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Evaluation of Capacity Development Activities of CGIAR

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Annex A: List of people interviewed

Name	Affiliation	Position
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Christine Croombs	IRRI	HR Director
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Dagmar Wittine	RTB	Program Manager
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Dorothy Mukhebi	AWARD	Deputy Director , Fellowships and Institutional Partnerships
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Enrico Bonaiuti	DLS	CRP Dryland Systems Research Program Coordinator
Eranga Peduruarachchi	IWMI	HR Manager
Ernest RUZINDAZA	African Union	Food and Nutrition Security Head

Name	Affiliation	Position
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Fatma Hussein Kiruwa	ILRI Beca Hub	Research Fellow
Festus Akinnifesi	ICRAF	Previously: ICRAF Regional Coordinator for SSA. Currently: Deputy Strategic Programme Leader, Sustainable Agriculture- SP2 FAO
Francesca Stomeo	ILRI Beca Hub	Scientist, Capacity Building
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Frank Place	PIM	
Godfrey Bahiigwa	IFPRI	ReSAKSS Coordinator for Africa (Now: DREA Director-African Union)
Giriraj Amarnath	IWMI	Sub-Theme Leader on Water Related Disaster Risk Management
Hadi Susilo Arfin	SEANAFE	Former SEANAFE Board Member from Indonesia
Herath Manthrithilake	IWMI	Head, Sri Lanka Development Initiative/Researcher
Hilda Munyua	ILRI	Project Manager
Ian Makin	IWMI	Acting Deputy Director General (Research)
Iain Wright	ILRI	Deputy Director General – Research
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Javier Mauricio Jiménez Carrera	INIAP	INIAP Contact
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Jesus Fernandez	SEANAFE	Last Technical Advisor, SEANAFE
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Name	Affiliation	Position
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Mehmood Hassan	ICRAF	Head of Capacity Development
Meine van Noordwijk	SEANAFE	ICRAF Scientist with institutional knowldege on SEANAFE
Meredith Giordano	IWMI	Acting Director, WLE
Michael Tunde Ajayi	Federal University of Agriculture, Abeokuta	Professor, Agriculture Administration
Moses Osiru	RUFORUM	Deputy Executive Secretary
Moses Siambi	ICRISAT	Research Program Director
Nancy Johnson and John McDermott	A4NH	Evaluation and impact assessment; A4NH Director
Nasser K. Yao	ILRI Beca Hub	Post-Doctoral Scientist - Plant Molecular Breeder
Nicole Lefore	WLE, IWMI	Coordinator, IMAWESA
Nicoline de Haan	IWMI	Gender Focal Point at HQ
Noel Magor	IRRI	Head of Impact Acceleration Unit and Training Center
Padmaja R	ICRISAT	Gender (Researcher)
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Per Rudebjer	Bioversity International	Head of Capacity Development
Peter Carberry	ICRISAT	Deputy Director General - Research
Philip Kiriro	PAFO and EAFF	President
Prasanna Meruthi Buddopalli	CIMMYT AMBIONET	CIMMYT Maize Program Director/Nairobi
Raghunath Ghodake	AAPARI	Executive Secretary
Raymond Erick Zvavanyange	Young Professionals for Agricultural Development	Country Representative
Richa Jain	ICRISAT CApDev	ICRISAT/HR
Richard Fulss	CIMMYT	Head Knowledge Management
Robin Buruchara	PABRA	Director
Roger Pellé	ILRI Beca Hub	Principal Scientist, Capacity Building
Rufaro Madakadze	AGRA	Coordinator, "Education for Africa crop improvement" Programme
Sally Berman	FAO/ CD Unit	Head of Capacity Development Division

Name	Affiliation	Position
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Shalandar Kumar	ICRISAT	Innovation Systems in Dryland (Researcher)
Shirley Tarawali	ILRI	Assistant Director General
Silim M. Nahdy	AFAAS	Executive Director
Simon Kisira	NEPAD Planning and Coordinating Agency (NPCA)	Strategy and Knowledge Management
Simon Mwale	CCARDESA	Acting Director (formerly Programme & Grants Manager)
Simone Staiger-Rivas	CIAT	Knowledge Management Specialist
Sonia Aktar	IRRI	Former Gender Focal Person
Sonja Vermeulen	University of Copenhagen (CCAFS)	Head of Research
Stephen N. Mugo	ICRISAT	ICRISAT Representative Kenya
Sudha Nair	CIMMYT AMBIONET	CIMMYT Principal Scientist/Hyderabad
Suresh Babu	IFPRI	Head of CD
Tadesse Kuma Worako	ARDC	Director of ARDC
Thomas Falk and Satish Nagaraji	ICRISAT	Senior Researcher
Thomson Chilanga-Malawi	Department of Agriculture Research Services (DARS)	Deputy Director
Wellington Ekaya	ILRI	Senior Scientist-Capacity Building
Wilfredo Carandang	SEANAFE	Executive Director, SEANAFE; Professor Agroforestry, UPLB
Willem Jansen	World Bank	Agricultural Economist
Wilson Kasolo	ANAFE	Interim Executive Secretary
Xavier Cuesta	INIAP	INIAP Contact
Zoumana Bamba	IITA	Head of CD

Annex B: Findings of a Systematic Review of AR4D CD

One important attempt to establish a sound empirical basis for what works and what doesn't work in AR4D CD was a 2013 review that scanned more than 30 000 publications and systematically selected and reviewed 73 published studies on the results of CD programs and interventions[1]. To the knowledge of this evaluation team, this systematic study represents the most complete meta-review on the results of CD in AR4D to date. In addition to summarizing approaches and results of the reviewed CD programs and interventions, the study also synthesized four groups of factors that influenced the effectiveness of CD programs and interventions in AR4D.

The study authors however warned that, also after excluding studies of very low quality, "many of the included studies can still be criticised for lack of quality in terms of robust impact assessment methods or detailed reporting on methods and potential bias, which seems to be a general problem with this type of intervention and evaluation". This reflects the evaluation team's experience that most evidence presented in the field of CD is qualitative and often derived without a robust research protocol and based on partial evidence, making it difficult to differentiate between empirical findings and professional opinions.

The study identified several positive **program management-related factors** that supported the effectiveness of CD programs and interventions: sufficient duration and opportune timing of CD programs, tailor-made training linked to specific needs, good change process management, opportunities for joint learning and knowledge exchange, alternating training, implementation and learning, competence of service providers including good interpersonal skills and relationships to beneficiaries, flexible adaptation to changing circumstances, quality management, and transparent and fair decision-making. Factors negatively influencing CD effectiveness were: implementation delays, uncertainties related to unpredictable funding behavior and changing goalposts of donors, donor preference for projects rather than programs, supply- rather than demand-driven CD without proper needs assessments, unrealistic expectations and project design, absence of clear impact pathways and theories of change, reduced relevance and interest of training candidates due to biased selection, lack of M&E data, lack of financial sustainability and exist strategies, staff and budget limitations, and funding cycles out of tune with academic cycles.

Organizational factors in the beneficiary organization helping effectiveness were: strong organizations with already high levels of capacity[2], staff willingness to collaborate and change related to the organization's image of its own performance, a critical mass of staff involved in CD and committed to change, ownership of the change process within and beyond the organization, change agents, continuous commitment of the organization's leadership, availability of appropriate tools and innovations, M&E capabilities and the ability to use M&E data for strategic decision-making, and financial sustainability and the ability to mobilize internal and external resources. Instead, factors

[1] Posthumus, H.; Martin, A.; Chancellor, T. (2013): A Systematic Review on the Impacts of Capacity Strengthening of Agricultural Research Systems for Development and the Conditions of Success.

[2] Several studies, including the 2006 CGIAR training evaluation by the Science Council, "Evaluation and Impact of Training in the CGIAR," 2006, noted that although training strengthens capacity, it is less effective if the organisation is weak.

reducing effectiveness are: lack of incentives and inadequate salaries or working conditions, lack of time for applying new skills because of teaching or management duties (e.g. for graduates promoted upon return), excessive bureaucratic procedures or inadequate administrative and financial management, lack of organizational resources such as libraries, equipment, infrastructure and laboratories, change of key personnel, clashes between the organizational culture of the beneficiaries with the philosophy of the CD program, implementation and change process transaction costs, and the lack of a long-term CD vision and strategy guiding individual CD interventions at the level of the organization and/or the donor.

Enabling environment factors at all levels were found to have an important effect on the results of CD programs and interventions: adverse socio-political and economic factors that can sometimes be linked to low (inter)national agricultural research priorities reduce CD impact, for example by prioritizing teaching over research, or quantity over quality. External pressure for change and accountability can be beneficial if supported within the organization. Different organizational cultures between research and other system actors can hamper collaboration and impact of CD. Partnerships can address this, for example through influencing the way research organizations do business, for example through insights into private sector perspectives. Improved stakeholder involvement and linkages with other organizations are found to enhance CD impact, and synergy with agricultural extension or collaboration with farmers facilitates agricultural development and enhances impact at farmer level. Viewing rural areas as sources if raw materials supported by commodity extension and research models result in weak innovation systems and focus on technology transfer and clear division of labor can lead to inward-looking organizational culture. Transaction costs of CD partnerships may be too high to be offset by cost reductions achieved through CD. An external catalyzing agent may be required for bringing partners together as private sector leadership in CD is often weak and the public sector lacks resources.

Regarding **research and dissemination capacities**, several additional factors were identified. Some studies found a mismatch between academic interests of researchers and farmers' needs because researchers benefited more from basic rather than from applied farmer-oriented research. The long time-lags between research and associated development results as well as short research activity time-frames pose important challenges CD needs to address. Foreign aid-driven research agendas were found to not always be in the best interest of smallholder farmers, and a lack of shared understanding of concepts and theories may hamper impact. A common issue across many studies was inadequate (or lack of) engagement between researchers and technology users while participatory approaches and embedding of R&D into innovation systems were seen as potentially capacity-enhancing. The update of new crops was reported to meet many challenges, for example licensing, lack of commercial interest or underdeveloped seed industries, and related capacities are required for achieving impact. Finally, access to and readability of research publications was found to represent an important capacity constraint.

Annex C: Capacity Development needs in developing countries

CGIAR research is directed towards poverty reduction, improvement of food and nutrition security, and improvement of natural resources systems and ecosystem services[3]. This requires individuals, organizations and systems with a diverse range of capacities that are not always present or fully developed in countries with which CGIAR cooperates.

The information summarized here derives from reviews of reports and databases, and two papers[4] commissioned for this evaluation:

The main points are:

- Agricultural research capacity in developing countries is often deficient in investments and funding stability. Difficulties exist in recruiting and retaining sufficient numbers of adequately qualified researchers, and requirements for national and regional systems evolve with changing approaches to AR4D.
- Agricultural extension services are frequently weak, under-staffed and under-financed.
- Agricultural systems vary significantly among and within countries in terms of organizational structures and policies, resulting in different capacities needs.
- Sufficiently detailed information on developing country capacity needs remains limited, particularly for agricultural extension.
- Low female participation in research and extension is an important issue.

Section I.A. Volume and volatility of AR4D investment

Investment levels affect capacity of research and extension staff, facilities, and support to networks and development agendas. Investment is generally too low and funding in sub-Saharan Africa is highly volatile.

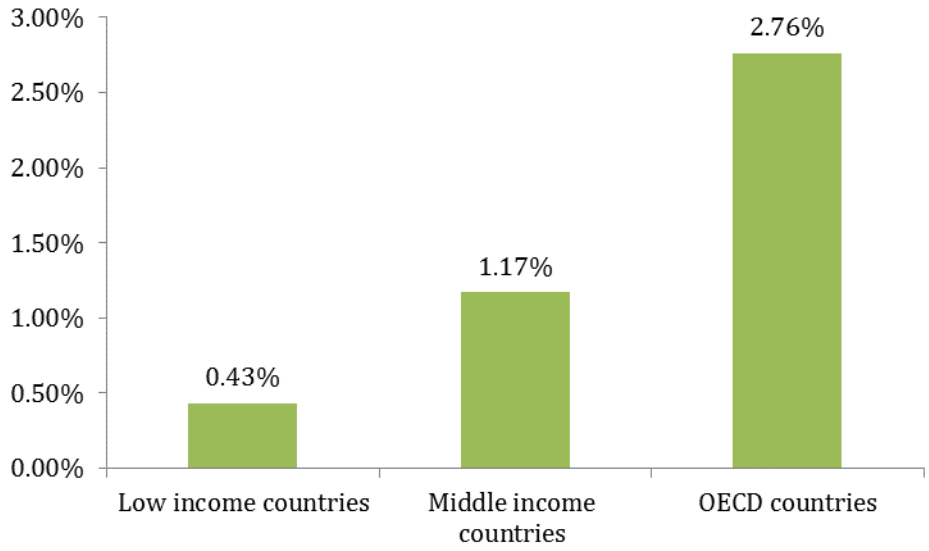
Excluding the private sector, low-income countries on average spent 0.43 percent of their agricultural GDP on agricultural R&D in 2001-2011, compared with 1.17 percent for middle-income and 2.76 percent for OECD countries[5].

[3] CGIAR (2015): CGIAR Strategy and Results Framework 2016-2030, p. 4.

[4] Christoplos, I. (2016): Capacity Development and Relations Between the CGIAR and Agricultural Extension. Published in Volume III of CGIAR-IEA: Evaluation of Capacity Development Activities of CGIAR (2017). Rome, Italy: Independent Evaluation Arrangement (IEA) of CGIAR (iea.cgiar.org) and Lynam, J. (2016): Assessing the CGIAR's Approach to Capacity Development in AR4D in Sub Saharan Africa. Published in Volume III of CGIAR-IEA: Evaluation of Capacity Development Activities of CGIAR (2017). Rome, Italy: Independent Evaluation Arrangement (IEA) of CGIAR (iea.cgiar.org)

[5] Nin-Pratt, A. (2016): Comparing apples to apples: A new indicator of research and development investment intensity in agriculture. IFPRI Discussion Paper 1559, p. 1.

Figure 1: Average agricultural R&D as percentage of agricultural GDP



A comprehensive meta-review of 292 studies on rates of return of agricultural R&D investments since 1953 reported an average rate of return of 81 percent[6,7].

Developing countries also showed "two-speed growth"; some countries dominating regional investment and growth figures and many countries lagging. For example, SSA experienced a 40 percent growth in total agricultural R&D spending since 2000, reaching 1.7 billion PPP dollars[8] in 2011. However, relatively few countries contributed to this: Nigeria, Uganda, Ghana, Kenya, and Tanzania. For 14 of the 40 countries for which ASTI data are available, agricultural R&D investment stagnated or shrank.

In absolute terms, large variations occurred between countries. For example, in Africa, in 2011, three countries represented about half of the overall R&D investment: Nigeria (394 million PPP dollars), South Africa (237 million), and Kenya (188 million), while 19 of the 40 countries each spent less than 10 million PPP dollars. Despite positive absolute growth, investment *intensity* in agricultural R&D

[6] The study reports average rate of return of 100 percent per year for research, 85 percent for extension, 48 percent for studies that estimated the returns to research and extension jointly, and 81 percent for all the studies combined. The authors warn that these averages give an incomplete and in some important ways misleading picture because rates of return are widely dispersed around their respective averages. The study calculated the median rates of return to 48 percent per year (research), 63 percent (extension), 37 percent (research and extension jointly), and 44 percent for all studies combined. Comparing this with the average of 81 percent demonstrates important positive skewedness in the distribution of rates of return.

[7] Alston, J. et al. (2000): A Meta-Analysis of Rates of Return to Agricultural R&D: Ex Pede Herculem? IFPRI Research Report 113. p. ix.

[8] 2005 international purchasing power parity dollars.

declined from 0.59 to 0.51 percent between 2005 and 2011. In 2001, 28 of the 38 SSA countries fell short of the 1 percent intensity target set by the African Union and the United Nations[9,10].

Investments are also highly volatile in the most donor-dependent countries.

- Across 85 countries worldwide, in 2000-2008, agricultural R&D spending levels in low-income countries were twice as volatile as in high-income countries. Across regions, SSA had high average spending volatility while Asia-Pacific and LAC were on par with those in high-income countries[11].
- In SSA volatility was particularly high in Burkina Faso, Gabon, Mauritania, Sierra Leone, Sudan, and Tanzania, while spending was more stable in Congo, Rwanda, and South Africa.
- Typically, volatility was higher at agency-level than at the country level[12].

A 2014 ASTI study reported high R&D spending volatility in SSA to have several causes, including short-term, project-oriented donor and development bank funding. The study noted that "In a large number of SSA countries, donors fund the bulk of non-salary-related expenditures and there is extensive anecdotal evidence of agencies reverting into financial crisis upon the completion of large donor-funded projects"[13].

Section I.B. Number and qualification of researchers

At the level of individual capacity, number and growth in numbers of researchers represented a critical capacity issue in developing countries. ASTI estimated that between 2000 and 2008, the total number of publicly employed agricultural research staff increased by 25 percent in SSA, 16 percent in Asia-Pacific,[14] and 5 percent in Latin America and the Caribbean[15].

There were large variations between countries. For example, in the LAC region there were about 20,600 agricultural researchers (FTEs) in 2012/2013 of which about three quarters were Brazilian (5 869 FTEs), Argentinian (5 825 FTEs), and Mexican (3 967 FTEs)[16]. In SSA[17], Nigeria and Ethiopia accounted for most public research capacity growth in the region, and Nigeria (2 688 FTEs), Ethiopia (1 877 FTEs) and Kenya (1 151 FTEs) employed more than a third of the research pool. Of the 38

[9] Established at several occasions, see e.g. NPCA and AOSTI, "Monitoring Africa's Progress in Research and Experimental Development (R&D) Investments," 1. for a summary.

[10] Beintema, N.M.; Stads, G-J. (2014): Taking stock of national agricultural R&D capacity in Africa south of the Sahara. ASTI Synthesis Report, p. 13, 15, 16; and Lynam, J.; Beintema, N.M.; Roseboom, J.; and Badiane, O. (2016): Agricultural research in Africa: Investing in future harvests: Synopsis, p. 86, 87, 89.

[11] Beintema, N, Stads, GJ., Fuglie, K. and Heisey, P. (2012): ASTI Global Assessment of Agricultural R&D Spending-Developing countries Accelerate Investment

[12] Beintema, N.M.; Stads, G-J. (2014), p. 20.

[13] Ibid, p. 20–23.

[14] Without China, India and Thailand.

[15] Beintema, N, Stads, GJ., Fuglie, K. and Heisey, P. (2012), p. 12-13

[16] Stads, G-J.; Beintema, N.M.; Pérez, S.; Flaherty, K.; and Falconi, C.A. (2016): Agricultural research in Latin America and the Caribbean: A cross-country analysis of institutions, investment, and capacities.

[17] Beintema, N.M.; Stads, G-J. (2014)

countries included in that analysis, 10 employed fewer than 100 FTEs each and several Sahelian countries (Burkina Faso, Mali, Mauritania, and Senegal) recorded rapid decreases in researcher numbers between 2008 and 2011[18]. Moreover, in SSA, the average was 7 FTE researchers per 100 000 economically active people in agriculture but only Botswana, Cape Verde, Gabon, Mauritius, Namibia, Nigeria, and South Africa employed $\geq$ 20 per 100 000 agriculture sector workers[19].

Many developing countries faced a challenge with maintaining adequate research capacity because of skewed staff age distributions and imminent retirement, and because of qualified researchers moving to the private sector and international organizations, including CGIAR. In LAC in 2012/2013, 40 percent of the region's agricultural researchers were in their 50s or 60s with a significant number approaching retirement. The situation was most severe in Guatemala, Panama, and Peru, where more than 70 percent of PhD-qualified agricultural researchers were > 50 years old[20].

Maintaining and improving staff qualifications represented another important capacity challenge. For example, in LAC[21] most of the region's capacity growth during 2006–2013 was for researchers with BSc degrees and NARS in many countries lacked the critical mass of PhD-qualified researchers. For example, Bolivia, Dominican Republic, Ecuador, Guatemala, Nicaragua, Paraguay, Panama, and Honduras had between 5 and 21 PhD-level researchers (FTEs).

CD needs generally concerned[22]:

- Scientific education and training in plant breeding, including advanced molecular methods and genomics. Capacity across crops is uneven. For example, in SSA there is pronounced focus on hybrid maize breeding.
- Scientific expertise in production systems and natural resource management. Lynman (2016), for example, found that integrated expertise on food safety, intellectual property rights, agro-biodiversity, environmental management and governance, agribusiness, and information systems was required. Overall, there appears to be insufficient numbers of universities and organizations offering such degree courses, although Wageningen

[18] Ibid.

[19] Beintema, N.M ; Stads, G-J and Flaherty, K. (2014): eAtlas: Africa's Agricultural Research Pool.

[20] Stads, G-J.; Beintema, N.M.; Pérez, S.; Flaherty, K.; and Falconi, C.A. (2016), p. 20.

[21] In 2013, close to three-quarters of Brazil's and half of Mexico's agricultural researchers were trained to the PhD level (Figure 7). In fact, 72 percent of the region's PhD-qualified researchers were employed in just these two countries. At Embrapa in Brazil, in addition to an emphasis on training existing staff and recruiting researchers with PhD degrees, many of its retiring scientists held MSc or BSc degrees. As a result, from 2006 to 2013, the number of PhD-qualified researchers employed at EMBRAPA rose by 36 percent while the number qualified to the MSc- and BSc-level declined by more than half. Generally, technical support staff at Brazilian agricultural research agencies are highly qualified as well, often holding MSc degrees and sometimes even PhD degrees.

[22] This analysis is based in the team's interviews and literature, for example: Lynam, J. (2016); Lynam et al., "Agricultural Research in Africa"; Anderson, Roseboom, and Weidemann Associates, Inc., "Towards USAID Re-Engaging in Supporting National Agricultural Research Systems in the Developing World"; Posthumus, H.; Martin, A.; Chancellor, T. (2013): A systematic review on the impacts of capacity strengthening of agricultural research systems for development and the conditions of success.

University's training on production systems and the African Regional Postgraduate Programme in Insect Science (ARPPIS) offered by the International Centre of Insect Physiology and Ecology (ICIPE) are exceptions.

- Economics training and education is required. The African Economic Research Consortium's Collaborative Master of Science in Agricultural and Applied Economics (CMAAE) addresses this, but a significant gap between the supply and demand for agricultural economists continues to exist in East and Southern Africa.

A literature review on AR4D education and training needs in Africa showed the lack of general practical problem-solving skills, capabilities for analyzing innovation systems, and communication, facilitation and partnership management skills to cope with multiple disciplines, organizations and stakeholders in innovation systems. To respond to policy-related challenges, agricultural scientists needed capacity to engage in scientific and agricultural policy arenas which, in turn, translated into a broad range of non-traditional capacities, for example for understanding social, economic and political aspects of biotechnology[23].

One frequently cited capacity concern was the risk that graduates with new qualifications and skills might pursue more attractive careers outside the agricultural system of their home country. The systematic study on impacts of CD on agricultural research systems however found little evidence supporting this concern and summarized "Most evaluations that considered the phenomenon of international brain drain found that the vast majority of graduates returned to their home countries or indeed to home organizations and that the brain drain was minimal", but also warned that some of the reviewed evaluations might have hidden some brain drain in trainees whose contact details were not actual anymore[24].

Section I.C. Changing requirements of national and regional systems

From an innovation system perspective, NARS is central "system within a system," and the capacities their organizations required to operate effectively between each other and with other system actors informed CD needs. NARS in developing countries need to adapt to the evolving socio-economic and political contexts in which they operate. These include investment levels and developments such as market-oriented agro-food chains, increasingly bio-based economies, democratization and decentralization[25]. Capacities among countries varied significantly, and were likely to differ between least developed countries and, for example, BRICS.

However, NARS and NARIs often lacked the necessary structural setup and managerial skills to function effectively in an evolving environment. NARS structures varied widely and NARS were organized around elements including i) ministerial departments, ii) autonomous institutes, iii) universities, iv) agricultural research councils, v) private sector organizations and, at least in principle, vi) research NGOs and think tanks. In most cases, several organizational models coexisted. For example, except for India, universities were part of NARS but did not act as their hubs. In Latin

[23] Posthumus, H.; Martin, A.; Chancellor, T. (2013), p. 6–8.

[24] Ibid., 22,23.

[25] This section draws on: Anderson, Roseboom, and Weidemann Associates, Inc., "Towards USAID Re-Engaging in Supporting National Agricultural Research Systems in the Developing World."

America, autonomous national research institutes (INIAs) were common while NARS in many Asian countries were organized as agricultural research councils. In Africa, there was a mix of organizational models without any of the types listed above being dominant.

NARS and their institutions experienced various capacity-related challenges. Drawing on ISNAR's review of 40 NARS between 1981 and 1988, 12 factors were identified that related to critically important NARS capacities in the areas of policy, organizational structure and management. Recent studies found these factors to still be relevant from an innovation system perspective[26]. They were i) interactions between national development policy and national agricultural research and ii) formulating research policy, iii) structure and organization of research systems and NARS linkages iv) policymaking v) linking extension, clients and farmers, and vi) sources of knowledge and technology, and management capacities vii) program formulation and program budgeting, viii) monitoring and evaluation, ix) information management, x) human resources, xi) physical resources, and xii) financial resources.

NARS and NARIs need leaders and managers capable of strategic planning in an agricultural innovation context, effective organizational management, establishing and managing relationships with key system actors, and attracting and managing sufficient funding. NARS also need to be organized and structured for effective AR4D in an agricultural innovation context, and their institutions need effective functional and organizational structures. NARS actors also require effective infrastructure and technical support to manage information, knowledge and their interactions effectively, and to measure and learn from results.

Suggested remedial actions were: inclusion of a wider stakeholder group on NARI boards, attuning higher education organizations better to the needs of farmers, rural traders, agro-processors, consumers and extension service providers and better integrating them into innovation systems, and to reduce and mitigate adverse institutional effects of funding volatility.

CD requirements also varied according to[27]:

- Developing improved crop varieties to satisfy smallholder needs. Breeding is costly and long-term, requiring priority-setting, division of labor and realization of economies of scale. However, priority setting in national systems, and the degree to which cooperation exists at a regional level, and with international institutions such as CGIAR, did not always reflect this.
- Adapt scientific solutions to local contexts, and scale-up. In SSA the strengthening of integrated capacity in NARIs was difficult because they were organized along commodities, providing little space for integrated capacity and, usually, innovation platforms were established outside of NARS.
- Establishment of effective partnerships and network structures with individuals and organizations.

[26] Ibid.

[27] This analysis draws on the team's interviews and literature analysis, and on Lynam, J. (2016).

Section I.D. Capacities for agricultural extension and rural advisory services

Capacity issues in agricultural extension are less well understood than for research. And there is less information available. Documents such as the 2014 worldwide extension study summary report[28], the Neuchâtel Group's 2007 common framework[29], and the paper commissioned for this evaluation[30] do not provide a concrete picture of the type and volume of extension capacity needed in developing countries, and there is no source of standardized information comparable to ASTI. One important international organization in the field of agricultural extension is the Global Forum for Rural Advisory Services (GFRAS), which has attempted to assess CD needs and to develop a global agenda for strengthening agricultural extension and advisory services[31].

GFRAS called for a "broader range of approaches to develop capacity at the three levels".

- At the individual level, GFRAS called for developing a series of non-traditional extension capacities such as market development business management, adaptation to climate change, and application of ICTs through a variety of traditional academic channels and through new, non-traditional training centers to apply new and unconventional approaches to learning. A 2015 GFRAS "learning kit" illustrates both the breadth of the target audience and of targeted additional competencies[32].
- At the organizational level, GFRAS called for mechanisms to ensure technical backstopping, for coaching and facilitation services in managing learning organizations, facilitation of self-reflection and of organic development of structure and self-design of processes, facilitation and coaching to improve communication, staff motivation and performance assessment, and career planning". A wide range of organization-level capacities were needed: strategic management functions, organizational structures, inter-and intra-organizational relationships, processes and systems, values and incentives, human resources, financial resources, information management, and infrastructure.
- To strengthen the enabling environment for extension and advisory services, GFRAS called for a wide range of political, financial, organizational, institutional and infrastructural

[28] Swanson and Davis, "Status of Agricultural Extension and Rural Advisory Services Worldwide: Summary Report."

[29] Established in 1995, this is a group of representatives of bilateral and multilateral cooperation agencies and institutions involved in agricultural development. The group's name stems from the group's first meeting hosted by the Swiss Agency for Development and Cooperation in Neuchâtel, Switzerland. It was set up in 1995 out of a meeting hosted by the Swiss Agency for Development and Cooperation in Neuchâtel, Switzerland.

[30] Christoplos, I. (2016)

[31] The following paragraphs draw on: Swanson, B. E. and Davis, K. (2014): Status of Agricultural Extension and Rural Advisory Services Worldwide: Summary Report. ; Davis, K. E.; and Sulaiman, V. R. (2014): The new extensionist: Roles and capacities to strengthen extension and advisory services.

[32] The GFRAS learning kit modules cover: extension framework, role of extension, extension program management, professional ethics, adult learning and behavior change, communication, facilitation, community mobilization, institutional development, value chain extension, agricultural entrepreneurship, gender and youth, and climate change adaptation. GFRAS, "New Extensionist Learning Kit: Modules and Competencies Required." See also: http://www.g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html

support" and for coaching and facilitation support from high quality management consultancy firms specialized in multi-actor platforms and partnerships, change management, and policy advocacy.

Interpreting capacity needs based on a pluralistic understanding of extension requires a significantly broader scope of analysis, and is likely to require serving a considerably more diverse and voluminous spectrum of CD needs.

Section I.E. Gender-related capacity challenges

Two general gender-related capacity challenges exist: low average female participation, and capacity (or commitment) to address gender-related issues in agricultural research and extension.

On average, there was low female participation in research and extension, and variation across regions and countries.

- The 2012 ASTI global assessment noted "many developing countries (particularly in West Africa, South Asia, and West Asia) still have relatively low levels of female participation in agricultural R&D and will need to further integrate gender differences into the formulation of related policies"[33].
- Benchmarking research across of the program African Women in Agricultural Research and Development (AWARD) across 125 agricultural research and higher education institutions found that "fewer than one in four professionals are women and that fewer than one in seven of those holding management positions are women.[34] To some extent, this reflects propagation from gender imbalances at secondary grade school and undergraduate university levels[35].
- The overall share of female agricultural researchers was higher in LAC (36 percent in 2013) than in other developing regions, such as SSA (22 percent in 2011), South Asia (20 percent in 2011/2012), and similar to West Asia and North Africa (34 percent in 2012). Differences between countries within regions were large. For example, in LAC, in countries like Venezuela (48 percent), Argentina (44 percent), and Uruguay (40 percent), women were well represented in agricultural research. In contrast, in countries including Bolivia, Honduras, and Panama, the share of female researchers was low (between 14 and 18 percent)[36]. Female participation in extension could be even.

Apart from female participation, researchers, extension agents and other stakeholders require a broad range of gender-related capacities to address the many gender-related issues in agriculture[37]. In the

[33] Beintema, N, Stads, GJ., Fuglie, K. and Heisey, P. (2012), p. 13.

[34] Cited in: Brandon, P. R., Smith, N. L., Ofir, Z., & Noordeloos, M. (2014). Monitoring and Evaluation of African Women in Agricultural Research and Development (AWARD): An Exemplar of Managing for Impact in Development Evaluation. p. 129.

[35] Cited in: Posthumus, H.; Martin, A.; Chancellor, T. (2013).

[36] Beintema, N, Stads, GJ., Fuglie, K. and Heisey, P. (2012); Stads, "Agricultural R&D in West Asia and North Africa Recent Investment and Capacity Trends"; Stads, "A Snapshot of Agricultural Research Investment and Capacity in Asia."

[37] Beintema, "Enhancing Female Participation in Agricultural Research and Development."

evaluation team's view, this points to a capacity to address social sciences more generally, notably political economy questions of relevance from an innovation perspective. Such skills include data and methodologies for gender-disagragated analysis, implications and ways to address gender differences in access, control, and use of land, produce, livestock and other assets, and access of women to financial services and insurance.

In addition, capacity for gender research needs strengthening on the role of gender in nutrition, gender-equitable value chains, and equitable rural labor markets. Overall, capacities are required for better integrating gender into agricultural research, development and extension, and for improving the enabling environment for greater female participation.

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