

**DFID**

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**A review on the effectiveness of capacity  
strengthening interventions and extent of the  
main capacity gaps in African Agricultural  
Research**

***Protocol***

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## 1 Background

Investments in the agriculture sector in sub-Saharan Africa have declined substantially during the 1990s. This has led to stagnating agricultural productivity and an increasingly fragile food security situation in many countries<sup>1</sup>. International donors and African governments have made recent commitments to increase levels of investment in agricultural research and development in order to address this problem. During 2001-2008, investments and human resource capacity in public agricultural research and development (R&D) averaged more than 20 percent growth in sub-Saharan Africa, but this occurred only in a handful of countries. Investment levels have stagnated or fallen in most countries resulting in prolonged recruitment freezes, limited training opportunities, aging pools of researchers, losses of senior staff, and disproportionate recruitment of junior BSc-qualified scientists<sup>2</sup>. Human and physical capacity in agricultural research organizations in Africa thus remains weak and their ability to effectively utilize new resources is limited. This means that considerable efforts are needed to strengthen capacity in order to generate sustainable returns on investment. A crucial question is how best to target investments in capacity strengthening to obtain the desired outcomes.

Greater attention is now being paid to capacity strengthening for agricultural research in sub-Saharan Africa. Most interventions continue to focus on enhancing the skills of individuals. However, this may in itself not be sufficient to translate into improved organizational performance leading to wider benefits for rural communities. Support for capacity strengthening at organisational and system level is also necessary so that new knowledge is generated, shared and utilised. A critical need is to strengthen the ability of different types of research and development organisations to work together to contribute to agricultural innovation.

Although there is a growing consensus that greater support for capacity strengthening at organisation and system level is required, the evidence from sub-Saharan Africa to show that this has had a beneficial impact on research performance is sparse and widely scattered. It

### **Working definition of 'capacity'**

Capacity is defined for this purpose as: 'the ability of individuals, organizations and systems to perform and utilize research effectively, efficiently and sustainably in addressing local, national and regional priorities that will contribute to poverty reduction and the achievement of the Millennium Development Goals, and to continuously learn and adapt to new challenges'. In the context of research for development, research capacity involves: the systems, facilities and resources to work with relevant stakeholders to identify and define relevant researchable problem areas; develop and maintain research partnerships and networks; plan and implement research tasks; participate in and utilize international research; evaluate, select and adapt research findings; and publish, disseminate and apply research findings.

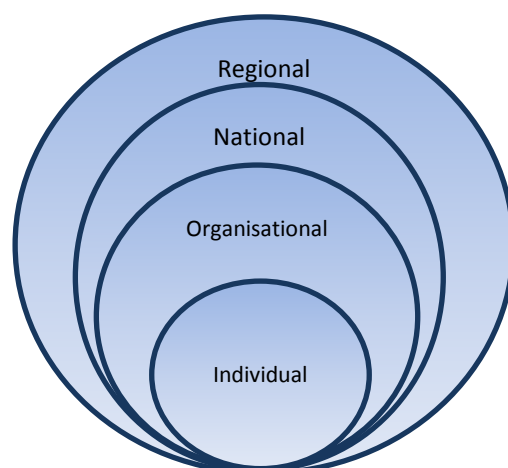
(Source: Pound B, Adolph B. 2005. Developing the capacity of research systems in developing countries: lessons learnt and guidelines for future initiatives. Report to DFID. Natural Resources Institute, University of Greenwich, Chatham)

<sup>1</sup> Jones M. 2004. Strengthening agricultural research in Africa. 2020 Africa Conference Brief 9. International Food Policy Research Institute, Washington

<sup>2</sup> Beintema N, Stads GJ. 2011. African agricultural R&D in the new millennium. Progress for some, challenges for many. Food Policy Report. International Food Policy Research Institute, Washington. Agricultural Science and Technology Indicators, Rome. DOI: <http://dx.doi.org/10.2499/9780896295438>

has to be noted that agricultural R&D is a slow business<sup>3</sup>. Consequently, there is a need to identify and synthesize current knowledge and evidence on the effectiveness of capacity strengthening strategies and interventions and the extent to which they deliver beneficial outcomes for agricultural and rural development. It is important to understand what has worked and to establish the conditions which have enabled success to be achieved. At the same time it is necessary to identify where the main capacity gaps lie, so that the most appropriate strategies can be used and investments targeted to address them.

We define capacity strengthening as any process, initiated internally or externally, that aims to improve the performance of regional and national agricultural research systems. This process can include many forms of capacity strengthening initiatives, such as training of individuals, organizational capacity strengthening and the strengthening of national or regional agricultural research and innovation systems. Agricultural research systems are defined as including agricultural research networks and programmes, national agricultural research institutes, agriculture faculties of universities and other agricultural education institutions, NGOs active in agricultural research for development, and the private sector. Figure 1 illustrates the various levels of agricultural research systems.



**Figure 1. Levels of agricultural research systems**

## 2 Objectives of the review

The systematic review is part of a larger study which reviews evidence from capacity strengthening interventions and programmes, and capacity strengthening components of other agricultural and rural development programmes. The objectives of this larger study are:

1. To systematically review studies and reports on capacity strengthening interventions in agricultural research systems in developing countries, to

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<sup>3</sup> Pardy PG, Alston JM, Piggott RR. (Eds.) 2006. Agricultural R&D in the developing world: too little, too late? International Food Policy Research Institute, Washington. DOI: <http://dx.doi.org/10.2499/089629756XAGR>

- identify the types and extent of their outcomes and impacts on capacity and performance;
2. To review evidence of capacity strengthening needs at institutional levels in regional and national agricultural research systems in sub-Saharan Africa;
  3. To make recommendations on areas for future investment in, and impact evaluation of, capacity strengthening in agricultural research systems.

The main research question and sub-questions to be answered with the systematic review (objective 1) are:

***What are the impacts of capacity strengthening interventions on the capacity and performance of regional and national agricultural research systems, and the conditions for success?***

- What are the (positive and negative) impacts of different types of capacity strengthening interventions on the capacity and performance of agricultural research systems?
- What are the different methods and indicators used to measure impact of capacity strengthening interventions?
- How does the impact on capacity and performance of agricultural research systems vary by different approaches to capacity strengthening?
- What (external and internal) conditions play a role in achieving beneficial impacts through capacity building?

Information to be collected under objective 2 of the larger study will consist of existing review reports (e.g. RUFORUM publications) and databases (e.g. [www.asti.cgiar.org](http://www.asti.cgiar.org)) to extract evidence on capacity gaps in African agricultural research systems, with particular reference to technical and managerial skills, new approaches to AR4D, and the impacts of financial constraints for personnel and recruitment. This analysis, however, will not take the approach of a systematic review but rather a structured literature review.

The policy recommendations under objective 3 will be based on the findings under objective 1 (systematic review) and objective 2. This will include recommendations on impact evaluation methods based on the reviewed methods under objective 1.

### **3 Methodology for the systematic review**

#### **3.1 CRITERIA FOR INCLUSION AND EXCLUSION IN THE REVIEW**

The suggested criteria for inclusion and exclusion of studies / publications for the systematic review are:

- Types of studies: studies that evaluate *ex-post* the impact or trace the impact pathway of capacity strengthening initiatives on the capacity and performance of agricultural research systems will be included. It is anticipated that a wide variety of evaluation methods are used, and we will therefore include quantitative and qualitative studies. Studies that describe capacity strengthening programmes but do not report on impact will be excluded from the systematic review, but may be included, if relevant, in the review for objective 2 (capacity strengthening needs).

- Types of interventions: studies that consider the impact of capacity strengthening interventions such as:
  - (post-) graduate training of individuals employed at agricultural research institutes,
  - Short courses (skills training) for staff employed at agricultural research institutes or in the private sector
  - Institutional capacity strengthening and change management
  - Research-into-Use programme
  - Research management skills
  - Mentoring schemes
  - Improvement of communication and information systems (incl. ICT)
  - Distance or e-learning programmes
  - Public-private partnerships
  - Technical assistance
  - Action research – research with community-level innovation
  - Farmer field schools
  - Innovation platforms
- Geographical spread: although the focus is on Africa, studies that consider capacity strengthening initiatives in Asia or Latin America will also be included. Studies from other geographic areas will be excluded.
- Studies since 1990 till present will be included.

Studies will be excluded if:

- The study does not relate to research and development within the agricultural sector;
- The study applies to high-income countries;
- The study does not report on any type of impact or outcome of the capacity strengthening intervention.

### **3.2 SEARCH STRATEGY**

We anticipate that there will be a limited amount of peer-reviewed publications available that evaluates the impacts of capacity building on agricultural research performance in Africa. We will therefore search for literature that includes quantitative and qualitative studies and reports including grey literature. The publications will be collected through various ways:

- Electronic search engines:
  - Google
  - EBSCO Discovery Service of University of Greenwich searching the following online databases: Academic Search Premier, British Library Document Supply Centre, CAB Abstracts 1990-present, CINAHL, EDS Foundation, ERIC, GreenFILE, Humanities International Complete, Library Information Science & Technology Abstracts

- Databases of scientific journals: Africana Periodical Literature, AgEcon, African Journals Online (AJOL), Asian Journals Online, Latin American Journal Online, British Library for Development Studies, IDEAS, JSTOR, Ingenta Connect, Scopus (searching scientific journals of large publishers such as Elsevier, Springer, Wiley-Blackwell, Taylor & Francis), and Swetswise.
- Web portals: 3IE, AGRIS, ASTI, CGIAR Vlibrary, Eldis, FARA, NEPAD-CAADP, RIU, RUFORUM, Search4Dev.
- Search for publications and reports from international agricultural research institutes and major donors projects such as ACIAR, AfDB, AusAid, DANIDA, DFID, DGIS, FAO, IDRC, NORAD, SDC, SIDA, UNDP, USAID, and World Bank.
- Academics and experts working in the field of capacity strengthening, including FARA and the SROs, will be contacted by e-mail with a request to send relevant publications and grey literature (e.g. evaluation reports, working papers) to the review team.

For the larger databases, full text will be searched using the search terms (free text) listed below:

- **Professional academic training of individuals:** (“graduate training” OR “post-graduate training” OR “higher education qualification” OR “distance learning”) AND (“capacity development” OR “capacity building” OR “research capacity” OR “agricultural knowledge”) AND (Africa\* OR “developing countries” OR Asia\* OR Latin America\*) AND (impact OR effect OR outcome OR evaluat\*) AND agric\* AND research
- **Short courses (skills training) of individuals:** (course OR training) AND (“capacity development” OR “capacity building” OR skills OR know-how OR management) AND (Africa\* OR “developing countries” OR Asia\* OR Latin America\*) AND (impact OR effect OR outcome OR evaluat\*) AND agric\*
- **Organizational capacity strengthening:** (“technical assistance” OR mentoring OR “institutional development” OR secondment OR attachment OR “change management” OR “experiential learning” OR “information systems”) AND (capacity OR management) AND (Africa\* OR “developing countries” OR Asia\* OR Latin America\*) AND (impact OR effect OR outcome OR evaluat\*) AND agric\*
- **Strengthening of agricultural research systems:** (“innovation systems” OR “research into use” OR “innovation platforms” OR “farmer field schools” OR “public-private partnerships” OR “action research” OR “national agricultural research systems” OR networks) AND (capacity OR performance OR research OR development) AND (Africa\* OR “developing countries” OR Asia\* OR Latin America\*) AND (impact OR effect OR outcome OR evaluat\*) AND agric\* AND research

However, it is acknowledged that a complex combination of search terms may not be appropriate or possible for some web portals. In those cases searches based on the terms “capacity building”, “capacity development” or “capacity strengthening” may just be sufficient. Depending on the scope of the portal, different search terms may become redundant. For example, the terms ‘agric\*’, research and the geographic

location can be omitted when searching the CGIAR portal which contains only publications on agricultural research in developing countries. The geographic location can also be omitted when searching the ELDIS portal which is focussed on developing countries.

The full search strategies (including search words and Boolean operators) for each electronic database or web portal, the search set numbers and the number of records retrieved will be included in full in the report. The data search will be sufficiently rigorous and broad to ensure that as many eligible studies as possible are identified.

The retrieved titles and abstracts will be examined against the inclusion/exclusion criteria by the reviewers to remove obviously irrelevant studies during a first rapid screening. The full text of the remaining studies will be assessed again by the reviewers against the same criteria during a second in-depth screening to select the final sample of studies to be included.

### **3.3 DATA EXTRACTION**

The selected studies that pass the inclusion criteria will be reviewed in detail. The studies will also be assessed for their clarity with which results and methodology are described, appropriateness of evaluation methods, and reliability and validity of the indicators used to evaluate impact. Data extraction forms will be used to extract all relevant data from the selected studies for further analysis. An evidence database will be constructed in Excel because of its ease of use and accessibility.

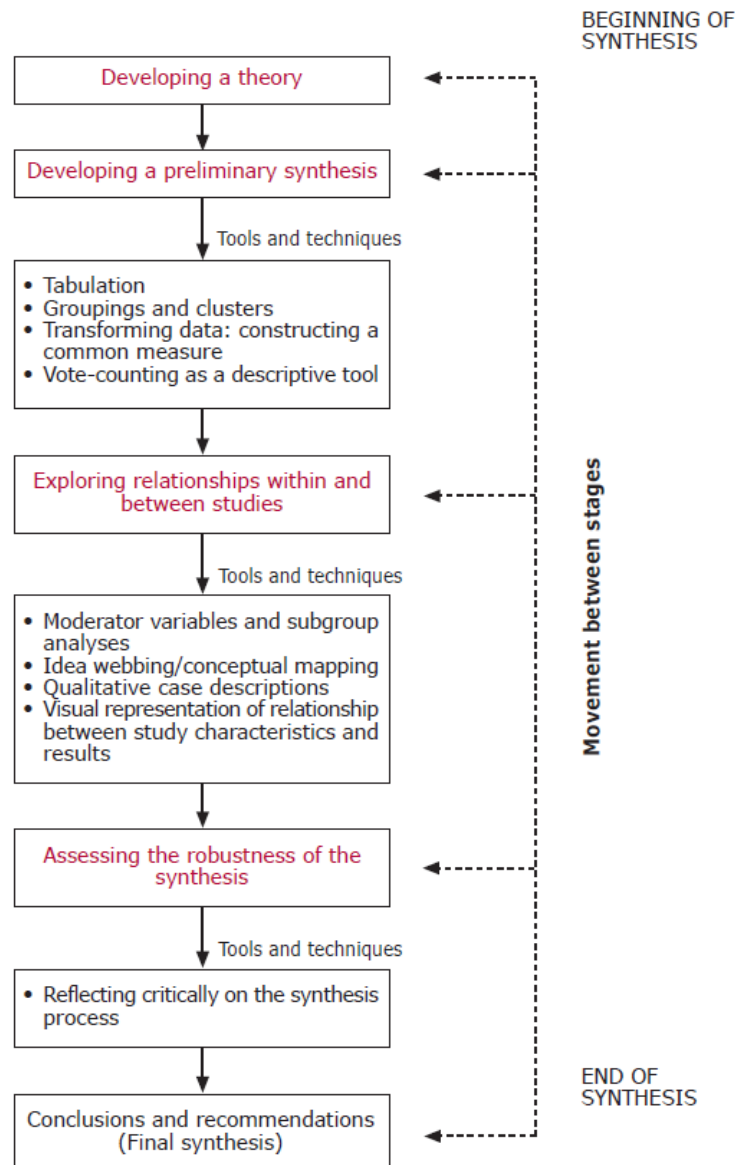
The database will contain information on:

- The studies (e.g. study objectives, study locale, year of publication, type of publication, authors);
- Context of the studies (e.g. description of agricultural research systems, level of capacity strengthening intervention, scope or sub-sector within agricultural research systems addressed by intervention);
- Methods used in study (e.g. data collection methods, evaluation methods, performance indicators);
- Descriptions of capacity strengthening activities;
- Relevance of the studies (high, medium, low), i.e. the appropriateness of the focus and the use of the study design to address the systematic review's question;
- Quality of the studies (high, medium, low), i.e. the trustworthiness of the results based on the methods used (considering sample size, evaluation method, data type, etc) and type of publication (e.g. peer-reviewed, unpublished);
- Key findings on the types and extent of impacts of capacity strengthening on the capacity and performance of agricultural research systems, with particular reference to gender aspects;
- Key findings and lessons learnt on what factors determine the level of impact.



### 3.4 ANALYSIS AND SYNTHESIS

Because we anticipate a large variety in the methodology used by evaluation studies, we will use a (qualitative) narrative approach, following ESRC guidance<sup>4</sup>, to synthesize results and explain contradicting findings. Figure 2 gives an example of the narrative synthesis framework<sup>5</sup>.



**Figure 2. Example of applying the narrative synthesis framework**

The methodology and findings of the systematic review will be documented in a project report. The key messages will be summarized, supported by relevant evidence including a description of important knowledge gaps, and policy recommendations.

<sup>4</sup> Popay J, Roberts H, Sowden A, Petticrew M, Arai L, Rodgers M, et al. 2006. *Guidance on the conduct of narrative synthesis in systematic reviews*. ESRC Research Methods Programme.

<sup>5</sup> CRD. 2009. *Systematic Reviews: CRD's guidance for undertaking reviews in health care*. Centre for Reviews and Dissemination, University of York