third phase. Preparations for a forth phase have been delayed. The original call for Concept Notes were sent out on 1 June 2016. UMSA and UMSS submitted first drafts in May and June 2018, respectively, but the drafts are still not accepted as the basis for the development of a new programme phase.
- The main components of the Bolivian programme are:
 - Support to the development of a research policy and increase in the dissemination/use of research (through the Vice Ministry of Science and Technology, VMCyT)
 - Support to research management (through the Department of Research, Postgraduate Studies and Social Interaction, DIPGIS at UMSA and the Directorate of Scientific and Technological Research, DICyT at UMSS)
 - Postgraduate training through support to PhD studies in Sweden (sandwich model) and research-focused Scientific Master courses at UMSA and UMSS.

1.2 *Focus and approach*

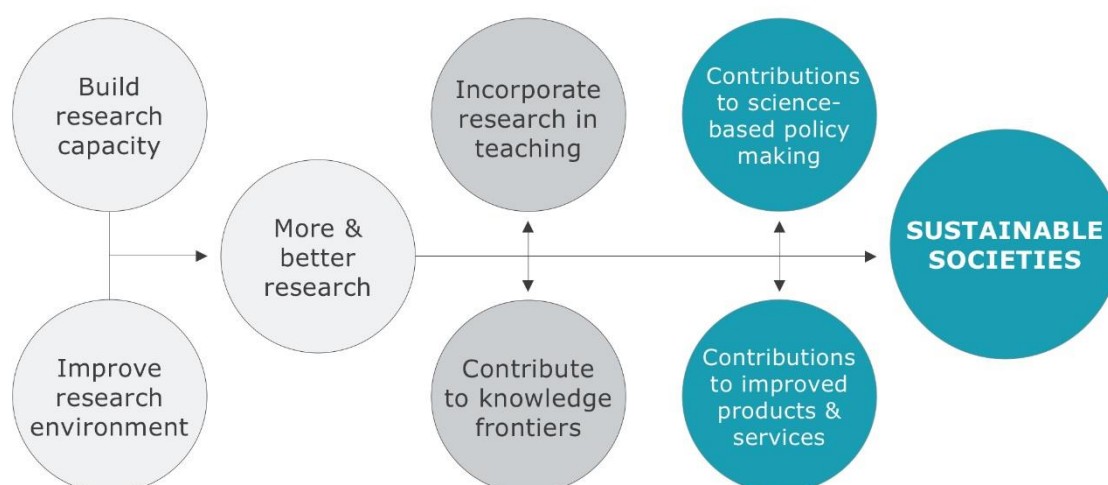
- This case study contributes to the global “Evaluation of Sida's model for bilateral research cooperation”. Fieldwork for the Bolivian case-study was carried out in the period 7-17 May 2019, equally divided between UMSA in La Paz and UMSS in Cochabamba. For a list of People Interviewed, see Annex 5.

- The evaluation approach was based on a combination of reports and other relevant documents (see Key References) and interviews with responsible government authorities, university and programme management, academic staff, PhD/Master students and external stakeholders from the public and private sectors.
- Most of the interviews were done with direct reference to Sida's 'Systems Approach' and 'Basic Logic' (visualised through a Spanish translation of Figure 1 and Figure 2 below). The Systems Approach focuses on institutions within higher education/research at international/regional, national and university levels deemed important for the capacity, quality and sustainability of research in Bolivia.
- The Basic Logic assumes that the combination of institutional support and research training will lead to more and better research, which, in turn, will lead to research-based teaching, contributions to knowledge frontiers, contributions to science based policies, contributions to better products and services – and ultimately to a sustainable society.
- There were no significant limitation during the conduct of the case study. The team was given access to the institutions/people as requested, and interviewees were eager to present their cases/points of view in an open and reflective way. There were some challenges in obtaining relevant quantitative data on output/outcome levels.

Figure 1: Systems approach: Processes of institutional change



Source: Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

Figure 2: Basic Logic: Relevance and applicability

Source: Adapted from Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

2. Context

2.1 Political and economic context

- Following a long period of military coups and neo-liberal governments, Evo Morales was elected president in 2006 on a reform programme including changes in the Constitution, the strengthening of the role of the state in the economy and a number of social programmes.
- While his proponents emphasise the important progress in terms of economic development, a stronger position of the indigenous population and poverty reduction (Vargas and Garriga 2015), his opponents argue that power is too concentrated, institutions inefficient and liberal rights poorly safeguarded (Anria 2016).
- Bolivia is a very ‘politicised’ country, with unions and other pressure groups/civil society organisations playing a significant role in Bolivian society. There are elections to a large number of different offices, from the village/barrio to the national level, and the capacity and will to organise political manifestations are high.
- Bolivia is a resource-rich country with an economy based on natural resource extraction. In the period after 2006, the country saw the highest economic growth in Latin America at an average of 4.9 percent, largely resulting from the nationalisation of the natural gas and oil industry, high commodity prices, expansion of natural gas exports and a prudent macroeconomic policy.
- Over the same period, the national poverty rate has been reduced from 59 percent to 39 percent mainly based on income growth, pro-poor labour policies and social programmes, and the Gini coefficient of inequality has declined from 0.60 to 0.47. Growth dropped from a peak of 6.8 percent in 2013 to 4.2 percent in 2017, partly due to low prices of natural gas and minerals (World Bank 2018).
- Main social programmes include transfers to school age children (‘Bono Juancito Pinto’), mother-child health care and insurance (‘Bono Juana Azurduy’) and the

elderly ('Renta Dignidad') as well as the recent (2019) One Health System ('Sistema Unico de Salud – SUS') that aims to provide health care to more than 5 million Bolivians (Vargas and Garriga 2015).

- Despite these developments, Bolivia continues to be one of the least developed and poorest countries in Latin America, finding itself as number 118 of 187 countries in the Human Development Ranking (UNDP 2019).
- There is also still a socio-economic divide between the indigenous population (60%) and the population of Spanish descent (40%) (Lalander 2017). Domestic violence represent 40 percent of the total number of recorded crimes committed (El Deber, 2019), and non-transmissible diseases are prevalent (Ministry of Health of Bolivia, 2018).
- Bolivia devotes about 11 percent of its annual national budget to education, which is about the same as for other Latin American countries (Bernason and Celic 2017). Both primary and secondary education have seen enhanced investments and emphasis under the current government.
- The result of this has been a growth in school attendance and literacy (even though school truancy and dropout rates remain high among the indigenous population), as well as an increasing demand for higher education resulting in a proliferation of public, private and indigenous universities.
- The economic and social progress in Bolivia has lifted the country up to the ranks of a 'middle- income country'. Historically heavily dependent on foreign assistance, this has led a number of international donors to leave the country (USAID as the main donor was ordered to leave in 2013) and significantly reduced the access to external funding for development programmes and projects – including for higher education and research.

Table 1: Key Socio-Economic Indicators – Bolivia

Item	
Population (million)	11.1
Urban Population (%)	69.1
GDP per capita (USD)	6,714
Human Development Ranking (of 187)	118
Global Gender Gap ranking (of 149)	25
Poverty Head Count (USD 1.90 per day %)	5.8
National poverty rate (%)	37
Mean years of schooling (years)	8.9
Adult literacy rate (%)	92.5
Under five mortality (per 100 live births)	36.9
Maternal mortality rate (/100.000 live births)	206

Source: UNDP (2019) <http://hdr.undp.org/en/countries>; World Economic Forum (2019)

2.2 The University System

- The 'political' nature of Bolivian society has also affected the public universities. Many of them were closed during the time of the military dictatorship (1970s and

parts of 1980s) and played a critical role in the restoration of democracy; then largely came to be seen as isolated ‘ivory towers’ during the reign of conservative governments (1990s and parts of 2000s); and under President Morales the large public universities in particular have seen an increase in staff/students but are still viewed with scepticism by the government.

- The universities in Bolivia are formally under the responsibility of the Ministry of Education and its Vice Ministry of Technology and Innovation and fully funded by the state. At the same time, public Bolivian universities are by law autonomous in all their economic, educational and academic decisions with a University Council (‘Consejo Universitario’) made up of academic staff, administrative staff and students as the maximum authority.
- The relationship between the State and the public universities should formally/ ideally be mutually beneficial with independent institutions enhancing the national knowledge base, supporting national development and being a critical voice in society. However, the current impasse of a draft policy/Law on Science and Technology of the VMCyT – seen by the public universities as undermining their role in society – highlights that this is also a tenuous relationship (see below).
- The history of Bolivian Higher Education starts with the foundation of the Royal and Pontifical University of San Francisco Xavier in La Plata (now Sucre) by the Jesuits in 1624. Today the university system in Bolivia consists of 68 universities, of which 12 are public, three public/indigenous and 53 are private (Ministerio de Educacion de Bolivia, 2016).
- Among the public universities, 12 are ‘public autonomous universities’. In addition to UMSA in La Paz (founded 1830) and UMSS in Cochabamba (1832), these include Universidad Autónoma Gabriel René Moreno (UAGRM) in Santa Cruz (founded 1880) and Universidad Publica de El Alto (established in 2000). There are also three public universities with a ‘special regime’ (profession/faith-oriented).
- Private universities have a relatively recent history in Bolivia of around 35 years. They were created by religious and commercial interests, and are attended by approximately 20 percent of the country’s total student population. The indigenous universities were created in 2008, with the dual aim to improve access to higher education for people from the indigenous groups and to adapt the pedagogic structure and curricula to the indigenous reality.
- In 2016, there were a total of 673,719 graduate and postgraduate students in Bolivia of which 81 percent were in public and 19 percent in private universities. In 2015, from a total of 25,089 graduated students, 55.5% were women – all according to the most recent official data (INE 2019). Postgraduate education’s primary goal – according to the Bolivian constitution – is to provide professional qualifications in different areas of importance for Bolivian society.
- Bolivian universities have traditionally emphasised teaching/undergraduate education, and growth in the number of people with a university education has been seen as important in its own right. Research has – until recently – been given more limited attention.

- This is partly related to the inadequate ‘critical mass’ or ‘cradle’ of researchers necessary to create milieux/cultures for research. But it also reflects a scepticism (even anxiety) towards research – internally at the universities from academic staff without a research background and externally from stakeholders who are sceptical to the ‘real intentions’ of researchers.
- Despite this, there has been an enhanced attention to research at public universities in the past few years. This is near-unanimously accredited to the Sida programme. As we shall see below, this has been done through support to UMSA and UMSS and their research and communication units DIPGIS and DICyT; the establishment/growth of the scientific master programmes in the public universities; the enhanced number of PhDs in the country; and improvements in scientific publication.

2.3 UMSA and UMSS

- UMSA and UMSS are by far the two largest and most important universities in Bolivia, with 78,000 and 75,000 students, academic staff of 2,700 and 1,800 and administrative staff of 1,200 and 1,100 respectively (see Table 2). Currently, the two universities have 13 and 18 faculties/colleges, covering social sciences, the humanities and science and technology – with the last-mentioned being smallest in terms of number of staff/students.
- Undergraduate training at UMSA and UMSS includes licentiate/honours programmes (52 and 87 respectively), as well as 45 master programmes at UMSA and 46 at UMSS – of which the majority are ‘professional’. In recent years seven ‘scientific’ MSc programmes have been offered by UMSS with support of the Sida programme.
- Politics also affects the inner workings of the two universities. Positions of authority (from Rector, Vice-Rector(s), Deans and downwards in the hierarchy) are elected on the basis of votes in the University Congress made up of academic staff, students as well as administrative personnel, which leads to power struggles and the building of alliances. This has an impact on the efficiency of the universities (both UMSA and UMSS were closed during 2015 for reasons of ‘internal politics’), but this may also be seen to contribute to the two universities being important and ‘vigorous’ institutions in Bolivian society.
- While UMSA is largely (and openly) in opposition to government policies in general and on higher education and research in particular (DIPGIS 2018), UMSS seems to take a more ‘accommodating’ approach. This has implications not only for their relations with the government as such, but also for their relations with society at large and the private sector.
- With the limited number of academic staff with post-graduate (PhD and Master) degrees (see Table 2) at the two universities, seniority has hitherto played a more important role for academic careers than formal qualifications (including publications). This limits the options for younger researchers – including PhDs emerging from the Sida-funded programme – to get permanent positions, particularly at UMSA.

- However, there are ongoing efforts to enhance the status and role of research at the two universities – also this largely attributed to the impact of the Sida cooperation. UMSA has approached this ‘top down’ by working for the establishment of a separate Vice-Rectorate for research (UMSA/DIPGIS 2018).
- UMSS has approached it more ‘bottom up’, by working to change the internal rules for university research careers (“*Escalafon de Investigadores*”) towards a stronger emphasis on academic criteria such as academic degrees and publications (UMSS Rector, personal communication).

Table 2: Profile of UMSA and UMSS

ITEM	UMSA	UMSS
Year established	1830	1832
Ranking (QS Univ.Rank.Latin America)	116	251-300
Faculties	13	14
Departments /‘carreiras’	54	81
Research institutes/centres	49	32
Post-grad courses (licentiate/master)	194	215
Local PhD courses (course-work and thesis)	0	2
Total academic staff	2,776	1,792
With undergraduate degree	66.3 %	64 %
With master’s degree	27.8 %	30 %
With PhD degree	6.5 %	6 %
Women among academic staff	26 %	35 %
Women among PhD-holders	28 %	39%
Number of students	85,000	80,358
Undergraduate students	80,000	75,136
Post-graduate students	5,000	5,222
Male students	52 %	37%
Female students	48 %	63%

Sources: UMSA 2018; UMSS 2019; <https://umssstat.umss.edu.bo/site/pobdoc?idTablaDet=6&idDato=49>;
http://dipgis.umsa.bo/?page_id=4357

3. Findings

- The bilateral programme with UMSA and UMSS has focused on: i) the research environment in the form of support to research management through DIPGIS and DICYT including physical infrastructure, ICT, library functions and (smaller) competitive funds; ii) capacity development and research activities in the form of PhD fellowships and support to scientific master programmes; and iii) support to national and institutional research policy and practise through support to VMCyT (since 2008).
- The primary focus has been on sciences, technology and medicine (see Table 3). At UMSA social sciences were part of the programme from 2000 to 2010 and then discontinued – but will be reintroduced in the new BRC-programme as from 2020. At UMSS, sciences, technology and health also dominate, but the university

has had a social science component in the form of a local scientific master course and will propose a PhD programme in the new phase.

Table 3: Programmes and partners Sweden-Bolivia (2019)

UMSA		UMSS	
Research environment	Swedish partner	Research environment	Swedish partner
Man. of Research, Postgrad-studies and Social Interac-tion	SU	Scientific and Technologi-cal Activities	SU
Innovation and Cluster De-velopment	BTH	Innovation and Technology Transfer	BTH
Research programmes*		Research programmes	
Food science and technol-ogy	LU	Agronomy/ plant biology	SLU
Water/sustainable develop-ment	KTH	Bioprocessing technologies	LU, LiU CTH
Aquatic pollution	KTH, LU	Energy technologies	KTH
Non-metallic minerals	LTU	Habitat and environment	SLU, LU
Energy and Hydrocarbons	KTH	Health – control of endemic diseases	UmU
Health/Biomolecules	LU	Innovation and technologi-cal transfer	BTH, LU
Health programme	GU/KI	Water resource manage-ment	LU, LTU
Biofinery	LU	Social Sciences (Master)	-

*SU: Stockholm University. BTH: Blekinge Institute of Technology. LiU: Linköping University. KTH: Royal Institute of Technol-ogy. SLU: Swedish University of Agricultural Science. UmU: Umeå University. LU: Lund University. LTU: Luleå University of Technology. GU: Gothenburg University. KI: Karolinska Institutet. CTH: Chalmers University of Technology.

- There have been two notable changes in the programme since its inception in 2000. The first is a process towards a stronger influence of the Bolivian universi-ties in the definition of research areas and the selection of PhD students, particu-larly since the start of the “Research Training Partnership Programme” from 2012. Still, interviewees maintain that there will be no ‘full ownership’ as long as there is external financial dependence.
- The second is an increasing emphasis on the relevance/applicability of research – having moved, according to one interlocutor, from “a disciplinary focus and basic research, via infrastructure and equipment to an emphasis on the MDGs, a multi-disciplinary focus and applied research”. This change seems primarily to be driven by the Bolivian programme management/researchers, and reflects political directives as well as a genuine commitment from the Bolivian partners to contrib-ute to solving pressing needs in Bolivian society. The priority is, still according to our interlocutors, not always shared by their Swedish counterparts coming from Swedish universities where this is not common.

3.1 System level support

- At the international/regional level (see Figure 1), links with councils, centres and networks of relevance to UMSA/UMSS are relatively undeveloped and mainly depend on individual initiatives/contacts. Both UMSA/DIPGIS and UMSS/DI-CyT have established such links (Table 4), but with limited Sida/institutional commitment. In addition to lack of funding for participation, cumbersome political/bureaucratic structures hinder effective engagement.
- Nationally, the support to the VMCyT is primarily based on the need to develop research policies, secure national IT-based access to research literature, and strengthen research and its dissemination. While having a well-qualified and capable staff, their impact is negatively affected by the political nature of higher education/research and their inability to make particularly UMSA and UMSS accept/follow national priorities.
- Such priorities include the (now stalled) new ‘Law on Science and Technology’, a ‘Technical Secretariat’ for access to research-based knowledge for government, private sector and society at large, and a planned “National Scientific Communication Network”. For the universities, such ‘centralisation of knowledge’ – and the Government’s plans to establish separate ‘research centres’ linked to public companies – is seen as an attack on their status and role, a limitation on the independence of the proposed research council and a potential threat to their academic freedom.
- There is no equivalent to a National Research Council or a National Research Fund in Bolivia (both are parts of the proposed new Law on Science and Technology) – but the Government does finance individual research projects with 100 scholarships each year since 2014. There is an Executive Committee of Public Universities (CEUB) and a 13th Congress of Public Universities will be held in 2020, but as both UMSA and UMSS consider themselves autonomous its relevance and impact is likely to be limited.
- A small part of the income from the Direct Hydrocarbon Tax (IDH) – charged on international companies to contribute to Bolivia’s economic and social development – goes to universities. This is mainly in the form of infrastructure/buildings, but IDH also finances smaller research programmes and will co-finance UMSA’s first scientific PhD programme started in 2019 together with Sida.
- Both UMSA and UMSS are engaged in donor agreements beyond the Swedish bilateral cooperation – even though they reiterate that the Sida-funded programme is by far the most important (see Table 4). The largest/most relevant alternative programmes are:
 - The Belgian-funded programme ARES (‘L’Académie de Recherche et d’Enseignement Supérieur’) has a bilateral agreement with UMSS (‘Programa de Apoyo Institucional AI-BELGICA ARES/CCD-UMSS’). Each year scholarships are granted for postgraduate studies at the PhD level and to Master students who are part of research centres in areas such as soils, health, energy and education.
 - The Swiss Agency for Development and Cooperation (SDC) at UMSA. The SDC grants scholarships and funds projects through a programme on climate

change adaptations ('Programa de Investigacion en Adaptacion y Cambio Climatico – PIACC).

- According to UMSA (2019), 419 smaller research projects have been financed by IDH between 2007-2017; 21 projects by the Swiss Development Cooperation between 2015-2017; and a total of 912 project funded by other donors (including the EU) between 2000-2019.
- In the same overview, the Swedish cooperation is accredited with 96 Competitive Fund projects, 30 projects for PhD education, 48 PhD graduates and 25 PhD students. The team has not been able to obtain similar lists from UMSS, with the exception of figures for PhD graduates/students (Table 5).
- There does not seem to be any systematic coordination/cooperation between the different donor-funded programmes, neither by the universities themselves nor among the donors. According to the Swedish embassy, one challenge is that hardly any of the donors involved in research cooperation and support have own representatives in Bolivia.
- Our interlocutors reiterate that – in practise – the two universities and their researchers are still totally dependent on external/foreign funding for doing research. They also emphasise that the best way to reduce the dependence on 'classical' donors is to give more emphasis to research-based international/regional institutions and networks.

Table 4: External Relations of Cooperation UMSA-UMSS (2018/2019)

UMSA		UMSS	
Donor Countries/Organisations		Donor Countries/Organisations	
Sweden (Sida)		Sweden (Sida)	
Swiss (COSUDE)		Swiss (COSUDE)	
France (AFD)		EU (European Commission)	
USA (McKnight)		Spain (European Commission)	
Japan (JICA)		Sweden (SRC)	
UN		Belgium (VLIR)	
Canada (IDRC)		EU (ECHO)	
Univ. of Bayreuth (Germany)		Mexico (IMTA)	
Laval University (Canada)		Univ. of Hohenheim (Germany)	
Massachussets IT (USA)		Colombia (CORPOICA)	
Univ. of Bloomington (USA)		Belgium (CIUF-CUD)	
Inst. of Andean Studies (Fr)		USA (SEI)	
Jetlube (Canada)		Belgium (CUD)	
MABET		Belgium (ARES)	

Sources: UMSA (2018); UMSS (2018a); <http://www.dric.umss.edu.bo/proyectos.php?page=16>

3.2 Improving the Research Environment

- Both UMSA and UMSS are old universities, with a top-down management and cumbersome bureaucratic structures. They generally consist of discipline-based faculties and departments with a focus on teaching, even though each faculty historically also has a Research Institute ('Instituto de Investigaciones'). UMSA is

located in a number of high-rise buildings/campuses in central La Paz (and a couple of rural outliers), while UMSS is a more ‘classical’ university with most of the faculty buildings located in the same space in central Cochabamba.

- One indication of the continued inferior position of research at UMSA/UMSS is that neither of the two universities has hitherto developed a research strategy and/or reform. However, there are ongoing discussions/struggles around the formulation of such policies – as noted focussing on ‘top down’ and ‘bottom up’ strategies, respectively. The outcome of both processes will be decided internally/autonomously at their next University Congresses (2020) that both universities are currently preparing for.
- Despite the dearth of clear research policies, research structures are established – partly functioning in parallel with the main university organisation. The core of the research structures are DIPGIS at UMSA and DICyT at UMSS – with Research Centres (“Centros de Investigacion”) established as part of the Sida Programme being the focus of attention. DIPGIS and DICyT were established prior to 2000 and the Sida programme, but interviewees unanimously emphasise the significant change in their position and role following from Sida’s engagement.
- Sida’s institutional support to ‘research management’ has primarily focused on tangible interventions in the form of overall funding, infrastructure (including labs), support to ICT and library facilities – but also support related to quality assurance and intellectual property rights. As a result of the Sida programme and its support to research, DIPGIS and DICyT have expanded significantly in terms of staff and resources.
- With the science focus of the cooperation, laboratories have been key and were generally praised as good and useful (with one interlocutor claiming that his Swedish professor was ‘envious’). However, the maintenance of some of the equipment remains an area of concern due to financial constraints and access to spare parts.
- Also the ICT component is considered successful, including the development of relevant university policies and with equipment delivered and installed and training conducted. While functioning well for the Sida-funded programme, there are challenges in extending the component to other parts of the universities.
- The library component of the programme has gained from the investments in ICT with improved access to e-resources and international literature at the two universities. This support has also involved the VMCyT, which has broadened the service to national programmes for research access and communication but still with limited impact.
- Research management as such has not been given particular attention in the programme, neither at the universities nor at the VMCyT. Relevant managers at the university/programme level and their key administrative staff are well qualified, but state that they have not been exposed to research/change management training as such.
- While formally part of the university structure, DIPGIS and DICyT at least to some extent function as ‘islands’ within the respective universities. This is related to their focus on research, which, as we have seen, is still somehow at odds with

the main focus of the university at large. They also acknowledge their near-complete dependence on Sida and other donors for research funding.

- Also, researchers and students linked to the Sida-supported programme agree that going through DIPGIS and DICyT is much more effective in handling daily bureaucratic affairs/challenges than the core structures and therefore use the former when possible.

Research Centres

- The research institutes at UMSA and the research centres at UMSS (hereafter the Research Centres), are at the core of Sida's support to a conducive research environment. The research centres are thematic, multi-disciplinary and consist of teams made up of one or more senior researcher (often including the coordinator in the centres involved in the Sida programme), one or more PhD students, one or more students from a related science master programme and one or more undergraduate students – in a conscious way to build research capacity and interest.
- The size and quality of the centres at UMSA (total: 49) and UMSS (total: 33) vary, with the centres supported by Sida being in the most privileged position in terms of funding and staff and all of which are currently related to faculties of sciences and technology. However, also these are seen by academic staff as well as students to vary in quality and efficiency.
- This partly relates to the time the centre directors/senior researchers have at their disposal for doing research. In some cases the administrative and teaching burden is so heavy that the time for research is limited. In fact, the science master students, who receive full scholarships, seem to be the only team members who could study/do research full time.
- Another condition affecting the quality and coherence of the research centres is the university incentive structure. Involvement in research and publication hardly gives any credit in terms of career development (even though – as we have seen – there are initiatives to change this). Some researchers simply do not see the value of putting in the extra effort that research requires under these condition.
- Having said this, most of the Sida-supported institutes/centres/projects are well managed, have clear visions and carry out important research.
 - At UMSS 11 Research Centres have worked hard and systematically on capacity development and research for many years, and are about to establish a local 'Social Sciences Research' PhD programme with the support of Sida (pending approval, due to its start in late 2019 or early 2020). It is expected that around 24 students will join the PhD programme on a full-time basis, receive scholarships and conduct relevant research.
- Asked to define a 'good/conducive research environment', our interlocutors usually emphasised the importance of good management/support structures, well-qualified academic staff and good physical conditions (including labs and ICT). Each research group generally seems to work well.
- However, funds are scarce for projects outside the Sida BRC-framework and competition can be harsh. In one case, an unusual request from the Cochabamba Municipality for multi-disciplinary research related to an infrastructure project for

a sum equivalent of 250,000 SEK) did not materialise as the different department/research groups could not agree on the distribution of funds/work.

- The main difference between UMSA/UMSS and Swedish universities in terms of research environment, our interviewees further maintained, is that the latter can concentrate fully on their research with less competing demands from administration/teaching and social interaction – which they argue is often not fully appreciated by the Swedish counterparts.

3.3 Building Research Capacity

- Human resource development, mainly through the support to scientific master and PhD students, is at the core of the bilateral research cooperation programme between Sweden and UMSA/UMSS. The scientific master programmes (see above) are meant to establish a better human resource base for further developing a critical mass of PhD graduates/researchers.
- The Master students are selected through competitive calls, and most of the student interviewees had clear goals for their research careers. The Master students are usually mentored by a senior researcher, and take active part in research centres/projects.
- The scientific master programmes supported by Sida – six of which are already concluded – at UMSS are:
 - Chemical Technology, Food and Bioprocesses
 - Water Quality and Environmental Management
 - Renewable Energy Technology
 - Genetic Improvement and Biotechnology
 - Epidemiology
 - Research in Social Sciences
 - Innovation
- Altogether 93 PhD students from UMSA and UMSS have graduated since the programme started in 2000, with an additional 45 in the process of finalising their studies (see Table 2). The average time spent on PhDs is 6.1 years (Millard et al. 2017).
- According to PhD students and graduates alike, the total length of time is drawn out by the sandwich model as it is very difficult to use the time in Bolivia effectively due to professional (administration/teaching) and family demands. Also bureaucratic issues (travel arrangements, visas, etc.) and language (most students are relatively poor in English when they start) tend to extend the period under study.
- However, most of our interlocutors argued that the advantages of the sandwich programme by being able to maintain contacts with their home universities and families outweigh the disadvantages. They were also generally pleased with the quality of their Swedish host institutions/supervisors.
- Those arguing against the model generally would have preferred to take the PhD through an individual scholarship, mainly due to the time they would expect to save and better opportunities to establish broader academic contacts/networks than the Swedish programme opens for.

- There have been plans for establishing local PhD programmes at UMSA and UMSS for a while, and the first was formally accepted by UMSS university authorities in May 2019 in Chemical Technology. Both academic staff and students are positive towards this as an alternative, but acknowledge that there are still few themes/disciplines with the necessary critical mass of senior/PhD researchers.

Table 5a: PhD Enrolment, Graduates, Students UMSA (2001-2018)

	Enrolled	Graduated	Still studying	Not completed
2001-2013	57	43	5	9
2014-2019	25	6	19	0
Total	82	51	24	9*

Source: UMSA *Among whom 2 passed away.

Table 5b: PhD Enrolment, Graduates, Students UMSS (2001-2018)

	Enrolled	Graduated	Still studying	Not completed
2001-2013	49	39	0	10
2014-2019	27	5	21	1
Total	76	44	21	11

Source: UMSS

- After finishing their studies through the sandwich programme, PhD students from UMSA and UMSS find themselves in different situations as regards work and options to continue research. While students from UMSS without exception have gone into teacher-researcher or researcher positions, many students from UMSA do not get permanent positions and may – at best – work as temporary programme/project staff. There is also, we understand, a total of 10 students from the programme who have remained in Sweden and not returned to Bolivia.
- Common for many of the PhD graduates is that research/scientific production tends to stop or slow down significantly after their return to UMSA/UMSS. One reason is the non-supportive political/bureaucratic system at the two universities. A second is the administrative/teaching burdens. A third is the limited options for funding of individual initiatives within the universities (inadequate equipment/labs were rarely mentioned).
- However, the most significant reason seems to be the dearth of alternative research contacts/ networks. Very few of the researchers we interviewed had sustained their relations with their Swedish supervisors or other Swedish colleagues after graduation (suggesting that the latter's main interest was to 'produce PhDs' and be 'co-authors in their PhD publications'). Only some of the most senior Bolivian researchers have well established international/regional contacts with other researchers/networks – usually on their own initiative but in some cases also through other cooperation agreements at UMSA/UMSS.
- Most of our interlocutors also argued that they were not in a position to develop research proposal on their own: they did not have the necessary training/experience to do it; they did not have the necessary overview over alternative funding options – and being young researchers from a developing country they did not carry the necessary weight in the bigger international funding arenas.

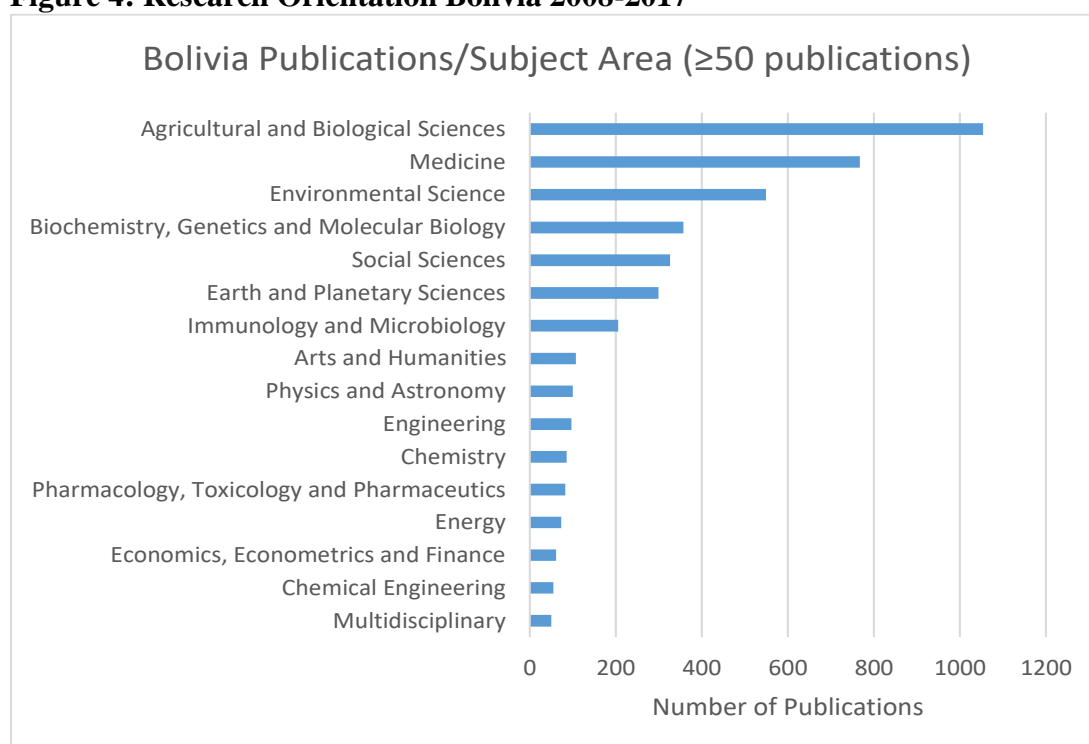
- While most of the funds for building research capacity are used for PhD students and master programmes, support is also given for separate competitive research funds ('Fondos Concursables de Investigacion') for short-term research projects for researchers and students through annual calls, and for financing specific activities like travels to research related events, internships, events and workshops organization and publications ('Programa Horizontal').
- While this has led to several projects and accompanying publications (books, journals, reports etc., see above), the funding is too limited to develop larger projects and the internal tendering process is not sufficiently swift and transparent.
- Bolivia also tends to lose out on Latin American research funds, against strong competition from regional research 'powerhouses' mainly in Mexico, Chile, Brazil and Argentina (Bernasconi and Celis 2017). UMSA is the highest ranked Bolivian university in Latin America as number 116, with UMSS being listed as between '251-300' (Table 2).
- VMCyT argues that this does not reflect the true nature of their publication records and is working towards improving the ranking of all universities of the country (e.g. standardising the way universities are named in international publications and indexing Bolivian journals).

Research Quality

- Against the odds mentioned above, many of the of the research centres/projects directly or indirectly supported by Sida still have good results to show for – some of which can be defined to contribute to 'knowledge frontiers'. As defined by our interviewees, the most prominent research at UMSA and UMSS include:
 - UMSA: The discovery of new species of bacteria in geysers of the highlands of Bolivia with potential industrial uses given that they are capable of resisting extreme high and low temperatures, organic solvents and acid PH.
 - UMSS: A comprehensive study on 'risk factors for non-transmissible diseases' addressed a current major public health problem, and was a key input in the design of the first national survey on that matter to be implemented in 2019 by the Ministry of Health, INE and PAHO, and is expected to be used in the design of future public health strategies and plans.
- Data on publications and their quality indicators from Bolivia and UMSA/ UMSS – with the latter representing 42 percent of total national output in 2017– are shown in Table 6 and 7 and Figure 3 below. While perhaps not very impressive for two universities with a total academic staff of over 4,500 and with UMSA and UMSS being ranked as the two top universities in Bolivia, the limited emphasis historically given to research implies that a large proportion of the publications are done by PhD graduates and others who have benefitted from the Swedish supported programme.

Publication Year	Indicator				
	Publications	Citations/ Publication	Top 10%	International Collaboration	Academic/ Corporate Collaboration
2008	239	32.1	17.2%	82.8%	1.7%
2009	236	28.6	16.5%	83.9%	1.3%
2010	236	25.6	13.6%	87.3%	0.4%
2011	238	19.9	9.7%	87.4%	2.5%
2012	244	76.3	14.3%	84%	3.7%
2013	268	16.6	13.8%	87.7%	3%
2014	291	11.8	11.3%	91.4%	2.7%
2015	306	12.4	13.4%	88.2%	1%
2016	320	7.6	15.6%	86.6%	1.6%
2017	295	4	13.9%	86.1%	1.7%
Total/Overall	2673	22.1	13.9%	86.7%	1.9%

Source: SciVal

Figure 4: Research Orientation Bolivia 2008-2017

Source: Scopus

Table 7: Bolivian Bilateral Programme Universities: Publications 2008-2017

Publication Year	UMSA	UMSS
2008	52	42
2009	51	33
2010	67	21
2011	73	24
2012	56	25
2013	77	28
2014	92	26
2015	85	25
2016	92	39
2017	95	28
Total	740	291

Source: SciVal

Teaching

- As we have seen, teaching is given considerable weight both politically and by UMSA and UMSS themselves. University teachers take obligatory courses in pedagogics, and good teachers are highly appreciated by students (with poor teachers sometimes facing boycotts...).
- As we understand it (no teaching was observed during fieldwork), teaching is done as a combination of lectures and lab-work (where relevant) and with problem-centered and interactive teacher-student relations and student group work. There is a growing tendency among teachers (especially young ones) to provide space for critique and discussion.
- Programme-related PhD students and graduates generally argue that teaching/pedagogics was not part of their studies in Sweden – and with only a few given the opportunity to teach undergraduate/master students while there.
- The Programme's main contribution to teaching is seen to be having made it more 'research-based'. Improved laboratories and other infrastructure makes teaching better; there is enhanced access to international literature/journals; and programme graduates are in position to make use of their own research in their lessons.

3.4 Contributions to Policy Making, Products and Services

- Moving on to the impact part of the Basic Logic (see Figure 2), the most striking feature of the Sweden-Bolivia programme is the strong emphasis given to policy relevance and 'social interaction'.
- One reason is political expectations, both from the political system/society at large and the university management. A second reason – emphasised by many – is the fact that the Bolivian researchers are surrounded by, and constantly reminded of, the pressing needs for knowledge-based development in their country.
- This is reflected in the organisational set-up of the universities, the choice of topics for PhDs and thematic focuses of the scientific master programmes, as well as

the choice of topics for research programmes. The VMCyT also has research relevance and dissemination as one of its core objectives, emphasising the importance of technological advancement, innovation and the environment.

- Much of this work is done within the multi-disciplinary research centres, but with a limited involvement of the social sciences. While there is a strong overarching commitment for being relevant for development, there are few explicit references to poverty reduction, human rights (non-discrimination, transparency, participation, etc.) and gender equality in programme documents (UMSA/ DIPGIS 2013, UMSS/DICyT 2013).
- The ‘rule of thumb’ for the academic staff at UMSA and UMSS is that 60 percent of their time should be used for teaching, 25 percent for ‘social interaction’ and 15 percent for research – even though we have seen that it varies in practise from a majority who only teach to a small minority who primarily do research.
- At UMSA, DIPGIS has a separate section for Social Interaction (‘Interaccion Social’). The university has a large production of popularised research publications, a newspaper/ bulletin, its own TV and radio stations and a web-based home page. ‘Social interaction’ is not as organised and developed at UMSS – with one person having the responsibility for research dissemination within DICyT – but its importance is heavily emphasised by most of the interviewees.
- One publication from UMSA lists a total 29 applied research projects during the period 2000-2015 (UMSA/DIPGIS 2016), and a similar publication from UMSS lists 13 projects (UMSS 2018). In many cases, it is difficult to ascertain whether the research projects referred to in illustration and text actually have led to concrete results – but the intention is clearly to show that research is important and relevant for society at large.
- Commendable as all this is, the practical implications of these efforts in terms of “contributions to policy making” and ‘improved products and services’ do not seem to be in line with efforts. Based on discussions with university/programme staff as well as external stakeholders, the real impact of research still suffers from the ambiguous and (for some) controversial status and role of research in Bolivia, and the political sub-text of the government being sceptical towards the public universities and vice versa.
- This is particularly the case of UMSA, which in some policy areas is in open opposition to the government. AT UMSS, which as noted is considered more government friendly and also closer to decision-makers in regional/local government, the relationship seems to be more open/constructive. At the same time, the private sector expressed scepticism towards the universities for being ‘too theoretical’ and the public sector tends to see the universities as not sufficiently relevant to its needs.
- However, there are signs of improvements: Several researchers stated that government institutions are increasingly staffed by people with university education who see the value of research. One example is an initiative from the Department of Metropolitan Planning in the Municipality of Cochabamba (KANATA 2018). They invited researchers from UMSS’s Faculties of Architecture and Economics

to contribute research findings to the first Metropolitan Action Plan, which resulted in a total of two ‘work agendas’ and 19 strategic projects in areas such as water and waste management, air pollution, urban planning, public transport, etc.

- An example of a successful UMSA-private sector partnership is the long-term relationship between the university’s Department of Chemistry and the pharmaceutical laboratory LAFAR. Bolivia has an enormous biodiversity, with limited research on potential pharmaceutical uses. The first tangible product after years of research is an anti-inflammatory unguent processed from a traditionally used herb, based on close cooperation with indigenous communities where the relevant herbs are collected.
- In fact, the main challenge for closer collaboration between the universities/the Sida supported programme and the public/private sector seems to be to find joint platforms and improve communication. According to one interlocutor, “[i]t seems to me that researchers are reluctant to share data and information and it takes a lot of time. We often need data and information to take quick decisions”. As seen by one university interviewee, the challenge is that the private and public sector do not really understand what research is about and are reluctant to pay for it.

4. Conclusions

4.1 Relevance (the extent to which the objectives of a development intervention are consistent with beneficiaries’ requirements, country needs and partners’ and donors’ policies).

1. The programme is well in line with country needs, as Bolivia – despite progress in economic development and poverty reduction – faces vital challenges in areas such as economic diversification, innovation and the environment that require research.
2. The programme is partly in line with Bolivian development policies and interventions, as government authorities – despite public proclamations of the importance of research – maintain scepticism towards the real intentions of public universities/researchers.
3. The programme is partly in line with policies and priorities at UMSA and UMSS, where sections of the management still perceive teaching to be more important than research – with DIPGIS and DIPCyT as important exceptions.
4. The programme is well in line with Swedish/Sida policies and values for research cooperation in general and its bilateral programme in particular, playing a pivotal role in enhancing research capacity and with ‘ownership/equal partnership’ showing progress.
5. The programme is well in line with the priorities and needs of the university research centres, PhD and Master students who have benefitted from it – albeit with the social sciences and humanities still having a marginal role.

4.2 Effectiveness (the extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance).

6. A 'systems approach' has been pursued, but it has only partially been effective due to relatively weak links with international/regional institutions and a 'politicisation' of the national system of research support.
7. Donor coordination is potentially important and few donors remain in the higher education/research sector. Coordination has not been systematically pursued, neither by the government, the universities nor by the donors.
8. The research environment has improved within the confines of the programme, but the relevant institutions (DIPGIS at UMSA and DICyT at UMSS) still function relatively isolated from the rest of the university structures.
9. The programme has not produced the number of PhD and master graduates and scientific outputs that could be expected from the two leading and largest universities in Bolivia, but nonetheless satisfactory given the political and institutional constraints on effectiveness.
10. Research capacity/outputs have improved through the PhD/Master training programmes and focus on research centres, but post-PhD research is still hampered by the discontinuation of relations with Sweden, limited capacity to secure alternative sources of funding and limited access to alternative research networks.
11. Teaching and research present themselves as 'irreconcilable' in the sense that teaching responsibilities tend to hamper research, but teaching has benefitted from the programme by having become more research-based.
12. The programme has contributed to 'knowledge frontiers' in its national/local connotation, in that research training has focused on Bolivian development priorities. There are few – but some – examples of contributions to 'knowledge frontiers' in the wider, academic sense of the word.
13. There are systematic efforts to contribute to science-based policy-making and improved products and services, but there are still challenges in converting these efforts into tangible collaborations with the public and private sector – related to communication rather than the relevance and quality of the research as such.
14. Cross-cutting issues such as human rights and gender equality are integrated into the programme. UMSA and UMSS are public universities without tuition fees and recruit relatively widely; there is a good gender balance among students and academic staff (but not in management positions); and the universities strongly defend their academic freedom. However, such issues are not equally integrated into the research projects.

4.3 Impact (positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended).

15. Support to the VMCyT has been important for putting research on the national agenda, but the impact of the programme for research policies has been negatively affected by the limited impact of public authorities on what are effectively autonomous public universities.

16. The impact of the programme for research capacity at UMSA-UMSS cannot be overstated: Since its initiation in 2000, it has been vital for enhancing the position of research, for building an institutional basis for research management, for producing PhD and scientific master graduates – and to some extent also for producing useful research and publications.
17. While research still does not have a comprehensive/systematic impact on development-related policies, products and services, there are sufficient individual examples of such impact to demonstrate its potential implications for a range of social sectors and groups.

4.4 Sustainability (the continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time).

18. From a situation where the position and role of research was very weak in Bolivian society at large as well as in the university sector, the Sida-supported programme has helped establish research activities with a critical mass of researchers albeit still in relatively few areas of research.
19. Despite these investments, research in Bolivia/at UMSA-UMSS remains dependent on external support for the years to come. With the decreasing presence of donors and still limited financial support from the government, international research funding mechanisms will become increasingly important.
20. There are positive developments in the understanding of/request for research-based knowledge both at the two universities and in parts of the public- and private sector – but the current momentum will need to be complemented with efforts to improve communication.
21. In the longer run, the most important conditions for sustaining the benefits from the Sida supported programme beyond Swedish assistance is for the government to develop a coherent research policy and increase its funding for research – and for the universities to demonstrate the value of research for solving Bolivia's development challenges.

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RWANDA

1. Introduction

1.1 Sida's bilateral research cooperation

- Swedish research support to Rwanda was initiated in 2002, and it is hence relatively recent compared to other similar programmes in the region (Tanzania, Mozambique, Uganda).
- From a relatively modest start with institutional support and three research programmes (in Education, the Environment and Peace Studies), cooperation expanded significantly in 2012/2013.
- This followed the transition from the National University of Rwanda (NUR) to the University of Rwanda (UR) – merging seven formerly independent public universities and colleges into one university spread across 10 different campuses around the country.
- The two first phases of the programme (2003-2006 and 2007-2013) had a total allocation of 262 million SEK. The third phase (2013-2018) had a total allocation of 364 million SEK and involved the UR and twelve Swedish universities – extended to 2019 with a new phase formally commencing in the beginning of July 2019.
- For the third phase, the overall objective of the programme has been to: “Increase production and use of scientific knowledge of international quality at the UR that contributes to the development of Rwanda”.⁵⁰ There are six specific objectives of the programme – each of which accompanied by a set of Result-Based Management (RBM) targets and indicators (UR 2017):
 - To contribute to the establishment of an environment more conducive to research and post-graduate training at the University of Rwanda.
 - To increase the number of PhD and Master degree holders in Rwanda.
 - To increase the quantity and quality of research conducted at the University of Rwanda.
 - To increase the use of research and competences produced within the programme in political decision- and policy-making in Rwanda.
 - To increase the use of research and competences produced within the programme by Rwandan society at large.

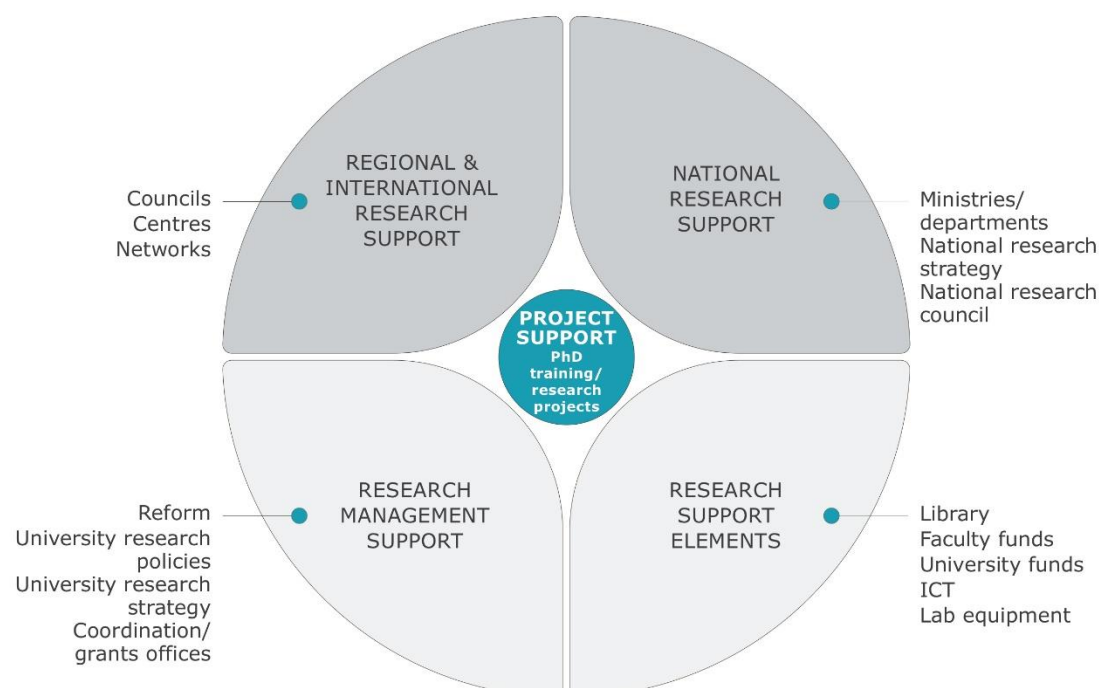
1.2 Focus and approach

- This case study contributes to the global “Evaluation of Sida’s model for bilateral research cooperation”. The most recent evaluation of the Rwanda programme was published in 2018, with fieldwork taking place for two weeks in October 2017

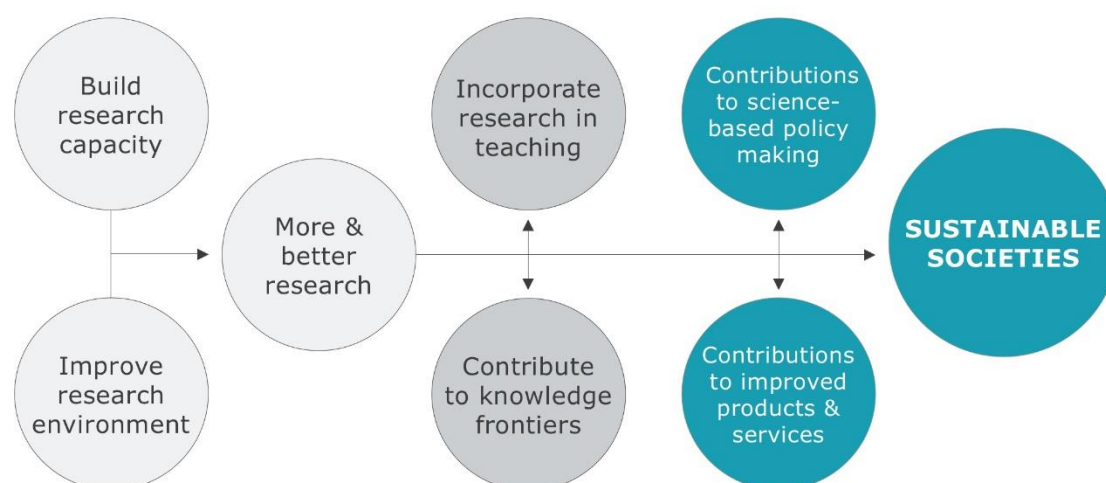
⁵⁰ For the new phase (2019-2024), this has been changed to: “Increase production and use of scientific knowledge of international quality at the UR that contributes to Rwanda becoming a knowledge-based economy” (UR 2019:13). This is different (and less committing in terms of impact), but it is uncertain if this has been intentional.

(Tvedten et al. 2018). No new fieldwork has been carried out for this evaluation, but recent developments have been followed up through document reviews and interviews with key stakeholders (see List of Interviews).

- The original evaluation was based on a combination of i) reviews of relevant studies and reports; ii) interviews with responsible government authorities, university and programme management, academic staff, PhD/Master students; iii) interviews with external stakeholders from the public and private sectors; iv) interviews with Swedish university staff in the programme; v) a survey of Swedish and Rwandan team leaders/deputy team leaders, and v) a tracer study of PhD graduates from the Programme.
- Most of the original interviews were done with reference to Sida's 'Systems Approach' and 'Basic Logic' (see Figure 1 and 2). The Systems Approach – which was not highlighted in the ToR and largely implicit in the programme – focused on institutions within higher education/research at international/regional and national levels deemed relevant for the capacity, quality and sustainability of research in Rwanda.
- The basic assumptions in the Basic Logic – which was explicit in the ToR of the evaluation but largely implicit in the programme – was that institutional support and research training (PhDs and Master) will lead to more and better research, which again will lead to research-based teaching and contributions to knowledge frontiers, and contribute to science-based policies, better products and services – and ultimately a sustainable society.
- There were no significant limitation during the case study. The team was given access to the institutions/people as requested, reports/output data were made available and of high-quality, and interviewees were eager to present their cases/points of view. However, there were some limitations in terms of discussing more sensitive issues such as authority structures and human rights issues including freedom of speech.

Figure 1: Systems approach: Processes of institutional change

Source: Adapted from Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

Figure 2: Basic Logic: Relevance and applicability

Source: Adapted from Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

2. Background

2.1 Political and Economic Conditions

- Rwanda is a landlocked country, with a total population of 11.5 million people, a population density of 421 persons per square kilometer and high population growth rate of 2.6 per cent – which will bring the population to 16 million by 2020 if this rate of growth is maintained (Mann and Berry 2016; Longman 2017, The Economist 2018).
- Rwanda has a unique history in the African context. With the 1994 genocide against the Tutsi, the country lost an estimated one million people. Two million refugees who had fled the country during the 1994 genocide and 500,000 former refugees who had been in exile for several decades, subsequently returned to the country.
- The genocide is omnipresent in Rwandan society, and has been/is sought dealt with for example through local courts of reconciliation, regular memorials and commemorations and the ‘I am Rwandan’ (‘Ndi Umunyarwanda’) initiative – which discourages the use of ethnic terms and acts based on ethnicity.
- The Rwandan Patriotic Front under President Paul Kagame has been the dominant political force in Rwanda since 1994, with Kagame winning his third term with 98 per cent of the votes in August 2017 (Behuria and Goodfellow 2018).
- While many commentators argue that his government is ‘autocratic’ and ‘developmental’ with little room for an opposition, association and freedom of speech (Amnesty International 2018; <https://freedomhouse.org/report/freedom>), the government itself argues that the country’s recent history makes this necessary. As an autocratic state, the ability to implement policies – on everything from banning of plastic bags to educational/university reform – is strong.
- Rwanda has taken a lead position in Central and East Africa in forming the political and security dynamics, and related actively to a number of pan-African economic challenges. However, the balance between an autocratic/developmental state and pursuing pro-active diplomacy is a delicate one – to which the recent conflict with Uganda testifies.
- Rwanda is becoming recognised as one of Africa’s economic ‘success stories’, boosted by an average annual economic growth rate of more than 10 per cent between 2001 and 2015 – even though the accuracy of key figures on economic development and poverty reduction have been questioned and there are indications that growth is slowing down (World Bank 2018, Behuria and Goodfellow 2018). Important progress has been made in key social indicators such as the child mortality rate and the maternal mortality rate, and Rwanda has initiated the innovative social protection programme Vision 2020 Umurenge Programme (VUP).
- The Human Development Index – measuring income, education and longevity – ranks Rwanda as number 158 out of 188 countries in the world and firmly places it among low-income countries. The national poverty rate dropped from 49.2% in 2000 to 38.2 % in 2013/14, but has not been further reduced since then (UNDP 2018, NISR 2018). There are continued challenges with population pressure and environmental shocks, in health and education and food insecurity.

- With 72.7 per cent of Rwandans involved in subsistence agriculture and access to land being extremely limited, the Government of Rwanda recognises that the economy needs structural transformation if it is to maintain the current economic growth pattern. Rwanda's Vision 2020 (RoR 2012) – currently in the process of becoming superseded by Vision 2050 – aims to transform Rwanda into a knowledge-based middle-income economy.
- The country's National Strategy for Transformation (NST) calls for the transformation of the agricultural sector and the creation of non-farm employment as critical for raising productivity in the economy. The objectives of the still valid Vision 2020 are:
 - Macro-economic stability and wealth creation to reduce aid dependence.
 - Structural economic transformation (with attention to education and health).
 - Creating a productive middle class and fostering entrepreneurship.
- The economic growth rate, coupled with the predominance of young people in the country, requires strategic and innovative policies and initiatives to avert risks associated with high youth unemployment. Higher education, research and innovation are seen to have an important role to play in this endeavor (World Bank 2019).

Table 1: Key Socio-Economic Data Rwanda

Population	11.5 million
Urban Population	28.8 %
GDP per capita (PPP)	719 USD
Poverty Head Count (USD 1.90 per day)	55.5%
National Poverty Rate	39.1%
Net primary enrolment rate	96.6%
Primary completion rate	60.4%
Under five mortality ratio	38/1000
Maternal mortality ratio	290/100,000

Sources: World Bank (2018)

2.2 The University System

- In Rwanda, the Ministry of Education (MINEDUC) is responsible for policy formulation and setting norms and standards for all levels of education. There is an overall Education Sector Strategic Plan (ESSP) that includes strategic direction of higher education in Rwanda alongside all other levels of education in the country's education system.
- Primary and secondary education have seen improvements, but still grapple with challenges in the form of inadequate physical infrastructure and learning materials, inadequately trained teachers and high levels of absenteeism and dropouts (Kagwesage 2013) – implying poor preparedness for higher education.
- Despite an official primary school attendance rate of 87.3 per cent, only around 60 per cent of students actually graduate. In secondary school, the attendance rate is 23 per cent, but also in this case with a lower completion rate. Teaching is also

‘desk-driven’, with limited room for own initiatives and critical reflections/discussion (Abbot et al. 2015 and personal communication, Sida 2019).

- With reference to Vision 2020/2050 and the government’s desire to build a knowledge and technology-based economy, the main emphasis in tertiary education is given to science, technology, engineering and mathematics (STEM) even though it is acknowledged that the social sciences and humanities have a role to play (UR 2017: 5).
- The Higher Educational Council (HEC) is responsible for securing coherent provision and quality of higher education through policy documents and guidelines, and has taken on the responsibility for student financing in higher education. Finally, the National Commission for Science and Technology (NCST) is an independent advisory board for development, promotion, and coordination of Rwanda’s science, technology, and innovation with an extended mandate to also formulate educational policy and provide funding to research and innovation through a newly (2019) established fund.
- There is one public university (UR) and 29 private universities in Rwanda. In 2015, the tertiary institutions counted about 4,000 academic staff members (18% women), and the total number of students in private institutions was 49,888 and in public institutions 36,427 (43% women). Net enrolment in higher education is calculated to be 1 per cent, which is well below the sub-Saharan African average of 6 per cent (HEC 2016:6; see also VLIR-UOS 2016).
- With the history of higher education/research in Rwanda, and the way the sector was affected by the genocide, there is a general dearth of well qualified university staff in the country and at the UR. At the same time, many have been educated at institutions of higher learning abroad. This has brought together people with experiences from many different countries. Also, higher education degrees are increasingly seen as a precondition for careers in government and the private sector, not necessarily as the start of an academic career.

2.3 *The University of Rwanda*

- The University of Rwanda was established by the Government of Rwanda in 2013, through a merger of seven public higher learning institutions – including the former NUR – into a consolidated entity (Table 2). The rationale was an acknowledgement that a merger was necessary in order to create a more efficient entity of higher learning and research in Rwanda.
- The UR is the sole public university in Rwanda. It is by definition not autonomous, and is directly controlled by the government (UR 2017:23). The university is governed by a Board of Governors and the academic governance structure includes the Academic Senate and College Academic Councils. Management is made up of a Vice Chancellor as the chief executive officer, and four deputy vice chancellors (DVCs).

Table 2: Profile of University of Rwanda

ITEM	UR
Year established	2003
World/Africa Ranking (Webometrix)	3,163/87
Colleges	6
Research centres	9
Master programmes	51
Local PhD programmes (coursework and research)	3
Total academic staff	1,378
With master degree	59%
With PhD degree	22%
Women among academic staff	24%
Women among PhD-holders	10%
Number of students	30,214
Post-graduate students	1,435
Male students	67%
Female students	33%

Sources: UR 2017, 2019; <http://www.webometrics.info/en/Africa>

- The UR currently consists of 6 colleges with 24 schools and 11 centres on 10 different campuses – of which the majority are located in Kigali and Huye. Each college is headed by a Principal. The colleges are: College of Agriculture, Animal Sciences and Veterinary Medicine (CAVM); College of Arts and Social Sciences (CASS); College of Business and Economics (CBE); College of Education (CE); College of Medicine and Health Sciences (CMHS); and College of Science and Technology (CST).
- The UR has an academic staff of 1,375, of whom 19% have a PhD. Among academic staff with a postgraduate degree, 20.8 % are female and the number of female staff among senior lecturers/professors is only 11 %. The UR currently has 30,214 students enrolled (33 % female), and of whom 1,435 are postgraduate (34% female). The university offers 67 undergraduate and 51 postgraduate programmes.
- Based on the government's desire to build a knowledge-based and technology-led economy, increasing emphasis will be put on science, technology, engineering and mathematics (see also UR 2017b:5). Close to 50 percent of UR graduates are from STEM programmes, and the College of Arts and Social Sciences graduates the least with 8 percent (2017). Still, in order to address Rwanda's challenges the UR is in the process of implementing a transition towards an interdisciplinary approach centred on a set of interdisciplinary research clusters (UR 2017).
- According to the UR itself (UR 2017:51, see also UR 2019), gaps that need to be addressed include:
 - The number of PhD holders and supervisors for post-graduate studies is insufficient, and there is no locally based PhD training by coursework;
 - The university has a high student to staff ratio in certain schools and suffers from limited teaching and learning resources;

- The research environment has improved but infrastructure and facilities (such as ICT and library) as well as administrative and technical capacity still need strengthening;
- The capacity to communicate UR research findings is limited, making improved linkages between the UR and the government as well as the private sector a priority.
- For professional, academic, and financial reasons, the UR will continue to rely on external cooperation and support for some years to come. Coordination of external assistance/cooperation is formally the responsibility of the Single Project Implementation Unit (SPIU).
- Since 2013, the UR has received external funding of 160 million USD as grants or soft loans from seven countries (Belgium, the Netherlands, Canada, Germany, South Korea, Sweden and USA) as well as multi-lateral organisations (African Development Bank, World Bank, UN, and EU) and private banks (the Exim Bank, South Korea).
- Sweden is the largest donor to the UR with the most comprehensive programme in institutional development and research capacity development – representing approximately 60% of such external funding in 2017 (UR 2017).

Table 3: UR External Relations of Cooperation (2018/19)

Donor Countries/Organisations	Multilateral Organisations
Sweden (Sida)	World Bank
Belgium (NUFFIC)	African Development Bank
Netherlands (ARES)	United Nations
Canada (IDRC)	European Union
Germany (GIZ)	International/Regional Institutions/Networks
South Korea (EXIM Bank)	Inter University Council of East Africa
United States (UCLA)	

Sources: UR 2017

3. Findings

- The bilateral programme with Rwanda (2003-2018) has involved research management (5 sub-programmes), research infrastructure (4 sub-programmes) and research training (11 sub-programmes). There has also been a component on ‘Regional Female Training’.
- An evaluation carried out in 2012 – i.e. before the transition from NUR to UR – broadly recommended a strengthening of the quality of research output, a stronger focus on developmental relevance, and actions to support NUR’s plans for expansion into UR (Pain et al. 2012).
- Since 2013, the UR as well as the Sida-funded programme have expanded significantly. In the midst of considerable challenges related to the (re)organisation from NUR to UR with six colleges in 10 different campuses across the country, the Sida-supported programme has become important and influential for research capacity development.

- In addition to the escalation in funding and number of people involved, there have been two notable changes since the start of the programme in 2003: Starting with the initiation of the Research Training and Partnership Programme' (RTPP) in 2013, the UR has taken on increasing ownership of programme content, focus and recruitment of students – to an extent where some Swedish counterparts argue that they do not have necessary impact, particularly in issues of research design, method and academic writing.
- A second – and related change – is an enhanced emphasis on national development priorities and applied research, partly stemming from government pressure/expectations and partly from changing university priorities – most evident through the decision that all research shall relate to a set of interdisciplinary research clusters. This is an organisational form of research that is not common in Swedish universities, and the Swedish partners tend to be more focused on basic/disciplinary research. The clusters include:
 - Agricultural transformation and food security
 - Socio-economic transformation and sustainable development
 - Environment, natural resource management and climate change
 - Inclusive governance, peace and security
 - Urbanisation, green cities and human settlements
 - Transformative ICT and knowledge management
 - Health and well-being for all
 - Sustainable energy and manufacturing
 - Transformative education, culture and creative arts
 - Transport and logistics

3.1 System Level Support

- The UR is linked to several international/regional research councils, centres and networks (see Table 4). However, there are no systematic links between the programme activities and these institutions, which limits potentially useful funding options and academic contacts/collaboration.
- There are two main exceptions to this, demonstrating the potentials in regional co-operation. One is the regional network established between the sub-programme Economics and Management with business-schools in Uganda and Tanzania (see Heshmati and Hartvigson 2019) and the second is the African Economic Research Consortium.
- Nationally, the Ministry of Education sets policies and standards, and has an impact on public as well as private universities through the overall Education Sector Strategic Plan (ESSP). The UR as the largest/most important university in Rwanda works in close contact with government ministries, and is expected to follow government priorities.

Table 4: UR-Sweden Programmes and Partners (2019)

Central Research Management*	Swedish partner
Programme Coordination	Linköping University
Research Directorate	Uppsala University
Innovation Centre	Södertörn University
Institutional Advancement	Uppsala University/ISP
Research Grants	No partner
Research Infrastructure	
Library	University of Borås & Blekinge Inst. of Tech.
ICT Infrastructure	Blekinge Institute of Technology
Instructional Technology	Stockholm University
Management Information System	No partner
Research Training	
Agriculture	Swedish Agricultural University
Economics and Management	Jönköping Int. Business School
Medicine and Public Health	Gothenburg University & Umeå University
Applied mathematics and Statistics	Linköping & Stockholm University
E-governance	Örebro University
Geographic Information Systems (GIS)	Royal Inst. of Technology & Lund University
Information and Communication Tech. (ICT)	Blekinge Institute of Technology
Environment	Gothenburg University
Peace and Conflict	Gothenburg University
Law	Uppsala University
Regional female training	Makerere, UCT , Sokoine; Gothenburg Univ.

*Titles as submitted by UR Sources: UR 2917, 2019; UR-Sweden Power Point Presentation 2019

- The national institutions with the most immediate academic impact on the UR and the Sida-supported programme is the Higher Education Council (HEC). Its role includes the accreditation of new local Master and PhD programmes. After a long process, HEC has recently accredited four local PhD programmes in Mathematics and Statistics, Economics and Management.
- In 2018, a National Research and Innovation Fund was launched to provide funding for research and innovation of relevance to the country's development objectives – including calls for an 'Excellent Research Grant'. However, the capacity to manage the fund (by the national Commission for Science and Technology, NCST) seems limited and Sida may decide to give support (Sida 2019).
- The vast majority of donors in higher education and research provide either scholarships or support research projects. Sida is the only donor that combines system support, institutional development and individual capacity-building. The largest

alternative programme are four World Bank funded African Centres of Excellence (ACE) and an additional four Regional Centres of Excellence.

- Despite this, there is limited coordination and cooperation between the donor programmes, and at times competition for human and financial resources.

3.2 Improving the Research Environment

- The UR is a university with clear authority structures, from the Vice Chancellor and downwards in the hierarchy, with limited devolution of decision-making (highlighted by staff from the formerly independent colleges). However, the UR research management and infrastructure units do not yet fully fulfil their roles, which tends to slow down decision-making. There is limited explicit focus on change management in the programme.
- All donor-funded projects should – in principle – fall under the responsibility of a Single Project Implementation Unit (SPIU), but this is still not fully operational. In fact, the Programme Coordination Office (PCO) – specifically established to coordinate the Sida-funded programme – still takes on many SPIU responsibilities and tasks.

Tangible Interventions

- The Sida-supported programme includes support to seven ‘tangible’ sub-programmes specifically focussing on research management and infrastructure (see Table 4).
- The Programme Coordination Office (PCO) plays a key role in managing the projects and functions as a point of reference for the rest of the UR (including top management). While effective, it is still not fully integrated into university structures.
- The UR – with Sida support – has developed a broad set of university policies (on human resources, gender, financial management, etc.) and strategies (UR Strategic Plan, master plans for main campuses, etc.) These are well written and actionable, but the degree of implementation varies.
- The Directorate of Research and Innovation (DRI) is vested with the main responsibility for coordination, support and dissemination of research activities through research directorates at each college, but still with limited capacity for implementation.
- The Central Research Fund is administered by DRI, and has funded a total of 62 smaller research projects with 295 researchers involved. While important, there is no room for larger research programmes and limited room for postdoc projects.
- Quality Assurance (QA) is carried out by the Teaching and Learning Enhancement Directorate (DTLE), with special units for quality assurance of research (e.g. the research grants) and of post-graduate programmes. While they do function in relation to locally produced publications, it has limited direct relations with the UR-Sweden programme publications produced by PhD students (supervision, peer-reviews, etc.) since most of the students are currently enrolled in Sweden.

- ICT has been supported throughout the programme period. After a good start from 2003 to 2012/13, the component had problems keeping up with the organisational challenges related to the merger between many colleges in different locations. It has improved in the last phase of the ongoing programme, with an overall university ICT master plan developed with Sida support.
- Library support has also been an integral part of the programme since the start but also saw additional challenges with the expansion from NUR to UR. The support now encompasses physical- and well as e-libraries. While improving its performance, its main challenge is to contribute towards a stronger ‘reading culture’ at the university.

Intangible conditions

- Looking at ‘intangible’ aspect of the research environment, the combination of clear/formal structures of the university, a good and effective PCO and an increasingly able academic staff (see below) have all contributed towards improvements in the research environment.
- On the other hand, interviewees highlighted an unbalanced workload (administration/teaching vs. research), unclear incentive structures for academic careers, and authority structures that do not always reflect academic criteria as conditions that affect the coherence/quality of the overall environment for research.
- The research environment has also been affected by the organisational changes following the transition from 14 institutions of higher learning with their own history and academic culture into one UR (HEC 2016).
- There are, finally, important issues around the room for open, free and critical discussion or ‘academic freedom’.
- The government has clear policies/preferences as to what type of research (focus on STEM) it favours and academics rarely (if ever) engage with policy-makers with a critical approach (Sida 2019).
- Interviewees acknowledged that there is a large degree of self-censorship, particularly – but not only – in the social sciences, and there are a number of examples of research that has been discontinued by the authorities.
- While this may not necessarily affect the academic quality of the research carried out particularly in the sciences, it does affect academia’s role of being a corrective/critical voice in Rwanda’s development endeavours.

3.3 Building Research Capacity

- The core of the research capacity-building component of the UR-Sweden programme is the PhD programme – and to a lesser extent the Master programme. A total of 67 PhDs have graduated since the inception of the programme in 2003, with 33 still in the process of studying and 12 having discontinued their studies. Altogether 11 Master programmes have been developed, with eight accredited and running, and over 300 Master students have graduated.

Table 5: PhD Enrolment, Graduates, Students NUR-UR (2003-2018)

	Enrolment	Still studying	Graduated	Discontinued
2003-2007	20	0	16	4
2007-2013	39	3	29	7
2013-2018	53	30	22	1
Total	112	33	67	12

Source: UR-Sweden Power Point Presentation 2019

- The PhD programme has seen improvements in the system of selecting PhD candidates, with increasing ownership by the Rwandan counterpart through the RTPP process (see above). Still, Swedish interviewees say that there are PhD students who struggle with inadequate background in aspects of their studies and with English as the language of instruction.
- PhD graduates and students are generally pleased with the sandwich model, but find the (obligatory) periods in Rwanda/at the UR double-edged. On the one hand, they appreciate the option of being home and the job security the system entails, but on the other, they argue that the model makes the studies less efficient as time in Rwanda cannot be used for studies due to other (professional and private) commitments.
- The UR currently runs 51 Master programmes. Altogether 11 master courses have been supported by the UR-Sweden programme. The master programmes have struggled with student recruitment and retention, mainly due to high tuition fees, students combining studies with work and challenges with master programme organisation and ‘ownership’. The master programmes do require submission of a published or publishable paper, and there is no distinction between ‘professional’ and ‘scientific’ master’s as e.g. in Bolivia.
- The research capacity at the UR/in the programme is strengthened, as evidenced by the number and quality of publications in international journals. The number of UR publications since 2008 show a positive trend, and PhD students in the programme have published a large proportion of these.
- Still, the UR finds itself in a relatively modest position in rankings/publications of African universities and is well behind a number of other East African universities – even though the quality of publications is higher in some areas such as medicine. This modest publication record must partly be seen against the fact that the whole educational system was in ruins after the genocide.
- Continued research after PhD graduation is hampered by management, administrative and teaching responsibilities as well as lack of funding. Relations with Swedish universities and academics tend to discontinue, and few have developed alternative international research networks. For many, the main alternative is national/UR Research Funds, but allocations are – so far – limited.
- The main challenge to building research careers after graduating from the UR-Sweden programme seems to be dearth of alternative international/regional research networks and contacts. Young graduates usually do not have the necessary

weight to apply for international funding and the necessary skills to develop their own proposals.

- There are research areas at the UR that now have a critical mass of researchers – some of which form the basis for the new local PhD programmes such as in health and mathematics – but also in these cases regional/international research networks will be crucial.

Table 6: Rwanda: Research Performance 2008-2017

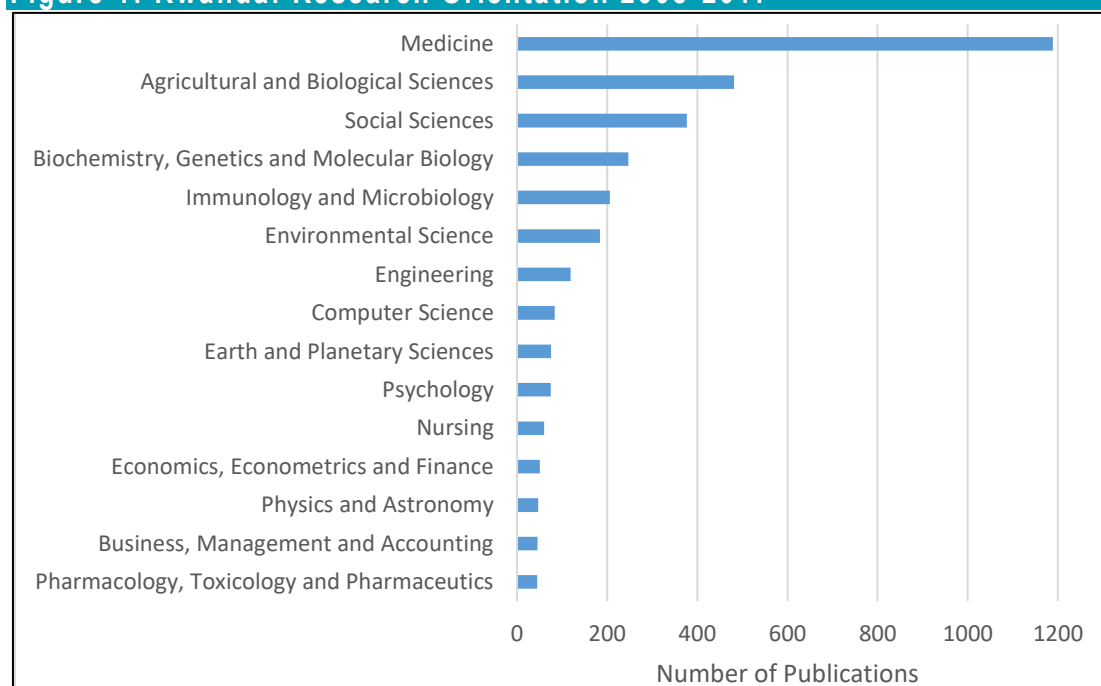
Publication Year	Indicator				
	Publications	Citations	Top 10%	International Collaboration	Academic/Corporate Collaboration
2008	75	22.6	9.3%	77.3%	1.3%
2009	99	23.9	19.2%	81.8%	4%
2010	138	17.5	12.3%	78.3%	3.6%
2011	162	21.2	14.8%	88.9%	0%
2012	190	14.2	12.1%	86.3%	3.2%
2013	262	14.4	14.1%	78.2%	0%
2014	274	13.7	13.1%	85.8%	4%
2015	321	28.4	12.1%	87.9%	4%
2016	364	14.3	11.3%	86.3%	3.3%
2017	407	7.4	10.3%	88.2%	3.4%
Total/Overall	2292	16.4	12.4%	85.1%	2.9%

Source: SciVal

Table 7: UR Publications 2008-2017

Publication Year	University of Rwanda
2008	39
2009	47
2010	69
2011	66
2012	96
2013	116
2014	161
2015	164
2016	183
2017	209
Total	1,150

Source: SciVal

Figure 1: Rwanda: Research Orientation 2008-2017

Source: Scopus

3.4 Teaching and Knowledge Frontiers

- The UR has academic staff with broad experiences from different academic regions/milieus including Sweden, which has positive implications for exchange of teaching experiences and forging of synergies.
- There is limited emphasis on pedagogy/teaching in Sweden for the PhD students involved in the programme. Some interviewees argue that teaching at the UR is still teacher-focused with limited room open/critical discussions, while others state that there is an emerging transition from ‘traditional’ (‘lecturing’) to ‘modern’ (‘interactive’) teaching methods.
- The UR-Sweden programme has brought labs and other necessary equipment into the sciences, which is actively used in teaching. There are still challenges of maintenance and accessibility, but these seem to be less and less prevalent. At the master level, problems of inconsistency in class attendance by teachers and students – and uncertainties about the role and responsibilities of Swedish counterparts – are raised as concerns.
- The sub-programme on innovation is meant to spearhead work in ‘knowledge frontiers’ and increase the use of research outputs for innovation activities. However, despite examples of innovative research performed at the UR the programme is not fully functional.
- Within the programme, PhD projects on “Child Survival in Rwanda: Challenges and Potentials for Improvement”, “Bilinear and Trilinear Regression Models with Structured Covariance Matrixes” and “Performance analysis of Cognitive Radio Networks under Spectrum Sharing and Security Constraints” are highlighted for their quality.
- As discussed above, interdisciplinary research and research clusters is a central element in future UR and UR-Sweden research. As we understand it, this will be

approached from individual departments/disciplines rather than multi-disciplinary research centres (UR 2019).

3.5 *Contributing to policy-making, products and services*

- The programme's policy relevance and wider effects have become increasingly important, as reflected in choice of themes/topics, the organisation of research in clusters – and close relations with the government.
- Most PhD projects address issues relevant to Rwanda's economic and social development, and master students who graduate from the programme usually continue in full employment for companies/institutions relevant to development.
- Relations with the government are not only indirect by taking national policies into consideration, but also direct: Research projects are done in cooperation with government entities (e.g. in ICT, Agriculture, Medicine and Health) and UR academic staff are engaged as board members, advisors, etc. in various government bodies.
- Even though the UR does not have structures and systems for commissioned research (much of this is still done by UR academic staff in their private capacities), there are examples of research that has led to specific products and services for the public/private sector (relations with civil society organisations seem rarer).
- For example: Research on bio-fortification of beans to fight iron deficiency led to the development and mass introduction of new bean varieties by CGIAR/Harvest-Plus, and research in the Law sub-programme contributed to the amendment of the Rwandan law regarding tools of evidence to establish paternity (Sida 2019).
- External stakeholders vary in their assessment of the relevance and quality of UR research. Some interlocutors claim it is difficult to know about and access the research that is going on at the UR, while others find the university useful but acknowledge that their relations are primarily on an individual basis.
- Initiatives for dissemination of research to a wider public by the UR and in the programme are limited, with few systematic attempts at producing report series, policy briefs, and other types of public engagement. There is no publishing company in Rwanda, which makes it difficult to disseminate research nationally. The exception is the UR webpage, which is easily accessible and informative, but with few publications *per se*.
- This means that the UR/the programme is good at relating to government policies and responding to calls for products and services from the public and private sector – but not at defining/setting the agenda for public discourses around key development challenges in Rwanda such as the environment, poverty reduction and gender equality that is the ultimate goal of the UR-Sweden programme.

3.6 *Cross-cutting issues*

- Human Rights include academic freedom, and academic freedom and quality of research are closely interlinked. In Rwanda, open criticism against official narratives of recent history (including the genocide against the Tutsi) and the government is very rare and comes with risks. Academic freedom is limited, with certain development policies and subject areas not being susceptible to critical research.

- According to Sida (2019), a poor people's perspective should guide the bilateral programmes. Most of the sub-programmes/research training projects in the UR-Sweden programme address aspects and root causes of poverty, but real impact may be weakened by the limited options for critical engagement with government policies. Also, while 7.8 percent of young people in the wealthiest quintile have access to higher education, the rate is only 0.3 percent for the poorest (Sida 2019).
- Gender equality is a high priority in the programme and progress has been made (UR 2019), but women are still under-represented among academic staff (24%) as well as among students (the share of women among PhD holders is only 10%). Gender is rarely explicitly integrated into curricula, teaching and research. Ongoing efforts to enhance gender equality include the implementation of an UR gender policy from 2016 and the establishment of the Centre of Gender Studies. However, 'gender mainstreaming' must be combined with concrete action/role-models to be effective.

4. Conclusions

4.1 Relevance (the extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies).

1. The UR-Sweden programme is well in line with Rwanda's overall development plans, where higher education and research has been given a particular role in moving Rwanda from an agricultural to a knowledge-based middle-income economy.
2. The programme is well in line with the UR's overall objective to "Increase the production of relevant high-quality scientific knowledge that contributes to Rwanda becoming a knowledge-based economy".
3. The programme is well in line with the objective of Sweden's research cooperation within development cooperation, which is to strengthen research training and research of high-quality and relevance.
4. The programme is partly in line with the accompanying goal of conducting, communicating and utilising research for economically, socially and environmentally sustainable development. While the government emphasises the instrumental value of research, there is limited room for alternative/critical engagement.

4.2 Effectiveness (the extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance).

1. Support to national institutions and research policies, strategies and institutions for higher education and research has been limited, because the government has a strong hold on such processes and strategies and institutions are largely in place – but there are still challenges for example related to sufficient and transparent national research funding.
2. Research management has been supported through the establishment of the PCO in close coordination with UR management. The effectiveness of the former is

impressive and has served as a point of reference for other units at the UR – but is still not fully integrated into the general university structures.

3. Support has been given to the development of specific UR reforms and policies. The main university reform – turning 14 institutions of higher learning into one UR – was done with the programme as de facto facilitator. Support to research management as such has been limited, and the research coordination office (DRI) has not fully taken on board relevant activities from the programme.
4. The research environment has been supported through tangible intervention in the form of infrastructure (labs, etc.), ICT and library functions. Goals have generally been achieved (with temporary setbacks related to the UR merger), but library support demonstrates that physical structures are not enough in themselves: there are persistent challenges in promoting a reading culture and in accessing scientific literature in a given field.
5. There is broad agreement among our interlocutors that the basis for a good research environment are good management structures, well qualified researchers, adequate funding and space to do research. While the first three points have shown good progress, research (and publications) has a strong tendency to slow down or discontinue after graduation.
6. This is partly a practical issue of having to balance requirements for administration and teaching with research, but it is also an issue of having necessary research networks. Relations with Sweden tend to wane after graduation (even though there are exceptions), most young researchers are not qualified to make independent research applications – and few have research networks beyond their Rwandan/Swedish experiences.
7. In research capacity development, a large number of PhD candidates have been educated through the sandwich programme, with good progress particularly in the past 4-5 years and few dropouts. Practically all candidates have returned to work at the UR – albeit without holding positions that enable them to devote themselves fully to research.
8. The master programmes have been slower to evolve with lower enrolment and fewer graduates than planned, due to a combination of inadequate human resources at the UR and limited attention from the programme and the high costs/practical hindrances for students who usually also work full time.
9. Outputs in the form of publications have improved for the UR in general and been good for PhD candidates, but – as noted – more limited after graduation. The bulk of publications are with international researchers as leads and with UR researchers as co-authors – but there are important exceptions.
10. Publications through more accessible channels such as national book outlets, policy papers, applied reports, briefs and the media is limited. This is partly the result of a dearth/control of such channels in Rwanda at large, but also due to a more limited emphasis on and experience with this type of publications within the programme.

4.3 Impact (positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended).

1. The impact of research training and institutional support on **teaching** has been difficult to ascertain, but there seems to be a development towards more interactive systems of instruction that at least to some extent relates to experiences/training from Sweden. Interlocutors have different opinions as to the room for critical thinking and discussions.
2. The impact of the programme on the ability of researchers to follow and contribute to ‘knowledge frontiers’ depends on definitions: There are examples of high-quality publications in reputable journals, but the main impact is related to contributions to ‘local’ knowledge frontiers in areas of concern for Rwanda’s development.
3. The impact on science-based policy-making is mainly through commissioned research and individual relations between UR academic staff and various government agencies. There are few accessible public channels for research dissemination, and limited space for research-based public discussions of development issues. This does not mean that the government is not interested in or does not follow the research carried out.
4. Contributions to improved products and services were limited in the initial phases of the programme, partly because the sub-programme on innovation was slow to evolve. There are still challenges in the relations/communication with the private sector and other external stakeholders, but there are individual examples of successful cooperation.

4.4 Sustainability (the continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time).

1. To a large extent thanks to the UR-Sweden programme, research is now firmly established as an integral part the UR and the university has a critical mass of qualified researchers that can be built upon, e.g. through local PhD programmes.
2. External donor funding for the UR has been relatively high and stable, and is likely to continue unless political developments in Rwanda change significantly. Still, increased government funding will be necessary in order to fully secure long-term financial sustainability.
3. Research networks beyond the UR-Sweden cooperation have expanded, but should be further developed in order to secure academic/intellectual sustainability.
4. While research in the narrower sense of the word seems secured/sustainable, the role of the university/research as a relevant but critical voice for sustainable development and poverty reduction is not secured. This will depend on an expansion of the political space for critical reflections and discussions in Rwanda.

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TANZANIA

1. Background

1.1 Sida's bilateral research cooperation with Tanzania

- The bilateral cooperative programme in higher education and research dates back more than four decades, evolving through stages as from 1977, initially at a modest volume until the mid-1990s at which time the systems approach was adopted comprising the so-called sandwich programme. Thereafter, the collaboration gained momentum. The legal basis of the current programme (2015-2020) is the Memorandum of Understanding (MoU) signed in August 2015.
- The tertiary education and research programme initially centred on the University of Dar es Salaam (UDSM) as Tanzania's largest institution of higher learning. It later expanded to comprise two offshoots, Muhimbili University of Health and Allied Sciences (MUHAS) and Ardhi University (ARU). In addition to direct support for these universities, Sida has also provided funding for the Commission for Science and Technology (COSTECH) with responsibility for overall coordination of the Tanzanian research sector.
- The programme objective has been to enhance Tanzania's ability to conduct research in various priority fields in order to contribute to evidence-based policy-making, action towards poverty reduction and, general societal development. Over the four decades until June 2017, Sida disbursed a total of SEK 342.4 million, allocated during successive five-year planning periods, the bulk since 1995. The last phase is scheduled to cover the period 2020-2025, at the end of which Sida is likely to exit.
- The programme mechanism adopted towards capacity-building for research has been the award of scholarships at master's and PhD levels to individual staff members, principally through the so-called sandwich model (see below). Beyond individual skill enhancement, other elements – e.g., ICT, laboratories and library services, regional collaboration, and research management – were included to form a holistic programme designed to create university systems with synergies among its constituent parts.
- To that end, emphasis was laid on institution-building, including management and institutional reform. The systemic ambition is captured in Sida's System Approach (see Figure 1 below) applied since 1995. Each university (and COSTECH) established substantive sub-programmes in priority areas, stemming partly from their respective internal needs assessments and partly from the national research priorities espoused in COSTECH strategy documents (COSTECH 2016).

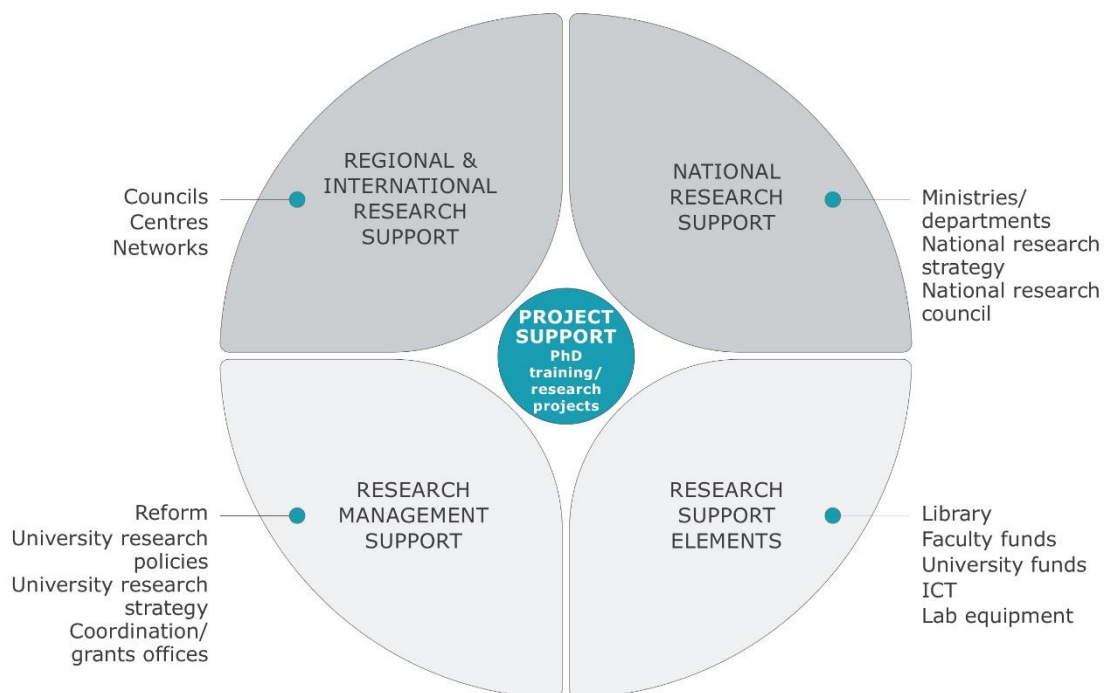
1.2 Focus and approach

- This country case study forms part of the overall *Evaluation of Sida's Model for Bilateral Research Cooperation* and feeds the country-level synthesis of findings into generic lessons that emanate from Sida's practice to date. In turn, these lessons are expected to contribute to designing the next phase of Sida support as from mid-2020.

- The latest evaluation of the Sweden-Tanzania collaborative programme served as an important reference document (Kruse *et al.* 2014) as did numerous and varied supporting documents (policy papers, planning documents etc., see List of References).
- Fieldwork for the Tanzania country case study was conducted during the period 6-17 May 2019 in Dar es Salaam where all the collaborative institutions are located. Participation in and observation of the annual planning meetings of the four collaborating institutions provided a broad overview of past activities and future plans, as well as perspectives on encountered challenges.

Altogether 56 interviews were conducted with a cross-section of stakeholders (see Annex 5). The majority of interviews sought to probe the extent to which Sida's purportedly unique holistic or System Approach was applied in practice. Beyond the objective of producing PhDs, four other elements were integral to the approach. Those elements were to some extent supportive of the overriding capacity-building objective – i.e. an environment conducive to learning and implementation of research projects – but they were also meant to contribute to making the approach holistic, integrative and, synergistic to the effect that it generated more than the sum of its constituent parts.

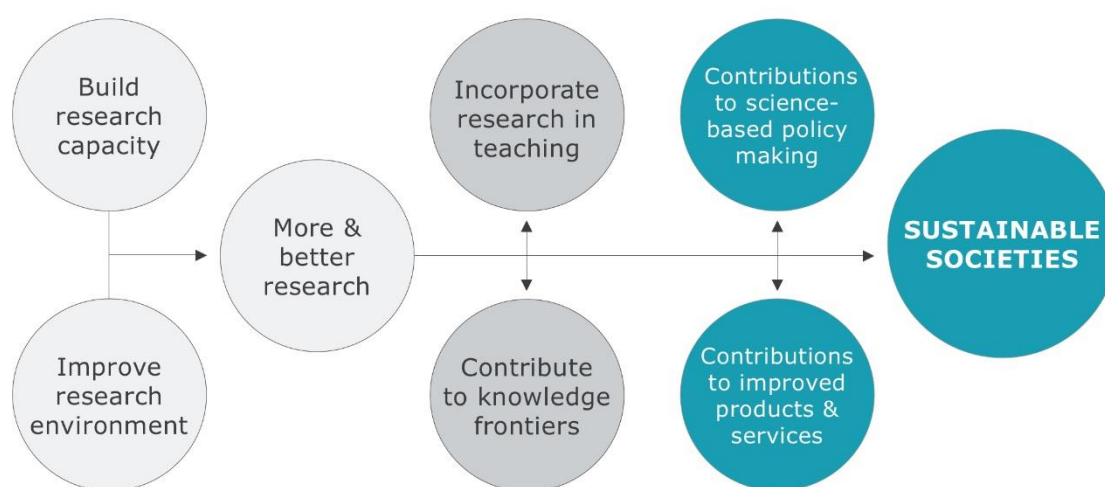
Figure 1: The systems Approach



Source: Adapted from Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

- The four components were as follows (see Figure 1), discussed in sections below:
 1. National research support (research council and strategy);
 2. Research support functions (ICT, library, lab, etc.);

3. Research management support (coordination, strategies, policy reforms at university level);
 4. Regional and international support (through centres, networks, etc.).
- The second main strand of inquiry centred on Sida's Basic Logic to ascertain whether individual academic capacity-building and institution-building as the two main outcomes did indeed serve to produce the desired long-term impacts (see Figure 2). Underlying the ToC is an implicit presumption that the movement from inputs through activities to intermediate outcomes and long-term impacts is likely to occur more or less spontaneously.
 - While the duration of the Sweden-Tanzania collaborative programme spans more than four decades, up until the mid-1990s the volume of Swedish support was considerably lower than post-1995. As a result, when assessing the relevance, effectiveness and impact of the bilateral research cooperation (BRC) programme in Tanzania it is more appropriate to consider the 25-year period from 1995 until 2020. In the discussion of findings below, we return to the Basic Logic and the linkages (or lack thereof) among its components.

Figure 2: Basic Logic

Source: Adapted from Terms of Reference (12.11.18), see also MFA (2015), Sida (2018b)

2. Context

2.1 Economic and political context

- In the recent past, Tanzania has registered a steady economic growth rate of 6-7 per cent per annum and enjoyed low, stable inflation rates. However, foreign direct investment has declined from high levels of about 5 per cent of GDP in 2014 and export growth has stagnated (World Bank 2017a).
- The comparatively high rate of economic growth at the macro level appears not to have made significant improvements in the quality of life for the majority of the people, as poverty remains pervasive. With a high population growth rate of about 3 per cent and life expectancy at 65 years, the total population is now approaching

60 million and the absolute number of poor has probably increased in the past decade.

- Tanzania's workforce is dominated by low-skilled workers (about 85 per cent), followed by medium-skilled (about 13 per cent) with highly skilled workers accounting for about 3 per cent. The work force composition is less skilled than that of an average lower middle-income country (Sundstøl Eriksen 2017).
- Investment in education and particularly in higher education and research forms an important element of national strategies aiming to reduce the dire poverty conditions in which a large proportion of the populations finds itself. Acquiring the necessary knowledge, technology and capacity could enable Tanzania to meet its development objectives.
- Agriculture (staple crops such as maize and rice, and cash crops such as coffee and sugar), extractive industries (minerals, gold, copper and coal) and energy (natural gas, hydro-electric power and renewables) are the main sectors of the economy. Significant offshore petroleum resources and its associated growing on-shore sector are increasingly relevant.
- Although agriculture is the source of livelihood for close to 80 per cent of the workforce, it remains predominantly rain-fed and hoe-based at a low level of productivity. With a growth rate of approximately 3 per cent, agriculture lags behind overall GDP growth (6-7 per cent) and barely keeps pace with population growth. Poverty in Tanzania is predominantly rural where the population relies on farming, fisheries, and livestock (Sundstøl Eriksen 2017). (see Table 1)

Table 1: Key Socio-Economic Indicators – Tanzania

Item	
Population (million)	57.3
Urban Population (%)	33.1
GDP per capita (USD)	2,683
Human Development Ranking (of 187)	154
Global Gender Gap ranking (of 149)	71
Poverty Head Count (USD 1.90 per day in %)	55.6
National poverty rate (%)	26.8
Mean years of schooling (years)	5.8
Adult literacy rate (%)	77.9
Under five mortality (per 1,000 live births)	56.7
Maternal mortality rate (per 100,000 live births)	199

Sources: UNDP (2019), Global Human Development Indicators (accessed on 05.08.2019 from <http://hdr.undp.org/en/countries>); World Economic Forum (2019), The Global Gender Gap Report 2018, (accessed on 05.08.2019 from http://www3.weforum.org/docs/WEF_GGGR_2018.pdf); World Bank (2019), Tanzania Economic Update. The Power of Investing in Girls: Education Girls and Ending Child Marriage in Tanzania, (accessed on 05.08.2019 from <http://documents.worldbank.org/curated/en/930521548691306669/pdf/134094-NWP-P168241-PUBLIC-TEU-28-01-19.pdf>).

- John Pombe Magufuli was elected President in 2015 on the ticket of Chama cha Mapinduzi (CCM), the dominant political party since independence – although with a historically low support base. In 2019, Freedom House, an independent watchdog organisation dedicated to the expansion of global freedom democracy,

classified Tanzania as ‘partly free’ with an aggregate score of 45 out of a possible 100. On two key dimensions Tanzania’s scores (ranging from 0 as the worst to 7 as the best) were 4 on political rights and 5 on civil liberties, indicating some decline (Freedom House 2019).

- Since 2015, significant efforts have been made to curb corruption, reform the public service and, maximise public revenue collection. These efforts have been accompanied by a return to the erstwhile state interventionist approach to economic management and business development in which actions have not always been transparent or in accordance with due process. The reform initiatives have been accompanied by increasing intolerance. In particular, sexual minorities have been targeted by the state. Public figures have been arrested and detained, and open political gatherings have been banned. It is widely perceived that the climate for open public debate on societal issues has become constrained.
- Tanzania’s civil society has a rich history, dating back to the colonial period. However, emphasis on state-building from the post-independence era until the 1980s saw civic space reduced dramatically. Following liberalisation in the 1980s, civil society organisations have proliferated in number and broadened in nature. Although their effectiveness is highly variable, some have maintained a high profile and ability to exert influence (Sundstøl Eriksen 2017).
- The economic and political context impinges on the university and research sector in three main ways.
 - First, the volatile political situation and the incumbent president’s capricious management style have created an atmosphere of insecurity and intolerance that is anathema to academic freedom.
 - Second, the government’s violation of human rights, particularly those of sexual minorities, have led to the suspension of aid flows by some donors.
 - Third, the drive to increase domestic revenue through a new taxation regime has deterred foreign investors and further contributed to an economic downturn (URT 2019; World Bank 2019).
- All this could constrain the government’s ability to sustain investment in higher education and research. In that regard, the critical question is whether this sector will be accorded priority over other demands on the state coffers to fill the gap left by Sida and whether other donors will replace Sida funding.

2.2 *The university system of Tanzania*

- Primary education is nominally free in Tanzania and the enrolment rate is high. The transition rate from primary to secondary level has hovered around 65 per cent in recent years, a vast improvement from about 15 per cent in 1995 (URT 2018:141). Secondary school enrolment is high, but the transition rate from secondary to tertiary education has dropped to about 10 per cent currently.
- The Ministry of Education, Science and Technology (MEST) is in charge of tertiary education and its main source of funding, and all universities – both public and private – operate under the supervision of the Tanzania Commission for Universities (TCU), which is responsible for the accreditation of institutions of higher learning. Public universities are semi-autonomous, i.e. free to determine their own

curricula and authorised to award academic degrees, but subject to many of the administrative and policy norms of other government-funded institutions.

- Tanzania's first higher education institution, initially comprising a single faculty of law was established in 1961 as a college under the University of London. In recent years, a proliferation of universities and university colleges has resulted in 12 fully-fledged public universities and 22 fully-fledged private universities. In addition, there are two public university colleges, 12 private university colleges, three public university campuses, centres and institutes, and 11 private university campuses, centres and institutes (TCU 2018). Most of the new private institutions of higher learning are orientated towards teaching at bachelor and master levels, and few have the capacity to offer PhD programmes or accord priority to research.
- In 2009, the government made a formal commitment to allocate 1 per cent of the national budget to support research in higher learning and research institutions. This allocation was to be managed by COSTECH which was tasked to coordinate and facilitate science, technology and innovation (STI) activities and to advise the government in these areas. However, in reality the commitment was not honoured and reached a mere 0.3 per cent (Kruse et al. 2014). This low contribution by the government meant, in effect, that Sweden's share increased as a funding source.
- Interviewees reported that challenges facing STI development in Tanzania include low research output; low quality training of postgraduates; limited research funding; inadequate knowledge and skills regarding modern and new technologies; insufficient research coordination; tenuous links between the private sector and research institutions; research results not reaching relevant stakeholders; and insufficient capacity and funds to commercialise innovative ideas and products.
- In view of this situation, Tanzania is likely to require long-term external funding and other forms of support in order to develop and optimise its research and innovation systems for the benefit of its people and its economy.

2.3 Collaborating Tanzanian universities

- As a matter of principle, Sida supports only public universities, the main reason being that these institutions receive government funding (underpinning national ownership and sustainability) and are accessible to qualified applicants regardless of social background or economic means to pay tuition fees. By contrast, private universities often charge high tuition fees, which are unaffordable for large segments of the population.
- Sida and the Swedish Agency for Research Cooperation with Developing Countries (SAREC) initiated support on a project basis to the UDSM in 1975. Since 2008, support has been extended to Muhimbili University of Health and Allied Sciences (MUHAS) and Ardhi University (ARU). Both were originally constituent colleges of the UDSM.
- The UDSM is the oldest and currently the largest university in Tanzania in terms of student population and breadth of programmes offered across academic disciplines, with 14 colleges/schools/directorates, 26 research centres, an academic staff of 1,538 and a student body of 29,000. The established objectives of the UDSM are threefold: (a) to transmit knowledge as a basis of action, from one

generation to another; (b) to act as a centre for advancing frontiers of knowledge through scientific research; and (c) to meet the high-level human resource needs of Tanzanian society.

- Founded in 2007, MUHAS is a successor to the Dar es Salaam School of Medicine, established in 1963 by the Ministry of Health. The objectives of MUHAS are similarly the advancement of knowledge, the diffusion and extension of technology and learning and, the provision of higher education and research in the medical fields. MUHAS offers a range of programmes in biomedical, clinical and allied health sciences. The Directorate of Research and Publications is responsible for promoting, coordinating and monitoring research. Support through Sida's bilateral programme is a major boost to MUHAS' efforts to enhance the research skills of its academic staff and to conduct research projects. Research at MUHAS has been donor-dependent as government support over a number of years has accounted for less than 2 per cent of project expenses. However, the government has continued to provide full salaries to staff and mostly covered the cost of institutional infrastructure and facilities.
- ARU was established in 1996 by transforming the former University College of Lands and Architectural Studies (UCLAS), then a constituent college of the University of Dar es Salaam. Its roots date back to 1956 as the Surveying Training School which in 1972, became the Ardhi Institute offering diploma programmes in three areas. As a public university, ARU's primary functions are teaching, research (in the fields of land, environment and human settlement development and management) and public service. The Directorate of Postgraduate Studies, Research and Publication is charged with quality control activities, including the approval of research proposals, applications for funding and the approval of research reports. ARU has established a number of collaborative research links with universities in Europe and the US among them Sida and Swedish universities.
- Profiles of the three universities, their staff and students are found in Table 2. The table reveals a fairly large proportion of PhDs among academic staff but a relatively low proportion of women; also, a relatively low proportion of post-graduate students with a regional average of female students at about one-third of the total student body.
- The three universities do not rank among the top 1,000 universities in the world (Times Higher Education World University Rankings). Within Tanzania, the UDSM was ranked as number one in 2019, while MUHAS came second, and ARU in fourth place. However, in Webometrics' world ranking, the UDSM's world rank was 1,864, while MUHAS and ARU numbered 2,796 and 4,066, respectively. Within sub-Saharan Africa, UDSM was ranked 21 and MUHAS and ARU as number 43 and 77, respectively (Webometrics 2019).

Table 2: Profiles of UDSM, MUHAS and ARU

ITEM	UDSM	MUHAS	ARU
Year established	1970 (1961)	2007	2007
Webometrics Ranking (in sub-Saharan Africa)	21	43	77
Colleges/Schools/Directorates	14	16	4
Research institutes/centres/stations	26	2	6
Post-grad courses/programmes (master)	102	59	4
PhD courses (local, coursework and research)	38	5	2
Total academic staff	1,538	306	237
With PhD degree	41%	43%	67%
Men among academic staff	74%	174	-
Women among academic staff	26%	114	-
Number of students	29,125	2,838	4,123
Post-graduate students	16.5%	26.3%	3.2%
Male students	66%	69%	-
Female students	34%	31%	-

Sources: UDSM (2017), *Facts and Figures 2011/12–2016/17*, Dar es Salaam, University of Dar es Salaam, Directorate of Planning and Development; MUHAS (2018), *Annual Report 2016/2017*, Dar es Salaam: Muhimbili University of Health and Allied Sciences. <https://www.muhas.ac.tz/pages/fact-and-figures> (<https://www.muhas.ac.tz/uploads/documents/en/1525861570-MUHAS%20%202016-2017%20Annual%20report.pdf>); ARU Website, facts and figures <http://www.aru.ac.tz/index.php/academic-units/key-features/school-of-architecture-and-design-sade/2016-05-04-06-27-43>; Webometrics (2019), *Ranking Web of Universities*, (http://www.webometrics.info/en/Ranking_africa/Sub_saharan_Africa).

- Beyond direct university support, Sida supports the Commission for Science and Technology (COSTECH). COSTECH is tasked to coordinate and promote research and technology development. It also serves the government in an advisory role on all matters pertaining to science and technology and their application to socio-economic development. COSTECH manages the National Fund for the Advancement of Science and Technology (NFAST) as a funding facility for research and innovation, and issues calls for applications for grants and administers the application process.
- Other functions include the maintenance of a research registry and science information services, the formulation of research policy and, the creation of incentives for invention and innovation. Additional activities include Internet connectivity support, biotechnology, energy, telecommunications and, the development of multimedia teaching material. COSTECH is also responsible for the management of the national budget for research. COSTECH is a vehicle for ensuring the ownership and sustainability of research at the national level.
- As beneficiaries of Sida support, the three universities and COSTECH complement each other with respect to subject matter and institutional roles. In conjunction, they are expected to ensure that Tanzania builds a sustainable research system, although not comprising its entirety. As noted, Sida's BRC programme is effectively 25 years, and we will in the following assess its relevance, effectiveness and impact.

3. Findings

- The findings centre on three main features: (a) Sida's application of its holistic System Approach and the degree to which it has facilitated the integration of its discrete components; (b) the appropriateness, application and explanatory power of Sida's Basic Logic, in particular the uptake and sustainability challenges; and (c) the tangible achievements of collaboration in terms of capacity-building for research and institution-building to create an integrated research system. In addition, some attention is devoted to challenges encountered by various stakeholders in Tanzania and Sweden alike, as reflected in interviews.

3.1 System level support

- As noted above, COSTECH is the main vehicle for system level support and considered a cornerstone in the Science, Technology and Innovation (STI) landscape in Tanzania and a key to innovation efforts. The COSTECH national research strategy document, prepared with Sida funding, comprises the entire gamut of sectors and research agendas, reflecting an inclusive process (COSTECH 2016).
- COSTECH receives about SEK 48 million per year from Sida, which accounts for about one-third of its budget. Sida funds are currently transferred directly to COSTECH, not via the Ministry of Finance as before. Disbursement of funds is quick and expeditious, but exchange rate fluctuations are sometimes problematic. The relationship with Sida has been very good, including monthly meetings of sub-programme coordinators. Instructions are clear with regard to reporting, but timely reporting is a challenge.
- COSTECH responsibilities include granting and managing awards sourced from NFAST, a funding facility provided by the government. As the custodian of NFAST, partially replenished by Sida, COSTECH periodically issues open, competitive calls for applications that it processes with external referees. COSTECH respondents indicated that many applicants do not know how to write competitive applications but that applications from stronger universities are generally better. Proposal budgets are invariably revised on given templates within a set ceiling. The best universities are most competitive, but they are also the most likely to secure funding from other sources.
- Commissioned research may also draw on NFAST (but such projects are very few), as well as for innovation. The Innovation Fund, initially funded by Sida, has issued one call for applications and a second is planned. Other donors are expected to contribute to its replenishment. An example of innovation resulting from fruitful interaction between research and development is the seaweed-farming project in Zanzibar, which has created an industry on the island (Msuya 2009).
- Innovation clusters have been set up for SMEs, most of them geared towards processing of agricultural produce. There are 15 innovation clusters at present, but they are not sector-specific. The innovation efforts are based on a triple helix concept, comprising (i) science, (ii) government and (iii) the private sector. Products resulting from innovation need to be certified by Tanzanian authorities such as the Bureau of Standards. A COSTECH respondent asserted that the massive 158-page

grants and innovation manual (COSTECH 2018) prepared with Sida support is not well adapted to Tanzanian reality. A particular challenge is to link researchers and stakeholders towards uptake based on actual needs assessments. Patenting and commercialisation of innovations are particularly challenging.

- With encouragement from Sida, COSTECH applies a moderate form of affirmative action in favour of women researchers. There is no dedicated call for women. However, there are calls targeting young/junior researchers. NFAST no longer has a formal allocation reserved for Zanzibari applicants. However, a one-off special call for Zanzibar alone, yielded 15 acceptable applications of which eight were funded. Training sessions have been held for prospective Zanzibari applicants to improve the quality of their applications and encourage collaboration with the mainland.
- With support from Sida, COSTECH's outreach efforts comprise various strategies including exhibitions, research presentations and training in research communication. Policy briefs are a relatively new and rudimentary development. Interviewees acknowledged that newspaper editors should be brought into the process and COSTECH conducts training for targeted researchers and media with a view to improving the communication of research results to wider audiences. Social media such as Facebook and Twitter are used externally and WhatsApp both externally and internally. The penetration of smartphones in Tanzania is about 40 per cent, albeit predominantly urban. COSTECH acknowledges that more work needs to be done with the communication teams at the universities. Science fora of a workshop nature are organised on specific themes. Still, COSTECH's leadership concedes that not enough has yet been done to organise meeting places for policy-makers, the private sector and the research community.
- In sum, it may be argued that COSTECH has many aspirations, but fewer achievements. When Sida exits from its current bilateral support programme, effectively having lasted 25 years, sustainability issues will inevitably emerge. The project implementation rate will doubtless be jeopardised by Sida's exit as about 80 per cent of COSTECH's operations (excluding salaries, NFAST and support for research projects) emanate from Sida. COSTECH's fate is uncertain with respect to Sida funding beyond 2025. However, as a parastatal some interviewees expect that the government would fill the gap left by Sida.
- An integral part of the national research environment that impinges on the operations of the entire university sector is the Tanzania Commission for Universities (TCU). This institution has had a regulatory role since 1995 with a significant impact on the entire university system that Sida endeavors to promote.
- The TCU support function vis-à-vis the universities is predominantly managerial, not scientific nor related to research matters. All universities accredited by the TCU are obliged to use the University Information Management System (UIMS), which manages all data pertaining to student applications, admissions and transfers (enrolment), as well as graduate and staff information.
- The majority of interviewees perceived the TCU as a bottleneck with regard to approval or validation of curricula and new courses; many, however, recognised that its shortcomings are the result of capacity constraints and limited professional

competence across a wide range of academic disciplines. University leaderships widely recognised this to be the cause of TCU delays, despite previous approval by the Senate of the relevant universities and acknowledged the need for a regulatory authority such as the TCU, conceding that its performance has greatly improved over the years.

- In sum: The overriding objective of Sida's support is to build an integrated research system, including a national innovation system. Some progress has been made, albeit slowly, and there is an emerging (or embryonic) national innovation system is discernible. The main challenge is to make different parts work in conjunction. So far, sub-optimal functioning of the TCU has delayed the implementation of taught PhD programmes.

3.2 Improving the research environment at university level

- Apart from Sida's support at the national system level, the research environment at the level of recipient universities is critical as depicted in the systems approach. Two elements internal to the universities are particularly important: (i) research management support; and (ii) research support elements (see Table 2 for an overview of sub-programmes).
- The former concerns university level policies and strategies, coordination and reform of existing structures to improve the environment. Much of this element is generated by internal stimuli, not necessarily through collaboration with Sida. Even so, it is noteworthy that indirect spin-offs from the Sweden-Tanzania programme have emerged. For example, teaching methods from Sweden have been transferred and adapted to Tanzanian universities, allowing a gradual shift away from dependence on the lecture to transmit information to an emphasis on critical thinking, interactive learning and problem orientation in teaching. At the UDSM, the College of ICT has been at the forefront of implementing new teaching methods, while at MUHAS, novel forms of staff assessment have left an imprint and influenced policy.
- Possibly attributable to collaboration with Sida are several other indirect effects: for the first time, the UDSM set aside in 2019 a significant amount of internal funding earmarked for research and received many applications. It is expected that the amount will increase to TZS 1 billion next year. This facility is an indication – albeit rather late in the long-standing collaborative relationship – of the recognition of the importance of research by the UDSM senior management and Sida has contributed to pushing in that direction.
- Similarly, new positions such as deputy vice-chancellor for research have been established at both the UDSM and MUHAS, indicative of research being accorded higher priority. All three beneficiary universities have put in place coordinators with secretarial assistance dedicated to the Sida-sponsored collaborative research programme and integrated into the university structure. Generally, these secretariats work well and have created good liaison with the coordinator at the Swedish Embassy in Dar es Salaam and with the central International Science Programme (ISP) coordinator at Uppsala University in Sweden, as well as with each of the collaborating universities in Sweden.

- Another spin-off, arguably attributable to the collaborative programme with Sweden, is the introduction of taught PhD programmes combining course work and thesis writing. This is a novelty in a country where a PhD had required a dissertation only. Pending a TCU decision to approve or validate the new reforms, some universities have moved forward on the strength of Senate approval in anticipation that the TCU will be amenable.
- Sida's research support also includes a host of key functions such as ICT and library services, laboratories, internal stipends and funding schemes. However, across the board, interviewees lamented that allocations to these functions have been inadequate, particularly to ICT and library services. Interviewees suggested that one of the reasons why these functions are accorded low priority is the widespread perception that support functions require only modest allocations. They noted that it was precisely upon such support functions that core functions rely.
- For example, all of the universities experience ICT challenges ranging from limited or absent ICT infrastructure to ageing and impractical ICT infrastructure. In both instances, the result is poor or patchy connectivity within the universities, (a challenge also experienced at COSTECH), frequently resulting in poor communication with outside collaborators. ICT personnel at all the universities are cognisant of both the problem and what remedial action is needed, but stymied by old buildings and lack of funds to do what is required.
- Similarly, library services, which are critical in all research, leave much to be desired. The experience some interviewees had in Sweden where library services are excellent, underscored the sub-standard nature of library services in Tanzania. Many returnee PhDs and other staff members continue to rely on colleagues and supervisors in Sweden for access to journal articles. There is clearly a need for increased funding for these fundamental services.
- Most annual planning meetings raised budget issues, some related to initial poor budgeting and others owing to expenditure delays. The notion was widespread that unspent funds could be carried forward to the next year, even to the point of starting educational programmes that could not possibly be completed within the programme period.
- At the university level, Sida's holistic approach extends beyond national borders to the East and Southern African sub-regions as well as to the pan-African scene and beyond the continent. Although exposure to the features and specialities of the Swedish collaborating universities is central, the importance of global networks is also highlighted, be they general or sector-specific.
- Among the various research sub-programmes, involvement in regional networks varies widely. Funding from Sida for PhD students has exposed them to a range of networks through participation in conferences where papers are discussed, and new colleagues met. The potential spin-off of involvement in such formal (through organisations and associations) and informal networks cannot be overestimated.

Table 2: Sub-Programmes of Tanzanian Universities and Swedish Partners

University of Dar es Salaam (UDSM)	
Sub-Programme	Swedish Partner Institution
Fisheries and Aquaculture for Food Security	Swedish University of Agricultural Sciences and Stockholm University
Sustainable Agricultural Productivity and Processing for Enhanced Food Security	Swedish University of Agricultural Sciences
Strengthening Research Management at UDSM	Stockholm University
Interdisciplinary Molecular Bioscience	Uppsala University
Smart Grid Capacity Development	Royal Institute of Technology
Agribusiness and Sustainable Development	Swedish University of Agricultural Sciences
Arsenic and Fluoride Removal in Drinking Water	Royal Institute of Technology
Private-Public Partnership for Sustainable Water Management	Stockholm University
Sustainable Sanitation	Lund University
Building Mathematics Capacity in Higher Education	Linköping Univ; Royal Institute of Technology; Mälardalen Univ; Uppsala Univ; Stockholm Univ.
Innovation and Sustainability in Tourism	University of Gothenburg
Muhimbili University of Health and Allied Sciences (MUHAS)	
Sub-Programme	Swedish Partner Institution
Health System Delivery for Mothers and Babies	Uppsala University
Health System Research Innovation and Socio-Economic Development	Umeå University
MUHAS Support for Research and Innovation	Stockholm University
Control of Malaria and Neglected Diseases	Uppsala University; Karolinska Institutet
Control of HIV and Tuberculosis	Karolinska Institutet
Road Traffic Injury Prevention and Care	Karolinska Institutet; Umeå University
Research Training Support	Karolinska Institutet

Ardhi University (URU)	
Sub-Programme	Swedish Partner Institution
Alternative Urban Planning Models for Small Towns	Swedish University of Agricultural Sciences
Land and Municipal Services in Urban Centres	Swedish University of Agricultural Sciences
Real Estate Market Dynamics and Housing Finance	Royal Institute of Technology
Informality and Habitation in Changing Urban Landscape	University of Gothenburg
Land Resources Vulnerability and HIV/AIDS	Royal Institute of Technology
Commercial Pressure on Land for Large-Scale Agriculture, Energy and Minerals Exploitation	Royal Institute of Technology
Research Support and Community Outreach	Swedish University of Agricultural Sciences

Tanzania Commission for Science and Technology (COSTECH)	
Sub-Programme	Swedish Partner Institution
Research Communication	Stockholm University
Innovation Clusters	Södertörn University

- In sum, it appears that the multiple sub-programmes under the Sweden-Tanzania collaborative programme engage variably with regional, pan-African or global institutions and networks. On the face of it, the principal investigators of the respective sub-programmes are key to developing such relationships. They build partly on established connections and result from new initiatives to cultivate them deliberately.

3.3 Building research capacity

- Building research capacity has been at the centre of Sida's holistic approach, principally through PhD (and master's) scholarships to enhance the competence of academic staff to undertake research. The many research sub-programmes contribute towards the same end, involving both students and experienced researchers (see Table 2).
- The overwhelming majority of the PhD graduates under Sida's collaborative programme with Tanzania acquired their degrees through the so-called sandwich programme. This mode of operation and collaboration involves alternation of sojourns by students between Tanzanian universities and Swedish partner universities. Tanzanians spend stints of 3-6 month at a time in Sweden, mainly for course work related to theory, methodology and research ethics, while the remainder is spent in Tanzania, primarily for data collection purposes. Delays occur, owing

mainly to the teaching burden of students when at home base in Tanzania. Normally, the Swedish universities award the degrees, but in some cases Tanzanians are required to take two degrees, one being a licentiate degree and the other a full PhD.

- There was near unanimous praise for the sandwich programme at the Tanzanian end. A senior academic at one university said: “The sandwich programme is an ideal model”. It has flexibility; some students have opted for a double degree, while others have opted for a joint degree. Both senior university staff and the students who had been through the experience subscribed to that view. Apart from the academic achievement of a degree, the respondents highlighted particular aspects of the sandwich model:
 - Exposure to new and inspiring professional environments and modes of thinking. Not only were Swedish colleagues and supervisors stimulating but the study environments included students from many other countries with whom experiences were shared and networks built;
 - Exposure to new teaching methods and course work. Until recently, PhD programmes in Tanzania had not comprised course work, only thesis writing. Respondents were particularly appreciative of interactive teaching in the form of seminars with preparations, as opposed to memorising, rote learning and conventional one-way lecturing. They recognised that the former tends to mobilise the students into active engagement, whereas the latter, conventional approach tends to limit student agency.
 - A senior academic, himself a product of the sandwich programme, asserted that supervision should be about encouragement and healthy criticism, and about learning how different people approach research, including the social sciences and humanities, rather than confining students to a set way of thinking.
 - Access to laboratories, ICT and other facilities, e.g. library resources. Laboratories are expensive to build, equip and maintain. Tanzanian universities, starved of funding, have had no way of competing with their Swedish counterparts in that regard. Exposure, however, has increased demand as was evident in the new state-of-the-art library recently completed at the UDSM with Chinese aid.
- The only minor reservations voiced by some students had to do with social conditions, including the weather, housing and logistical challenges. Very few had negative experiences that could be construed to be racist in nature.
- In mid-2019, an online survey was conducted by the ISP among 60 coordinators and supervisors at Swedish institutions to review experiences from their vantage point with Tanzanian students and universities (Andersson 2019). The response rate was 73 per cent, representing voices from 24 of the 28 sub-programmes. The assessments by the Swedish respondents were not as singularly complimentary as those expressed at the Tanzanian end. A majority of the respondents (77 per cent) expressed general satisfaction about coordination and supervision, while the remainder had an overall negative experience. The coordinators had a slightly less positive experience than their supervisor counterparts. The positive assessments

pointed to successful capacity-building, its productivity and its high academic quality.

- Most PhD students arrive in Sweden as planned, but starting and graduating within the set time frame has been challenging owing to time-consuming recruitment processes, registration, procurement, release of students' field allowances, and acquisition of resident permits in Sweden. These challenges notwithstanding, the sandwich model was considered efficient by a large majority of the Swedish respondents. Double degrees were considered especially challenging.
- Tanzanian ownership of the budget in relation to supervision was mentioned repeatedly as a concern by the survey respondents, adversely affecting both Swedish institutions and Tanzanian students. Due to lack of budget control, lack of transparency and insight into the budget share covering the Swedish side, supervisors (not in all programmes, though) lamented that they were unable to push projects ahead and help students whenever needed.
- Some respondents considered the Swedish supervisors' budget insufficient. Swedish supervisors receive their normal salaries but use the funds under the Sida-supported programme to buy time for supervision and relief from teaching obligations. In practice, however, the supervisors get mired in administrative minutiae that eat into the time originally allotted to supervision.
- Two-thirds of the respondents were satisfied with their communication with partners in the sub-programmes. The main communication hurdles revolved around time management and planning and were perceived to reflect cultural differences. Examples given included lack of or late response to e-mails, insufficient information regarding meeting agendas, no or little involvement by the Swedish partners in planning, and too short planning horizons. Nearly three-quarters of the respondents were satisfied with the professional and academic aspects of collaboration.
- On average, respondents met their partners physically once or twice a year, and two-thirds of the respondents had participated in Annual Review or Planning Meetings at some point during the current programme phase. However, the general view was that participation in such meetings was not accommodated within the budget. Hence, attendance was not always prioritised or possible.
- Half of the respondents had been involved in annual report writing while one-third had been involved in budgeting, in both cases only to a limited degree. Respondents were less satisfied with their involvement in the budgeting process and wanted more transparency.
- Half the respondents were satisfied with their communication with and administration by the ISP. However, many supervisors expressed no opinion about the ISP because it communicates directly with the coordinators, not the supervisors. The ISP was requested to provide clearer information and earlier updates regarding meeting dates and guidelines for financial reports, and more timely communication regarding programme developments. Four out of ten respondents considered communication with Sida and the Embassy in Dar es Salaam as satisfactory. However, since the ISP handles much coordination and communication, many respondents do not need to communicate directly with Sida or the Embassy.

- Some of the same hiccups noted by the Swedish survey respondents were reiterated by Tanzanian interviewees who repeatedly referred to delays in the recruitment of PhD students to be enrolled in the sandwich programme. In some instances, this was due to the slow development of research proposals, which could take up to eight months since the proposals were sent back and forth between students and reviewers; the students could not be registered before they had their proposal accepted.
- Other hurdles included excessive delays in procurement of materials and services that slowed down project progress due to centralisation of processes leading to bottlenecks. Another recurring complaint in many sub-programmes concerned poor budgeting that in the case of many sub-programmes led to underutilisation of funds and carry-over of funds from one year to another, and in other cases to stalled activities due to shortage of funds.
- Predominantly through the sandwich programme, notwithstanding setbacks and shortcomings, the Sweden-Tanzania bilateral collaborative programme has recorded considerable achievements in terms of capacity-building, measured by the numbers of master's and PhD degrees:
 - UDSM: the total number of completed PhDs was 120 by June 2017, of whom 31 (25 per cent) were women. By the same date, 664 master's degrees had been completed, of which 237 (36 per cent) were by women.
 - MUHAS: the number of PhDs had reached 77 by June 2017, and 16 master's degrees. The proportion of women is unknown.
 - ARU: 24 PhDs had been completed by June 2017, of which 8 by women (one-third) plus 6 master's degrees, of which 4 (two-thirds) were obtained by women.
- During the period 2015–2017, the UDSM recruited 11 postdoc students of the 20 planned. MUHAS had planned to recruit 6 postdocs but proved unable to recruit any at all. Similarly, ARU had planned to recruit one postdoc, but eventually decided against it.
- In addition, 15 enrolled PhD students were heading for a double degree, 41 were registered in Sweden and 60 in Tanzania, altogether 116 PhD students registered during the current phase ending in mid-2020.
- The cumulative effect of all these efforts to build academic competence is that at the UDSM 40 per cent of academic staff now hold a PhD degree (628 out of 1,580). The corresponding figure at MUHAS is 43 per cent, and 34 per cent at ARU. Although the Sida-sponsored collaborative programme cannot claim credit for these cumulative statistics, the Swedish contribution has no doubt been substantial.
- While achievements in terms of built research capacity measured by degrees are impressive, it does not follow that the acquired capacity will automatically come to fruition. Admittedly, Sida's approach has emphasised the systemic integration of discrete components with a view to facilitating research endeavors beyond the training phase. Some success has been accomplished towards that end and the Tanzanian partners have taken many institutional cues from the programme (cf.

above) to ensure continued progress. Moreover, the retention of professional contacts acquired during training can be cultivated and leveraged for continued collaboration. Still, there are hurdles to overcome.

- First, when PhD students return to Tanzania after a time at a Swedish university or after having completed their degrees, they tend to be burdened by teaching and administrative duties that detract from research activities. This is to be expected given the still relatively small number of PhD holders among faculty in Tanzania. The accent on teaching stems partly from the neglect of tertiary education during the structural adjustment era of the 1980s. To redress this, the Tanzanian government prioritises the production of new graduates.
- Even so, a majority of respondents in a tracer study reported that they were engaged in research of direct relevance to poverty reduction and the development of Tanzania. Similarly, they stated that they were currently using the expert knowledge obtained through their PhD training (Freudenthal 2014). Outputs in terms of publications appear in Table 4 and Table 5 and research orientation in Figure 3 – with publications from the three BRC-Tanzania universities representing 32 percent of total national output in 2017.

Table 4: Tanzanian Bilateral Programme Universities: Publications 2008-2017

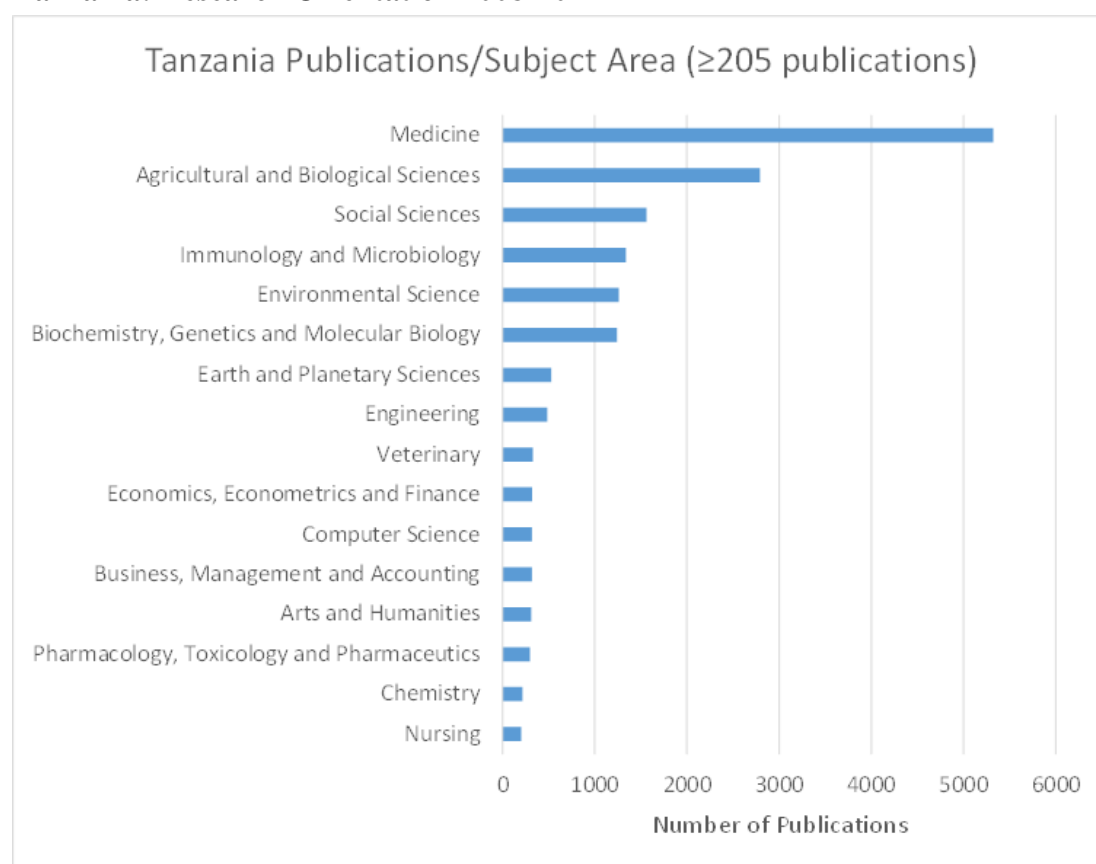
Publication Year	Ardhi University	Muhimbili University of Health and Allied Sciences	University of Dar es Salaam
2008	7	110	141
2009	8	128	142
2010	8	134	144
2011	7	151	156
2012	7	161	140
2013	14	174	180
2014	10	180	201
2015	12	177	224
2016	15	199	214
2017	10	223	273
Total	98	1,637	1,815

Source: SciVal

Table 5: Tanzania: Research Performance 2008-2017

Publication Year	Indicator				
	Publications	Citations/Publication	Top 10%	International Collaboration	Academic/Corporate Collaboration
2008	650	26.9	12.5%	73.2%	2.5%
2009	778	30.6	14.4%	75.7%	2.6%
2010	875	25.1	13.4%	74.2%	2.2%
2011	953	22.6	13.1%	73.6%	2.2%
2012	1,007	17.4	12.3%	76.8%	2.8%
2013	1,113	16.5	14.6%	79.2%	2.4%
2014	1,320	12.9	13.5%	78.4%	2.0%
2015	1,373	13.6	11.9%	80.9%	2.0%
2016	1,472	8.8	12.5%	79.6%	2.2%
2017	1,600	4.1	12.0%	80.1%	1.6%
Total/Overall	11,141	15.8	12.9%	77.8%	2.2%

Source: SciVal

Tanzania: Research Orientation 2008-2017

- Second, although the support elements in Sida's approach have been strengthened, such as ICT and library services, shortcomings remain.
- Third, the main hurdle in the pursuit of research is probably funding. Although NFAST exists as a funding source, its continuous replenishment is in question. Hence, the level of funding it may offer is uncertain. The attitudes among interviewees regarding funding prospects ranged from complacency to worry, mainly the latter. Whatever amounts the government will avail, the universities and COS-TECH will have to boost their efforts to diversify research funding (from foundations, donors, private sector, etc.) and devote more attention to training researchers in designing research projects and writing competitive applications.

3.3 Contributions to policy-making, products and services

- In line with the rationale underlying the Sida ToC, more and better research is expected to contribute to evidence-based policy-making and, to the creation of new products and services through innovation processes. The fulfilment of this expectation depends on the degree to which relevant stakeholders actually make use of generated research results. Therefore, the uptake linkage in the ToC is critical, i.e. do various stakeholders actually draw on the research results in their respective spheres of activity? Even when results are accessible in the public domain, such uptake does not occur spontaneously. It needs facilitation through pro-active intervention (Ndiaye 2009).
- A distinction must be made between different types of contribution, some of which have an indirect impact, whereas others have a direct link. First, research may produce evidence that underpins and improves policies and legislation. Second, tangible products may result from innovative research and commercialisation of prototypes. Third, improved and innovative services, be they new production techniques, the purification of contaminated drinking water, or the development of new vaccines, contribute to societal development. It should be borne in mind, however, that the gestation period from research output to observable impact tends to be long, often disrupted by factors unrelated to the scientific endeavor itself, including political factors of lack of investment capital.
- With respect to policy-making, the contributions of research are often indirect, for example through university graduates. Many alumni of universities are recruited into the civil service and other functions in society. The incumbent president of Tanzania is himself a UDSM alumnus. Some graduates emerging from the Sweden-Tanzania collaborative programme have risen to elevated positions, including a prime minister who was educated at Stockholm University, and three ministers holding key portfolios such as Finance and Agriculture (both graduates of Lund University) and Natural Resources (educated at Blekinge Institute of Technology and Karolinska Institutet). The list also comprises a principal secretary in Ministry of Finance (graduate of Gothenburg University), a governor of the Central Bank (educated at Lund University), a medical chief in the Ministry of Health (a graduate of Karolinska Institutet); as well as a CEO of the Cooperative Rural Development Bank (educated at Uppsala University). It is a reasonable assumption

that these alumni have brought their skills and insights to bear on their respective jobs.

- Most interviewees agree that the researchers and potential users in conjunction need to find effective means of communication and interaction. One alternative raised was policy briefs, but personal interaction through meetings or joint for a was preferred. Contributions emanating from the sub-programmes include wild-life protection; energy and the development; heritage and history; food security; fisheries and aquaculture; rooting out malaria and tuberculosis; developing vaccines; to combating gender and child violence; water purification; flood containment; and understanding climate change (Martin 2017).
- Uptake by the private sector is equally important. Unfortunately, the incentive structure affecting action by academics is almost entirely geared towards publishing. Far too little attention is given to interaction with the private sector e.g. through personnel exchange schemes to facilitate innovation and patenting. Academics need exposure to real-life challenges facing the private sector, and the private sector needs to appreciate what research can and cannot contribute. The current merit system of the university world does not put a premium on such interaction (Barry and Sawyer 2008).
- If and when patents are filed, the road to commercialisation is usually long and convoluted. Public agencies, including COSTECH if mandated to do so as part of its innovation remit, could invest in commercialising promising inventions and innovations. Over the years, the UDSM and COSTECH have supported 57 innovation clusters involving 6,871 firms, 57 per cent of them headed by women (Martin 2017). Some 140 cluster facilitators have been trained under the programme to establish clusters and facilitate the preparation of business plans. Many clusters have interacted with academic institutions to harness knowledge in order to improve the quality of their goods and services. The majority of the clusters have generated more revenue and employed more people. Ultimately, investments in business ventures are likely to yield dividends, in the first instance in the form of job creation. Contributions to GDP and revenue generation for the state could also accrue.
- Interviewees were agreed that issues of intellectual property rights (IPR) need more attention. A national IPR policy adopted by Tanzania in 2007 relates to the World Intellectual Property Organisation (WIPO) and the African Regional Intellectual Property Organisation (ARIPO) based in Harare. However, concomitant legislation has yet to be passed. The UDSM has established an office dedicated to IPR matters headed by a lawyer. These are moves indicative of a paradigm shift away from Tanzania's socialist legacy of state interventionism. Much work remains to be done with regard to IPR awareness-raising, both within the academic community and in the private sector. Participation in courses on IPR and patenting run by the Swedish Patent and Registration Office might be one measure towards that end. The implementation of policy and accompanying legislation once enacted will take time. The Business Registrations and Licencing Agency (BRELA) works with COSTECH on these matters.

- A potential patenting case in point, stems from a Sida-funded sub-programme at the UDSM: the outcome of the fluoride and arsenic project (see table on sub-programmes at UDSM) is cutting-edge technology, highly relevant to Tanzania and other countries in the region. To address the arsenic and fluoride water pollution problem in the Kilimanjaro region, the UDSM has developed a solution at the lab level, which could be translated into a large-scale purification plant in Arusha, where the water table in the surrounding mountainous area has receded and caused fluoride contamination. This would be a public utility with adequate funding to pay the UDSM for the technology it has developed. Tanzania has obtained a loan from the African Development Bank (AfDB) to conduct water to Arusha from Moshi where the ground water is also fluorinated. However, the patenting process is still in the early stages and complicated because the technology has been developed with Sida funding and assistance from the Royal Institute of Technology in Sweden. Therefore, it is not immediately clear who would own the patent. Potentially, however, a registered patent could become a source of income for the UDSM given that dental fluorosis is a problem prevalent in other parts of the region and the new technology offers a solution for which clients would pay.
- Social media and conventional media (print and electronic) are suitable means of outreach to broader constituencies in the interest of awareness-raising regarding the contribution of research to societal development. Broadening the understanding of what research can contribute to solving problems in society will enhance the legitimacy and support for investment in research, and may induce politicians to assume a more favourable attitude to funding research that serves their constituents.

4. Conclusions

- The success of an intervention such as Sida's bilateral programme in support of higher education and research may be judged in terms of four criteria: (a) relevance; (b) effectiveness; (c) impact; and (d) sustainability.
- 4.1 Relevance - the extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs and partners' and donors' policies).*
1. The programme is well in line with Sida/Swedish aid policies, which seek to strengthen national capacity for and ownership of quality education systems and, aligned with global challenges such as the erstwhile Millennium Development Goals (MDGs) and recently the Sustainable Development Goals (SDGs), albeit variably so.
 2. The specifics of the intervention, i.e. the constituent parts such as the 27 substantive sub-programmes emerged primarily through initiatives at the Tanzanian partner universities and COSTECH and as such, are well in line with Tanzania's objective to prioritise training and research and thereby promote an indigenous base of science and technology to enable Tanzanians to solve their development problems.
 3. The program is well in line with Swedish/Sida objectives for development research where local ownership is a core value as demonstrated by the themes and

research questions which emanated from the Tanzanian partners, with some modification.

4. All sub-programmes addressed perceived societal challenges in Tanzania and were applied in orientation and the programme is thus well in line with Tanzania's development objectives.
5. The academic staff who acquired degrees through the programme were appreciative and their enhanced qualifications and skills did contribute to capacity-building for research. Hence, the overall relevance of the intervention was never in question.

4.2 Effectiveness -the extent to which the objectives of the intervention were achieved or are expected to be achieved, taking into account their relative importance.

6. Sida's holistic approach emphasises the inter-relationships of the constituent parts of the intervention, i.e. the building of a coherent research system. Partnerships forged between universities and regional/international research organisations are not necessarily a result of Sida intervention. The building of a systems approach has been only partially successful.
7. Whilst there is some evidence of links between university-based research and national research policies, the link between the universities and COSTECH, the main research regulatory agency, is surprisingly weak.
8. However, with regard to institution-building aspects, the research systems at the three targeted universities are forming, albeit gradually, although some elements remain deficient, notably the core support functions of ICT, laboratories and library services, mainly for want of resources.
9. The administrative functions seem to be faring better and keep improving with innovations such as the establishment of deputy vice-chancellor positions for research.
10. The regional links beyond the borders of Tanzania are uneven.
11. The relationship between the three universities and COSTECH appears blurred; it is unclear how the national research council benefits the research systems at the three universities, let alone how the government serves the same role through budgetary provisions via MEST, and the regulatory role of the TCU.
12. The statistics provided above on master and PhD graduates under the Sida-sponsored programme testify to the high overall effectiveness of the intervention in regard to the training of academic staff.
13. Donor coordination in line with this key principle of the Paris Declaration on Aid Effectiveness, was only slightly evident. Although a group of development partners exists with, their potential for coordination has not materialised yet.⁵¹ Sida's

⁵¹For example, Tanzania recently concluded an agreement with France regarding collaboration in higher education and research, about which the Swedish Embassy was oblivious. Similarly, the relationship is unclear between the recently constructed library building at the UDSM – funded by China – and Sida's support for library and ICT services.

systems approach does not address donor coordination yet harmonisation could enhance the effectiveness of interventions across the board and forestall wastage of resources.

14. While a distinction must be made between the global frontier and that relating to the domestic scene in Tanzania, to the extent the involved academics publish in international fully refereed journals, they contribute to both the global and the domestic pool of knowledge.
15. Furthermore, the thematic thrust of the sub-programmes addresses domestic issues and interviews with principal investigators of 27 sub-programmes clearly indicate that the research outputs contribute to the body of knowledge relevant to the resolution of development problems within the country: some sub-programmes are deliberately designed to overcome development hurdles; others are likely to equally contribute with time or indirectly.
16. Finally, it must be reiterated that whether the research outputs come to fruition will depend largely on complementary action such as adequate dissemination of research results, uptake by relevant stakeholders and investment in complementary activities towards the resolution of societal problems, as well as a policy environment conducive to embarking on such initiatives. The universities and COSTECH have taken some steps towards enhancing dissemination and uptake of research, but the funding – and skills – available to adequately complete this cycle are scarce and diminishing.

4.3 Impact - the durable, long-term positive (or negative) effects of the intervention, directly or indirectly, intended or unintended

17. Bearing in mind that the gestation period of research is long, compounded by a host of political and other variables that affect the road to impact, it is exceedingly difficult to say *a priori* what the impacts might be. It can only be ascertained *ex post* some years down the road. The effective 25-year duration of the Sweden-Tanzania collaborative programme may not be long enough to ascertain durable impact, let alone establish attribution to the endeavour, insulated from exogenous factors. Short of attribution, contribution is rather a more apt term.
18. However, it is *likely* that achievements to date in building a functioning research system, including its qualified and dedicated personnel, will have long-term positive impacts. The main hindrance is probably factors external to the research systems, i.e. the political economy of the country. The government might face resource constraints, leading to inadequate budgetary allocations to the university sector and/or to inadequate investments informed by the research findings.

4.4 Sustainability - the probable continuation of benefits derived from an intervention beyond the discontinuation of donor inputs, and the resilience of benefit flows to risk over time.

1. The benefits of Sida's long-term financial and in-kind contributions to higher education and research in Tanzania, over a long period of time, are undeniable. However, to escape the risk of a dependency trap, domestic efforts, e.g. government inputs through NFAST or otherwise or indeed private sector contributions will be required to fill the resource gap after Sida eventually exits, probably after 2025.

Although temporary respite might come from other external donors, this would only shift dependence from one donor to another.

2. While the resilience and durability of an institution – in this case research systems at the three universities in terms of Sida’s holistic concept – are no doubt affected by the firmness of its financial basis, the intangible aspects such as staff commitment and dedication, the management structure, and the mind-set and outlook also feature in the ambition to build a research system. Despite the precarious financial position of Tanzania’s research system, the infusion of a younger generation of trained academics at all three institutions, the elevation of research within these institutions, the numerous external research partnerships forged by the universities and even the commitment by government to staff COSTECH may suggest that the impact of Sida’s intervention might outlast its exit.
3. However, given that tangible results in the form of degrees seem to have dominated the intervention, in the assessment of the evaluators and many of the interviewees, institutional sustainability has not been accorded enough attention to date.

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VIETNAM

1. Introduction

The bilateral research cooperation (BRC) programme with Vietnam is the fourth case study that was undertaken as part of this review. In contrast to the other three, which are case studies of current programmes, the Vietnam programme ended in 2011. Sida's BRC approach has evolved incrementally over the years and its current form is different from when the Vietnam BRC was active. This limits the extent to which the current model and ToC can be directly applied retrospectively. But as will be seen core elements of Sida's principles of engagement – e.g. ownership and partnership, long-term support, etc. – were present in the Vietnam programme. As will be argued there are sufficient similarities (and some important differences) for the Vietnam programme to be examined through the lens of Sida's current approach. In turn, the Vietnam programme offers a basis for critically debating Sida's current approach.⁵²

The structure of this report follows the framing of the other case studies to the extent that the Vietnam programme evidence addresses the structure. But it also goes beyond it by drawing on the benefits that a retrospective perspective allows in assessing the effects of impact, issues of institutional change and sustainability.

2. Background

2.1 Sida's Bilateral Research Cooperation

Sweden was the first Western country to establish diplomatic relations with what was then North Vietnam back in 1969. This reflected a strong foreign policy position and critical stance towards US actions within the region and this was maintained after unification of the country in 1976. During the Vietnamese invasion of Cambodia in 1979, which led to the overthrow of the Khmer Rouge regime, Sweden continued its support even though most other donors suspended their activities. Thus as an early partner to Vietnam, at a time when most other donors were unwilling to support Vietnam, it had a significant presence and weight of influence that has to be taken into account when assessing its effects. As the evaluation of the long-term cooperation observed⁵³, Sweden built a 'special' relationships with Vietnam that gave it access and ability to work on sensitive issues within a one-party state that few other donors enjoyed. Moreover, its engagement acted as a catalyst in enabling Vietnam to develop productive relationships with other donors.

Sida's BRC⁵⁴ with Vietnam spanned a thirty-five year period from 1976 to 2011. Vietnam's University system was in poor condition in 1976 as a result of the legacies

⁵² A point that was emphasized by Le Than Forsberg.

⁵³ McGillivray 2012 Long Term Development Cooperation

⁵⁴ For much of the funding period it was actually SAREC that supported Vietnam, but this was absorbed

of war. There were major institutional divides between the south and north after unification, in part reflecting the Soviet influence and consequences of it for the education system in the North. This included *inter alia* the creation of a division between universities whose role was strictly confined to teaching and separate discipline-specific research institutes. There are still legacies of this division.

Originally, Sida support to research focussed at the ministry level but after a decade it moved to the university level given the challenges of working through the ministry.⁵⁵ After 1986, it worked primarily at the university level emphasising heavily the building of individual research capacities through training programmes. The solidarity that Sweden gave to Vietnam at a time when it had few international friends, the ways in which that solidarity developed into and built long-term personal friendships and relationships between Swedish and Vietnam partners have been significant elements in the Vietnam cooperation and have had consequences. The significance of personal relationships is a theme that is returned to later but the unilateral ending of that cooperation relationship by Sweden in 2011, although it was long foretold, it still a matter for comment by Vietnamese in 2019. From a Vietnamese perspective, it brought into question the underlying principles of the partnership.

The level and nature of Sida support over the 35 year period was considerable (370 million SEK) and diverse. Overall, it came to support, in its final phases, a range of disciplinary areas, some 26 research institutes and universities spread across the country as a contribution to building a more unified university system. This is a significant point of difference between the current Sida BRC approach, which usually focuses on a single national state university. For its final phases (2005-2011) the support, building on an existing focus, came to be organised into three thematic sub-programme areas. These were biotechnology, health, and rural development including environment, working primarily with universities in Hanoi, Hue, Ho Chi Minh City and Can Tho. The latter two sub-programmes generated most of the PhDs student (32 of the 37 PhD students of the tracer study in 2008⁵⁶ came from these two sub-programmes) and have been the focus of this review. Although the formal bilateral cooperation ended in 2011, various components of the programme have continued at a reduced level with additional funding from Sida, some through its regional office.

2.2 Focus and Approach

Fieldwork for the study was carried out in both Sweden and Vietnam. In Sweden interviews were held with five project coordinators (See Annex 1, Table 1) and with the

into Sida in 2008. For the purpose of simplicity the term Sida is used here.

⁵⁵ Annerstedt, J & Liyanage, S (2008) Challenges when Shaping Capabilities for Research. Swedish Support to Bilateral Research Cooperation with Sri Lanka and Vietnam, 1976-2006, and a Look Ahead, Sida Evaluation 2008:14

⁵⁶ Freudenthal, S (2009) Tracing Research Capacities in Vietnam: Contributions of the Vietnam-Swedish Research Cooperation Programme. Sida Evaluation Report

former Sida coordinator for the final phase of the bilateral research cooperation. A field visit was made to Vietnam between April 22 and May 1 to Hue and Hanoi. Interviews (see Annex 1) were held with a range of academic staff most of whom had been students under the BRC. In addition, interviews were held with a number of independent informants who had familiarity with the Sida programme and a Ministry of Education official who had done her PhD study on the university system.

A modest tracer study was undertaken, building on that of Freudenthal in 2009.⁵⁷ This was done in particular regard to the RDViet programme and to a more limited extent with those who had been part of the MEKARN programme.

The review was not without its challenges. While there is a documentary record with respect to various programme evaluations and follow-ups, which are drawn on, Sida's institutional memory of the programme has to an extent faded and is held mainly by key individuals some of whom have retired. This made the fieldwork element challenging as it had to be pursued through personal connections and networks rather than institutional relationships.⁵⁸

3. Context

3.1 Political and economic context

The nature of the Vietnamese state and its behaviour is a subject of considerable debate. On the one hand, it remains a one-party state under the rule of the Communist party with uncertain space for political dissent or civil contention. On the other, it is widely seen as a developmental state built on a social contract with its citizens, in part forged as an outcome of war. Since the 1980s and as a result of the *doi moi*⁵⁹ reforms it has delivered major results in terms of economic growth and poverty reduction.⁶⁰ The Vietnamese economy grew by 6.8 percent in 2017 and increasing to over 7 percent in 2018. The transition from a very poor agrarian state pre-1980s to one of rapid economic development has been a result largely of the country's integration into regional markets. Vietnam has become a manufacturing hub, importing capital, technology and intermediate goods from more advanced Asian economies that are then exported as finished products (footwear, garments and aquatic products) to the European market and the US.

⁵⁷ Freudenthal, (2009) op.cit.

⁵⁸ In this regard, it should be noted that Adam Pain contributed to the RDViet collaboration from 2006 to 2011 and so comes to the evaluation from an insider position. However, that provided the networks of relationships on which to build the evaluation.

⁵⁹ *Doi moi* (renovation) is the name of the reform process launched by the Vietnamese Communist Party in December 1986. The process became particularly significant after 1989 with the fall of the Berlin Wall. Like the Chinese case, the *doi moi* implied the transition towards a market economy 'with socialist characteristics', without major political reforms.

⁶⁰ Chapman, N. (2017). Mechanisms of Vietnam's Multidirectional Foreign Policy. *Current Southeast Asian Affairs*, 2, 31-69.

The reduction in poverty levels have been dramatic. In 1994, the number of families under the poverty line was about 58 percent, this had declined to about 16 percent in 2006 and the extreme poverty rate in 2018 is estimated to have declined to below 3 percent.⁶¹ The provision of basic services in terms of education and health has improved significantly. Gender gaps have narrowed and there are now more female students attending school than male students at the upper secondary and tertiary education levels. From 1990 to 2015, the maternal mortality rate fell from 233 to 58.3 deaths per 100,000 live births and infant mortality dropped from 44 deaths per 1000 live births to 15 – with no difference between male and female infants. Rural access to clean water has risen from 17 percent of households in 1993 to 70 percent in 2016 and in 2016, 99 percent of the population use electricity as their main source of lighting, whereas in 1993 only 14 percent did. In 1986, the country had a population of about 60 million which reached 97 million in 2018 and over 70 percent of the population is currently under 35 years of age.

Vietnam has ambitions to move from its current lower middle-income status to a higher middle-income country and to achieve this through the development of a knowledge-based economy. However, it faces considerable challenges (compared with other countries in the region), with an inefficient bureaucracy, a high level of corruption, and weaknesses in its higher education system and research capacity. To address these, Vietnam has expanded its multi-sided, bilateral and multilateral cooperation with other countries to boost its higher education through human resources development, new technologies, a competitive industry and sustainable development.⁶²

3.2 The University System

There are complex historical dimensions to the evolution of Vietnam's current University structure and environment, which are very briefly summarised here. Built on a long historical tradition (Confucian) of respect for and value given to education the French colonial intervention effectively downgraded university education for the Vietnamese. The war that divided the country led to a heavy Soviet influence on educational structures in the north. A key result of this was a division between universities solely fulfilling teaching roles and separate independent research institutions linked to government. The result was that post-war Vietnam emerged with a deeply fractured and impoverished university structure. The Soviet legacy has lived on but over time has had diminishing influence although it has not gone.

During the last thirty years the university system has grown both in terms of enrolment rates (29% in 2013) and numbers of universities and colleges (from 214 in 2004 to 442 in 2016). The university structure is complex and often discipline-specific (e.g. agricultural universities, medical universities, education universities) with a division

⁶¹ <https://www.worldbank.org/en/country/vietnam/overview> Accessed July 1st 2019 and the primary source for all data in this paragraph

⁶² Thaarup, J., and Villadsen, S. (2010). Long Term Development Cooperation between Vietnam and Sweden. Stockholm: Swedish International Development Cooperation Agency (Sida).

between the 20 national research universities (see Annex, Table 2), regional universities and colleges which are often amalgamations of small universities and private college and universities. In addition, government research institutions are still prominent under the control of specific ministries.

Originally, all universities were governed by the Ministry of Education, Science and Technology (MOST) but the 20 national research universities were removed from MOST and now fall under their related ministries. The policies governing universities with respect to funding, independence, authority, governance, recruitment and promotion are complex and as one observer has described ‘incoherent’.⁶³ It would be difficult to describe Vietnamese universities as an education system in the sense of being a unified whole. Rather it is a complex web of actors and networks with the outward form of a system but a rather different substance. As a recent assessment noted, there are major challenges to the higher education systems in terms of governance, funding, research and research training, academic standards, graduate employment, internationalisation and staff employment.⁶⁴

The Vietnam government has responded to the need to meet the employment demands of various industries and professions by increasing funding for education. This has seen an expansion in the number of vocational education and training (VET) providers as well as universities to meet the pressure for skilled workers, especially in areas such as information and communications technology (ICT), tourism and healthcare. However, there is still some way to go before Vietnam’s education system can be said to meet the needs of the country’s emerging economic and social demands.

So far, Vietnamese universities have not been ranked in the world’s top 1,000 universities (based on world university rankings). The regulatory environment is highly bureaucratic and centralised through the Ministry of Education and Training (MOET), which has authority over education, including higher education. MOET decides education policy and implementation expectations that extend to rules about student admissions.

MOET is gradually handing over more independence to higher education institutions. However, progress has been slow. Research is weak with academics in universities having little time available due to a high student teaching load and limited access to research funding. Most research is conducted in specialised research Institutes, which are not yet linked closely with teaching, even where they are part of a university. In part, this weakness is a legacy of the fact that universities were seen more as

⁶³ Ahn PhD Thesis

⁶⁴ Anh, L.T.K and M Hayden, 2017, The Road Ahead for the Higher Education Sector in Vietnam, *Journal of International and Comparative Education*, 6, (2), 77-89

teaching institutions and were narrowly focused on professional training and certification to the neglect of other roles. There is an emerging concept of “research universities” that is not well developed or understood. The weakness is also derived from an extremely low level of staff in universities with PhD qualifications that enable them to undertake research effectively.

The publication of research conducted in Vietnam has been low, relative to Vietnam’s neighboring countries. A study conducted by one of Vietnam’s most leading scientists stated that “a vast gulf still separates Vietnamese universities from their peer institutions in the region”.⁶⁵ This he attributed to the graduates of research universities in the region having higher research skills. Hien made a detailed analysis of publications authored by Vietnamese citizens and working in Vietnam and of those authored by Vietnamese working abroad or co-authored with foreigners. He found that Vietnam’s four leading universities⁶⁶ each generated 15-30 times fewer publications than either of Thailand’s two most prestigious universities. Vietnamese co-authors accounted for only 29% of all publications in 2004, and 37% in 2008. In contrast, Thai co-authors accounted for 70% in 2004 and nearly 80% in 2008 of all publications. The analysis suggested that Vietnam had strengths in mathematics and theoretical physics, disciplines that did not need large investments in laboratories. In other disciplines with more impact on development, such as medicine and agriculture, there were more foreign co-authors, suggesting a relative lack of resources in Vietnam to support local researchers with sufficient strength to publish.

Hien concluded that the most important factor explaining the weakness of applied sciences such as engineering in Vietnam was the inadequacy of government policy and a lack of investment in research and training capacity. He noted further the growth in the Vietnamese economy was overwhelmingly concentrated in low value-added sectors such as agriculture, natural resource exploitation and light manufacturing, and that “if Vietnam is to move up the value-added ladder and integrate into global supply chains, it needed a much larger corps of skilled workers, especially in science and technology related fields, than its university system is currently capable of producing. Fulfilling this demand will require a radical change in Vietnam’s R&D organisations, and in higher education system.”

A key weakness is seen to be the funding environment. While a National Fund for Science and Technology Development (NAFOSTED) was established in 2008 and has operated to and been recognised for exemplary standards of peer review and rigorous assessment of research grant applications by merit, it commands only 5% of the

⁶⁵ Hien, P.D (2010) A comparative study of research capabilities of East Asian countries and implications for Vietnam. *Higher Education*, **60** (6), 615-625.

⁶⁶ The current top five universities are the Vietnam National University, Hanoi, The Hanoi University of Science and Technology, Can Tho University and Hue University according to the Quacquarelli Symonds (QS) Asia University Rankings.

national research budget. The rest is allocated through ministries and provincial governments who have entirely different practices. However, universities have also increasingly set up their own research funds which can provide modest grants. A consistent account both from informants and other sources⁶⁷ is of pervasive practices of bureaucratic rent seeking, various described as ‘bureaucratic fees’ or corruption within the system. This is not a rule- or discipline-bound bureaucracy but one that is deeply structured by hierarchy and only penetrated through personalised relationships and networks that are multilevel. It is this system that determines access to resources, funding and employment. This role of personalised relationships is perhaps not surprising given the strength of family relationships and networks of trust that pervade Vietnamese social life.

4. Findings

It is not possible to structure the lessons from the Vietnam bilateral research support to engage directly with the five dimensions of the Sida model (or even retrospectively apply the model) in the ways in which the other case studies have been able to do. In part, this is so because the research cooperation was not specifically designed to make all these contributions and indeed gave up trying to work at the ministry level. Although one can map to an extent processes of change and outcomes in Vietnam’s research, there are challenges of attributing effects to Sida’s contribution. Account has to be taken of the roles of other external actors both before and since 2011 and institutional change dynamics within the Vietnam’s research system itself even within the areas that Sida supported.

Nevertheless, the current Sida approach will be used as a lens to examine effects, and the evidence from Vietnam will, in turn, be drawn on to critically consider the design elements and specifications of the Sida approach itself. After all, Vietnam in many ways could be seen as the almost ideal test ground for the approach given the record of Vietnam as a developmental state (e.g. the rate of poverty reduction) and its commitment to developing a science-based knowledge economy. We will first, however, review the evidence on outputs and outcomes from the two components of the Sida programme that were investigated before returning to consider the broader lessons.

4.1 The Health Programme

There were two components to the health programme. The first was the “Health Systems Research (HSR) Programme” initiated in 1991 with collaboration between Hanoi Medical University (HMU) and Karolinska Institutet (KI) and Umeå University in Sweden. The main aim of the HSR program was to strengthen research and teaching

⁶⁷ See Zink, A (2013) *Hot Science, High Water: Assembling Nature, Society and Environmental Policy in Contemporary Vietnam*, Nordic Institute of Asian Studies, Monograph No 124, Denmark NIAS Press; Anh, Le Thi Kim (2016) *Developing the Academy in Vietnam: An Investigation of the Formation of Academic Identity by University Lecturers in Vietnam*. Doctorate Thesis, School of Education, Southern Cross University, Australia.

competences at Vietnamese medical institutions and through research promote evidence-based decision-making for priority health problems at various levels of the Vietnam health care system. The HSR programme established a demographic surveillance system (DSS) known as FILABAVI. This aimed to follow health and social development in a district through the implementation of focused research studies. The DSS has also providing a framework for research training and education in Vietnam and for participating institutions in Sweden. The PhD training followed Sida's classic sandwich model. By 2008, 11 PhDs had defended their thesis within this programme and by the end of the programme an estimated further 8-10 had completed their degrees.⁶⁸

The second health programme was the "Pathogenesis, diagnosis, epidemiology and treatment of common diseases in Vietnam" initiated in 2000 as collaboration between HMU and KI. The main objective of this programme was to improve the research capacity and competence among young academic staff (all medical doctors, MDs) at HMU through postgraduate education. Research subjects were selected at HMU according to the specific needs for Vietnam and the possibility to match with supervisors and interests at KI. Six PhD candidates had defended their thesis by 2008 and a total of 17 had graduated by 2012.

A consistent and emphatic comment made by all the informants who graduated from these health programmes was of the value of their experience in doing their PhD in Sweden. There were two dimensions to this. The first was of the experience of and learning from different teaching approaches that were more interactive than those that they had experienced in Vietnam. The second was of the research process and the culture of supervisory practices. The informants spoke of the steep learning curve they went through in terms of becoming responsible for their own research, the value of working in research teams and of open-minded enquiry. In short, they learned the requisites of becoming high-quality researchers. This experience of teaching and research they have carried back to their positions and practice in Vietnam.

As a consequence of the long-term support given by Sida, the prominence of Sida funding to the medical sector during this period (1991–2011) and the fact that almost all PhDs that have been trained have remained in the Vietnam health sector⁶⁹, possibly up to some 50 PhDs in health have now risen to senior positions in the Vietnamese medical system. As one informant observed, they are 'the Swedish cohort' and another informant listed the positions that they now occupy, varying from heads of departments, deans, professors, directors of hospital, directors of international organisations and so forth. They have in effect created a critical mass of researchers and senior staff within the medical system that has had undoubted effects on influencing research culture and practice at an institutional level. The establishment of an alumni association of KI graduates has certainly fostered a sense of common identity and

⁶⁸ Precise figures on the total number of PhDs in Health Sciences have not been tracked down; Freudenthal (2009) gives figures for up to 2008 and various estimates were provided for after 2008.

⁶⁹ A point emphasised by Freudenthal (2009)

contributed towards supporting the next generation of medical researchers. But there are also second-generation challenges now in that there is not a cohort of similar size coming through after them with an equal quality of training experience.

The Vietnamese graduates returning from Sweden certainly faced challenges within the university system particularly a decade or so ago. These included the heavy influence and dead hand of senior Soviet-trained staff who did not have the research tradition in which the KI graduates had been trained. There were also bureaucratic obstacles and corruption as well as heavy teaching loads, combined with relatively low salaries. Some of these constraints have to an extent been reduced over the last decade. The ‘glass ceiling’ as it was termed by one informant has slowly been pushed upwards as older Soviet trained staff retired, research teams have been established and new forms of research funding based on merit have been created. However, these funds are still a small proportion of overall research funding available in Vietnam.

In addition, other international collaborative endeavors have developed leading to new research partnerships with the US, France, the UK and so forth. This is a point that is returned to later. Although the scale of collaboration between KI and Vietnam has certainly reduced since 2011, the strong personal relationships between key staff of the partnership has supported a reduced programme of cooperation with additional funding from Sida and other sources. In part, this has been facilitated by a Swedish medical graduate from the cooperation who married a Vietnamese, remained on the KI staff and has come to play a brokerage role finding funding sources to keep the collaboration alive.

There is certainly strong evidence of rising numbers of international publications by many of the Swedish-trained Vietnamese staff (see table 1 with respect to Hanoi Medical University), in part supported by government policy that has increasingly set standards for performance and promotion that include international publications. There is also strong evidence reported by the informants of the relevance of much of the research and its influence on policy-making with respect to, for example, policy towards geriatrics, osteoporosis and so forth.

4.2 Agriculture

The start of the agriculture programme under the Sida BRC was the “Integrated Farming Systems Research Project” (1989-2002) which sought to develop research capacity through improvement of facilities, research collaboration and research training at four research institutes/universities in Vietnam with the support from the Swedish University of Agricultural Sciences (SLU). The four Vietnamese institutions were situated in Northern, Middle and Southern Vietnam.⁷⁰ At first, the project focused on master training since there was no equivalent master’s program in Vietnam. The students from the four Vietnamese institutions spent part of their time in Sweden at SLU attending graduate courses and part of their time in Vietnam carrying out

⁷⁰ National Institute of Animal Husbandry (NIAH) in Hanoi, Hue University of Agriculture and Forestry (HUAH), The University of Agriculture and Forestry in Ho Chi Minh City (UAF-HCMC), later renamed Nong Lam University) and Can Tho University (CTU).

farm-based research. In 1996, some of the best MScs were able to continue to the PhD level. The sandwich training model for the PhD programme was followed and over the years 14 people were awarded their PhD degrees under this programme.

In 1989, a second Sida-SAREC financed research project was initiated, involving collaboration between SLU (Department of animal nutrition and management) and four Vietnamese institutions – The National Institute of Animal Husbandry (Hanoi); Hue University of Agriculture and Forestry; The University of Agriculture and Forestry in Ho Chi Minh City; and Cantho University. The goal of the project was to increase the research capability of these four institutions, with a focus on sustainable livestock-based smallholder agriculture. This led in 1992 to the establishment of an international Master of Science (Sustainable Livestock Systems), supported by Sida/SAREC, and initially based at SLU. From 1996 onwards, however, the programme moved to Vietnam, but with the degrees still awarded by SLU. In 2001, this was absorbed into a new South East Asia regional programme (MEKARN) that included selected universities and research institutes in Laos and Cambodia as well and also added training to PhD level.

Although not strictly part of the Swedish BRC with Vietnam as it was a regional programme, “MEKARN” (Mekong Basin Animal Research Network) continued with a strong Vietnam component. The objectives were to strengthen cooperation in research and training, exchange ideas and experiences and to improve the livelihood of poor farmers in the Mekong delta (Vietnam, Laos and Cambodia). Activities have focused on the sustainable use of natural resources in integrated, small-scale livestock-based systems like, for example, finding local feed alternatives or improving animal health, growth or fertility. Since the MEKARN project started, 32 students from the three countries have received doctoral degrees and 63 students have received MSc degrees. About 36 % of the students were female. All research was done in their home country with periods of education and dissertation at SLU, according to the “sandwich model”. In addition to the training, small research grants and networking have been a key part of the support. MEKARN continued into a further phase beyond the end of the BRC with Vietnam in 2011, with funding from the regional office of Sida. This additional phase ended in 2018.

A more direct continuation of the farming systems programme but with a broader interdisciplinary approach was the “Sustainable Rural Development Programme” or the RDViet programme which started in 2004. This was based at Hue University of Agriculture and Forestry (HUAF) with SLU as the Swedish collaborating partner. Notably it was a collaboration between five Vietnamese partner Universities⁷¹ who sent their staff to the Hue based master’s programme in rural development that had been developed and was part taught by staff from SLU. Three rounds of the master’s

⁷¹ Hue University of Agriculture Science (HUAF); Vietnam National University of Agriculture (VNUA); Nong Lam University (NLU), Vinh University (VU); Can Tho University (CTU); Ang Gang University (AGU); National Institute of Animal Husbandry (NIAH) and Institute of Policies and Strategies of Agriculture and Rural Development, Ministry of Agriculture (MARD).

courses were held producing 30 master's graduates who went back to their universities and research institutions afterwards. There were also four Vietnamese PhD candidates within the programme.

The Vietnamese coordinator of the rural development programme was a former PhD student from the farming systems programme, and a PhD holder, professor and vice rector at the university. The RDViet combined master's and PhD training, a small grants programme for staff members of collaborating Vietnamese universities, small research grants for master's graduates on graduation and the organisation of annual research meetings over the period 2004-2011. Thus, in contrast to the health collaborations the agricultural programmes by design and from the beginning had a mix of support with strong networking involving several Vietnamese partners, formal training with small grant awards and regular research meetings.

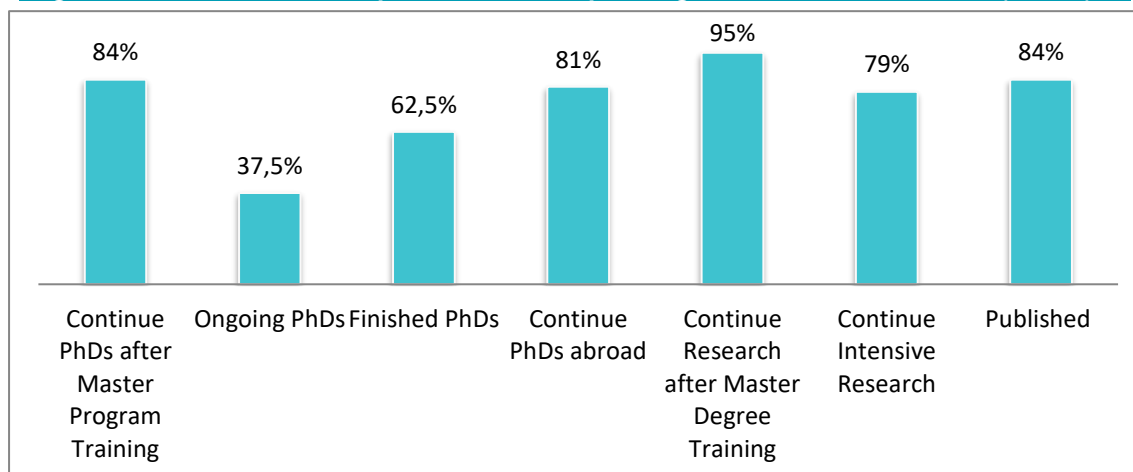
As with the health programmes, graduates from the master's and PhD agricultural programmes all spoke strongly and positively about their educational experience both in Sweden and in Vietnam. They noted not only how it had contributed to their ability to be an effective researcher but also how it had led to systematic changes in their teaching practice and a more interactive practice with students. Of particular note is the fact that the design and curricula of the RDViet master's in Rural Development provided the basis of new Vietnamese master's programmes in Rural Development that were gradually established during the life of RDViet in HUAF and other partner Vietnamese universities.

In contrast with health programmes, and by design, the graduates from these programmes came from diverse institutions spread across the country and therefore did not generate quite the critical mass effects that can be seen in the health programmes. Nevertheless, the small grants component of the programmes meant that many researchers benefited from the funding. Many appreciated that the small grants were awarded on a personal basis giving them room to experiment and develop as researchers. As the animal husbandry department at HUAF commented, although the level of MEKARN funding had been less than for other projects, the benefits of small-scale funding over a period of time (and many received sequential MEKARN grants after they had acquired PhDs) were greater than one big centrally designed project. Balanced against that experience the deliberate networking within the design of the agriculture programmes has had important effects and led to durable research and teaching relationships.

As with the health programmes almost all of the 20 plus Vietnamese MEKARN students have remained in Vietnam rising to senior positions in research institutes or in their universities becoming professors, vice-chancellors or deans. From the RDViet programme over 80 percent of the interviewed master graduates (19 out of 30) have gone on to do PhDs (see Fig.2), over 80 percent of these were done overseas and two-thirds of them have now finished their PhDs. Almost all have continued in their university department or institute, continued with research and have published (see Table 1). One of the graduates is now a dean and several are heads of departments. One has

risen to be a deputy head of department in the Ministry of Education and Training and another is deputy director in the Ministry of Agriculture's research institution.⁷²

Figure 1. Career Development on completing the RDViet Masters (N=19)



The evidence is more mixed in relation to research publications in comparison with health (see table 1). For the MEKARN the final evaluation⁷³ pointed to 'the very high publication rates in international refereed journals as being exceptional and as [speaking] to the strengths of the MEKARN mentorship programme'. The programme generated over 155 publications in international refereed journals.

For the RDViet graduates, the publication record is understandably more modest and has largely arisen from the PhD research they have subsequently undertaken. Nevertheless, some individuals who have graduated from the RDViet master's programme have published a significant number of international papers, in other cases the more applied focus of some of the research has meant that publication within Vietnam has been a more appropriate. Overall, the international publication level from HUAFF is increasing, particularly in the scientific subjects. There are also specific examples of research uptake from some of the livestock research, and the strong shift from producing graduates for government service to producing graduates for the private sector in agriculture is driving stronger links between research and uptake. Policy influence is also evident from those graduates who are working in government policy research institutions.

⁷² Institute of Policies and Strategies of Agriculture and Rural Development, Ministry of Agriculture and Rural Development (MARD).

⁷³ ViFARD (2013) Sustainable Farming Systems in the Lower Mekong Basin (2008-2012) Evaluation Report: 4.

Table 1: Publications by RDViet (N=19)

Pro-gram		Interna-tional Articles	Na-tional Article	Interna-tional Book	Na-tional Book	Re-search Papers	Other Publica-tion
RDViet	Mean	2.4	4	1.4	1.83	3.29	2.38
	No	15	9	5	6	14	8
	Min	0	0	0	0	1	1
	Max	5	10	3	6	6	7

Source: Interviews with 19 former RDViet Master students, April-May 2019

The evidence on research productivity and environments more conducive research is also mixed. A key challenge that many but not all staff face, is the teaching burden, which severely limits the time for research. There are continuing challenges of re-search funding and while there is limited funding both from the university and from national funding bodies (NEFOSTEC) it is more focused on younger staff, limited in amount and difficult, but not impossible to get. There are also challenges of negotiat-ing personal networks and avoiding paying forms of bureaucratic rent within the uni-versity system. For those who work on the social dimensions of rural development, access to research funding is even more difficult and the challenges of international publications even greater. However, low salaries also drive the need to find second sources of income.

Gender

Issues of gender cut across all the programmes. In terms of recruitment to the pro-grammes the practice of gender balance has been operational from the start. Inter-views with women who were part of the MEKARN programme provided a consistent comment that they were aware that MEKARN had a principle of selecting a woman if there was a man and a woman of an equal calibre for the programme. Of the 30 RDViet graduates, 16 were women. While the gender division for the health pro-grammes was not determined, of the 18 health PhDs interviewed in 2008⁷⁴, eight were women. The sandwich model for the overseas PhDs was certainly seen as an ad-vantage by women as it enabled them to balance the responsibilities of a professional life with the demands of commitments to the family which a fulltime overseas PhD would not allow.

As many of the women interviewed made clear, they see themselves as having double responsibilities in their life – for the family and for their professional life. This has consequences for the time that they will allocate to their academic life and by vir-tue of the teaching burden, leaves less time for research. Yet, they manage it carefully and many have risen to senior positions as heads of departments, deans and so forth. However, as a number commented the further up the academic hierarchy the fewer

⁷⁴ Freudenthal (2009)

women are found. As one informant put it ‘where are the female rectors and vice-rectors?’ There is in effect a glass ceiling for women reflecting Vietnam’s academic and political culture.

Summing Up

In sum, the specific evidence from the health and agriculture sub-programmes point clearly to research capacity having been built, contributions to new knowledge being made, with improved teaching practices and contributions to society. The research environment has also become more conducive to doing research although it is not without challenges. All of this in combination points to changes in the research system although how this change has come about needs discussion and we return to this later.

4.3 Broader evidence of change

There is also broader evidence of change and we draw here on the international publication record of the top academic institutions to make this point. The data in table 2 clearly point to a significant increase in the number of international publications from Vietnam’s leading research institutions, with the key universities (e.g. Hanoi Medical University, Hue University of Agriculture and Forestry, although noting that it cannot be separated out from the aggregate figures for Hue University) that have been supported by Sida ranking within the list.

Table 2: Top 10 Vietnamese sources of international scientific journal articles in 2007-2009 and in 2015-2018 (Ranked by 2015-2018 share)

Author’s home institution	Articles Au-thored (2007-2009)	% Share of all Viet-namese In-ternational Journal Ar-ticles N = 2388	Articles Au-thored (2015-2018)	% Share of all Viet-namese In-ternational Journal Ar-ticles N = 17054
Vietnamese Academy of Science and Technology (VAST)	292	12.2	2,016	11.8
Hanoi University of Technology	103	4.3	1,287	7.6
Vietnam National University, Hanoi	171	7.2	1,284	7.5
Hanoi University of Science	62	2.6	583	3.4
Hanoi Medical University	70	2.9	359	2.1
Hue University	49	2.1	329	1.93
Hanoi National University of Education	84	3.5	257	1.5
Institute of Mathematics, Hanoi	88	3.7	159	0.9

Nong Lam University, HCMC	40	1.7	152	0.9
National Institute of Hygiene & Epidemiology, Hanoi	89	3.7	4	0.02
	1,048	43.9	6,430	37.65

Source: For 2007-2009 data, ISI Web of Science, 2010 reported by Zink, (2012:49); for 2015-2018 data

The increased publications count should not be overly celebrated since it says nothing directly about quality, research productivity or ranking in international citation indices. It certainly cannot match China's share of STEM papers published in Scopus that rose from 4% in 2000 to 19% in 2016 putting a number of Chinese universities in the top 1% of most highly cited papers in maths and computing.⁷⁵

There is also evidence of a rising number of international collaborations in research, which can be interpreted as indicative evidence of Vietnam being drawn into international research and knowledge networks after the Sida BRC ended and so speak to the continuation of and sustainability of research activity. Again, the outputs in terms of publications have increased from such collaborations over a ten-year period (see table 3) with the leading country collaborations with Japan, USA, South Korea, Germany and China having increased in significance. However, it is also interesting to note the countries that ranked in the top 15 partner countries 2007-2009 had dropped out of the ranking in 2015-2018. These include Thailand, Belgium and Sweden.

Table 3: Top 15 International partner countries in the publication of international scientific journal articles in 2007-2009 and in 2015-2018 (ranked by 2015-2018 position)

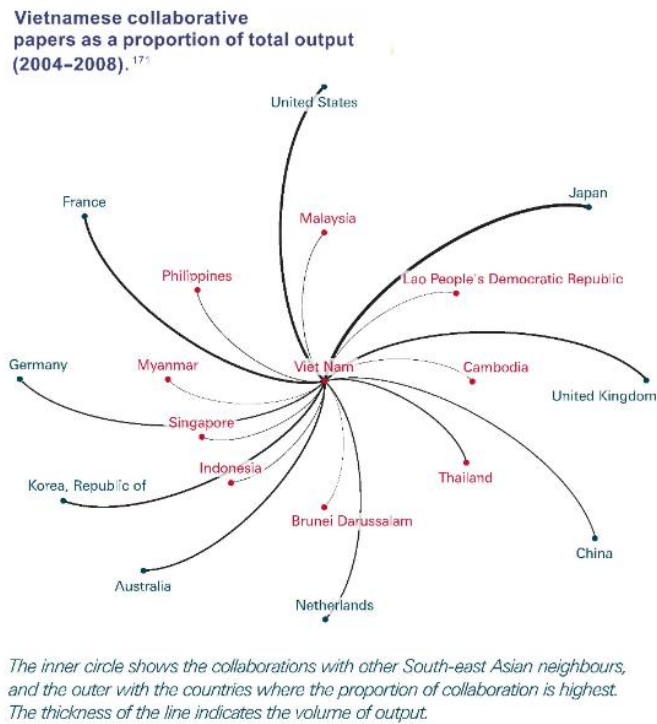
Country	2007-2009 (N = 2388)		2015-2018 (N = 5531)	
	Articles Authored	% Share of co-authored articles	Articles Authored	Share of co-authored articles
Japan	373	15.6	1,054	19.1
USA	282	11.8	1,007	18.3
France	243	10.2	864	15.7
South Korea	214	9.0	788	14.3
Germany	140	5.9	768	13.9
China	107	4.5	638	11.6
Russian Fed.			595	10.8
Australia	178	7.5	491	8.9
UK	164	6.9	487	8.8
Italy			394	7.1

⁷⁵ The Economist, Looking to Beat the World, November 17th 2018:66

Netherlands	121	5.1	383	6.9
Spain			355	6.4
Poland			323	5.9
Switzerland	62	2.6	313	5.7
Brazil			294	5.3
Thailand	119	5.0		
Belgium	100	4.2		
Sweden	89	3.7		
Denmark	70	2.9		
Taiwan	59	2.5		
	2,321	97.4		

Source: ISI Web of Science 2010 (Zink, 2012:53)

There is also a wider data set that points to the significance of Vietnam's collaboration with its Southeast Asian neighbours in comparison with countries where its collaboration is highest.

Figure 2: Vietnamese international collaborations⁷⁶

¹⁷¹ Analysis by Elsevier based on data from Scopus.

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A further refinement is to look at the specific institutions that Vietnam collaborates with and how those relationships have changed over time. As Table 4 shows, there has been a fairly major change since 2008–2009. Key partners that were present in this period including KI by 2015–2018 had dropped out of the top ranking. In part, this may have been driven by the rise of international partnerships in physics which is the subject of focus of the top four partner institutions in 2015–2018. But note should also be made of the appearance of high-quality European universities, including Oxford and Cambridge University and Imperial College in the ranking of collaborating partners. This indirectly could be seen as a reflection of Vietnam's increased standing in terms of global science.

⁷⁶ Source: Royal Society (2011) Knowledge, Networks and Nations: Global scientific collaboration in the 21st century. London, The Royal Society: 55

Table 4: International institutions that collaborate with Vietnamese scientists in the publication of international scientific journal articles in 2007-2009 and 2015-2018 (ranked by 2015-2018 position)

Country	Articles Authored (2007-2009)	% Share of co-authored articles	Articles Authored (2015-2018)	Share of co-authored articles N = 5531
Istituto Nazionale di Fisica Nucleare – INFN, Italy			2,257	40.8
Russian Academy of Sciences	45	1.9	968	17.5
Consejo Superior de Investigaciones Cientificas, Madrid, Spain			424	7.7
National Research Centre Kurchatov Institute, Moscow			415	7.5
Centre National de La Recherche Scientifique (CNRS) France			294	5.3
National Academy of Sciences in Ukraine			286	5.2
Polish Academy of Sciences			274	5.0
Sorbonne University			268	4.9
University of Oxford, UK	105	4.4	264	4.8
University of Valencia			258	4.7
Imperial College London			255	4.6
Universität Heidelberg			250	4.5
University of Paris 6, France	25	1.0	244	4.4
University of Groningen			243	4.4
University of Tokyo, Japan	54	2.3		
University of Copenhagen, Denmark	44	1.8		
Chungnam National University, Korea	38	1.6		
Mahidol University, Thailand	35	1.5		
Institut Pasteur, France/Vietnam	34	1.4		
Karolinska Institutet, Sweden	34	1.4		
World Health Organisation International	33	1.4		
Kyushu University, Japan	26	1.1		
University of Paris 11, France	26	1.1		
Nagasaki University, Japan	24	1.0		

Source: 2007-2009 ISI Web of Science (Zink, 2013); 2015-2018

5. Conclusions and Lessons from BRC with Vietnam

5.1 Conclusions

Three summary conclusions can be drawn from the Vietnam case study in relation to the effects of the research collaboration. They all confirm the *relevance* of support, its *effectiveness*, the *impact* that it has achieved and its *sustainability*. These conclusions are consistent with the findings of the effects from Sida's general support to Vietnam.⁷⁷ They also speak to Sida's core values of building long-term relationships, partnership and ownership.

First, the nature of research cooperation with Vietnam has had some distinctive elements that appear to contrast with the current Sida approaches. Key differences include a focus in Vietnam on multiple rather than single national universities and a greater emphasis on individual research capacities rather than institutional capacities. The building of individual capacities has been pursued at both master's and PhD levels with a graduated approach in the master training moving from Swedish to Vietnam based master's. However, almost all the PhD level training has been done through the classic sandwich PhD approach. But attached to the formal training and particularly so in the case of the support in the agriculture/environment area there have been additional components to the support that has included research training, small research grants both at pre-PhD qualification and post-PhD and networking support. This has been highly appreciated and effective, and has in various ways provided support beyond the PhD and has been a significant contribution.

Second, there is no doubt that the Sida BRC-V has contributed significantly to the building of individual Vietnamese research capacities and ten years on many of these individuals have risen to senior positions. As a consequence of the long-term partnership at a time when Sida was a major player with considerable influence in supporting Vietnamese universities, this has meant that Sida funding has contributed to building a critical mass of research scientists in the areas that they have funded. This critical mass as it has risen in seniority has had undoubted but unquantifiable effects in building teaching and research cultures at an institutional level. It also reflects the personal qualities, commitment and dynamism of the individuals who are part of this critical mass. This speaks to the need to consider the specific cultural setting in understanding processes of change.

There are two implications that arise from this conclusion. The first is that it is through individuals working within the university system that change is being brought about and that in part this is an endogenous process. This speaks to the importance of recognising the role of social actors as 'institutional entrepreneurs'. The second implication is that in shifting from a sandwich model to local PhDs, Sida is in effect perhaps losing influence and access to key agents of change.

Third, the increased number of qualified research staff has undoubtedly led to a significant rise in internationally published research although Vietnam overall lags

⁷⁷ McGillivray et al (2012) op.cit.

behind the region in terms of research productivity. Research outputs have influenced policy and had facilitated uptake in agriculture, for example. New international research partnerships have been built and funding from other international sources have been secured. There is now more but limited government funding for research as government places greater emphasis on innovation and technology as drivers of growth.

5.2 Lessons and Considerations

However, beyond a retrospective assessment of the legacies of bilateral research cooperation with Vietnam, there are some wider reflections worth examining and two are explored here. The first is to examine what the Vietnam case offers to a critical consideration of the Sida model and Basic Logic. The second is the puzzle of the relative absence of the institutional presence of Swedish universities in Vietnam ten years after the bilateral programme ended.

(a) The Sida model/approach and Basic Logic

Sida's current model of engagement envisages a systems approach focussing on research management, research infrastructure and research training. Sida in its early days of research cooperation in Vietnam attempted to work at the ministry level but in time it shifted to work with universities because of the challenges of working at the higher level.⁷⁸ It is worth considering the challenges that Sida's might face in applying its holistic approach now within the Vietnamese university system and the extent to which it might work. This is of course speculative but it draws attention to the need to think through processes of institutional change in their specific context and addressing the existing relations of accountability within the university system. That is the relations between a ministry and a university head, between the university head and the heads of departments and the heads of departments and individual staff members.

A Sida intervention would be likely to seek to develop a rule or discipline-based systems around delegation of responsibilities, finance, information and motivation or incentives.⁷⁹ The challenge would be that a rule-based system around these elements would be incoherent with existing incentives that structure the system. One might get the appearance of a system operating according to the rules but in practice functioning in an entirely different way.⁸⁰ In short, a theory of institutional change, which at present appears to be missing from Sida's systems approach and ToC is needed to address how, given the existing ways in which the universities operate, changes can be brought about in the relations of accountability and how such change would be assessed.

⁷⁸ Freudenthal 2009

⁷⁹ This draws on Pritchett's analytical framework of coherence and incoherence in education system (Pritchett, L (2015) *Creating Education Systems Coherent for Learning Outcomes: Making the Transition from Schooling to Learning*. Research on Improving Systems of Education (RISE) Working Paper)

⁸⁰ This is what Pritchett calls 'isomorphic mimicry'.

But, in turn, that begs the question of the extent to which one can talk of a university system with a hierarchy of system levels in Vietnamese universities. What is strongly evident at present is the personalised networks that permeate the structure and shape how the Vietnamese university system operates. In part, this reflects the everyday lifeworld of Vietnamese and the centrality of the family across all its generations and highly personalised trust networks. However, just as much as networks can include, they can also exclude and when personal networks spill over into professional networks where what is at stake is access to material resources, merit and qualifications may matter less than personal relationships.

Thus, there are still significant challenges in Vietnam's university environment which raise questions about the very nature of institutional change in Vietnam and whether or not external actors and to what degree can influence such change. There was a striking conversation with one interviewee when the issue of how change was brought about within Hanoi Medical University was discussed. She commented on how there were limits to working within the system, but she had got around it by setting up an external organisation that could influence in a different way. This speaks to a more general observation about the nature of institutional change in Vietnam. While there is the appearance of a monolithic and omnipotent state, the reality is that key changes in policy direction are often an outcome of diverse and localised resistance and experimentation and policy-making is highly iterative.⁸¹

Might there be a more helpful way of thinking about institutional change and how it happens rather than simply following what appears to be more of a rational choice approach inherent in the Sida Basic Logic linked to incentives and reflected in its systems approach to research capacity development? Indeed, the Basic Logic while identifying the changes it expects to see offers little understanding of the causal processes that might bring these about. Research is a social activity and is more often than not conducted as a form of collective action (of which research networks are an element). The evidence from Vietnam points more to the role of individuals collectively bring about change within specific arenas or scientific fields. Vietnam offers evidence of the key role of charismatic research leaders in bringing about change. There is a need to think more and conceptualise how stability and change is brought about by social actors within formal bureaucratic structures to help us understand the links between micro and macro level change processes in research capacity development.

(b) Institutional Partnerships

Sida ended its bilateral research cooperation with Vietnam in 2011 and it was an action that Vietnamese partners still talk about. While at one level it is understood, it is also at another level an incomprehensible behaviour to Vietnamese in terms the withdrawing from and rupturing a relationship of trust. The contribution of Sida is widely

⁸¹ See Shanks, E., Luttrell, C., Conway, T., Vu Manh Loi and Ladinsky, J (2004) Understanding pro-poor political change: the policy process. London, Overseas Development Institute

acknowledged in Vietnam but a question that could emerge from the Vietnam cooperation is about the substance and nature of the partnership. Many of the informants described their position under the Sida BRC-V as one of a recipient (and a willing one) but also felt that over time, they had moved to a position of greater equality at which point the institutional partnership was ended. It continued, of course, at a reduced level because of the personal relationships that underlay the relations between institutions. But it appears on the face of it that the institutional partnerships both with Sida and Swedish Universities after 2011 have withered. One can understand the constraints on Sida in terms of its available choices that have limited its presence after 2011. Nevertheless, a case could also be made for reduced but continued support after 2011 that might have contributed to leveraging the institutional partnerships to a different level.

The greater puzzle is with the Swedish universities in that the partnerships appear not have endured or matured after 2011 at an institutional level beyond Sida funding. The comparison to be made is with other partnerships that universities in Vietnam have established. A core example is the setting up by Oxford University a Clinical Research Unit of units within the Medical Universities in Hanoi and Ho Chi Minh city. These are staffed by senior Vietnamese and UK research staff and have various partnerships and collaborations within Vietnamese medical researchers that appear as collaborations of greater equality.

Karolinska does not have that presence although a staff associate who graduated through the Karolinska-Vietnam collaboration and is based in Hanoi has continued to broker and seek funding for ongoing collaboration of researchers. As this staff member observed, as a small country such as Sweden needs Vietnam as a research site to be able to work on medical research problems of global importance. Various collaborations that the Hanoi National University of Agriculture now has involves mutual exchange of staff and students and joint research. But the collaboration of SLU with HUAH has almost vanished, which is surprising given both the quality of research staff that now exist in Hue and what Vietnam offers in terms of a research site for agriculture and rural development.

The question arises as to why the Swedish universities have not developed partnerships in Vietnam beyond Sida-funded bilateral cooperation in their bids to be institutions of global importance. In part, it may be an issue of size since Swedish universities by European standards are relatively small. It may also be in part a cultural issue since Swedish universities, given their limited number and the countries small size, are relatively inbred. By this we mean, reflecting the relatively small pool from which it draws, a full academic career from undergraduate to faculty member may be spent inside the same department. The historical reliance of Swedish universities on funding from Sida bilateral funds may also be a consideration in that it has limited the imagination to work in a different way and build more global partnerships. Whatever the reason, it is difficult not to see the decline in Swedish institutional collaboration as an opportunity lost. Whether it can be recovered remains to be seen.

List of 20 National Research universities in Vietnam in 2019

	Vietnamese name	English name
1	Đại Học Quốc Gia Hà Nội	Viet Nam National University, Hanoi
2	Trường Đại Học Quốc Gia Thành Phố Hồ Chí Minh	Viet Nam National University, Ho Chi Minh City
3	Đại Học Kinh Tế Quốc Dân	National Economics University
4	Đại Học Kinh Tế TP HCM	University of Economics, Ho Chi Minh City.
5	Trường Đại Học Sư Phạm Hà Nội	Hanoi National University of Education
6	Trường Đại Học Sư Phạm TP HCM	Ho Chi Minh City University of Education
7	Trường Đại học Vinh	Vinh University
8	Trường Đại học Cần Thơ	Can Tho University
9	Đại học Đà Nẵng	Da Nang University
10	Đại học Thái Nguyên	Thai Nguyen University
11	Đại học Huế	Hue University
12	Trường Đại học Công nghệ Giao thông Vận tải	University Of Transport Technology
13	Trường Đại Học Y Hà Nội	Hanoi Medical University
14	Đại học Y Dược Thành phố Hồ Chí Minh	Ho Chi Minh City University of Medicine and Pharmacy
15	Đại học Bách Khoa Hà Nội (HUST)	Hanoi University of Science and Technology
16	Học Viện Nông Nghiệp (VNUA)	Vietnam National University of Agriculture
17	Đại học Hàng Hải (VIMARU)	Vietnam Maritime University.
18	Học Viện Quân Y	Military Medical Academy
19	Học Viện Kỹ Thuật Quân Sự	Military Academy of Technology
20	Học viện Báo chí và Tuyên truyền tên tiếng Anh	Academy of Journalism and Communication

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Annex 3: Comparative Case Studies

THE CAMBRIDGE AFRICA PROGRAMME

Background

Formally established in 2008, the Cambridge-Africa programme (Cambridge-Africa in short) grew out of a number of individual long-term collaborations between Cambridge and African researchers. It is an umbrella programme with a small support office that has a range of coordinated multidisciplinary and interdisciplinary initiatives between Cambridge and Africa that are designed to strengthen research capacity and scholarship in African universities and research institutes. Health sciences have been a key component of the programme.

The core aim of the programme has been to provide short- and medium-term support to African research institutions to facilitate the development of the current generation of African research leaders. These leaders are seen as needed in turn to provide the mentorship and training for the next generation of African researchers and also to require the research facilities and other resources to achieve this.

The rationale for the programme has been clearly articulated by the founding director, Professor David Dunne:⁸²

‘Universities that aspire, like Cambridge, to be leading international centres of academic and research excellence, have a responsibility to support and promote the development and well-being of students, academic colleagues, and institutions wherever there is a need in the world. However, building these relationships with Africa over the last 10 years has very significantly enriched Cambridge’s own academic environment benefitting both our students and academic researchers’

This goal has been primarily pursued through the provision of training and mentorship for African researchers in Africa, and African PhD and postdoctoral fellowship visits to Cambridge. Cambridge-Africa has facilitated the linking up between researchers in African and their colleagues in several Cambridge University departments, faculties and schools. In addition, it has connected key staff in offices across the University of Cambridge (e.g. Research Operations, Development and Alumni Relations, External Affairs and Communications) to Africa, to help the development of sustainable, mutually beneficial collaborations, networking, fundraising activities

⁸² University of Cambridge, 2018, An overview of the Cambridge-Africa Programme, p3.

and communication. Other Cambridge affiliated institutions such as the Wellcome Sanger Institute⁸³, the Babraham Institute⁸⁴ and the National Institute of Agricultural Botany (NIAB) are also involved in the programme.

Programme Content

The current programme has six main initiatives that extend across subject areas such as the social sciences and humanities, engineering, biological and health sciences, as well as research management and administration. They are as follows:

The Wellcome Trust-sponsored Makerere-UVRI Infection & Immunity Training Programme (MUII) (2008-2020). In association with Cambridge University and the London School of Tropical Hygiene and Medicine, the five-year MUII programme was initiated in 2008 using 3.2 million GBP funding from the Wellcome Trust. MUII has been helping East Africans pursue research careers in infection and immunity, focussing on endemic diseases of the region. The programme works with regional research centres and leading international Universities to ensure excellence in collaborative training activities including short courses, research attachments and research fellowships. MUII (2008 - 2015) has been extended for a further five years (MUII-plus, 2016 - 2020) with additional funding of 4.7 million funding from the Wellcome Trust and the UK Department for International Development under the Developing Excellence in Leadership, Training and Science Initiative (DELTA Africa).⁸⁵

⁸³ A not for profit genomics and genetics research institute funded by the Wellcome Trust

⁸⁴ An independent life sciences institute co-funded by Cambridge University

⁸⁵ <https://aesaa.ac.ke/aesaa/en/programmes/deltas/>

This is a long-term programme, which, over an initial period of five years (2015-2020), is supporting 11 collaborative teams headed by world-class researchers and spanning 54 lead and partner institutions from across the continent to invest in research infrastructure and offer training fellowships and mentorship. DELTA Africa's ultimate goal is to produce researchers with the capacity to publish and lead locally relevant and high-quality research to impact health science, policy and practice in Africa. This new generation of scientists will play a major part in shaping and driving a locally relevant health research agenda in Africa, contributing to improved health and development on the continent.

AESA (a joint initiative of the African Academy of Sciences and NEPAD) is implementing the DELTA Africa programme with the support of the Wellcome Trust and the UK's Department for International Development and the New Partnership for Africa's Development (NEPAD). DELTA Africa funds programmes have four strategic areas

Scientific quality: To produce world-class scientific research that addresses African health and research priorities through scientific discourse and collaborative supervision, DELTA Africa promotes collaborations with well-resourced universities, research institutions and think-tanks to strengthen capacity.

Research training: To strengthen scientific research training and build career pathways for scientific researchers DELTA Africa focuses on the tertiary and postgraduate training of science students and professionals along a defined career pathway. Training offered by DELTA Africa programmes is designed to provide individuals at all career stages with the academic support and research facilities they need to develop into world-class researchers.

Scientific citizenship: Foster mentorship, leadership and equitable collaboration in science, and engagement with public and policy stakeholders.

Research management and environment: to cultivate professional environments to manage and support

The Wellcome Trust-sponsored Training Health Researchers in Vocational Excellence (THRiVE) (2009-2021). The Wellcome Trust funded the £6.2 million THRiVE programme (2009 - 2015). East African students registered for PhDs in their home universities with local supervisors, but received support in the form of co-supervision and co-mentorship from leading Cambridge research scientists. The Wellcome Trust and UK Department for International Development has committed 5.25 million GBP for a further five years (2016-2021) of funding for THRiVE-2 as part of DELTAS Africa, which aims to improve health in Africa through research driven by the most urgent regional challenges.

The Carnegie-sponsored Cambridge-Africa Partnership for Research Excellence (CAPREx) (2012-2019). CAPREx is a partnership between three universities: the University of Cambridge, UK; Makerere University, Uganda; and the University of Ghana, Legon. It aims to strengthen Africa's capacity for sustainable excellence in research, through close collaborative work with those who are selected as the region's most talented individuals. CAPREx offers postdoctoral fellowships whereby academics from partner institutions can develop the skills, networks and vision to become internationally competitive, successful researchers. CAPREx received funding from the Carnegie Corporation of New York, 2.2 million USD (2012 - 2019) and Isaac Newton Trust 179,000 GBP (2012- 2016). Funds for the fellow's research projects were donated by the ALBORADA Trust.

The Cambridge-Africa ALBORADA Trust Research Fund (2012-2026). This fund was established in 2012 with a 1 million GBP donation from The ALBORADA Trust⁸⁶, UK to the Cambridge-Africa programme. The Fund enables principal investigators at the University of Cambridge, across all disciplines, to apply (jointly with a partner at a sub-Saharan African university or research institution) for grants to initiate and/or strengthen research collaborations. Funds are awarded for research costs such as reagents, fieldwork and equipment. African fellows who are members of ongoing initiatives of the Cambridge-Africa Programme (i.e. MUII, THRiVE, and CAPREx) and their Cambridge mentors/collaborators are also encouraged to apply for funds jointly, for activities that add value to their existing research projects. By 2015, the ALBORADA Fund has supported more than 78 research collaborations in 12 African countries, involving over 28 African institutions, in more than 38 areas of knowledge, and with more than 78 African researchers and 86 Cambridge researchers participating. The ALBORADA Trust awarded a further 4 million GBP to the Cambridge-Africa Programme for the period 2016 to 2026, to support further engagement between Cambridge and Africa.

scientific research

⁸⁶ The Alborada trust (<http://www.alboradatrust.com/how-to-apply/>) primary aims are the funding of medical and veterinary causes, research and education, welfare of animals and help with relief to disaster areas worldwide. ALBORADA was a horse bred and raced by Kirsten Rausing of the Tetra Pak fortune.

The Wellcome Trust-Cambridge Centre for Global Health Research (WT-CCGHR) (2013- 2019). This was established in 2013, and is therefore capitalising on the extensive basic biomedical and health-related research capacity across many departments and research institutes at the University of Cambridge and the Wellcome Trust Sanger Institute, and using these to support research capacity development and knowledge exchange partnerships with African universities and institutes. As examples, the best young African researchers selected on academic criteria interested in building an academic career in health-related disciplines are matched to Cambridge and African mentors who can guide them in the writing, planning and presentational skills needed to compete successfully for external funds.

Cambridge-Africa PhD Scholarship Scheme (2015-2020). The University of Cambridge and the Cambridge Trust has provided funding to enable 25 (five per year for five years) outstanding applicants from sub-Saharan African countries to study for PhDs at the University of Cambridge. There are no restrictions on subject areas, for these PhDs. However, preference has been given to applicants proposing to work on projects that focus on African priorities, and those who have links to African institutions.

In sum, although there are discrete sub-components with specific funders in the overall programme there are clear inter-relations and synergies between these components. While there is no formal or systematic monitoring of overall programme effects and impacts as such⁸⁷ programme documentation on the range of activities and outputs is considerable (see Figure 1). In addition, there are examples in the documentation of additional research grants outside the Cambridge-Africa programme that collaborating partners have been able to leverage as a result of the partnership.⁸⁸

Figure 1: Key activities and outputs of the Cambridge-Africa Programme

- Partners in 50 African institutions across 18 countries
- Regional hubs in Ghana and Uganda
- 40 fields of research in health, food security, education, etc.
- Research management training in the African hubs
- A network of over 200 Cambridge collaborators
- Support for more than 40 African PhD Fellows in Africa and Cambridge
- Support for 75 Africa-based postdoctoral Fellows
- Initiated more than 150 new African-Cambridge research partnerships
- Over 170 publications by African Research Fellows
- Live, interactive, video-linked lectures from Cambridge to Africa
- Support worth 4 million GBP from the University of Cambridge
- 7.5 million GBP in external funding into the Cambridge support programme
- 25 million GBP in external funding directly to African partners

Source: University of Cambridge, 2018, An Overview of the Cambridge-Africa Programme, p. 2)

⁸⁷ Interview notes with Dr Caroline Trotter, current Programme Director, Cambridge May 17th. 2019

⁸⁸ One example cited (Overview, p13) is of the securing of a Leverhulme Royal Society Africa Award of 180,000 GBP over three years arising from a CAPREx collaboration between the University of Ghana and Cambridge University on the epidemiology of trypanosomes in cattle in Ghana.

Programme Logic

There is no formal theory of change as such elaborated for the Cambridge-Africa programme but it is not difficult to deduce from the approach and substance of the programme the principles on which it operates, and its distinctive features can be identified as follows:

- The programme presents its model as one of training for African researchers, on African priorities in Africa. It seeks to award ‘high-quality, personalised, postdoctoral or PhD research fellowships to the best academically-talented young academic staff in African Universities’. It is a model, therefore, based on individual academic excellence and working with key future research leaders;
- These fellows and researchers are matched to senior Cambridge research leaders who provide mentorship and collaborative support that include visits to Cambridge and by the Cambridge staff to the fellow’s home universities;
- The PhDs are usually registered at their home universities with Cambridge supervisors complementing the work of local supervisors; however, the home universities have access to Cambridge resources which support and complement local research facilities and networks;
- It is therefore a bottom-up programme primarily working with individuals rather than focussing on institutions although the programme has institutional dimensions (e.g. research management training, regional hubs, research partnerships);
- It has a strong focus on support in diverse ways to post-PhD and early career researchers to help them build research groups;
- It has been developed as a model of partnership which, while recognising the advantages and resources that Cambridge University can bring to the partnership, seeks to establish partnerships of trust, equality and mutual benefit and recognises the responsibilities that Cambridge has to achieve these effects;
- The University of Cambridge plays a key role in supporting the funding of the programme. This has included direct funding from its own resources PhD scholarships but the programme office has been active in raising research grants and funding support to develop the programme; while some of these have come from the UK Department of International Development a significant proportion has been sourced elsewhere;
- While the programme is not in a position to unconditionally offer long-term support given the need to raise research grant funding which is time bound, nevertheless it is in effect a long-term programme that has a vision beyond the time frame of individual research grants.

Implications for the Sida model/approach

There are certainly elements of the Cambridge-Africa model that are similar to those of Sida. Its broad goals are similar with regard to seeing the role of African Universities to act as ‘*development hubs and agents of change, devising sustainable African strategies for economic, social, scientific and cultural success and produce leaders in*

all aspects of civil society'.⁸⁹ It is also relatively long term. But there are also a number of distinctive elements of the Cambridge Africa programme that offer an alternative mode of engagement to research capacity-building in contrast to the Sida model/approach.

First, Cambridge-Africa as primarily a bottom-up programme is focussed on the individual rather than the institution and building research leadership. Implicitly within its practice is the idea of building a critical mass of researchers who in time will bring about institutional change. In this sense, it contrasts with Sida's multi-level approach.

Second, it is leveraged on the principle of research excellence and is therefore academically selective in looking for the current generation of research leaders. This is not a principle underlying the Sida programme as such.

Third, while it shares with the Sida approach the practice of home university-based registered PhDs but with complementary support by Cambridge, it has a significant focus on post-PhD support and early career development which is absent from the Sida model.

Fourth, it works more to a network rather than institutional model of capacity development, focussing on building with research individuals and groups based on trust and performance. Sida works more on an institutional model of capacity development.

Fifth, and perhaps the most striking, Cambridge University itself is playing the lead role in the programme, acting as a broker for funding support from a range of sources. This contrasts strongly with the Swedish universities who have been accustomed to Sida funding to support partnerships with universities. Swedish universities do not appear to have moved beyond this. It should be noted that Oxford has also, but more recently, initiated an Oxford University-led Africa programme based in part on the Cambridge model.⁹⁰

⁸⁹ University of Cambridge, 2018, An overview of the programme, p. 4.

⁹⁰ See <http://www.afox.ox.ac.uk/wp-content/uploads/2019/06/AfOx-Annual-Report-2018.pdf> The Africa Oxford Initiative has the vision of making Africa a strategic priority for the University of Oxford. Since its launch in 2016, AfOx has provided a platform for 'all things Africa in Oxford', while facilitating the establishment of equitable and sustainable collaborations between African researchers and colleagues based at the University of Oxford.

NORWEGIAN PROGRAMME FOR CAPACITY DEVELOPMENT IN HIGHER EDUCATION AND RESEARCH FOR DEVELOPMENT

Background

The Norwegian Programme for Capacity Development in Higher Education and research (NORHED) was launched in 2012, following the merger of the Norwegian Programme for Development, Research and Education (NUFU) and Norad's Programme for Master Studies (NOMA). The purpose of this merger was to move towards capacity-building beyond individual students and researchers and to address the broader institutional environment. The design of NORHED was developed through a broad domestic and international consultative process.

The NORHED programme is intended to strengthen the capacity of higher education institutions in low- and middle-income countries to educate more and better qualified graduates, and to enhance the quality and increase the quantity of research outputs by the recipient countries' own researchers.

Higher education and research are priority areas in Norway's development cooperation policy. These priorities reflect Norad's view and presumption that strategic investment in higher education and research will generate long-term dividends in terms of strong academic institutions engaged in societal development towards achieving the Sustainable Development Goals (SDGs) and ultimately poverty reduction. In other words, activities under the NORHED umbrella are applied in nature and ostensibly linked to development outcomes.

Investments under the NORHED umbrella are expected to generate many benefits, above all the development of recipient countries' intellectual resources, a competent workforce, visionary leaders, gender equality and human rights adherence. They are also intended to contribute to evidence-based policy- and decision-making towards sustainable long-term economic, social and environmental development.

Currently, NORHED gives priority to five thematic areas: (i) education and training; (ii) health; (iii) natural resource management, climate change and the environment; (iv) democratic and economic governance; (v) humanities, culture, media and communication; and in addition a special sixth area defined geographically: (vi) capacity development in South Sudan. This orientation reflects in large measure Norwegian aid policies, but the areas are broad enough to accommodate a wide range of projects. NORHED-funded projects and programmes are implemented in a medium- to long-term perspective based on North-South partnerships, purportedly demand-driven by Southern stakeholders although in close consultation with Norwegian universities. Institutional commitment and involvement underpin these partnerships, the nature of which is assumed to strengthen ownership by the Southern stakeholders. With regard to higher education training programmes, all levels in the hierarchy – from bachelor to master and PhD – are eligible for support. Beyond the production of graduates, NORHED accords priority to research conducted in conjunction by Southern and Northern individuals and institutions.

NORHED's geographical coverage includes countries in Africa, Asia and Latin America, although African countries predominate, mainly on account of the bulk of Norwegian aid being channelled to Africa. Interventions must be responsive to higher education sector priorities of the partner countries and linked to the government policies and priorities at national and/or regional levels. Gender sensitivity is a cross-cutting concern throughout the project cycle. Synergies are sought in the short- to medium-term with other Norwegian-funded programmes similar in scope and objective, as well as with programmes/projects financed by other countries/organisations.

Based on needs assessments in the countries concerned, NORHED-funded projects and programmes may address institutional capacity-building and individual competence-building of staff through master, PhD and post-doctoral fellowships, complemented by administrative and small-scale infrastructure strengthening, as well as initiatives to enhance access to higher education. Significantly, NORHED projects and programmes aim to design curricula and teaching methods and launch master programmes responsive to societal needs, i.e., with an applied orientation. Such programmes are expected to be sustainable after NORHED funding has been phased out, but sustainability is a perennial challenge. The range of eligible NORHED-funded interventions is broad and flexible provided the outputs meaningfully contribute to overall outcomes and long-term development impacts.

A primary objective of NORHED is to produce more and higher-quality research relevant to the identified areas/programmes of the countries in question. There is decidedly an applied orientation to interventions towards long-term societal benefits. Another key objective towards more and better research is the production on a continuous basis of more and better qualified graduates – men and women alike – at different levels.

NORHED purportedly takes a holistic approach to capacity-building and the strengthening of higher education institutions by supporting a range of output-producing activities, the combination of which produce sustainable results. NORHED outputs and activities are organised under six main categories:

1. Programmes: Increased and strengthened education and research programmes;
2. Systems: Strengthened education and research systems;
3. Infrastructure: Improved institutional infrastructure for education and research (including supplies and equipment, though not buildings);
4. People: Increased capacity and competence of staff and students;
5. Gender: Improved gender balance and gender focus in all educational and research programmes;
6. Methods: Enhanced methods for effective and high-quality teaching and research.

Indicators and measurability

NORHED distinguishes between different post-programme impacts, e.g., the effects and consequences expected to occur and/or continue to improve even after NORHED's exit. Impacts are categorised as short-term (by 2030) and long-term (by 2050). By supporting the creation of strong institutions of higher education equipped with solid research capacities the expected direct contributions are:

- In the short term: (i) an enlarged, academically qualified workforce capable of meeting future development challenges; (ii) increased knowledge and better knowledge management systems; (iii) evidence-based policies and decision-making, and (iv) gender equality.
- In the long term: (i) sustainable economic development; (ii) sustainable social development; and (iii) sustainable environmental development. These impacts are vaguely defined and require indicators (qualitative or quantitative) to be measurable, which is not the case currently.
- Indicators pertaining to short-term impacts are predominantly the conventional qualitative ones:
- Number and type of education programmes established at institutions in the Global South, including regional programmes;
- Number of curricula developed afresh and/or revised;
- Net entry rates by age and gender;
- Staff/student ratios by education programmes;
- Number and percentage of female teachers by level of education;
- Student retention and progression rates;
- Graduation by age, gender, field and level of study;
- Change over time in number and gender of higher education students by field of study;
- Graduate employment;
- Reasons for failure or non-completion of courses;
- Presence of female administrators and managers;
- Personnel in higher education engaged in research and development by sector;
- Administrative/academic staff ratio;
- Number of joint research projects by Norwegian-South country institutions;
- Number of publications by academic staff;
- Number of teachers/educators/teaching assistants who successfully completed in-service training with NORHED support;
- Number of host-country institution faculty and/or teaching staff who enrolled in training programmes for strengthened qualifications;
- Number of individuals from underserved and/or disadvantaged groups accessing tertiary education programmes;
- Number and type of other dissemination activities;
- Number of direct beneficiaries reached annually by the partnership.
- Indicators of institutional and societal impact are more difficult to construct and would probably have to be composite and defined in qualitative terms because they comprise multiple variables that determine the functionality of an institutions. Nevertheless, the official NORHED presentation mentions a few, although little is said about the methodology to be used:
- Uptake/influence of NORHED-supported research in public policies;
- Uptake/influence of NORHED-supported research findings, new technologies, innovations and solutions by local communities, civil society and the private sector;
- Knowledge transfers within South-South and South-North networks and partnerships;

- Changes in the broader institutional environment at NORHED-supported departments and faculties to strengthen their capacity for education and research;
- Access to libraries, laboratories and ICT for staff and students in NORHED-supported institutions.

Cross-cutting concerns

A number of cross-cutting issues are expected to inform all NORHED-sponsored activities: gender, human rights, conflict sensitivity, and environment and climate. Furthermore, zero tolerance of corruption applies to all activities supported through Norad's budgets, and anti-corruption measures should be put in place. The mainstreaming of these cross-cutting concerns is demanding and inadequate guidance is provided to that effect.

Gender equality is a priority in NORHED. Gender mainstreaming entails integrating gender perspectives in the planning and implementation of all aspects and phases of the project cycle. This covers elements such as the design of curricula and research projects, human resources and recruitment, teaching, supervision, research activities as well as monitoring and evaluation. Educational programmes and research activities that explicitly address gender equality are encouraged.

Measures should be taken to increase the number of female students at all levels, as well as female researchers, project participants and project coordinators. All projects should strive to recruit at least 50 per cent female students at all levels.

Measures should also be taken to facilitate the completion by female students of their degree studies, such as career mentoring schemes and the inclusion of female researchers and students in formal and informal research networks, to provide secure working environments and to institute incentives targeted at female students (e.g. awards/grants).

In addition, beyond respecting the human right not to be discriminated against on the basis of gender, NORHED projects are encouraged to address human rights in general and to facilitate the inclusion of marginalised groups. NORHED projects are expected to improve access to and inclusion of underrepresented groups into the higher education institutions' policies and practices. Such underrepresented groups refer to indigenous peoples, ethnic minorities, people with disabilities and other vulnerable or marginalised groups of society. However, little is known yet about actual long-term impact.

Projects are also considered in terms of potential positive or negative environmental impacts, especially on climate change and include action to mitigate whatever negative impacts are identified during the design, planning and implementation phases.

As a matter of principle, zero corruption tolerance is applicable to all NORHED funding. Recipients are required to document that they have adequate financial management systems and capabilities to handle the received funds. Contracted institutions are responsible for the proper use of the funds accruing to them. In cases of suspicion of financial irregularity or incorrect reporting, further disbursement may be suspended until the matter has been settled. The project partners shall organise their activities and control systems in such a manner that financial irregularities, including

corruption, theft, embezzlement, fraud, misappropriation of funds, favouritism or nepotism are prevented. The greatest risks are associated with procurement procedures. To forestall irregularity, all procurement of goods or services must be based on competitive bidding in accordance with established rules and good business practice, which ensures transparency, verifiability, equal treatment, practicability and non-discrimination based on nationality or local ties. Procurement done in a Southern partner country shall be based on the country's own procurement regulations provided they match international standards. If it is detected through audits or otherwise that money has been misused, or that financial reporting is incorrect, funds will be reclaimed. Norad has a *Fraud and Integrity Unit* tasked to manage cases of suspected financial impropriety in the handling of grants, including a whistle-blower mechanism. Recently, the auditing of NORHED project at Sokoine University of Agriculture (SUA) revealed irregularities in procurement processes. As a result, all disbursements to SUA were suspended pending further investigation and remedial action.

Communication and outreach

NORHED is preoccupied with communication and dissemination strategies to reach different stakeholders throughout the implementation phase, and to convey the end-results to potential users. The stakeholders include the partner institutions, other donors, relevant ministries and governmental institutions, civil society, as well as the private sector. The means of communication include policy briefs, newspaper articles, research papers, reports and books produced within NORHED framework. To the largest extent possible, results should be accessible, i.e., scholarly articles published in open access journals and popularised pieces in non-jargon language.

Administrative and partnering arrangements

NORHED projects may comprise one partner institution in a low- or middle-income country and one Norwegian partner institution. However, the involvement of more partners is encouraged in order to create and reinforce regional academic networks. A NORHED project may be placed at various levels in the participating institutions, depending on its nature and the scope. Normally, the operational level would be at the faculty, school or college level, although larger departments or centres may also be an option. Whatever the location level, NORHED projects should always be anchored in the regular management structure of the institution to ensure ownership at that end. Partner institutions must identify a project coordinator to handle the day-to-day running of the project and to handle liaison among the partners. Sufficient administrative and financial capacities are expected to be provided to ensure the smooth and transparent running of the project.

In the interest of South-South collaboration, the NORHED framework encourages collaboration between institutions among low- and middle-income countries. Such collaboration could provide complementary elements (additional resources and competences) and contribute to a more holistic approach. Geographical proximity, potential for mutual academic benefits and prospects for sustainability guide the formation of such collaboration. Cases in point are regional collaboration in research, exchange of teaching staff and resources, exchange of students, and capacity development of

technical and administrative staff. Upon completion of their studies, the graduation of students should preferably take place at the Southern partner institutions rather than at institutions in Norway to underscore ownership, yet bearing in mind assessments of quality, capacity and cost-effectiveness.

Collaborative partnerships are central to the NORHED facility between higher education institutions, i.e. South-Norway and South-South-Norway. This is to ensure that the interventions are locally owned and locally driven, and locally accountable for achievements and risk management. Quintessentially, the partnerships are based on certain principles: transparency, mutual trust and shared decision-making and responsibilities; local ownership and capacity development; effective and efficient project management; zero corruption tolerance; contractual agreements regarding division of roles, responsibilities and shared budgets.

Monitoring and evaluation

As a matter of course, measures to ensure regular quality assurance and monitoring, reporting and evaluation are integral elements of NORHED to help facilitate the achievement of the intended, sustainable results in a cost-effective manner. Submission of annual plans and budgets as well as annual progress and financial reports are integral to the project cycle. Towards accountability, annual audited reports, including a management letter regarding the Southern partners' share of expenditure are a requirement. For the purposes of planning, budgeting and reporting, annual meetings are organised with all partners in attendance, the venue of which alternating between Norway and the relevant partner country in the South.

Reviews are routinely conducted during the implementation phase to assess progress and potential outcomes and impacts. The timing and terms of reference are decided upon by the partners in conjunction. Norad's Evaluation Department initiated a real-time evaluation of the NORHED programme in 2013, and an external evaluation will be conducted after every five years. Norad acknowledges that a long time horizon is required to sustain higher education and research capacities after the projects end. Yet, the indicative duration of NORHED projects is five years only.

It should be emphasised that complementary to the NORHED programme, Norad also provides considerable funding for development research through dedicated programmes administered by the Research Council of Norway (RCN). While the RCN grants, awarded on a competitive basis – with similar partnership conditions – are principally for research projects, PhD and post-doctoral fellowships may also be included.

Tanzanian universities are among NORHED's beneficiaries. Vietnam has been a beneficiary in the past, but not currently. Bolivia does not feature on the list of recipient NORHED countries. In terms of academic disciplines, the range is wide, comprising hard sciences as well as social sciences and humanities. Health-related projects predominate, while natural resource and environmental management project, including climate change, are on the increase.

Mid-term review 2017

A mid-term review of the NORHED programme was commissioned by Norad and undertaken in 2017 by an external consulting company (Technopolis 2018). The assessment was made in terms of the standard OECD/DAC criteria: relevance, effectiveness, efficiency; possible impact; and sustainability.

The review concluded that the overall relevance of the NORHED is very high because it addresses the needs of the partner countries and is able to incorporate cultural and socio-economic aspects coupled with outreach and community engagement. However, the review also found that emphasis needs to be put on linking project activities more closely with relevant national stakeholders from the outset to obtain buy-in from the local authorities and stakeholders. All projects were focused on capacity-building in higher education, and entrusted partners with responsibility for management and coordination, a new NORHED feature compared to its predecessors. Two types of capacity development were distinguished: (a) capacity-building focused predominantly on and confined to the participating institutions, i.e. what was deemed ‘basic’ capacity-building such as master and PhD training, as well as training of university staff to increase administrative capacity; and (b) capacity-building beyond the partner institution by engaging local stakeholders, staff from government agencies, private sector, CSOs, etc.

The partnerships were characterised variously. Some of the most advanced forms of partnership built on trust and respect involved ‘capacity exchange’ among the partners. In other partnerships the Norwegian partners played a mentoring role, i.e., the partners were not on an equal footing. A third type of partnership centred on implementation with some evidence of collaboration, although the links between the partners appeared weak. A fourth type of partnership were imbalanced, where expectations and contributions did not match. Finally, non-functioning partnerships were also detected in which the partners were largely oblivious of each other’s activities, hence operating in isolation and sometimes involving non-contributing partners. The review found that most of the partnerships belonged to the first three categories. However, there were examples of the latter two as well.

Notwithstanding the diversity of the 45 projects reviewed in terms of thematic area, balance across project activities and chosen partnership model, all projects were aligned with the overarching objectives of the programme, albeit somewhat unevenly because their design allowed for flexibility. The most significant achievements were reportedly in institutional capacity-building. Some examples of best practice were identified with respect to integrating cross-cutting concerns during implementation, although evidence of systematic approaches was patchy regarding mainstreaming across the project portfolio.

Both internal and external factors influenced project implementation. The internal factors related to management such as the flow of resources and the limited pool of female candidates. The external factors concerned to the ways in which the relevant country worked, i.e., its political economy, stability and exchange rates. The delayed expenditure of funding tended to be attributable to external barriers. Furthermore, the overall effectiveness was affected adversely because many projects were operating in isolation without appreciable synergies between them. The review noted that Norad,

through NORHED and otherwise, is regarded as a unique and often dominant funding source for educational activities. It appeared that very few partners enjoyed funding from international sources other than Norad/NORHED.

Efficiency is a relative concept, defined as the achievement of results by the economical use of resources (e.g., money and time) without waste. In contradistinction, effectiveness simply refers to the achievement of results regardless of the volume of resources expended in the process. The review found that the efficiency concept was not well understood. It is also a difficult concept to apply and quantify, especially regarding institution-building, which was an important outcome of many projects. It is possible to arrive at a reasonable estimate of what a PhD scholarship would cost and how long it would take to complete, and then compare it to actual expenditure and completion time. However, even with respect to scholarships, no standardised rates or cost estimates were applied. The indicators used, developed through a participatory process, needed clearer definition. It is far more complex to stipulate the required expenditure of creating a workable institution involving multiple parameters, let alone what it would take to ensure the sustainability of an institution. Short of a clear notion of efficiency in institution-building activities, the review nevertheless found examples of good practice communicated by means of narrative reporting in some detail. Efficiency was reduced by the turnover of staff and delays, leading, in turn, to a loss of institutional memory.

Owing to NORHED's emphasis on institution- and capacity-building, education and research, the potential for achieving durable impacts was found to be great after the funding has ceased. The education and research activities were closely linked and mutually reinforcing. The institutional capacity-building efforts, however, appeared somewhat disconnected from the other activities. The overall attention to sustainability seemed very low in the design of the programme; very few projects considered the future of project activities or exit options. Instead, further NORHED funding was generally expected. However, some aspects appeared promising in terms of sustainability, including networking and international collaboration among the South-South and South-North partners, which were deemed to increase the ability to secure international funding. Individual sustainability will no doubt be ensured for those who have acquired degrees. Their competence is durable. Similarly, developed curricula will also have a life after the discontinuation of NORHED support. Another beneficial long-term impact is probably a better understanding of the inter-disciplinary nature of the approaches adopted by the partners.

To mitigate the risks associated with high turnover rates of staff, the review recommended systematic support and harmonised guidelines to be developed in order to facilitate the smooth handover of projects. Furthermore, the roles and responsibilities of project officers should be reviewed to ensure efficient use of available in-house resources, and to decide if and when external support is justified and advisable.

The review also recommended that the reporting requirements in terms of indicators and narratives be revisited, in particular the standard indicators applied. It was recommended to introduce template-based online reporting, with the possibility of offline completion if need be. A distinction should be made with regard to types of content with a view to capturing a core set of standardised information from all projects

and to retaining flexibility and allowing project-specific descriptions and information. Finally, a monitoring database should be created to ensure easy access to information and monitoring of progress.

Comparing NORHED and Sida's BRC approach

Given the like-minded aid policies of Norway and Sweden, it is unsurprising that there are many similarities in Norad's approach through NORHED and that of Sida's BRC to supporting higher education and research in their partner countries, most of them in the low- and middle-income categories. Both take a strong position in favour of the potential contributions that tertiary education and research can make to boosting economic growth. Such a posture is underpinned by research (Kwabena Gyimah-Brempong *et al.* 2006; Bloom *et al.* 2006; Altbach 2013; Seetanah and Teeroovengadum 2017). Apart from contributing to economic growth, which is a necessary precondition for making a dent in the poverty problem, higher education and research are perceived to have intrinsic value in their own right not only as a means to achieving growth.

Similarities in approach include predominant bilateral support for pairs of universities, though sometimes involving more than two recipient countries, including South-South collaboration. In principle, support coverage may extend worldwide although both countries tend to concentrate on a limited number of countries. Second, the bulk of activities (in terms of time and money) are centred on scholarships at master and PhD levels in order to build capacity. Third, however, complementary to support for individuals through scholarships, both approaches stress institution-building, i.e. purportedly contributing to making universities integrated, holistic units, the components of which pulling in the same direction. Fourth, the ambition of the institution-building efforts is to promote ownership by the partner countries and to embed the institutions of higher learning in society. Fifth, linked to the embeddedness of universities is the emphasis put on dissemination of research findings and outreach to stakeholders beyond academia, such as policy-makers in government, civil society and the private sector. This would fit well into a theory of change (ToC) whose ultimate ambition is sustainable societies. Sixth, informing all activities, both approaches insist on several cross-cutting concerns such as gender relations, human rights, the environment and anti-corruption safeguards. Finally, both approaches include monitoring and evaluation mechanisms, even though they are weak.

There are also some discernible differences between the NORHED and Sida approaches, most notably in the longevity and generosity of Sida's practices as opposed to NORHED's somewhat guarded commitment. Sida's perseverance is remarkable – at least as far as Tanzania is concerned – and would stand out in any comparison. It attests to Sida's seriousness in this sector. Not only is the longevity of Sida's support in Tanzania noteworthy, the volume is also noteworthy. Total disbursement to Tanzania alone amounted to SEK 342.4 billion over four decades until mid-2017, the bulk since 1995. Admittedly, Tanzania may in this regard be an exception, but the amount is nonetheless indicative of serious commitment.

NORHED's mode of operation appears project-based, reflecting demand by Southern organisations and their Norwegian counterparts in conjunction, albeit with

the latter in a supposedly reticent role. The applications for NORHED funding emanate from the Southern partners and ownership is ostensibly a central feature since 2012 when the partnership concept was introduced. In its most simple form a partnership is a relationship between two entities engaged in collaborative activities framed by specific grants and projects. It may be balanced between equal partners, or unbalanced between superior and subordinate partners. However, all research partnerships unfold in specific times and contexts, which makes them complex. The messiness of personal circumstance, social relations, differing agendas, institutional restructuring and unanticipated geopolitical events is compounded when the goals of producing knowledge and informing action are brought together in a collaborative process (Fransman and Newman 2019).

By virtue of being project-based, the NORHED programme seems somewhat disjointed and spread over multiple discrete projects of varying nature, although within the general guidelines. NORHED also attaches importance to institution-building in addition to heightening the competence levels of staff through scholarships. A holistic approach is an ambition, with emphasis on systems, management and supportive infrastructure (ICT, laboratories and library services). However, the integrative, holistic nature of support functions in Sida's approach does not feature as prominently in NORHED's approach. At least, NORHED does not highlight to the same extent the synergies between various elements in its total approach. NORHED's entry point is at the level of researchers, whereas Sida initiates collaboration with the leadership of institutions. Many of the involved researchers build on previous contacts and networks in the design of NORHED projects. In this regard, NORHED appears to differ from Sida's mode of operation.

Furthermore, the NORHED programme appears to have a stronger steering function with respect to thematic emphases, set by Norad. The explicit linkage to Norwegian aid policies and country programmes is demanding for Norad and Southern collaborating partners alike. Apart from South Sudan as a geographically defined priority, the other thematic areas appear to leave less leeway for the Southern collaborative universities in terms of prioritisation, notwithstanding their rather broad definition. Even so, there is some flexibility and dialogue with respect to substance but Norad is rather strict in terms of administrative and financial issues. By contrast, Sida's programme devolves almost entirely the thematic prioritisation to the Southern partner universities, although in consultation with selected Swedish collaborators.

While NORHED attaches importance to the uptake of research findings, dissemination and outreach to communities and specific target groups towards developmental objectives, the ToC is not as explicitly formulated as in Sida's approach. Hence, sustainability issues are not at the forefront. Besides, the NORHED approach does not comprise anything comparable to the National Fund for the Advancement of Science and Technology (NFAST) as in Tanzania.

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Interview on 3 April 2019 with Jeanette da Silva, head of NORHED, Norad.

AFRICAN ECONOMIC RESEARCH CONSORTIUM

Background

Over the last 30 years, the Africa Economic Research Consortium (AERC) has been at the forefront of building capacity in economic policy research and training on the continent, informing policy debates and responding to emerging policy priorities. Although driven by African economic challenges and managed by Africans, the funding of the AERC programmes are largely leveraged from donors outside the continent, though recently also from sources within Africa. The graduate training programmes of the AERC have created a cadre of economists contributing to policy analysis in Africa and adding capability for training future economists. The AERC approach capacitates both individuals and institutions to produce knowledge to inform policy designed to influence economic and social development, including the reduction of poverty.

The AERC training programme is a major feature of the consortium's portfolio. It is designed to augment the pool of economic researchers in sub-Saharan Africa by supporting postgraduate studies in economics generally and in agricultural economics specifically, and by enhancing the capacities of departments of economics and departments of agricultural economics and agribusiness in public universities. The goal of the training programmes is to build the capacity of mid-level managers and policy analysts, and to produce first class students interested in careers in academia. The programmes integrate theory, methodology and African applications into academic teaching, while ensuring that theory is grounded in empirical investigation.

The AERC supports several training programmes:

- A collaborative PhD programme in economics, along with targeted support for PhD thesis research. The collaboration features joint facility for electives, enforcement of standards through internationally recruited external examiners, a common curriculum and the joint development of teaching materials;
- A collaborative master programme in economics for Anglophone Africa (excluding Nigeria and South Africa);
- A collaborative Master of Science programme in agricultural and applied economics for Eastern, Central and Southern Africa.

The consortium also maintains close links with collaborative master programmes in Nigeria (under the auspices of the Foundation for Economics Education) and in Francophone Africa (run by the Programme de Troisième Cycle Inter-Universitaire en Economie) and some universities in South Africa. Between 20 and 30 universities across the African continent collaborate in the training programmes.

A comparative advantage of the AERC training programmes is probably their direct relevance to Africa – in terms of research, policy orientation, use of the African reality (data, literature, focus, and examples), and the development of grounded theories, in addition to the literature and academic materials. In this regard, the AERC training programmes depart from conventional programmes in economics elsewhere in the world.

In efforts to bridge the gap between economic research and economic policy-making – a major goal of the AERC – several types of event are organised. One example is annual senior policy seminars that bring together researchers and policy-makers to discuss key issues of contemporary interest to policy-making in sub-Saharan Africa. Some of these fora may gather up to 100 participants, ranging from policy-makers, researchers, practicing economists, private sector stakeholders to civil society representatives.

The AERC also organises sub-regional policy fora with specific (sub)sectoral foci, e.g., resource-use efficiency in smallholder agriculture. The purpose of these regional fora is to bring together mid-level policy-makers, academia and research organisations from the sectors and sub-sectors on the agenda to deliberate on emerging economic issues with a bearing on the relevant sectors of the sub-region. Policy research papers are presented to shed light on salient issues for discussion.

At the country level, national policy workshops provide fora for the presentation of the results of AERC research as well as interaction between AERC-sponsored researchers and the national policy community. These workshops are fully implemented by local institutions, with some financial support from the AERC. They have become useful vehicles for promoting economic policy dialogue, and in some countries they have become annual national events and are largely self-financed.

While the AERC is overwhelmingly orientated towards capacity-building in one particular academic discipline – economics – the consortium is also deeply engaged in outreach and policy development through a host of fora designed to bridge the gap between research and policy-making. This includes engagement with private sector stakeholders. Facilitation of and participation in regional and international networks further strengthen its professional foundation.

Throughout its 30-year existence, the AERC has struggled with sustainability and sought to diversify its resource base. An array of donors has supported the consortium over the years, including Sida. The role of African stakeholders is paramount in the sustainability of the AERC. The African Central Banks Governors' Forum has greatly enhanced African stakeholdership of the AERC, placing the organisation on a more sustainable path. This support is expected to continue in the foreseeable future.

A mid-term evaluation of the implementation of the AERC strategic plan (2015-2020) found that the consortium has made a huge contribution to building research capability. University departments of economics had been transformed and strengthened due to the AERC training and research programmes and the capacities of central banks and finance ministries had greatly improved. However, the success story also revealed some shortcomings. First, performance on gender relations and on universities in fragile states was not as good as expected. Second, while global frontiers had advanced in terms of teaching and research methodologies, the AERC had not managed to live up to and match this new challenge. Third, donor priorities and modalities had changed, making it more difficult to raise core finance for a successful venture such as the AERC, leading to a search for new sources of finance to ensure institutional sustainability. Fourth, the evaluation found that the AERC needed to adjust to changing research priorities, albeit without specifying how and in what direction.

Fifth, as communication strategies had been revolutionised by the development of the internet and social media, the AERC had to adapt to this new reality.

While the mid-term evaluation was indeed impressed by the achievements, rather than dwelling on the successes it highlighted the shortcomings and challenges ahead and suggested some reforms. Improvements were noted in the quality of research. Furthermore, significant progress was found in diversification of activities by country, with participation from post-conflict and fragile states rising from 25 to 34 per cent, and the proportion of research activities from Francophone and Lusophone countries increasing to 54 per cent. Thus, the AERC coverage had become more even across the continent.

However, there was less success on gender balance. In 2018, the proportion of new proposals from women was only 17 per cent compared to 23 per cent in 2015. In the interest of a better gender balance, the evaluation recommended increased female representation at every level, including keynote speakers, resource persons, and panel membership. Similarly, gender balance should be sought in Board and Programme Committee composition. Moreover, female master students should be encouraged to attend the biannual meetings, and the AERC should take gender considerations into account when allocating research resources.

The change in thematic focus showed a considerable rise in agriculture, climate change and natural resource management and a decline in the share of themes related to poverty, food security and income distribution. The diversified thematic research portfolio showed that, despite its history and general reputation, the AERC research portfolio was by no means dominated by macro-economic issues. The thematic research endeavours consisted of individual projects, within a general theme, yet uncoordinated. They often posed research questions and used methodologies that had been suggested elsewhere, with their novel contribution arising from the investigated geographic area and empirical reality. It was suggested that the research cycle from submission to reporting of results be streamlined and the quality improved by continuous inputs from resource persons, by encouraging teams of researchers (two or three) to join forces in submitting proposals, and by better coordination in collaborative research efforts during implementation. A pro-active approach on the part of the AERC would be needed to the effect that priority be devoted to developing stronger links between thematic and collaborative research.

With regard to training, previous evaluations had pointed out some shortcomings: global standards had not been reached; the uneven distribution of capacity-building among countries and groups had not been addressed adequately; new methodologies needed to be adopted; and the participation of underrepresented countries and groups should be ensured. While noting these shortcomings, the evaluation also observed some progress in addressing these challenges.

Policy impact of the AERC activities occurs through seminars, publications, social media and alumni. Four senior policy seminars were held during the 2015-2018 period, with high-level participants and extensive media coverage. Over 1,000 policy analysts and researchers participated in AERC activities in 2017, a large increase compared to 2014. Altogether 19 thematic research papers were published in 2017/18

and two books emanating from collaborative projects. However, the number of downloads was disappointing. The website has since improved greatly, reaching over 30,000 unique page views per month and a digital e-library is nearing completion, covering all AERC publications.

Policy impact is likely to come from policy briefs. Additionally, social media engagement has increased across all four platforms used by the AERC to reach early career researchers, network members, journalists and leading thinkers globally. An AERC blog was launched recently – AERC Insight – providing commentaries on economic issues of the day.

The AERC has a huge comparative outreach advantage in its alumni who are working in many countries and capacities. Their potential impact is well illustrated by the many governors of central banks who are AERC alumni. However, the AERC needs a more systematic database of alumni to make full use of this resource. Efforts towards that end have been initiated via the LinkedIn network since the launch of the new website.

A summary indicator of policy influence is the considerable reputational success of the AERC. In the ranking of the Go-to Think Tank Index, the AERC featured on top in three categories among African institutions in both 2018 and 2019. Nevertheless, the AERC does not seem to like the think tank label with its somewhat unserious connotation. Rather, its focus is academic capacity-building and solid policy-relevant research. Yet, the AERC occupies a good position as a powerful convener of policy-makers and researchers to contribute to the formulation and expression of ‘African views’ on major economic issues of the day. This convenorship is a major contribution towards bridging the gap between academia and policy-makers/practitioners.

Traditionally, the AERC has partnered with governments rather than with the private sector. Its training and research have been orientated to improving policy, which is the purview of the public sector. However, the AERC sees a potential for closer engagement with the private sector. This could be done through memoranda of understanding; policy outreach activities tailored to the private sector; private sector participation in research dissemination; and research related to private sector concerns. Private firms and banks would probably be interested in the effects of public policy change on their activities, on the strength of which the private sector might be persuaded to support the work of AERC materially and perhaps through exchange of personnel. The idea would be to make the private sector see how effective national economic policies might benefit their own profitability as well as the benefits they would gain from employing well-educated economists. Larger firms might benefit from employing well-educated economists to help them analyse contemporary events and policies and to forecast future economic developments. Associations of SMEs might be useful vehicles for reaching the multiplicity of small and medium-sized companies that predominate many African economies. However, the scope for a private sector direct role in research appears limited.

Enhancing the financial sustainability of AERC activities could include deepening relations with existing partners and re-engaging previous funders; reinforcing the engagements of African governments; engaging with non-traditional partners, especially from the Global South; and leveraging the alumni network. Overall funding has been

static. African institutions' support for the AERC include the Governors Forum, the African Development Bank and the Kenyan Government scheme, which together account for about 30 per cent of total income. Within a static total, the share of core finance fell because of changes in the nature of Northern aid donors' support. This has meant that activities are increasingly donor-driven. There has been a squeeze on the activities funded from core finance, including administration and scholarships. The reduction of the administrative share in total expenditure is adversely affecting communication and digitisation, while cuts in scholarships will undermine the training programme. Sustainability is evidently a major challenge. The AERC leadership sees the need for greater diversification of funding, particularly from African sources such as national governments, the private sector, foundations and regional organisations. A more diversified funding base with a stronger African presence would strengthen African voices in determining the research agenda and the strategic direction of the organisation.

The professionalism of the AERC management and staff was acknowledged by the mid-term evaluation. There is no need for changes to the current governance structure. The fact that the Board of Directors is distinct from the Programme Committee is noteworthy and appreciated to ensure that the research programme is free from undue donor influence. However, the evaluation saw some room for improvement of the administration and processing of new research proposals from submission to completion. To that end, the professional staff in the secretariat should become more engaged in the research activities of the network and be active researchers capable of contributing to the elaboration of research projects.

Comparing the AERC and Sida approaches

The Sida and AERC approaches to supporting higher education and research are similar in some respects and dissimilar in others. The principal similarity is that both approaches emphasise capacity-building by training master and PhD students, and by conducting research. Both interventions have made impressive achievements in that regard. This emphasis stems from a conviction that policy and action need to be evidence-based through research.

Furthermore, both schemes are characterised by longevity and perseverance. The AERC has been in existence for three decades whereas Sida has a history of four decades in Tanzania. This stance reflects the conception of research as a long-term undertaking, that the gestation period of research is very long, and that bridging the gap between academia and policy-making/practice is a complex undertaking.

A third similarity is the emphasis on the application of research to the solution of societal problems. In the case of the AERC the policy orientation was initially macro-economics, but has evolved to include agricultural economics, poverty and inequality issues among others. Alumni have entered into key positions such as governors of central banks and officials in ministries of finance. The AERC also organise meeting places for stakeholders, policy-makers and researchers on salient issues.

Both the AERC and the recipients through Sida's approach face sustainability challenges. The need for diversifying the funding base is paramount for both.

The main dissimilarity that immediately presents itself is the difference in coverage across academic disciplines. While Sida is open, in principle, to training and research projects in most disciplines across the board, the AERC is focusing exclusively on economics in its many variants.

Another dissimilarity is lack of holism and attention to institution-building in the AERC approach as opposed to that of Sida. Most AERC activities are project based, often on the initiative of applicants. Collaboration has only recently been highlighted.

The AERC approach does not forge partnerships between institutions as is typical of the Sida approach, e.g. between Tanzanian and Swedish universities, for purposes of supervision. Instead, the AERC engage top-notch economists from the US, Europe and Africa who act as supervisors at intensive week-long workshops. The AERC has also played a role in bringing together African universities in sub-regional consortia.

Sources:

African Economic Research Consortium, Executive Summary, Revised Report on Evaluation of Strategic Plan 2015-2020.

<https://aercafrica.org/>

Interview with Prof. Njuguna Ndung'u, Executive Director, African Economic Research Consortium (AERC).

THE WORLD BANK ACADEMIC EXCELLENCE CENTRES OF EXCELLENCE PROGRAMME

Background

The model of developing ‘Centres of Excellence’ in the Global South in scientific and technical research and training through external support has a history that dates back to the 1990s. The World Bank itself initiated in the late 1990s a programme to support a global chain of centres of excellence or what were called Millennium Institutes. These were seen to help developing countries rapidly expand capacities in science and technology and support the growth of enterprise development and knowledge economies. The Commission for Africa in 2005 also advocated for the establishment of a network of centres of excellence in Africa, which the G8 in July 2005 committed itself to support. A well-funded programme was constructed with the aim to revitalise Africa’s institutions of higher education and establish a regional network of centres of excellence. There have been other initiatives as well in Africa promoted by NEPAD (the New Partnership for Africa’s Development) and the South Africa-led proposal for a network of five Nelson Mandela institutions with one in each of Africa’s regions. It is not clear what effects and outcomes these programmes have had.

Underlying all these programmes have been three core assumptions. First, development is largely associated with economic growth in a competitive global economy with industry and enterprise development as the key motor of this growth. Second, in emphasising Centres of Excellence there is a strong emphasis on ‘high’ science and technology and enclaves of elite expertise. Third, the idea of regional centres speaks to practices of network and partnership between them and the global north and assumptions of shared goals and ideas of progress. We return later to examine these assumptions.

A similar rationale underlies the World Bank African Centres of Excellence (ACEs) initiative, which was launched in 2014 with 165 million USD in loans. The money was used to create 22 ACE in West and Central African nations, which for project purposes include Nigeria, Benin and Togo. The centres were competitively chosen in partnership with the governments, which took on loans to support them. Two years later, the bank approved 148 million USD in loans to create a similar set of 24 centres in Eastern and Southern African countries including Mozambique, Rwanda, Tanzania, and Zambia. The third and final round (the programme is due to end in 2024), announced in 2018, has pushed the World Bank’s total investment past 500 million USD, making the programmes one of the biggest-ever science-supporting undertakings on the continent. It once more targets West and Central Africa and may also eventually include an extra 50 USD million from the French development agency AFD. Thus, in total 46 ACEs have been set up in 16 countries.

Programme Content

The ACE programme⁹¹ has two stated goals – that of ending extreme poverty and promoting shared prosperity. Its objectives are to increase in selected universities through regional specialisation in STEM subjects, agriculture and health (a) the quantity (the number of enrolled in students in post-graduate programmes), (b) the quality of postgraduate programmes (so that students acquire the necessary theoretical knowledge and applied skills upon graduating, and (c) improve the development impact of post-graduate education. The priority and pre-identified thematic areas have included water, ICT, power, housing, urban design, coastal degradation, education and the environment (see Table 1). The programme in comparison with Sida's bilateral research programme is relatively short term with each phase spanning 4-5 years and strongly driven by a results-based framework on which fund disbursement is based. The results indicators relate to student enrolment numbers, quality and relevance of educational and research activities, development impact, institutional relevance, fiduciary improvements and institutional impact.

Table 1 Distribution of 46 ACEs in 16 African countries under ACE I and II

Country	ACE Specialisation
<i>West and Central Africa</i>	
Benin (1)	Mathematics
Burkina Faso (1)	Water
Cameroon (1)	IT
Ghana (3)	Crop Improvement, Water Management, Infectious Diseases
Ivory Coast (3)	Climate Change, Statistics, Mining Environment
Nigeria (10)	Agriculture (3), IT, Oil Fields, Material Science, Health (4)
Senegal (2)	IT, Maternal Health
Togo (1)	Poultry Science
<i>East Africa</i>	
Ethiopia (4)	Agriculture, Water, Railway Engineering, Health
Kenya (3)	Agriculture (2) Energy
Malawi (2)	Agriculture, Health
Mozambique (1)	Petroleum
Rwanda (4)	IT, Energy, Education and Statistics
Tanzania (4)	Agriculture (2), Water, Health
Uganda (4)	Agriculture (2), Material Science, Health
Zambia (2)	Mining, Health

⁹¹ Graham Harrison, September 14, 2018 Presentation on the World Bank and the Africa Centres of Excellence (ACE) projects: ACE Impact

The programme has three components. The first supports the establishment of the ACE, provides additional funding for engineering-focused centres (which is an emphasis of the programme) and rewards well performing centres to scale-up. The second component aims to support the ACE network and provide regional technical assistance and support for learning and the third seeks to support regional higher education policy-making and collaboration and project facilitation and monitoring (in the case of the West Africa programme by the Association of African Universities based in Accra, Ghana).

Governments that receive the loans give out five-year grants that allow the centres, which are linked to established universities, to invest in infrastructure, staff and financial support for students. The West and Central African centres have enrolled about 6,500 master and 1,600 PhD students so far, and the East and Southern centres another 1,800 altogether. In the long run, centres are expected to sustain themselves financially, drawing on funding from governments, philanthropic organisations and industry.

The expected results from the programme are stated as follows:

- International quality post-graduate education;
- Targeted research in response to development challenges;
- Stronger sectoral engagement;
- Increased strategic/functional regional and international partnerships;
- Strengthened institutional level impact;
- Improved student support and welfare;
- Increased enrolment and better retention of women.

The structure of the ACE programme, its scale and its relatively short duration makes it difficult to assess processes of change and the means by which this change is happening. Indeed, the reporting on the ACE projects is heavily output-based (see Figure 1) focussing rather more on numbers and course accreditation. However, there are clearly implementation challenges with the June 2018 status report showing that fund utilisation on average had only increased from 25 to 35% since its start with the top performing centres scoring rates of just over 50 percent.

Figure 1: ACE Project Implementation Status (ACE Project Implementation Status and Results Report, June 2018, Public Disclosure Project)

The ACE project continues its robust implementation with strong results on the ground. Most of the centres are fully into implementation with over 6,500 MSc and 1,600 PhD students supported under the project of which at least 2,600 are regional students. The project has achieved its PDO-level indicator target of having 15 internationally accredited programmes, with the West Africa Centre for Crop Improvement (WACCI) being the latest centre to obtain international accreditation from the German Agency for Quality Assurance through Accreditation (AQAS) for its PhD in Plant Breeding and MSc in Seed Technology. In addition, there are at least five other centres undertaking international gap and self-assessments to obtain international accreditation. This focus on meeting international benchmarks is a key feature of the results-based financing approach of the project and is continuing to yield results. The progress on the industry-university linkages is still slow but yielding some results with continued internships for students. Finally, most of the centres have strong ownership at the university level, with some of the centres continuing to make progress on external revenue generation. The sub-component on The Gambia-supported under component 2.2 of the project to purchase educational services from the other ACEs is progressing well with 35 Gambian students having graduated from MSc and PhD programmes and a further 90 expected to graduate in July 2018.

There are certainly examples of ACE that have performed well. One such is the West African Centre for Cell Biology of Infectious Pathogens where researchers have characterised a new malaria vaccine target and built Ghana's first high-performance computing centre for genomics. The World Bank itself publicises examples of what are seen to be 'successes'.⁹²

A report in University World News⁹³ noted three main challenges that the programme was facing – attracting regional students, a shortage of academics to take on new programmes and doctorates and 'a steep learning curve for interaction with the private sector, meeting international quality benchmarks and the generation of external revenue'. In addition, there were issues of management and politics, funding and gender with a relatively low uptake – 25-33% by girls in the engineering programmes. With respect to sustainability it was noted that the ACE were built on existing initiatives and what was being looked for was incremental impact although the comment was made by a World Bank official that a time frame of 10-15 years was envisaged for building a true centre of excellence.

A rather more critical assessment⁹⁴ notes that only a few centres from the first round of ACE have managed to win international research grants from the UK Wellcome Trust, (a biomedical research charity in London), and the US National Institutes of Health. But funding from national African governments have taken longer to materialise. Several African governments are in the process of creating national research-funding mechanisms. Kenya created one in 2015, and Uganda is expected to launch its programme late in 2018. Ghana's government has said that it is earmarking 50 million USD for a research fund, but the proposal still awaits parliamentary approval. The Kenyan programme had 30 million USD to spend in 2017, but its budget has been cut back to 27 million USD for 2018, owing to lower-than-expected tax revenue and the cost of back-to-back elections last year. The 2019 budget might be even smaller.

As the *Nature* article comments, previous funding schemes have petered out: Uganda's Millennium Science Initiative ran from 2007 to 2013, supported by 30 million USD from the World Bank. It created a number of science programmes in Uganda, but a review found that the country's government had failed to produce the "continuous and predictable resources" required to keep those initiatives going. Critics of the ACE scheme say that it has allowed governments to delay making substantive national investments in research and have suggested a co-funding model might

⁹² See for example 'Centres of Excellence: Revolutionizing the poultry production chain in West and Central Africa' which presents the work of the Avian Sciences (CERSA) of the University of Lome in Togo, <http://www.worldbank.org/en/news/feature/2017/05/15/centers-of-excellence-revolutionizing-the-poultry-production-chain-in-west-and-central-africa> accessed 26/06/19

⁹³ Karen MacGregor (July 3rd 2015 'Steady Progress for Africa's 19 centres of excellence, University World News

⁹⁴ Nordling, L (2018) The World Bank and the African Centres of Excellence (ACE) Projects. *Nature* 561, 16 (2018) doi: 10.1038/d41586-018-06094-w

have been more effective. Governments have 40 years, including a ten-year no-payment period, to repay the money at low or zero interest. There are also those who suggest that the scheme has put pressure on African governments to fund science and training at a level that they would not have done on their own.

Programme Logic

In the ACE programme documentation there is no elaborated formal theory of change or explicitly argued ‘model’ of engagement as such, although it is not difficult to deduce it from the argumentation that defines the problem and offers the solution in the project appraisal document summarised in Figure 2. Essentially, what the narrative offers is the reinterpretation of the scientific domain through a development lens in which economics and the need to stimulate the economy through conventional markets becomes the focus.⁹⁵ The solution to the problem becomes the already established ‘model’ of ‘Centres of Excellence’ which is to be pursued through a regional approach. The focus on an output driven model, within a relatively short period of time, essentially frames the incentives to drive institutional change in terms of money and those changes are largely expressed in terms of what can be measured as outputs – numbers and reports. As will be discussed below, this is an approach that differs from the modalities and values that Sida is committed to in its bilateral support.

Figure 2: Summary argumentation justifying the ACE Project (edited)



⁹⁵ Ferguson, J (1994) *The Anti-Politics Machine* Depoliticisation and Bureaucratic Power in Lesotho, Minnesota: University of Minnesota Press.

▼
 Limited investment has meant that higher education institutions are not capable of responding to the immediate skills needs of supporting sustained-productivity led-growth in the medium term;

▼
 Higher education policies are disconnected from regional and national development priorities resulting in gaps between labour market demand and competencies of graduates;

▼
 Higher education faces severe constraints in terms of attaining a critical mass of quality faculty;

▼
 Financing for higher education is not sustainable without sufficient funding coming from affluent households and the private sector;

▼
 Nurturing the fast growth of private higher education is critical to providing youth more educational possibilities while also making public investments in higher education more strategic;

▼
 Demand for higher education will grow tremendously over the coming decades as a consequences of massive expansion in access to basic education;

▼
 Governance and leadership is integral to the development of higher education systems that respond to the needs of African economies;

▼
 A regional approach to higher education in Africa offers the best way to build and sustain excellence in higher education in African economies;

▼
 A regional approach will work best in focusing on the few dynamic institutions with pockets of quality faculty that have already been responding innovatively by offering quality, fee-based courses to students from the region;

▼
 Thus, the higher order objective of the proposed project is to meet the labour market demands for skills with specific areas where there are skill shortages affecting development, economic growth and poverty reduction, etc.

Source: World Bank (2014) Project Appraisal for an Africa Higher Education Centres of Excellence Project, Report no PAD332, P1-6

A number of observations can be made about the model of Centres of Excellence, which is the core of the World Bank approach.⁹⁶ Excellence is a powerful term, which ‘seeks to prescribe how research is conducted, organisationally and conceptually’.⁹⁷ What in practice becomes ‘excellence’ in essence is publication in reputable international journals and this is the metric that the World Bank ACE project applies. But do these standards in an academic context apply to where one is seeking ‘development’ outcomes, if they are applied might it be at the cost of development and context relevance or if those standards are not met and if so does it mean that what it produced is not valid or useful knowledge?

It is also the case that excellence within a particular science discipline may be inadequate to address many of the challenging development problems such as climate change, environmental sustainability or poverty. Might it be that a narrow emphasis on this form of excellence would inhibit the necessary interdisciplinary and collaborative work that is required for such development problems? The emphasis on STEM within the ACE project is not supportive of that interdisciplinarity.

Moreover, the model of scientific excellence – which focuses on methodological rigour and objectivity – to assert credibility essentially is an apolitical view of science which sees policy engagement as speaking truth to power. But the wider evidence informed by social studies on the ways in which policy processes work suggests that in practice both science and policy processes are partial and politicised and mutually constructed in decidedly non-linear ways. All this suggests that the notion of excellence needs a broader conceptualisation that includes ‘social and economic impacts, the development of collaborative relationships and participative forms, good governance, effectiveness and cost efficiency’,⁹⁸ and addresses development and sustainability goals and the pathways to achieving them.

As much as the idea of excellence can be debated, so too can be the idea of centres, with its notion of concentration, be questioned, particularly within a regional context. As Leach and Waldman observe ‘excellence is ... contextual and structural, so it is necessary to address critically the kinds of spaces in which ‘experts’ are expected to produce excellence’. Centres run the danger of creating distance between science and society and creating islands of scientific activity. While the ACE project strongly emphasises private sector engagement in these islands, the private sector has had a poor history of responding to the localised and left behind and the poor, marginal and disempowered. Thus, rather than thinking of science in centres of excellence a more relevant framing might be to think of science practice in terms of networks, coalitions and alliances within an innovation perspective in which multiple actors engage in innovation processes.

⁹⁶ This draws from Leach, M. and Waldman, L (2009) Centres of Excellence? Questions of Capacity for Innovation, Sustainability, Development, STEPS Working Paper 23, Brighton: STEPS Centre

⁹⁷ Chataway, J., Smith, J., and Wield, D (2007) ‘Shaping Scientific Excellence in Agricultural Research; International Journal of Biotechnology, 9.2: 172-187: p. 175.

⁹⁸ Op.cit: 2007:183

Implications for the Sida model/approach

There are clearly some strong contrasts between the ACE programme and Sida's approach with respect to objectives, process and approach. Key differences include the scale of the programmes, the duration (or speed?) of engagement (and therefore implicitly of assumptions about rates of change), national versus regional approaches, the institutional model (Centre of Excellence versus a National University), the more instrumental modalities of ACE (e.g., results-based management linked to fund disbursement) versus processes of negotiation as well as partnership modalities and institutional levels of engagement. The two approaches are not readily compared, and it is not easy to discuss them in terms of outcomes given the rather different assumptions and objectives that frame the two different approaches. Nor are we in a position to assess outcomes in terms of the relative efficacy of the two programmes to deliver capacities. Both cases reflect limitations in monitoring and understanding of processes of institutional change.

In both cases, issues of context are scarcely addressed. For the ACE project it would appear not even to be an issue given the assumptions around a 'regional approach' (something of an institutional mono-cropping approach which excludes context). The diverse contexts in which Sida implements its programmes (e.g. Vietnam versus Tanzania or Cambodia) would suggest a degree of local tuning, in part reinforced by Sida's active commitment to ownership (the substance of which is less clear in the case of ACE). It is not clear, however, that context is actively factored into the design of Sida country bilateral research cooperation. Certainly, in neither the ACE nor the Sida programme are differentiated processes of institutional change according to context either analytically monitored and investigated or learned from.

It is also clear that the ACE model is strongly driven by a very singular economists' model of economic growth and what drives it. Sida has a somewhat softer version of this but in that both focus largely on supporting capacity development STEM and speak to comparable models of 'excellence' and the metrics to assess this, the discussion around ideas of 'excellence', how it is assessed and whether it is sufficient or appropriate in the context of addressing development problems is relevant to Sida as well.

Annex 4. Evaluation Matrix

Main Evaluation Questions	Data Requirements & Sources	Methods and indicators
EQ1: To what extent has Sida's model for bilateral research cooperation (BRC) contributed to building research capacity in partner countries?	<i>Requirements:</i> Detailed analysis of Sida's model, specific country programmes and analysis of outcomes <i>Sources:</i> Programme Documents and evaluations, Perception Surveys/Tracer Studies and Bibliometric databases and key stakeholder interviews	Programme document analysis, country case study interviews, analysis of tracer studies and bibliometric analysis <i>Indicators:</i> Evidence of change in research capacity (publications etc.) and attribution of those changes and level of contribution to the BRC.
EQ2: To what extent has the support influenced national policies, institutional structures and financing of higher education and research?	<i>Requirements:</i> Documentation on higher education policies and practices and funding in relation to Sida programme. <i>Sources:</i> Publicly available documentation (Government, World Bank, Asian Development Bank etc) and key stakeholder interviews in case study countries	Analysis of policy documents, other secondary sources, interviews <i>Indicators:</i> Evidence of change in policy and its implementation & financing of higher education and research and attribution of those changes to the BRC.
EQ3: To what extent is the model an effective instrument for building research capacity at the selected universities in partner countries?	<i>Requirements:</i> Details on programme components, other donor programmes, government policy and funding <i>Sources:</i> Documentation, Case studies, Perception Survey/Tracer Studies, Bibliometric databases, key stakeholder interviews	Programme document analysis, country case study interviews, analysis of tracer studies and bibliometric analysis <i>Indicators:</i> Evidence of change in diverse aspects of research capacity (publications etc.) and attribution of the relative contribution of the diverse instruments of BRC to those changes
EQ4: What are the results in qualitative terms of the model for bilateral research cooperation, both in terms of scientific quality, quality of the research infrastructure developed, and the quality of the research environment in general?	<i>Requirements:</i> Data on publications, infrastructure and incentives in the research environment and wider perceptions of research quality (e.g. relevance, credibility) <i>Sources:</i> Bibliometric databases, inventories, key stakeholder interviews, information on career trajectories, key informants etc.	Programme document analysis, country case study interviews, analysis of tracer studies, bibliometric analysis, and key informant interviews. <i>Indicators:</i> Research publications (bibliometric analysis), Use and functioning of research infrastructure, evidence on research cultural practices (seminars etc.)
EQ5: What is the overall impact, i.e. positive or negative effects, of the	<i>Requirements:</i> Assessment of views of participants, assessment of evidence of	Programme document analysis, country case study inter-

model for bilateral research cooperation in terms of direct or indirect, negative and positive results?	change from documentary sources, data on publications etc. <i>Sources:</i> Interviews with key Swedish and country partners, bibliometric databases, key informants. documentation	views, analysis of tracer studies, bibliometric analysis, key informant interviews with Swedish and country case study partners <i>Indicators:</i> Overall assessment of changes (see EQ1-4) and attribution of the relative and overall contribution of the diverse instruments of the BRC model to those changes
EQ6: Provided Sida's model for bilateral research cooperation has contributed to intended outcomes, is it likely that the benefits of Sida's programmes are sustainable beyond the Swedish support?	<i>Requirements:</i> Assessment of contextual environment for university support and dynamics of university change <i>Sources:</i> Policy documents, key stakeholder interviews, country case studies	Country case studies, document analysis with key stakeholder interviews. Other bilateral programme documents will be consulted if giving special attention to this issue. <i>Indicators:</i> Overall assessment of changes in universities institutional capacity (quality, funding etc.) and trajectory of change
EQ7: What are the major factors influencing long-term sustainability of research cooperation capacity and institution building results?	<i>Requirements:</i> Summative assessment drawing on analyses and responses to above questions <i>Sources:</i> Responses to and analysis of preceding EQs	Interpretative analysis
EQ8: To what extent and how is Sida's bilateral research cooperation taking human rights and gender equality into consideration in their programmes?	<i>Requirements:</i> Documentation and data on human rights and gender equality and changes <i>Sources:</i> Programme documentation, university data, key stakeholder interviews	Analysis programme and university documentation, key stakeholders interviews. Other bilateral programme documents will be consulted if giving special attention to this issue. <i>Indicators:</i> References and actions in relation to rights issues and effective documentation and analysis
EQ9: To what extent and how is Sida's model for bilateral research cooperation affected by political, economic and socio-cultural context?	<i>Requirements:</i> Broader analysis of university context and dynamics of change <i>Sources:</i> Country Case Studies, Policy Documentation, Country Literature, Key Informants	Documentation analysis and review, interviews. Other bilateral programme documents will be consulted if giving special attention to this issue. <i>Indicators:</i> Design and implementation of BRC in different country contexts in case study countries and documentary analysis of other BRC countries
EQ10: To what extent and how does Sida's	<i>Requirements:</i> Assessment of policy impact of research products	Key informants interviews, documentation

model for bilateral research have impact on science-based policy making, improved products and services and sustainable societies?	<i>Sources:</i> Country case studies, key informants, relevant documentation	<i>Indicators:</i> Evidence of policy forums, use of evidence and effects and attribution of any observed changes to BRC
EQ11: What is the best approach in terms of selecting one or a combination of the four modalities for building research capacity in low-income countries?	<i>Requirements:</i> An interpretative question that will weigh the evidence gathered <i>Sources:</i> country cases studies, programme documents, interviews etc.	Interpretative analysis
EQ12: What will be the best way to monitor and evaluate research quality and relevance in a future programme?	<i>Requirements:</i> Review of lessons from case study country documentation, field findings and comparative literature on M&E <i>Sources:</i> Country case studies, documentation and wider literature	Interpretative analysis <i>Indicators:</i> Data on existing monitoring and evaluation of research quality and its use, strengths and limitations
Addressing Sida's 'System Approach and Basic Logic		
To what extent is the evidence of research cooperation implementation consistent with the application of a holistic approach and its effects? What might be learnt from this?	<i>Requirements:</i> Assessment of application of the models, the inter-relation of its components and coordination of programmes with other donors in partner countries. <i>Sources:</i> Country case studies and findings from the EQs	Interpretative and summative analysis
To what extent is there an integrated programme and are its effects (synergies) greater than the sum of its parts?	<i>Requirements:</i> Assessment of the application of the model and its outcomes <i>Sources:</i> Country case studies and findings from the EQs	Interpretative and summative analysis
What is the evidence that research cooperation builds capacities at individual and institutional level and how effective is it at doing this?	<i>Requirements:</i> Assessment of capacity development outcomes from case studies <i>Sources:</i> Country case studies, tracer studies and findings from the EQs	Interpretative and summative analysis
What is the evidence that research cooperation lead to conducive environments for higher education and research and if so what is its contribution?	<i>Requirements:</i> Assessment of changes in research and teaching culture and incentives in case studies and functioning of research infrastructure <i>Sources:</i> Country case studies, Perception Survey/tracer studies and findings from the EQs	Interpretative and summative analysis
Do and to what extent improved research capacity and research environments lead to more and better research?	<i>Requirements:</i> Assessment of career trajectories, research publications and their quality <i>Sources:</i> Country case studies, Perception Survey/tracer studies and findings from the EQs	Interpretative and summative analysis
Does improved research contribute to better teaching outcomes?	<i>Requirements:</i> Assessments of teaching quality (if they exist) and change and use of research and qualified academics in teaching	Interpretative and summative analysis

	<i>Sources:</i> Country case studies, Perception Study/tracer studies and findings from EQs	<i>Indicators:</i> Teaching quality assessments and attributions of causes of change if any
Does improved research lead to improved knowledge contributions and how does this feed back into teaching?	<i>Requirements:</i> Assessment of case studies on research impact and use of findings in teaching <i>Sources:</i> Teaching Quality evaluations, Country case studies, key informants, teaching curriculum	Interpretative and summative analysis <i>Indicators:</i> Teaching quality assessments and attributions of causes of change if any
Does improved research and knowledge contributions improve contributions to science-based policy making?	<i>Requirements:</i> Assessment of engagement in relevant formal and informal policy making and use of research findings <i>Sources:</i> Country case studies, tracer studies and findings from the EQs, Documentation e.g. policy briefs	Interpretative and summative analysis
Does improved research and knowledge contributions contribute to improved products and services?	<i>Requirements:</i> Assessment of use of research products and services linked with research outputs <i>Sources:</i> Country case studies, tracer studies Key informant Interviews, Documentation	Interpretative and summative analysis
Do the above improvements contribute to sustainable societies (environment, human rights, gender, poverty reduction etc.) and if so in what respects?	<i>Requirements:</i> Assessment of sustainable changes in country case studies, extent and potential causes <i>Sources:</i> Contextual literature, key informants	Interpretative and summative analysis Limitations in data access likely to affect analysis.
What evidence is there to support the robustness of Sida ToC, the causal connections between its elements, the validity of its assumptions and what do we learn from this?	<i>Requirements:</i> Broad assessment drawing on findings from about questions <i>Sources:</i> County case studies, contextual literature	Interpretative and summative analysis – possibly resulting in an alternative/revised ToC with a greater elaboration of causal connections

Annex 5: List of Persons Interviewed

Bolivia

Name	Position	Institution	Programme/Department
Malin Larssen	Focal Point	Swedish Embassy	Swedish Embassy, La Paz
Waldo Vargas	Director	UMSA	DIPGIS
Ignacio Chirico	Coordinator	UMSA	DIPGIS
Olga Iniguez,	Programme coordina- tor	UMSA	
Jorge Quintanilla	Programme coordina- tor	UMSA	Recursos hídricos y contaminación
Jovana Almanza	Programme coordina- tor	UMSA	Biodiversidad vegetal
Wilfredo Talavera	Dean/Director	UMSA	Decano - Facultad de Ciencias Puras y Naturales
María García	Dean/Director	UMSA	Facultad de Ciencias Puras/ Instituto químicas
Waldo Vargas	Director	UMSA	DIPGIS
Carlos Rodríguez	Support staff	UMSA	DIPGIS/Social Communication
Noemi Tirado	Programme coordina- tor	UMSA	Toxicología Medioambiental
Angel Aliaga	Programme coordina- tor	UMSA	Manejo de Agua y Desarrollo Sostenible

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Ramiro Pilco	Programme coordinator	UMSA	
Alberto Jimenez	Programme coordinator	UMSA	
Jorge Velasco	PhD student	UMSA	Ingeniería Química
Carla Crespo and	PhD student	UMSA	Bioquímica
Jackeline Calla	PhD student	UMSA	Bioquímica
Cristina Mejia	Support staff	UMSA	DIPGIS/Quality Assurance, Scientific Communication
Elizabeth Guzman	Administrator	UMSA	DIPGIS, Social Interaction
Mauricio Penarieta,	PhD student	UMSA	Química de los Alimentos
Patricia Mollinedo	PhD student	UMSA	
Luis Lopez	PhD student	UMSA	Petroquímica
Leslie Tejada	PhD student	UMSA	Química de los Alimentos
Ximena Ortiz	MSc student	UMSA	Ciencias Químicas
Josue Mamani	MSc student	UMSA	Toxicología
Jorge Yañiquez	MSc student	UMSA	Química de los Alimentos
Enrique Ocampo	Director	LAFAR	LAFAR/Laboratorios Farmacéuticos
Juan Ríos del Prado	Rector	UMSS	Rectorado
María Esther Pozo	Vice-Rector	UMSS	Vice-Rectorado
Julio Medina	Director	UMSS	DICyT
Jacqueline Maldonado	Director's Assistant	UMSS	DICyT
Romina Gomez	Support staff	UMSS	DICyT/Admistration, Technology
Ivan Fuentes	Support staff	UMSS	DICyT/Admistration, Technology
Edwin Urena	Support staff	UMSS	DICyT/Admistration, Technology
Lilian Aguilar	Support staff	UMSS	DICyT/ Admistration, Technology

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Nando Zurita	Support staff	UMSS	DICyT/Admistration, Technology
Fernando Gutierrez	Support staff	UMSS	DICyT/ Admistration, Technology
Carlos Lopez	Support staff	UMSS	DICyT/ Admistration, Technology
Lilian Aguilar	Support staff	UMSS	DICyT/ Admistration, Technology
Ana Maria Michel	Support staff	UMSS	DICyT/ Admistration, Technology
Alfredo Cossio	Dean/Director	UMSS	Decano - Facultad de Ciencias y Tecnología
Daniel Illanes	Dean/Director	UMSS	Facultad de Medicina
Marcela Luizaga	Dean/Director	UMSS	Instituto de investigaciones - Facultad de Medicina
Rosmery Salazar	Dean/Director	UMSS	Instituto de investigaciones - Facultad de Ciencias Sociales
Roger Fuentes	Dean/Director	UMSS	Instituto de investigaciones - Facultad de Agronomía
Omar Arce	Dean/Director	UMSS	Instituto de investigaciones - Facultad de C
Marina Sturich	Dean/Director	UMSS	Instituto de investigaciones - Facultad de Arquitectura
Carmen Ledo	Programme coordina- tor	UMSS	Habitat y medio ambiente
Omar Arce	Programme coordina- tor	UMSS	Innovacion y desarrollo
Marcela Luizaga	Programme coordina- tor	UMSS	Salud
Alfredo Duran	Programme coordina- tor	UMSS	Manejo integrado del agua
Jorge Quillaguaman	Programme coordina- tor	UMSS	Bioprocesos
Daniel Guzman	PhD student	UMSS	Biotecnología
Jorge Quillaguaman	PhD student	UMSS	Biotecnología
Daniel Eid	PhD student	UMSS	Salud Publica
Andres Gonzales	PhD student	UMSS	Geofísica

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Carla Fernandez	PhD student	UMSS	Recursos hídricos
Evelin Cardozo	PhD student	UMSS	Energía
Daniel Guzman	Director	UMSS	Centro de Biotecnología
Ana Maria Romero	Director	UMSS	Centro de Aguas y Saneamiento Ambiental
Linnet Garcia	Director	UMSS	Instituto de Investigaciones Biomédicas
Evelin Cardozo	Director	UMSS	Centro de Investigación en Energía
Janeth Daga	MSc student	UMSS	Chemical Technology and Food
Israel Flores	MSc student	UMSS	Water and Environmental Management
Daniela Elias	MSc student	UMSS	Social Sciences
Pablo Jimenez	MSc student	UMSS	Renewable Energies
Angela Zambrana	MSc student	UMSS	Health: Epidemiological Chemistry
Gudnar Nunez	MSc student	UMSS	Innovation and Development
Marcelo Delgado	Director	Gov. of Cochabamba	Metropolitan Region Unit
Jenny Carrasco	Vice-Minister	Min. of Education	Vice Ministry of Science and Technology
Erika Montes	Director General	Min. of Education	Vice Ministry of Science and Technology
Cecilia Molina	Sida Focal Point	Min. of Education	Vice Ministry of Science and Technology
Alex Pantoja	Sida Consultant 1	Min. of Education	Vice Ministry of Science and Technology
Cindy Baez	Sida Consultant 2	Min. of Education	Vice Ministry of Science and Technology
Faruk Dosserich	Sida Consultant 3	Min. of Education	Vice Ministry of Science and Technology

Vietnam In Sweden

Name	Position	Institution
Solveig Freudenthal	Retired, formed responsibility for the Vietnam Bilateral Research Cooperation	Sida
Malin Beckman	Lecturer , Department of Urban and Rural Development Coordinator, RDViet 2009-2011	Swedish University of Agricultural Science

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Ewa Wredle	Senior Lecturer, Department of Animal Nutrition and Management Coordinator Mekarn II (2013-2019)	Swedish University of Agricultural Science
Ingeborg Van der Ploeg	Director of Studies Coordinator Common Diseases in Vietnam	Karolinska Institute
Cecila Stalsby Lundborg	Professor, Global Health System and Policy Coordinator Global Health Systems Programme	Karolinska Institute

In Vietnam (Date: 22nd April – 1st May 2019)

First name	Last name	Position	Institution	Program/Department
Van An	LE	Rector	HUAF	Management
Dinh Phung	LE	Vice-Rector	HUAF	Management
Huu Ty	PHAM	Head	HUAF	International Office
Duc Ngoan	LE	Professor	HUAF	Faculty of Animal Science & Veterinary Medicine (FASVM)
Thi Hoa Sen	LE	Vice-Dean	HUAF	Faculty of Agricultural Extension & Rural Development (FERD)
Huu Van	Nguyen	Vice-Dean	HUAF	FASVM
Vu Hai	Phan	Head Department	HUAF	FASVM
Thi Thu Hong	Tran	Head Department	HUAF	FASVM
Thanh Hai	Duong	Lecturer	HUAF	FASM
Thanh Hang	Du	Lecturer	HUAF	FASM
Duy Quynh Tram	Nguyen	Vice-Dean	HUAF	Faculty of Fisheries
Anh Phuong	HUYNH	Dean	HUE University of Science	Social Work Faculty

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Thi Tuyet Suong	Nguyen	Lecturer	HUAF	FERD
Thi Hong Phuong	LE	Lecturer	HUAF	FERD
Le Phi Khanh	HO	Lecturer	HUAF	FERD
Nguyen Ha	Pham	Technical Deputy Director	VUSTA Project Management Office	VUSTA
Le Thanh	Forsberg	UN Specialist	UN, Viet Nam	UN Resident Coordinator's Office
Mattias	Larsson	Associate Prof Global Health, KI	Honorary Prof HMU	KI & HMU
Linus	Olson	Project	Karolinska	KI & HMU
T.K Chuc	Nguyen T.K	Professor	HMU	-
Khanh Toan	Tran	Professor	HMU	-
Van Do	Nguyen	Head Department	HMU	Dept. Pathophysiology and Immunology
Thi Thanh Huong	Nguyen	Vice Head Physiology KI Alumni coordinator	HMU	Physiology Dept, HMU;
Vu Trung	Nguyen	Head Department & Vice Director, National Hospital for Tropical Diseases	HMU	
Thi Kim Cuc	Ngo	Vice Director General	National Institute of Animal Science (NIAS)	Management
Manh Thang	Chu	Head Department	NIAS	Animal Nutrition and Waste Management
Thi Thanh Van	Do	Director	NIAS	Goat and Rabbit Research Centre

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Thi Luyen	Ly	Vice-Director	NIAS	Goat and Rabbit Research Centre
Thiu Ha	Le	-	NIAS	Scientific Management and International Cooperation
Thi Kim Anh	Le	Professor	Hanoi National University of Education	-
Trung Thanh	Ngo	Head Department	VNUA	Department of Sociology
Thi Nang	Do	Lecturer	Academy of Finance- Under Ministry of Finance	-
Le Hoa	Nguyen	Head Department	IPSARD	-
Thu Phuong	Nguyen	Lecturer-Researcher	VNUA	Faculty of Economics and Rural Development
Vu Than	Huyen	Head of Department	National Geriatric Hospital Hanoi	
Thu	Nguyen	Doctor and researcher	National Geriatric Hospital	
Van Tuan	Vo	Researcher	Can Tho University	Mekong Delta Research Institute
Cong Huu	Pham	Lecturer-Researcher	CTU	Can Tho University
Xuan Phu	Pham	Lecturer	An Giang University	Natural Resources Management Department
Flordeliz B.	Dacuyan	Assistant Professor	University of the Philippines Visayas Tacloban College	Division of Management
Thi Hong Nhung	Pham	Lecturer	Nong Lam University, Ho Chi Minh City	Faculty of Economics
Back Dang	Nguyen	Dean	Nong Lam University, Ho Chi Minh City	Faculty of Economics
Phuong Anh	Cap Thi	Researcher	Vietnam Leather Footwear and Handbag Association.	MARK

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Thanh Huong	Nguyen Thi	Lecturer	Quang Binh University	Faculty of Agriculture, Forestry and Fishery
Hai Hanh	Tong Thi	Lecturer	College of Food Industry, Danang	Department of Science Management and International Affairs
Van Hieu	Tran	Lecturer	An Giang University	
Thanh Trung	Truong	Lecturer	Can Tho University	Department of Animal Science
Tuyet Giang	Nguyen	Lecturer	An Giang University	Department of Animal Husbandry and Veterinary Medicine
Hieu Phuong	Nguyen	Lecturer	Nong Lam University	

Rwanda

M/F	First name	Last name	Position	Programme/Department	Institution
M	Alex	Karara	Team leader UR (also Director of Resource Mobilisation)	Central Institutional Advancement	UR
F	Alice	Dukuze	UR CRA Financial Administrator & DTL	UR Research Coordination Office	UR
F	Aline	Umubyeyi	Dean	Medicine & Health Sciences	UR
F	Alphonsine	Mukamuhirwa	PhD Student	Agriculture	SLU/UR
F	Anna	Stockman	Deputy Team leader Sweden	Library	BTH
F	Anna	Norman Haldén	Deputy Team leader Sweden	Agriculture	SLU
F	Anne	Kagwesage	PhD graduate	Education	UR
F	Beatrice	Mugwaneza	Team Leader	Programme Coordination	UR
M	Belson	Rugwizangoga	PhD Student	Medicine & Health Sciences	GU/UR
M	Bengt-Ove	Turesson	Programme Coordinator Sweden	Programme Coordination	LiU
M	Bengt-Ove	Turesson *	Team leader Sweden	Applied Mathematics and Statistics	LiU

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M/F	First name	Last name	Position	Programme/Department	Institution
M	Björn	Mattsson	Team leader Sweden	ICT Infrastructure	BTH
F	Brice	Mukashema	Programme Administrator	Swedish Embassy	Swedish Emb.
F	Brigitte	Nyirambangutse	PhD graduate	Environment	UR
M	Callixte	Karege	Co-supervisor and Vice Chairperson HEC Board	Agriculture	UR
F	Camilla	Orjuela	Supervisor	Peace, Conflict and Development Studies	GU
M	Charles	Kabiri	PhD graduate	ICT Research	BHT
M	Charles	Gakomeye	Administration & Logistics Manager	Programme Coordination	UR
M	Charles	Murigande	Deputy Vice Chancellor Institutional Advancement	VC's Office	UR
M	Charles	Kabwete	Co-supervisor	Peace, Conflict and Development Studies	UR
F	Charline	Mulindahabi	PhD graduate	Peace, Conflict and Development Studies	GU/UR
M	Daton	Ngilinshuti	Team leader UR	ICT Infrastructure	UR
M	Didace	Kayihura	Principal CASS		UR
M	Egide	Kaitare	Co-supervisor	Medicine & Health Sciences/CMHS	UR
M	Emile	Bienvenu	Team leader UR/ Director of Centre of Innovation and Entrepreneurship)	Innovation	UR
F	Emilia	Molnar	First Secretary/Program Manager Research	Swedish Embassy	Swedish Emb. Kigali
F	Emma	Bergstedt	Administrator	Medicine & Health Sciences	GU

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M/F	First name	Last name	Position	Programme/Department	Institution
M	Enock	Niyondamya	Monitoring and Evaluation specialist	SPIU	UR
M	Ernest	Mutwarasibo	PhD Student	Peace, Conflict and Development Studies	GU/UR
F	Ethel	Brundin	Team leader Sweden	Economics & Management	JIBS
M	Etienne	Ntagwirumugara	Director	Africa Center of Excellence in Energy for Sustainable Dev.	UR
F	Ewa	Wredle	Team leader Sweden	Agriculture	SLU
M	Francois	Masabo	CCM Director	CCM /CASS	UR
F	Francois Xavier	Naramabuye	Co-supervisor	Agriculture	UR
M	Fredrik	Söderbaum	Supervisor	Peace, Conflict and Development Studies	GU
M	Froduald	Minani	Team leader UR	Applied Mathematics and Statistics	UR
M	Gasabo Jean	Damascene	Director General	Research and documentation centre / CNLG	CNLG
M	Gaspard	Rwanyiziri	Team leader UR	GIS and Remote Sensing	UR
M	George	Njoroge	Principal	College of Education (CE)	UR
	Guillaume	Nyagatare	Deputy Team leader UR	Agriculture	UR
F	Gunilla	Blomqvist Sköldbberg	Team leader Sweden	Peace, Conflict and Development Studies	GU
F	Gunilla	Krantz	Team leader Sweden- Health Sciences	Medicine & Health Sciences	GU
M	Gustav	Aldén Rudd	Deputy Team leader Sweden	Peace, Conflict and Development Studies	GU
M	Henrik	Hansson	Team leader Sweden	Instructional Technology	SU

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M/F	First name	Last name	Position	Programme/Department	Institution
M	Ignace	Gatare	Principal	College of Science and Technology (CST)	UR
M	Ildephonse	Musafiri	Co-supervisor	Economics & Management /CBE – Of- fice of the President	UR
F	Immaculée	Bugingo	Program Manager	SPIU	UR
	Innocent	Musonera	Deputy Team leader UR	Law	UR
M	Jean Bosco	Gahutu	Team leader UR- Medicine	Medicine & Health Sciences	UR
M	Jean Pierre	Nkuranga	Acting Deputy VC /Admin. and Finance	VC's office	UR
M	Jean-Bosco	Habyarimana	PhD Student	Peace, Conflict and Development Stud- ies	GU/UR
M	JMV	Ndayizigiye	Director of Audit	Directorate of Internal Audit	UR
M	John	Mugisha	Deputy Team leader UR	GIS and Remote Sensing	UR
	Joseph	Nzaba	Co-supervisor	Applied Mathematics and Statistics	UR
M	Joseph	Ntaganira	Team leader UR - Public Health	Medicine & Health Sciences	UR
F	Kajsa		Program Administrator, Sweden	Programme Coordination / PCO	LiU
M	Kalema	Gordon	Principal Senior Technologist	Ministry of ICT	Ministry of ICT
M	Kato	Njunwa	Team leader UR	UR Research Coordination Office, Re- search Directorate (Also UR Research Director)	UR
M	Kristofer	Månsson	Supervisor	Economics & Management / JIBS	Jönköping University
F	Laetitia	Nyinawamwiza	Principal	CAVM	UR
M	Lars	Hartvigson	Deputy Team leader Sweden	Economics & Management	JIBS
M	Leif	Abrahamsson	Team leader Sweden	Research and Postgraduate Studies	ISP

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M/F	First name	Last name	Position	Programme/Department	Institution
M	Leon	Niyibizi	PhD Student	Agriculture	SLU/UR
M	Louis	Sibomana	PhD Student	ICT Research	BHT
F	Lucia	Naldi	Supervisor	Economics & Management / JIBS	Jönköping University
M	Marcel Ndengo	Rugengamanzi	PhD Student	Applied Mathematics and Statistics	LiU/UR
M	Marcel	Ndengo	Co-supervisor	Applied Mathematics and Statistics	UR
F	Margueritte	Umubyeyi	Deputy Team leader UR	Library	UR
F	Marie Francoise	Mukanyangezi	PhD Student	Medicine & Health Sciences	GU
F	Marie Christine	Gasingirwa	Director General	Directorate of Science, Technology and Research	MINEDUC
M	Martin	Ntawubizi	Co-supervisor	Medicine & Health Sciences	UR
M	Mathias	Nduwingoma	Team leader UR	Instructional Technology	UR
M	Mikael	Boström	Head of Development Cooperation	Swedish Embassy	Swedish Emb. Kigali
M	Muhebera	Bizimana	PhD Student	Library	University of Borås
M	Mucyo	Cyprien	Publication Officer	UR Research Coordination Office	UR
M	Mupenzi	Gashugi	Finance Manager	UR Research Coordination Office	UR
M	Mupenzi	Mutimura	Senior Research Fellow in Animal Nutrition	Rwanda Agricultural Board	BAB
M	Musekura	Celestin	Co-supervisor	Economics & Management	UR

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M/F	First name	Last name	Position	Programme/Department	Institution
M	Nelson	Ijumba	Deputy Vice Chancellor Academic and Research Affairs	VC's office	UR
M	Ntagwiru-mugara	Etienne	Team leader	World Bank funded Centre of Excellence in Energy, UR	UR
F	Olive	Niyomubyeyi	PhD Student	GIS and Remote sensing	LU/UR
M	Oliver	Habimana	PhD Student	Economics & Management	JIBS/UR
M	Paul	Vaderlind	Deputy Team leader Sweden	Applied Mathematics and Statistics	SU
M	Peter	Johnson	Deputy Team leader Sweden	Law	UU
M	Philip	Cotton	Vice Chancellor	VC's office	UR
M	Rama Rao	Bokka	Team leader UR	Economics & Management	UR
M	Raymond	Ndikumana *	Overall Programme Coordinator	Programme Coordination / PCO	UR
M	Rob Van	de Gevel	Coordinator	Strengthening Education for Agriculture Development (SEAD)-Niche	UR
F	Robinah Kalamera	Namuleme	Team leader UR (Also Director of UR Library)	Library	UR
M	Said Ngoga	Rutabayiro	Team leader UR	ICT Research	UR
M	Samuel	Kamugisha	PhD Student	Economics & Management	JIBS/UR
M	Samuel	Sibomana	Previous Deputy Team leader UR	Central Institutional Advancement	UR
M	Simon	Rukera-Tabaro	Team leader UR	Agriculture	UR
M	Sirajul	Islam	Deputy Team leader Sweden	E-Governance	Örebro
M	Steven	Rulisa	Co-supervisor/Dean	Medicine & Health Sciences /CMHS	UR
F	Sylvie	Mucyo	Deputy Programme Coordinator + Student Manager UR	Programme Coordination /PCO	UR
F	Sylvie Mukunde	Mboyoy	Team leader UR (Also Chief Information Officer)	University MIS & Project Manag. Systems	UR

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M/F	First name	Last name	Position	Programme/Department	Institution
M	Theogene	Twagirumugabe	PhD Student	Medicine & Health Sciences	GU
M	Theophile	Niyonzima	Deputy Team leader UR	Innovation	UR
F	Theresa Lagali	Hensen	Program Administrator + Student Manager, Sweden	Programme Coordination / PCO	LiU
M	Thomas Kigabo	Rusuhuzwa	Chief Economist & Director General	Central Bank of Rwanda	Central Bank of Rwanda
M	Tom	Umulisa	PhD Student	Law	UU/UR
M	Eugene	Kazige	Coordinator	SPIU	UR
M	Samuel	Nizeyimana	Director of Finance and Administration	SPIU	UR
M	Kamuzinzi	Masengesho	Co-supervisor	Arts and Social Sciences/Education	UR
M	Faustin	Gasheja	Acting Principal	College of Business and Economics (CBE)	UR
M	Vincent	Byusa	Team Leader UR	College of Business and Economics	UR
M	Vincent	Ngarambe	Director of Procurement	Directorate of Procurement	UR
M	Vivien	Munyaburanga	Coordinator	Academie de Recherche et d'Enseignement Supérieur (Belgium)	UR
M	Åke	Grönlund	Team leader Sweden	E-Governance	Örebro

Interviews in Tanzania

Name	Position	Institution	Programme/Department
Edmund Alavaisha	PhD student	UDSM	Sub-programme on Private-Public Partnership for Sustainable Water Management
Wineaster Anderson	Dean	UDSM	Business School, Principal Investigator, sub-programme on Innovation and Sustainability in Tourism

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Name	Position	Institution	Programme/Department
M. Bakari		UDSM	Sub-programme on Affordable Adsorbent Systems for Arsenic and Fluoride Removal in Drinking Water Sources
Donath Damian	PhD student	UDSM	Sub-programme on Interdisciplinary Molecular Bioscience
Juma Hussein	PhD student	UDSM	Sub-programme on Interdisciplinary Molecular Bioscience
Julian Ljumaalana	PhD student	UDSM	Sub-programme on Affordable Adsorbent Systems for Arsenic and Fluoride Removal in Drinking Water Sources
Mesia Ilomo	PhD student	UDSM	Sub-programme on Engendering Agribusiness Entrepreneurship
Abel Ishumi	Professor emeritus	UDSM	By e-mail only
Mohammed Kassim	Co-Principal Investigator	UDSM	Library
Oscar Kibazohi	Principal Investigator	UDSM	Sub-programme on Sustainable Agricultural Productivity and Processing for Enhanced Food Security
Cuthbert Z.M. Kimambo	Deputy Vice-Chancellor	UDSM	Research
Richard J. Kimwaga	Co- Principal Investigator	UDSM	Sub-programme on Sustainable Sanitation in Theory and Action
Amelia Kivaisi	Co-Principal Investigator	UDSM	Sub-programme on Interdisciplinary Molecular Bioscience
David Koloseni	Co-Principal Investigator	UDSM	Sub-programme on Building Mathematics Capacity in Higher Education
Herald N. Kundaali	Co-Principal Investigator	UDSM	Sub-programme on Smart Grid Capacity Development
Thomas Lyimo	Principal	UDSM	College of Applied Sciences, sub-programme on Building Mathematics Capacity in Higher Education
Victor Mbande	PhD student	UDSM	Sub-programme on Private-Public Partnership for Sustainable Water Management

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Name	Position	Institution	Programme/Department
Latifa Mbelwa	Coordinator	UDSM	Sweden-Tanzania Collaborative Programme in Higher Education and Research
Herieth Mero	PhD student	UDSM	Sub-programme on Interdisciplinary Molecular Bioscience
Felix Mtalo	Principal Investigator	UDSM	Affordable Adsorbent Systems for Arsenic and Fluoride Removal in the Drinking Water Sources
Joseph Mtamba	Co-Principal Investigator	UDSM	Sub-programme on Affordable Adsorbent Systems for Arsenic and Fluoride Removal in the Drinking Water Sources
Matern S.P. Mtolera		UDSM	Institute of Marine Sciences, Principal Investigator, sub-programme on Fisheries and Aquaculture for Food Security
Eunice Mureithi	Principal Investigator	UDSM	Sub-programme on Building Mathematics Capacity in Higher Education
Kelefa Mwantimwa	Principal Investigator	UDSM	Library
Esther Ndenje-Sichalwe	Director	UDSM	Library
Joel Nobert	Director	UDSM	Institute of Resource Assessment, Principal Investigator, sub-programme on Private-Public Partnership for Sustainable Water Management
Sylvester Rugehyamu		UDSM	Sub-programme on Building Mathematics Capacity in Higher Education
Lettice K. Rutashobya	Principal Investigator	UDSM	Sub-programme on Engendering Agribusiness Entrepreneurship
Donatha Tibuhwa	Director, Principal Investigator	UDSM	Post-Graduate Studies and Curriculum Development, Interdisciplinary Molecular Bioscience
Elly Tumsifu	Co-Principal Investigator	UDSM	Sub-programme on Engendering Agribusiness Entrepreneurship
Said Aboud	Principal Investigator	MUHAS	HIV/AIDS and Tuberculosis
Gasto Frumence	Principal Investigator	MUHAS	Sub-programme on Health Systems

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Name	Position	Institution	Programme/Department
Omary Miinzi	Principal Investigator	MUHAS	Sub-programme on Malawi and Neglected Tropical Diseases
Anne Outwater	Principal Investigator	MUHAS	Sub-programme on Injury, Prevention and Care in Road Traffic
Andrea B. Pembe	Vice-Chancellor	MUHAS	Muhimbili University of Health and Allied Sciences
Felix K. Sukumus	Director	MUHAS	Information and Communication Technology, Coordinator of ICT and Library sub-programme
Bruno Sunguya	Director	MUHAS	Research and Publications
Hidaya Kayuza	PhD/Coordinator	ARU	Tanzania-Sweden collaborative programme in higher education and research
Daniel Mbisso	PhD	ARU	
Dawah Magembe-Mushi	PhD	ARU	
Daniel Msangi		ARU	
Ilbard Kombe		ARU	
Yasin Senkondo	Director of Graduate Studies	ARU	Research and Publications
Bestina Daniel	Project Coordinator	COSTECH	
Khamisi Kalegele		COSTECH	Research Communication
Mgumia		COSTECH	Cluster & Innovation Fund
Anna Ngoo	Project Coordinator	COSTECH	
Amos Nungu	Director General	COSTECH	
Neema Tin-damanyire	Programme Officer	COSTECH	
Msangi		COSTECH	Research Fund

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Name	Position	Institution	Programme/Department
Ilomo Tumwimbi- lege	NFAST Co-ordinator	COSTECH	
Jeanette Da Silva	Head of NORHED	Norad, Oslo	By telephone only
Johan Hellström	Coordinator	Embassy of Sweden, Dar es Salaam	Responsible Officer, Bilateral Research Cooperation Programme
Charles D. Kihampa	Executive Secretary	Tanzania Commis-sion for Universi- ties	
Ulf Källstig	Deputy Head of Mission	Embassy of Sweden, Dar es Salaam	
Njuguna Ndung'u	Chief Executive Officer	African Eco- nomic Re- search Consor- tium, Nairobi	

Interviews in Sweden

Name	Position and organisation
Abraham Joel	Coordinator – Department of Soil and Environment, Swedish University of Agricultural Sciences/SLU collaborating with UMSS on Habitat and Environment
Mark Howells	Coordinator – Royal Institute of Technology (KTH), Department of Energy Technology, collaborating with University of San Simón on the Energy Planning programme
Stina Oredsson	Supervisor – Lund University, Zoology and Cancer Cell Biology Department, collaborating with University of La Paz to establish a cell culture laboratory
Lars Hartvigson	Coordinator – Jönköping University collaborating with Addis Ababa University on a leadership programme
Olle Terenius	Coordinator – Uppsala University collaborating with Armauer Hansen Research Institute (AHRI) and Addis Abeba University on the International Science Programme
Ioannis Dimitriou	Coordinator – Swedish University of Agricultural Sciences/SLU collaborating with the Eduardo Mondlane University (UEM) on Quality assurance of research and post-graduate training
Leif Abrahamsson	Coordinator – Uppsala University collaborating with Universidade Eduardo Mondlane (UEM) on the International Science Programme Uganda/ Mozambique
Bengt-Ove Turesson	Coordinator for all universities working with Rwanda – based in Linköping University
Lars Hartvigson	Deputy Team Leader – Jönköping University collaborating with the university of Rwanda on a leadership programme
Gunilla Blomqvist Sköldberg	Team Leader – Peace, Conflict and Development Studies at the University of Gothenburg collaborating with the University of Rwanda (UR) on a capacity development project
Anna Stockman	Librarian – Blekinge Institute of Technology collaborating with the University of Rwanda on IT and library topics
Anna Norman Haldén	Coordinator – Swedish University of Agricultural Sciences, Biomedical Sciences and Veterinary Public Health collaborating with the Institute of Marine Sciences at the University of Dar es Salaam
Sara Gabrielson	Coordinator – Lund University, Centre for Sustainability Studies collaborating with the Water Resources Engineering Department at the University of Dar es Salaam

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Caroline Wamala	Coordinator – Stockholm University, Computers and Systems Sciences/SPIDER collaborating with the Directorate of Research at the University of Dar es Salaam and the Directorate of Library Services at the Muhimbili University of Health and Allied Sciences
Sanja Tibell Savic	Coordinator – Uppsala University, Department of Organismal Biology collaborating with the Molecular Biology and Biotechnology Institute at the University of Dar es Salaam
Thomas Kjellqvist	Coordinator – Södertörns Högskola, collaborating with Tanzania and Rwanda on two Sida projects related to the role of universities in innovation
Monika Berge	Coordinator – Karolinska Institutet collaborating with Makerere University (MU) – Health Sciences
Sigrun Dahlin	Coordinator – Swedish University of Agricultural Sciences, Department of Soil and Environment collaborating with Makerere, Busitema, Gulu and Kyambogo universities on maize-based cropping systems
Veronica Trépa-gny	Coordinator – University of Borås, Faculty of Librarianship, Information, Education collaborating with the IT East African School of Library and Information Science (EASLIS) at Makerere University
Dr. Andrej Weintraub	Karolinska University, Hospital, Huddinge Also worked with the Nicaragua programme
Dr Curt Almqvist	Based at Skogforsk in Uppsala Hard to tell how much involvement he had in the Vietnam programme
Ewa Wredle	Coordinator for the Department of Animal Nutrition and Management, Nutrition and Management, Ruminants, SLU

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For country specific references, please see the individual country case studies (Annex 2,3).

Evaluation of Sida's Model for Bilateral Research Cooperation

The purpose of this evaluation is to provide an overall assessment of the extent to which Sida's model for bilateral research cooperation, its' System Approach and Basic Logic contribute to research capacity in low-income countries.

The programmes have reached many of their stated goals in terms of research capacity development (PhD graduates), an improved research environment (management and infrastructure) and outputs in the form of academic publications.

At the same time, there is a set of common challenges related to the extent to which the Sida model strengthen research of high-quality and relevance to poverty reduction and the sustainability of the programme post-Sida's interventions.

Building on evaluation findings and theories of institutional change, the evaluation concludes that the Sida model has not given sufficient attention to research groups and networks as *agents of change*. Such a focus will not only lead to a different programme focus and dynamic, but also contribute to making the programme more sus-tainable beyond Sida support.



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