Influencing Change:

Mainstreaming Gender Perspectives in Agricultural Research and Development in Eastern and Central Africa

International Center for Tropical Agriculture (CIAT)
Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)

Cover photos:

Front cover: Two rural women putting manure in a cassava field. Photo taken during research on gender issues in Rwanda, remote areas. Photographer Leonidas Dusengemungu says, “The child on the back highlights the burden for rural women in addition to home duties and field duties when the husband is away. These women constitute above 70% [of farm labor] working alone on the family fields. They really feed African families. One can ask where are the husbands? Yes, some have off-farm activities. But, others simply do not help on such hard activity.”

Back cover: Participants at the project’s third workshop in June 2006 in Nairobi (Hilton Hotel). Courtesy Elizabeth Ssendiwala.

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Edited by:
Barun Gurung
Elizabeth Ssendiwala
Michael Waithaka

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International Center for Tropical Agriculture (CIAT)
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Participatory Research and Gender Analysis Initiative
(formerly CGIAR Systemwide Program on Participatory Research and Gender Analysis)
Centro Internacional de Agricultura Tropical
International Center for Tropical Agriculture
Apartado Aéreo 6713
Cali, Colombia
Tel.: +57 2 4450000; Fax: +57 2 4450073
E-mail: prga@cgiar.org or ciat@cgiar.org
Website: www.ciat.cgiar.org

Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)
ASARECA Secretariat
Plot 5,Mpigi Road
P.O. Box 765
Entebbe, Uganda
Tel.:256 414 320556/320212; Fax: 256 414 321126
E-mail: secretariat@asareca.org or asareca@imul.com
Website: www.asareca.org

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Contents

Introduction:
Engaging with the challenges for mainstreaming gender in agricultural research and development

Barun Gurung[1]

The project 'Building Capacity in Gender Analysis and Gender Mainstreaming in the NARS of ASARECA' emerged in response to the general urgency for agricultural research and development systems in Sub-Saharan African region to more effectively address the needs of those constituency groups, particularly poor women small-holders, who are vulnerable to the effects of poverty, land degradation and climate change. More specifically, the project emerged in response to the need for agricultural research and development systems to adopt 'demand-driven' agendas of innovation, and integrate gender-sensitive participatory approaches into the structures and cultures of their organizational practice to more effectively respond to the complex social and environmental realities of vulnerable groups.

The project approach was to influence the policies of agricultural research and development systems, while improving implementation and delivery of services directly benefitting vulnerable groups, such as poor women, through improved targeting. The project's agenda was to advocate for change through developing capacity, to develop institutional mechanisms for making gender an explicit criterion for programming and effectiveness, and to enable organizations think more deeply about gender relations, away from the earlier "add women and stir approach" (e.g. Subrahmanian, 2007, p. 113).

In a general sense, gender-mainstreaming initiatives targeted at institutions that are responsible for agriculture and natural-resources management need to be cognizant of, and strategically anticipate, several challenges that contribute to the 'gender blindness' that permeates such institutional contexts.[2] The first challenge concerns the limitations of such institutions to effect real changes in social relations of their constituency groups. Integrating gender concerns

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[1] Barun Gurung, the former coordinator of the Systemwide PRGA Program, is an anthropologist whose research interests include indigenous knowledge, the politics of organizational practices, organizational change, and the influence of masculinities on research and development systems. He is currently an Associate with Women Organizing for Change in Agriculture and Natural Resources Management (WOCAN).

[2] The targeting of sector bureaucracies for gender-mainstreaming initiatives is part of a larger trend in development which is due in part to mainstreaming programs being negotiated, designed, managed and monitored by international and national bureaucrats, not by or along with politicians and civil society groups. While such practices may evolve by reaching out through consultative processes with stakeholders in the initial stages, they rarely go beyond this to develop sustainable processes to ensure that program implementers are held to systems of accountability (Standing, 2007).

within organizational agendas whose main objective is now necessarily the promotion of equal rights is a difficult task and one that reinforces the powerlessness of the gender-equality agenda and the gender intermediaries of change (e.g. Mukhopadyay, 2007).

A second challenge that grows from the first is the tendency within such institutions to define gender mainstreaming in instrumental terms (investment in women has high pay-offs) and subsequently focus narrowly on emphasizing women's visibility and their capacities and needs. A focus on an instrumental agenda diminishes the inherently transformative visions that underlie the mainstreaming agenda (see, e.g., Subrahmanian, 2007; see also Standing, 2007; Mukhopadhyay, 2007; Goetz and Sandler, 2007). One subsequent outcome of this is that mainstreaming efforts are largely implemented through the adoption of a managerial or industrial approach to mainstreaming that emphasizes reliance on 'tool kits' and 'checklists.'[3]

A third challenge to mainstreaming initiatives concerns the 'logic of bureaucracies', a term used by Ann-Marie Goetz and Joanne Sandler (2007, p. 161) to refer to how bureaucracies react to new challenges. They make the argument that sector bureaucracies are much like armies in the sense that they have complex chains of command in which rank is a key determinant of what "gets prioritized and becomes actionable" (p. 166). When a new challenge is posed, the bureaucracy's response will be determined by the level of threat or opportunity.[4] However, when it comes to gender equality or women's rights, both the opportunity and threat are low and, as the authors point out, this is evident in the exclusion of programs charged with mainstreaming from decision-making venues that they are set up to influence. Subsequently, the pervasive message that is generated by this exclusion is that gender equality is not important.

The fourth and final challenge concerns the culture of organizations. In many ways, organizations are not free from the influence of the larger society in which they are situated. The culture of an organization tends to reproduce the norms, values and attitudes of the larger society, where class and gender ideologies permeate the bureaucratic ethos and exert considerable influence on normative organizational practice. Mats Alvesson (1993, 2002) introduced the

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[3] This approach to mainstreaming demonstrates a commonality with the general growth of interest in 'managerial' approaches to rural-development policy and planning directed at promoting economic growth, poverty reduction, social inclusion and equity in rural areas. This growth is illustrated by the spread of logical frameworks, management-by-results, and narrow *ex-ante* and *ex-post* quantitative economic rate-of-return methods. The notion that 'good' and 'best' practices for institutional arrangements can be transferred and scaled up as part of the introduction of 'good governance' is now also embedded in new managerial approaches to rural development (see Gurung and Biggs, 2008; Biggs, 2007).

[4] The level of threat is determined by the extent to which a challenging issue can undermine the funding base or public image of the bureaucracy. Opportunities are measured likewise in terms of the resources in physical-capital or public-relations gains that response to the new issue brings (Goetz and Sandler, 2007, p. 166).

concept of 'cultural traffic' to capture and describe the flow of information between the larger society and the organization's cultural and social practices.[5]

A re-oriented gender-mainstreaming approach needs to be built on an understanding of the structure and cultural practices of agriculture and natural-resources management institutions, together with enhancing the skills and capabilities of internal change intermediaries to use change strategies through negotiated actions within their institutional environments that are often resistant or immune to ideas of social change.

Before proceeding to the discussion on the methodological underpinnings of the Project's approach, a brief background on the history and approaches to gender mainstreaming is given.

Background

What is gender mainstreaming?

Rooted in feminist visions for change, gender mainstreaming as an approach has its roots in feminist strategies to make governments agents of transformative change for women. These took concrete shape through several developments beginning with the United Nations Decade for Women (1975–85), and culminating in the enormous agenda for transformation and change signaled by the World Conference on Women held in Beijing in 1995 (see Staudt, 1997, cited in Subrahmanian, 2007; Tiessen, 2007).

The agenda for influencing mainstream development processes includes altering policies, improving implementation and delivery of policies through clear programs for change in administrative systems, and directly benefitting women through targeted actions and programs. Advocating for change through developing capabilities and establishing institutional mechanisms to ensure that gender is an explicit criterion for development programming and effectiveness are some of the core strategies for gender mainstreaming.

Approaches to gender mainstreaming: integration vs transformation

Generally, gender mainstreaming is viewed in terms of two functions: integration and transformation. An integrationist approach to mainstreaming aims at ensuring that gender equality concerns are integrated in the analyses of problems faced by particular sectors, while also aiming to set specific targets for outcomes, and ensuring that monitoring and evaluation of policies and programs are in place to measure the progress achieved in gender equality.

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[5] Sector bureaucracies represent a microcosm of gendered values and practices that prevail in the larger social system. Women professionals often have to struggle against the dominantly held view of professionalism that equates professionalism with masculinity. It is, therefore, not uncommon to witness the exclusion of women professionals from senior positions or decision-making bodies in sector bureaucracies (see Gurung, 2010, for more detailed description of such processes of exclusion).

A major focus of an integrationist approach is to improve an institution's technical processes in development through the development of frameworks, checklists and tools for gender integration into policies, programs, and training initiatives to increase gender awareness in planning, monitoring and evaluation systems. Implicit to the adoption of an integrationist approach is the assumption that integration of gender issues will benefit the organization in meeting its official priorities and goals.[6]

The aim of a transformative approach to gender mainstreaming is to introduce women's concerns related to their position (strategic interests) onto mainstream development agendas, so as to transform the agenda for change. For example, one way to ensure that gender-equality concerns are integrated into agriculture is to make sure that extension services address both women and men, and that technological packages are appropriate for both women's and men's roles in agriculture. However, the issue might be that women in their own right, and not as wives or dependents of men, have no rights to land. Advocacy for women's land rights is thus necessary to set the agenda for change of mainstream programs addressing gender inequality in agriculture.

Integration and transformation require work at two different institutional levels. While integration involves working within institutions to improve 'supply' side of the equation, a transformative agenda requires efforts to create constituencies that demand change. The latter requires an understanding of the nature of political society, state–society relationships, and the extent to which, in particular contexts, the policy-making institutions are dependent on, or autonomous from, the influence of international development and financial institutions. Integration depends for its success on transformation. Building the accountability of policy-making institutions to the gender-differentiated public they are supposed to serve has to go hand in hand with the creation of the demand for the democratic, accountable and just governance.

The challenge for change intermediaries is that they have to straddle both worlds, the technical and political, but development business tolerates only the technical role. Why is this so? Because the most pervasive understanding of development is that it is a planned process of change in which techniques, expertise and resources are brought together to achieve higher rates of economic growth (Kabeer, 1994, in Mukhopadyay, 2007).

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[6] Case studies conducted by the PRGA Program confirm that the adoption of integrationist approaches are effective for applied research: they enable new, more appropriate technologies to emerge or existing ones to be adapted to local conditions; they accelerate the uptake of relevant technologies; they generate effective partnerships between researchers and farmers. On the other hand, methods innovations (the learning and change that occur in implementation processes as a result of built-in feedback) resulting from farmers' feedback to projects are not sustained beyond the life of the project. Rather, innovations remain isolated from, and often contradict the institution's process of innovation (see, e.g., Lilja and Ashby, 2001; Johnson *et al.*, 2000, 2001).

Project approach: Reframing gender mainstreaming

'Informed insiders'

The project 'Building Capacity in Gender Analysis and Gender Mainstreaming in the NARS of ASARECA' adopted an approach that emphasized the role of 'informed insiders' to influence change within their own organizations. Two members from each participating NARS in eight countries of the ASARECA region were invited to participate in a series of training programs to use their own institutional contexts as subjects of study and, combined with knowledge and skills of change strategies, generate plans for change in their own institutions. These training initiatives were complemented with on-site visits by members of a training team to 'mentor' participants while generating enabling environments by soliciting support from the leadership of their organizations.

Understanding the organization

Developing an analytical understanding of one's own organizational context is a critical component to an effective gender-mainstreaming strategy. Equally important is the adoption of a conceptual framework that views the organization as a complex set of relationships with its own structure and culture.[7]

The organizational model adopted for this project (Fig. 1) attempts to draw together structural, political and cultural dimensions of organizational practice, each with their own set of elements that converge at certain points in the framework. This organizational model is used both as an analytical tool and as a planning tool for gender mainstreaming.

The Technical dimension of an organization consists of its most 'visible' and tangible elements, and analysis can easily focus on identifying the numerous sources that reflect the organization's mandate and policy, and the division of tasks and responsibilities, and its existing human resources. The elements of this dimension may be outlined in an organigram,[8] and the

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[7] The traditional and popular image of an organization is a compartmentalized structure with divided functions, and governed by a hierarchy with those at the 'top' assuming authority over the efforts of those at the bottom. Drawing from Max Weber's (1947) model of a bureaucracy, this model is considered a rational way of organizing and controlling joint endeavors. However, there is increasingly the view that organizations need to be seen as microcosms of the larger social and cultural systems in which they are situated (e.g. Alvesson, 1993, 2002). This suggests a notion of an organization removed from traditional models based on the Weberian concept and replaced with more human, inclusive and less punishing forms that facilitate organizational and individual performance and allow for learning and growth (see also Wilson, 2001).

[8] An organigram is a chart that shows the lines of authority, responsibility, and vertical and horizontal relationships among departments in an organization, akin to the Weberian model of a bureaucracy described earlier.

	Mission	**Structure**	**Human resources**
Technical	*Policies & Actions* The guiding policy and its operationalization in action plans, strategies, and monitoring & evaluation systems	*Tasks & Responsibilities* The way people are positioned and the way tasks & responsibilities are allocated to them	*Expertise* The number of staff, their skills, job descriptions, appraisal systems, etc.
Political	*Policy Influence* The way that management, people from within the organization, and people from outside the organization influence the policy	*Decision-making* The patterns of formal and informal decision-making processes	*Room to innovate* The space provided to staff through rewards or incentives, or created by staff, to define their work
Cultural	*Symbols* Symbols, rituals and traditions associated with the organization's image of itself	*Cooperation & Learning* The way that work relations are organized, such as working in teams, networking	*Attitudes* The way staff feel and think about their work, working environment, other employees, etc.

Figure 1. The Organizational Framework

Source: Groverman and Gurung (2001), adapted from Tichy (1982).

organization's various publications and public-relations literature—it is the 'public face' of the organization.

The Political dimension of an organization is less tangible and represents the more 'hidden' processes of organizational life. The external and internal influences that come to bear on policy decisions, the informal processes of decision-making, and the processes through which individual members negotiate 'spaces' for new or innovative practices.

Finally, there is the Cultural dimension, which is perhaps the least tangible or visible of the three dimensions, but it underpins organizational practice in fundamental ways. The organizational culture is a microcosm of the larger social and cultural systems in which it is situated, and reflects, in subtle and not so subtle ways, the norms, values and attitudes that prevail in society. Some features of organizational culture include the use of symbols to convey meaning; the rites and rituals of organizational life; the use of specialized language within particular concerns; socialization and norms; the moral code transmitted by the organization;

and attempts to manipulate culture (e.g. Wilson, 2001). Attitudes, norms and values of the organizational culture are gendered and, as a result, affect the organizational outcomes in significant ways (see, e.g., Alvesson and Billing, 1997; Itzin and Newman, 1995; Mills and Tancred, 1992).

Strategizing for action planning

The strategic framework for action planning draws on four broad areas of concern that are integral to successful gender mainstreaming[9] and was adopted as a general guide to mainstreaming gender throughout the operations and programs of the organizations.

The first area concerns the generation of '*political commitment*', both within the organization as well as with other constituencies that are important to the work of the organization. This involves seeking support from the senior leadership within the organization to integrate gender by committing staff and other resources, to ensure that the leadership will institute needed policies and procedures, and make public commitment to gender equality, and create awareness both within and outside the organization. All the other areas of concern grow out of this demonstration of political commitment.

A second area of concern in gender mainstreaming is the identification of capacity needs and the subsequent plans to develop the '*technical capacity*' of staff for gender analysis and gender mainstreaming within the organization. This area concerns developing plans to assess capacity needs of staff and increasing expertise, production of training materials, and making changes in technical and project approaches. Generally, 'technical capacity' is the area that is most frequently the focus of most action planning for gender mainstreaming because it achieves an 'instrumental' and 'efficiency' objective. However, it is not unusual for trained staff to leave the organization, taking their 'skills' with them. It is therefore important to focus equally on the next area of concern to ensure that mainstreaming plans are implemented in a sustained manner.

The third area of concern is the development of systems and procedures that ensure '*accountability*' for gender mainstreaming. Action planning must take into consideration systems and procedures to encourage and reinforce new behaviors and practices, and ultimately, integrating gender into job descriptions, work plans and performance assessments of the organization.

Finally, any strategic action plan for gender mainstreaming must necessarily include plans for influencing changes in the mindsets and values of the organization's staff, particularly against harmful cultural practices that impede the inclusion of gender equality into practices of the organization. This would also include identifying and implanting practices that nurture

[9] For a more detailed discussion on the areas of concern for developing an action plan for gender mainstreaming, see Gurung (2008).

safe environments within the organization to discuss areas of discomfort, lingering biases and practices of exclusion that may be part of the organizational culture.

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Influencing change: Project evaluation

Elizabeth Ssendiwala and Michael Waithaka

Introduction

The need for gender as an analytical variable in development and specifically in agriculture is now widely recognized (Poats, 1991; Quisimbing and Mclaffery, 2006; Blackden *et al.*, 2006). In agriculture, researchers and innovators are expected to align their work to the needs of different social categories and take into account the unequal social relations that exist in societies. These issues can be explored effectively through gender analysis. For this reason, agricultural innovations should be informed by research based on gender analysis. However, this is usually constrained by a limited capacity to conduct gender-sensitive research and the predominance of a 'supply-driven' agenda of innovation. A needs assessment carried out in 2003 revealed that there was limited capacity to carry out gender analysis in the Eastern and Central African (ECA) region. The assessment was carried out at the end of the project 'Gender Factor in Agricultural Research Programmes.' Findings from case studies in the same project corroborated this assessment (ECAPAPA, 2005b).

This led to the establishment of a collaborative initiative between the Association for Strengthening of Agricultural Research in Eastern and Central Africa (ASARECA) and the Consultative Group on International Agricultural Research (CGIAR) Systemwide Program in Participatory Research and Gender Analysis for Technology Development and Institutional Innovation (PRGA Program) in the project 'Building Capacity in Gender Analysis and Gender Mainstreaming in the NARS of ASARECA.' The project was initiated in 2004 to develop and enhance the capacity of selected personnel from the region to utilize gender-sensitive participatory research and mainstream such approaches in their respective organizations. Eight countries participated in this project—Democratic Republic of Congo (DRC), Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. Two participants from each of the countries were selected to represent their national agricultural research systems (NARS). The participating organizations received grants to support gender-sensitive participatory research.

Project activities

Four training workshops were conducted under the project. The first workshop was held in Nairobi in November 2004 and was attended by 19 participants from nine[1] ASARECA countries (ECAPAPA, 2004). During this 2-week workshop, participants were taken through gender concepts with an emphasis on gender analysis and organizational change. The concepts explored were: participation, stakeholders, gender, sex, gender relations, gender division of labour (productive, reproductive and community work), practical gender needs, strategic gender needs, gender equality, gender-based constraints, gender assessment, and access to and control over resources. Gender analysis was defined as the socio-economic methodologies that identify and interpret the consequences of gender differences and relations for achieving development objectives, as well as the implications of development interventions for changing power relations between women and men. It describes

[1] Participants from Burundi attended the first workshop, but did not carry on with the project as they did not submit a proposal; hence, participating countries remained eight.

the process of collecting data on gender issues and analyzing that data. Organizational change was explored in relation to the role of institutions in mainstreaming gender in agricultural research.

Participants also went through a rigorous process of proposal formulation with a well-defined work plan of activities to be carried out during the first phase of the project. During this period, participants carried out an assessment of the gender terrain in their respective organizations.

The second workshop was held at Addis Ababa in July 2005 (ECAPAPA, 2005a). This was an opportunity to get into the depths of gender analysis and organizational change, as well as to focus on the gender change agent in an organization. This latter element focused on some skills that a gender agent needs to be able to bring about change (in regard to gender) in an organization. There were intense discussions on the activities that would help each country team enhance the institutionalization of gender analysis in their organizations. This was in recognition of the fact that a conducive organizational environment is necessary in order to incorporate gender analysis into research. The strategies included gender training, as well as field studies to generate empirical evidence to support the mainstreaming of gender-sensitive approaches in agricultural research. Participants made presentations of their activities as a way of sharing experiences across the countries.

The third workshop was held in June 2006 in Nairobi (ECAPAPA, 2006b). Participants shared their experiences in their efforts to influence change, as well as the field research they had undertaken. The highlight for this workshop was the Training of Trainers on gender analysis, which was aimed at enhancing the participants' capacities to train scientists in their own NARS on gender analysis. In November 2006, a leadership workshop was conducted (ECAPAPA, 2006a), aimed at enhancing the participants' skills in influencing change. As gender change agents, the participants are expected to spearhead the institutionalization of participatory research and gender analysis in their organizations.

Having attended the training workshops throughout the project, participants organized and conducted similar gender training in their own organizations. The intense training of trainers that the participants were taken through equipped them with the necessary skills and confidence to train other scientist in gender-sensitive participatory methodologies in agricultural research.

The evaluation

As the project drew to a close, it was important to take stock of what the project had achieved and the lessons learned.

The objectives of the evaluation were:

1. To assess organizational changes that had occurred in the participating NARS in regard to gender;
2. To assess the extent to which knowledge and skills gained through the capacity-building project were being utilized;
3. To inform the PRGA Program and ASARECA on strategies for institutionalizing participatory research and gender analysis in the NARS of ECA.

Methods

The evaluation mainly utilized qualitative methodologies with a focus on participants' and respondents' experiences, perspectives and opinions regarding the project.

Data collection

Data collection methods included in-depth interviews with various categories of staff in four organizations using a semi-structured interview guide. The categories of interviewees were decision-makers, project country teams, project task force and staff trained by the country teams. The four organizations visited for face-to-face interviews were Kenya Agricultural Research Institute (KARI), Institut de Sciences Agronomique du Rwanda (ISAR), Department of Research and Training (DRT) in Tanzania, and National Agricultural Research Organisation (NARO) in Uganda.

During these interviews, the interviewer recorded the discussions (with the permission of the interviewees). The recording was later transcribed and the information synthesized.

Survey questionnaires were used to collect information from the other four organizations—Institut National pour l'Etude et la Recherche (INERA, DRC), Centre National de Recherche Appliqué au Développement Rural (FOFIFA, Madagascar), Agricultural Research Corporation (ARC, Sudan), and Ethiopian Institute of Agricultural Research (EIAR).

Electronic survey questionnaires were sent to these organizations and were received back electronically. The interviews informed necessary modification of the survey questionnaires before sending them out to the country teams in these countries to distribute to the different categories of respondents in the organizations.

Document review

In order to get a better insight into the place of gender in the organizations, a number of organizational documents were reviewed, including policy documents and strategic plans. These documents were collected in each of the organizations that the reviewer visited. However, it was difficult to access such documents in organizations where survey questionnaires were sent out electronically.

Other documents that informed this evaluation were reports produced by the country teams over the course of the project. The organizational assessments carried out in the early part of the project were particularly useful in informing the evaluation of the gender situation in the organizations. The workshop reports of the four training workshops conducted through the project were also useful sources of information. Reports on training activities conducted by participants in their organizations were also reviewed.

Findings / outcome

Organizational assessments

The project sought to enhance institutionalization of gender-sensitive participatory approaches in agricultural research in recognition of the fact that there is need for a favorable environment for use of participatory research and gender analysis methodologies. Consequently, institutional assessments in regard to gender were part of the project's activities. The assessments were meant

to identify institutional gaps and provide indicators for appropriate strategies for mainstreaming participatory research and gender analysis in the NARS.

Although the assessments were not carried out in a uniform manner (among the organizations), they were all based on the 'Nine Boxes Organizational Framework' (Groverman and Gurung, 2001; see also page 0 in this volume). This framework can be used as a tool to help understand organizations. It can also be used for analyzing, planning, monitoring and evaluation purposes. The nine-box framework distinguishes nine elements of an organization: policies and action, tasks and responsibilities, expertise, policy influence, decision-making, room for maneuver/innovation, organizational culture, cooperation/learning, and attitude. These elements address the technical, socio-political and cultural dimensions of an organization. Closely related to this is the Gender Integration Framework (GIF), which focuses on four elements—political will, technical capacity, accountability and organizational culture in organizational analysis (InterAction's CAW, 2005). The four dimensions are essential in any gender-mainstreaming strategy.

Gender change in organizations is catalyzed by the gender change agents. Participants in this project played this role. It was therefore important for the evaluation to look into the role that participants were playing as gender-mainstreaming agents.

This section presents a synthesis of the findings from the organizational assessments, and respondents' views on gender in the organizations.

Gender in the organizations

The organizational assessments revealed that the participating organizations were at different stages of incorporating gender into their work. While some have been making these efforts for a long time, others were still in their infancy in gender-mainstreaming. In KARI, for example, gender-mainstreaming efforts began with the establishment of a Gender Task Force (GTF) in March 1995 to facilitated the incorporation of gender issues into all KARI programs of applied research and development (KARI, 1998). Today, KARI counts the following achievements in its efforts to mainstream gender: implementation of a gender-sensitization program through which over 80% of researchers have been gender-sensitized; establishment of the Gender and Agricultural Research Database (GARD); holding of the first KARI scientific conference (1998); updating of KARI's guidelines for proposal writing and giving gender awards to scientists who incorporated gender issues in the scientific papers presented at the KARI's Biennial scientific conferences. In EIAR, a Gender Focal Unit (GFU) was established after the first gender-sensitization workshop in 1999 (EIAR, 2001). However, there is only one gender expert responsible for implementing the mandate of the GFU. As a participant of this project, the GFU coordinator negotiated a strategic positioning for the unit within the new organizational structure.

At the other end of the spectrum, ISAR, ARC, DRT, INERA and FOFIFA had not yet had any systematic effort to mainstream gender in their organizations. This was attributed to lack of capacity and institutional will in the organizations.

The project provided a good forum for organizations to learn from each other. Those that were in their infancy now have tips that they can tailor to their situation, while the more experienced organizations were learning that gender mainstreaming is a process and not an end in itself. By facilitating the institutional assessments, the project created an opportunity for the NARS to identify institutional gaps that needed to be addressed to mainstream gender analysis.

Policy and action

Assessments sought to find out whether policies were in place on gender with respect to the products as well as the internal affairs of the organization. According to the assessment report from EIAR, gender is reflected in EIAR's strategy, which states that "Focus on gender responsive research is one of the principles and values of the organization." The same strategy has been incorporated in research strategies at sector and center level. In DRT, researchers interviewed were not sure whether the organization had a policy on gender; however, document review showed that the Agricultural Sector Development Strategy clearly states one of the outputs in strategic areas as "Gender issues mainstreamed in Agricultural development plans" (MAFS, 2005). This mandates DRT to pursue gender-mainstreaming in the organization. In KARI, gender is reflected in the strategic plan (KARI, 2005). In NARO, the assessment showed that, apart from the NARO statute of 1992 that provides for women representation on the Board, there were no policy provisions for gender considerations.

The need for a policy on gender was well articulated by a respondent from KARI during the interview:

> *"What I would like to see is that we move to the policy arena and ensure [that] there is a policy on gender institutionalization within the NARS in the region irrespective of the level. If we can have clear guidelines, our work would be easier"* (Dave Nyongesa, researcher, KARI).

The project's focus on institutionalization of participatory research and gender analysis highlights the need for organizational change, especially in the policy arena. This can only happen if there is political commitment from the leadership of an organization.

For this reason, efforts were made (in the course of the project implementation) to achieve political will/commitment from the top leadership. Political will is seen as a major step towards gender-mainstreaming in an organization (InterAction's CAW, 2005). The directors general (DGs) of the participating organizations were kept informed of the project's progress through regular communication with the coordinator, ECAPAPA. They were also involved in signing the contracts for the research grant. Where possible they were invited to officiate in the opening of the training workshops—during the training workshop in Addis Ababa, the DG of EIAR gave a welcome remark, and the DG of KARI gave an opening remark during the Nairobi workshop of June 2006. In 2005, a team of resource persons from the project visited three organizations (DRT, ISAR and EIAR) to mentor and support the country teams, as well as to assess their capacity in influencing change. The team sought audience with the DGs and other senior staff in each organization visited. This was an opportunity not only to update the top management on the project, but also to get their opinions and support for institutionalization of participatory research and gender analysis. The PRGA Program coordinator also joined the team on several other such visits and had discussions with top management in KARI, NARO and ISAR. In all these meetings, the top management expressed their support for the project and gender-mainstreaming in their organizations. This kind of support is necessary as we move toward commitment in policy.

During interviews for the project evaluation, one the DGs expressed willingness to be a torch-bearer for gender-mainstreaming in the region. He indicated that he would be willing to sensitize other DGs who form the Board of Directors of ASARECA (the decision-making body in ASARECA). Such commitment is a positive sign toward addressing gender in ASARECA.

Task and responsibility

Of the eight participating organizations, only three (KARI, NARO and EIAR) had a gender coordinating unit. There are debates by gender practitioners on the importance of a gender unit in an organization. One argument is that since gender is 'cross cutting,' it should be everyone's responsibility and not a responsibility of one person or unit. However, it has been noted that when this attitude prevails, then gender actually ends up being nobody's responsibility and it ends up evaporating. For example, documenting its experiences with gender-mainstreaming, UNDP (2006) notes, "too often, mainstreaming has meant that everyone—and thus no one in particular has responsibility … and talk about gender and women has too often taken the place of action." There is therefore a need for a coordinating office to hold everyone accountable. In a planning seminar at NARO (supported by this project), participants suggested that there should be a gender coordinator at NARO and gender advisors at all Public Agricultural Research Institutes (PARIs). This is more or less the arrangement at KARI, which has one gender coordinator and gender advisors in each KARI center.

However, it was noted that there was no mechanism to support the existing coordinating office. In the three organizations which have a coordinating unit, this consisted of only one person with hardly any funds from the organization's core budget. In KARI, for example, the office of the gender coordinator was located in a center away from KARI headquarters and there was no mechanism to oblige other scientists to consult the office. During a planning seminar at KARI (supported by the project), participants felt that the coordinating office should be strategically located, reporting directly to the director general.

Having a gender coordinator with significant expertise and giving him/her support, endorsement and clout within an organization is seen as part of political commitment toward gender-mainstreaming (InterAction's CAW, 2005). However, organizations are cautioned against viewing a gender focal unit/coordinator as someone to do the work for them or to whom all gender business is referred; rather, they should be seen as a resource to the scientists (Feldstein, 1998; Macdonald *et al.*, 1999).

It is important to note that even in organizations where there was no gender focal unit, participants in this project came to be seen as informal gender coordinators. A participant from ISAR reported that, "the other people know us as the gender representatives and our interaction [with them] is changing." This implies that the project managed to create skilled gender agents to oversee gender-mainstreaming in the organizations (recognized by other staff members). The country teams incorporated other members from their organizations to form a gender team aimed at influencing change. Some country teams (such as the DRT team) organized and conducted training for their newly incorporated gender-mainstreaming team. The team in DRT consists of members from different units. In other organizations such as NARO, the gender-mainstreaming team consists of members with gender expertise. The team facilitated a gender-mainstreaming seminar in November 2006 for center directors, who came up with action points for mainstreaming gender in NARO, which have been turned into an action plan (with timeframe and budget). This is a commendable step toward gender-mainstreaming. In ARC, the gender team consists of top-level managers from different sectors (deputy director for programs, deputy director for technology transfer, dean of faculty of agriculture – University of Gezira, general director – Ministry of Agriculture, and director of extension – Ministry of Agriculture). During their first meeting in

August 2006, the team consolidated a common goal and brainstormed on strategies for gender-mainstreaming at ARC.

Expertise

A major outcome of this project was the enhancement of gender skills among the participants. This was mainly in three broad areas: enhanced capacity to conduct gender analysis and participatory research; skills in mainstreaming gender analysis and participatory research through organizational change; and skills to train others in the use of gender analysis and participatory research. Participants have been able to utilize these skills in the project activities through field research, training other scientists in gender analysis, and in making efforts to influence organizational change.

One of the major activities carried out by the country teams was training scientists on gender analysis. After going through the training workshops, participants were able to organize and conduct similar gender training workshops in their own organizations. Some of the participants (especially those from INERA, ISAR and DRT) had had little knowledge on gender prior to joining the project. It is therefore noteworthy that they are now in a position to conduct gender training in their organizations.

In Rwanda, the team conducted two major training workshops for over 100 participants from various stations of ISAR, and a planning seminar with 48 participants. The influence from the training was evident in the fact that constant reference was made to the gender training during interviews. The country team reported that participants in the training had requested further training so that they could have a session in the field in order to practise gender analysis. In DRT, three training workshops were conducted in gender analysis through this project (one of which was for the new gender team). The first had 10 participants from Eastern zone, the second had 21 participants from the same zone, and the third had 12 participants. In NARO, one-day workshops were conducted at three NARO institutions to sensitize the staff on the importance of mainstreaming gender in research and development, and ensure gender is incorporated in research projects. Participants comprised of heads of programs, project leaders, scientists and support staff. A two-day planning seminar was held in November 2006 with the center directors. The outcome of this seminar was action points for gender-mainstreaming in NARO. In ARC, a one-day inception seminar was held with the top management and senior scientists, 24 participants. The FOFIFA team conducted a total of eight workshops. One training workshop and a planning seminar were conducted in KARI, while EIAR and INERA each held one training workshop.

Discussions with some of the scientists trained by the country team in ISAR revealed that they got to appreciate the need for incorporating gender in the research process. In the words of one trained researcher, "I never had any training on gender but after this training, I saw that it is good to incorporate gender in all research activities." Although most scientists had been using participatory methodologies, they now recognize the need to incorporate gender as well. One scientist from ISAR put it very clearly during the interview:

> *"People are viewing this research as participatory. In PRA [participatory rural appraisal] methodology, you find that some women [farmers] are involved but they are not planned to be there. It is by coincidence that the ones who are there are where they are"* (scientist from ISAR).

This shows that the scientists trained by the project participants clearly understand that there is a need to have a gender perspective, even when using the traditional participatory methodologies. With this kind of understanding, it is easy for the scientists to embrace gender analysis. The training therefore helped change attitudes among the scientists. In NARO, for example, it was reported that biological scientists viewed gender analysis as a tool to be used by socio-economists only. Negative attitude toward gender has been reported as one of the barriers to gender-mainstreaming. This comes mainly through ignorance as to the importance of gender perspective in agricultural research.

Both during the interviews and in the workshop reports from the country teams, the reason that most scientists were not utilizing gender analysis was that they lacked the skills to do it. A respondent from DRT expressed the need for training thus:

> *"They [scientists at DRT] are at varying levels but the majority lacks the skills [to incorporate gender]. Because they don't have skills, they don't use gender in their work. There should be more training on gender within the organization"* (a participant from DRT).

Training was also seen as an avenue to influence the change of attitude. In every organization visited, respondents (especially the country teams) reiterated the need to sensitize decision-makers. Once they understood the need for gender-mainstreaming, it was hoped that they would take the necessary steps toward institutionalizing gender analysis.

The training introduced by the project was reported to be beneficial for the scientists, as all the participants and respondents in the evaluation reiterated the need for continued training. This was understandable given that a one-off training in gender analysis is not sufficient to equip the scientist to use the methodologies effectively in their work. Moreover, the project did not have enough funds to carry out systematic training for all scientists in the participating organizations, or follow up the trained scientists to see if they were able to use the methodology in their work. The organizations were, however, encouraged to make use of the scientists trained in the project to continue gender-analysis training in their organizations. Technical expertise among the staff is part and parcel of gender-mainstreaming. Recognizing this fact, KARI (for example) had a systematic schedule of training in gender (through the gender task force established in 1995) in all its centers. During this training, a team of willing scientists from different centers was trained as trainers in gender and they became the gender advisors in their centers. This was a good start, although the high staff turn-over in the organization implies that gender training has to be a continuous activity. Thus, the project had a contribution to make even in an organization such as KARI in terms of capacity-building. In the other organizations, it was noted that some researchers had been exposed through one-off seminars or workshop, but there was no organized strategy for training in gender analysis in agricultural research.

Organizational assessments revealed that scientists were well acquainted with participatory research, but not gender analysis. This highlights the importance of the project, which focused on capacity-building in participatory research and gender analysis out of the realization that the methodologies were poorly applied where they were done at all. In some organizations like ISAR, participants had to start with sensitization on gender, as many scientists still had a stereotyped idea about the concept (such as equating gender to women). In ARC, participants facilitated a dialog to allow the scientists see the need for gender analysis. It was reported that scientists who were

using participatory methodologies would only involve farmers at the dissemination stage. It was therefore not surprising that the technology adoption levels had remained low.

There were fewer women in the NARS than men, with the gap widening as one moved up the hierarchy. This was found to be a common problem and the major factor was said to emanate from the education system, where females were not encouraged to take on science subjects. However, a mechanism such as affirmative action could be used to help alleviate this problem. In Kenya and Rwanda, for example, there are presidential directives to have 30% women in all civil-service sectors. This can be an opportunity for the NARS to recruit more women. Once recruited, the women can be helped to take further training to enable them move up the organizational ladder.

Apart from the two participants from KARI and EIAR who are the gender coordinators in their organizations, there was no mention of gender in the terms of reference in the rest of the participants' job descriptions. This meant that the work they put in to do gender-related tasks, such as participating in this project, was an added responsibility. Although this caused some delays here and there in the project's schedule, the enthusiasm the participants showed in this project denotes that they were ready to oversee gender-mainstreaming in their organizations.

Policy influence

Positioning of participants to influence change: As gender change agents, participants made efforts to influence change in their organizations. Some reported changes in the way they interacted with other staff members (including decision-makers) as a result of their participation in this project. In ISAR, for example, one of the female participants had been promoted to a station director. As such, she was involved in many meetings with decision-makers. During the interview, she mentioned that she used this opportunity to talk about gender.

In NARO, one of the participants said that she now got more gender-related assignments, especially through the gender coordinator. These were opportunities to influence change in her organization. A participant in KARI also seems to be exerting quite some influence in the organization as a result of his participation in this project: since he joined the project, he has been involved in several committees where he was able to bring some influence with regard to gender. For example, being a member of the Strategic Planning Committee (in KARI), he was able to give a gender perspective, especially in the institutional arrangement and uptake of technologies. Since the KARI Strategic Plan was drafted in December 2004 (soon after the project's first workshop), the participant was able to give input based on what he had learned in the workshop. He is now (since joining the project) widely consulted, especially by his immediate boss, on various issues. As he put it:

> *"he keeps asking my views which clearly shows that he now respects my position because I have gone through this training ... Even in our interactions with colleagues, they now feel that we are more knowledgeable and we are able to pursue it a bit further."*

In FOFIFA, participants organized a meeting attended by 45 scientists (including the director general) to give feedback after their participation in the project's first workshop. The fact that the director general and other decision-makers attended and participated in this meeting shows their support to the participants and the project.

In DRC, one of the participants, who is a professor of agricultural economics in University of Kinshasa, introduced a course on gender-sensitive data collection in the faculty of agronomic science. This was after his participation in the project's first two training workshops.

Influence through networking: The project managed to create a forum whereby participants could network, thereby enhancing networks and alliances across the organizations. The team in Kenya, for example, was involved in the second workshop organized by the DRT team in Tanzania. Since the Kenyan team was more 'seasoned' in gender, they provided useful expertise to the Tanzanian team. Besides, it gave the workshop participants a perspective on what was happening in neighboring organizations. This kind of alliance was constantly called for by respondents during the evaluation. At ISAR and DRT, it was mentioned that scientists were likely to take gender training more seriously when conducted in conjunction with 'outsiders.'

Opportunities for learning from each other were provided during each of the project's training workshops. Relevant examples from the participating NARS were constantly cited during discussions. This exchange and learning from each other was particularly helpful when forming strategies for influencing change.

It was constantly suggested that ASARECA should act as a catalyst for gender-mainstreaming in the NARS. One suggestion of was to have the DGs whose organizations had made significant steps toward incorporating gender, to engage those from other organizations. The DG of KARI expressed his willingness to share KARI's experiences with the ASARECA Committee of Directors (which consists of the DGs of the ten ASARECA NARS).

Decision-making

Criteria for approval of new proposals: In most of the organizations, gender was not taken into account as a criterion for approving new proposals (in relevant areas), and there was no monitoring-and-evaluation criterion used to follow up on the implementation of gender in research process.

In these NARS, gender was only emphasized through specific donor-supported projects, after which the idea died out. Asked whether gender questions (or criteria) are included in project-proposal approval, one respondent from Sudan said, "in the case of proposals submitted to donors, gender questions have to be considered before they can be approved." This trend highlights the need to institutionalize participatory research and gender analysis, for sustainability beyond short donor-funded projects. This also helps to eliminate the attitude that gender is a foreign concept.

Aspects of the project that participants found most useful

In the interviews and survey questionnaires, participants were asked which aspect(s) of the project that they found most useful. Although the participants joined the project with various levels of knowledge and skills in gender, they all reported to have benefited immensely from the project, especially through the capacity-building aspect.

In KARI, where participants were already acquainted with gender prior to joining this project, they reported that they found skills on change agent and influencing change to be very useful. As one participant from KARI put it:

> *"The various ways of bringing about change in an organization was useful. For example, we were told that we can also do it informally ... I have tried to do that.*

> *When I meet them [decision-makers], I remind them that gender still has a place in research"* (Jane Ngugi, gender coordinator, KARI).

The training-of-trainers workshop on gender analysis was appreciated by all participants. All country teams have conducted several training workshops in their organizations through this project. This is a big achievement given that most participants joined the project with very limited knowledge and skills in gender, yet now they not only have the skills but also the confidence to train scientists in gender analysis. As one participant from ISAR said:

> *"Through the training we get, we expect to impact all ISAR stations. We sensitized the management staff on gender issues and then after that they helped us conduct a workshop through which we reached many scientists"* (Leonidas Disengemungu, researcher, ISAR).

A participant from DRT commented that, "I was not used to the participatory teaching methodology but after this training; it gave me a broader understanding on how to do it." Now she appreciates participatory methodologies in training and she was using the same in other training activities that she conducted in the organization.

One participant from EIAR listed the following regarding the project:

> *"I have gained a good deal of experience in:*
>
> - *How to be a change agent in my organization*
> - *Learned how to conduct organizational assessment*
> - *Learned more about participatory research and gender analysis*
> - *Helped to design my future activities in a better way*
> - *It also helped me to establish a network among ASARECA member countries."*

These are important achievements especially coming from a gender coordinator. The implication is that she is now in a better position to do her work as a result of her participation in this project.

Gender-analysis methodologies were cited as a useful skill learned through the project. Participants used these methods in carrying out field studies as part of the project activities.

Field research / case studies

There is a need for locally relevant cases and material to support the use of gender-sensitive participatory methodologies in agricultural research. Case studies (relevant to agriculture) generated locally can be used not only as empirical evidence to demonstrate the importance of gender-sensitive participatory methodologies, but also as part of the training material for the scientists. Participants used the grants provided through the project to carry out such case studies. The field-study findings correspond with some common findings in gender analysis.

In ISAR and KARI, the field studies found that gender considerations in an agricultural innovation could change the gender roles to a more equitable pattern. The team in ISAR focused on climbing beans, whose production has mainly been a woman's duty especially during the weeding. However, when the team introduced a different style of planting (planting in lines), men were ready to help in weeding because it was now easy to weed using a long-handled hoe rather than the usual short ones which necessitated bending while weeding. This was quite important given

that weeding has been seen as the hardest and enormously taxing work on women's energy (IFAD and FAO, 1998).

The case study in KARI demonstrated that gender considerations in agricultural research increase the adoption level. Through the poultry project (which the team assessed), it was found that now women and men could sit and plan together, something which was previously foreign to them, as men always made arbitrary decisions without ever consulting women. In INERA, the team found that women were too overburdened by domestic/caring chores to concentrate on cassava production. Yet cassava was one of the major sources of food security and income in DRC. In ARC and EIAR, the field studies found that there were marked gender-based differences in access to and control over resources and services that resulted in different farm performance and, in the end, support of livelihoods of households. The question of land ownership was explored in ARC and KARI. In ARC, the study found that the quality and distribution of land favored men and enabled them to manage themselves better and cope with the harsh climatic and economic conditions. The soil-management project used as a case study by the KARI team had attempted to incorporate gender, but the issue of land ownership hampered participation of women. This was because women did not own land, they only had access to land through men (mainly husbands). Because of this entitlement, everything went to the husbands.

With a better understanding of gender and cultural issues within a community, scientists were able to get better response in their interactions with the farmers. The scientists had also realized that most of the farmers were women, so they cannot afford to exclude women from the research process. In KARI, for example, most of the projects submitted in 2005 had a gender perspective: a participatory monitoring and evaluation officer (who was also one of the project's participants) noted that 16 out of 19 proposals he had received had a gender perspective.

Conclusions

The relevance and the appropriate timing of the project cannot be overemphasized. ASARECA has had other gender-related projects which have not paid attention to the organizational dimension. This project no doubt made a difference by engaging the leadership in the participating NARS and seeking organizational change in order to institutionalize participatory research and gender analysis. Efforts to engage ASARECA at the policy level through this project provided an opportunity to develop a mechanism for institutionalization of participatory research and gender analysis in all the NARS of ASARECA. The capacity built through this project can be utilized to ensure this. A big challenge remains on how to bring the two ASARECA countries that did not participate in this project (Eritrea and Burundi) on board. This could be overcome through networking. It is hoped that ASARECA will embrace the recommendations set out by participants in this project as a way of ensuring gender-mainstreaming in the region (Ssendiwala *et al.*, 2006).

Best practice

Through sharing of experiences among the participating organizations, some practices have emerged as strategies for enhancing gender-mainstreaming in an organization.

1. *Incentives for scientists to do gender-sensitive work:* The provision of an award to scientists presenting papers with a gender perspective during the biannual scientific conference was

reported to have encouraged more scientists to incorporate gender in their work. This has worked well in KARI for a number of years.

2. *Gender coordinator or unit:* Although gender should be everyone's responsibility, a coordinating unit ensures accountability, provides expertise, and ensures that gender concerns do not 'evaporate.'
3. *Case studies (documentation):* Besides documenting the cases where participatory research and gender analysis are used effectively, it is also important to document each organization's gender-mainstreaming process (including progress, opportunities, challenges and lessons learned).
4. *Annual or biannual seminars with a focus on gender:* This provides an opportunity for learning from each other and networking. Being a gender change agent is said to be a lonely job. As such there is a need for networking. For instance, KARI's first gender conference in 1998 is well documented (KARI, 1998). Seminars can provide an opportunity for networking and learning from each other.
5. *Exchange visits and networking:* For scientists, this is another way of learning from each other and keeping abreast of fresh ideas in this area.
6. *Continued training in participatory research and gender analysis:* (Even in KARI where over 80% of staff had at one time been trained in gender, it was noted that high staff turnover has meant that training has to be continuous.) Besides the in-house training, this may also include sponsorship of interested scientists for long-term training in gender such as Master's degree.

Recommendations for ASARECA

- Develop a regional policy that ensures gender-sensitive participation becomes integral to agricultural research in the NARS.
- ASARECA should play a catalytic leadership role in ensuring that member NARS mainstream gender-sensitive participatory research by integrating such approaches in their research programs and projects.
- Support and enhance the capacity of NARS members in their ability to conduct and mainstream gender-sensitive participatory research approaches.
- Provide a regional platform for exchange of experiences and 'best practices' in gender-sensitive participatory research within members countries.
- Generate criteria for gender compliance in the ASARECA competitive grant scheme (CGS) concept notes and full proposals that are part of the competitive grants process.
- Develop performance indicators for programs that integrate gender-sensitive participatory research approaches common to the NARS in the region, so that they become accepted practice.
- Conduct research to understand and document how institutional changes are happening.

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Gender issues and perspectives in agricultural research and development projects in the Democratic Republic of Congo

Kinkela Sunda Savy and Célestin Alimasi Bahandi

Introduction

Following the example of other countries, the Democratic Republic of Congo (DRC) has ratified the Agreement on Eliminating Discrimination against Women (CEDEF) and adopted the 1995 Beijing Action Plan. By doing so, the Government of the DRC has shown its commitment to promoting women's rights.

This paper examines the gender status within agricultural research in the DRC. In this respect, participants from the DRC conducted two studies and held a workshop on participatory research and gender analysis at the University of Kinshasa in August 2006.

The first study dealt with the current status of gender within agricultural research and development organizations. The second is intended to analyze gender analysis in a cassava production system. The workshop was organized to sensitize researchers, teachers, civil servants, NGOs, agricultural development representatives and students on participatory research and gender analysis issues.

Current status of the integration of gender within agricultural research and development organizations (2008)

Background

Agricultural research, training and development organizations produce goods and services for the population. For that purpose, they employ men and women, they have target groups for whom these goods and services are intended, and they work in partnership with other organizations (CEDPA, 1997).

To fulfill its mission, each organization has its culture and its practices, which—deliberately or otherwise—can be neutral, favorable or unfavorable toward gender issues (Levy, 2002).

The gender issue is not only a high-profile topic in the world in general and in the DRC in particular, but it is necessary to reach fair and sustainable development. Therefore, the integration of a gender perspective within institutions, organizations, programs and projects has to be achieved by change in several domains—politics, structures, procedures, allotment of human, financial and material resources, and attitudes of staff (Nations-Unies, Division pour la promotion des femmes, 2003).

The integration of a gender perspective faces several constraints, including a lack or shortage of competent staff in gender-related issues, financial means, and that all the required changes take time (i.e. their results can be seen only after a relatively long period of time) (FAO, 2002). For this reason, we observed how the gender issue is taken into account by organizations at various levels (DDC, 2003).

Generally, stakeholders are often involved in research and agricultural development projects, and their identity and role depend on the project objectives (Caro and Lambert, 2000). So, for instance, within the framework of the cassava mosaic project, four interest groups are involved:

- International bodies: donors (USAID, EU and the World Bank via Bureau Central de Coordination), an implementation agency (FAO), and an agricultural research institution (IITA);
- Institutions of the national agricultural research system: INERA and University of Kinshasa;
- NGOs: international (World Vision, Inades-Formation and PROSAKIN) and national (CADIM and CECREP);
- Local structures: traditional leaders, local authorities, farming producers' organizations and groups, and private sector).

Concerning these particular stakeholders, USAID and the European Union tend to support research organizations and agricultural development projects that take into account the gender aspect.

The competitive grants system of ASARECA (channel for EU and USAID funds) takes gender aspects into consideration in assessing project proposals.

As there was a lack of information on this matter concerning other interest groups, a survey was planned to examine the integration of gender in research organizations and agricultural development projects in the DRC.

This study examined gender status within agricultural research, development projects and NGOs in the DRC.

Research objectives

General objective

The study's general objective was to find out the level of integration of participatory research and gender issues within agricultural research organizations and development projects in the DRC.

Specific objectives

1. To determine the degree of gender integration in organizations (politics, budget, skills/capacities, procedures/tools, culture, human-resources management, equity and responsibilities).
2. To determine the degree of gender integration in the management of the research and development project cycle.

Methodology

Data collection

Data were collected through a sample survey using two questionnaires, one developed for the general management of organizations and the other for the implementation of research and development projects (Kinkela, 2004–2005).

Questionnaire design

The questionnaire on organizations dealt with the following items:

1. Organization's status and fields of intervention
2. Whether or not gender aspects are included in the organization's policy
3. Whether or not the gender policy is implemented
4. Budgeting of gender activities
5. Opinions on gender
6. Whether there is a body dealing with gender, its assignments and staffing
7. Source(s) of initiatives on gender aspects
8. Whether or not gender issues are taken into account in decision-making processes within the organization
9. Whether or not a think-tank structure on gender and incentives exists
10. Fields for the application of gender analysis and its outcomes
11. Understanding of main gender concepts.

In the project-implementation questionnaire, the main concerns were:

1. Motivations, implementation and sustainability of the project
2. Fields of intervention
3. Target beneficiaries
4. Stages of the project in which beneficiaries are involved
5. Aims with respect to gender
6. Obstacles encountered in the implementation of gender projects
7. Data-collection in connection with gender
8. Lessons learned with regard to gender
9. Investigation methods
10. Understanding of main gender concepts.

Sampling

In order to cover the various organizations potentially interested in gender aspects, we started by identifying five categories according to organizations' status:

- NGDOs (non-governmental development organizations)
- Development projects
- Educational institutions
- Agricultural research organizations
- Agricultural and rural development public services.

Because organizations are dispersed through the large country and the importance of each category, a sample of 43 organizations was selected—21 NGDOs, 6 development projects, 5 educational establishments and bodies, 4 agricultural research organizations and 7 public services. However, after screening the sample changed somewhat (Table 1).

Table 1: Status and numbers of investigated organizations

Category	Numbers		%	
	Planned	Actual	Planned	Actual
NGDOs	21	30	49	79
Development projects	6	1	14	3
Education	5	5	12	13
Agricultural research	4	2	9	5
Public services	7	0	16	0
Total	43	38	100	100

Data processing

Data collected were processed with EPIDATA 3.3, SPSS 10.0 and Excel 2000 software.

Difficulties encountered

Some difficulties were encountered during this survey, especially during the investigation stage, notably:

1. List of NGOs had not been updated—this caused changes in the sampling process
2. Absenteeism in public services
3. Reticent attitude of some organizations, especially development projects.

Findings

At the organizational level

Political engagement: Eighty-four percent of NGDOs were aware of gender issues. Among the research organizations, 82% expressed favorable opinion on gender. However, organizations seem to consider gender issues only upon request from donors. Moreover, there is no gender policy in the mandate of public services in agricultural research education. The parity law passed by parliament, granting equal opportunities in public institutions, is nevertheless a great opportunity for engaging gender in organizations. Coupled with this is the fact that girls' education has been boosted and many women have reached a high level of education in various fields.

In job appointments and promotions, preference is given to female applicants in case of equal skills between a male and a female. While this positive discrimination is essential, it has been viewed by some as a threat, in that women might be put in positions for which they are not competent. Another threat is the fear of mediocrity in research in the organizations.

Budget: Gender-sensitive budgeting was noted in 26% of agricultural research organizations. A relatively large share of the budget (30–35%) was allocated to women's needs in the organizations. However, these budgets are mainly used to meet only practical needs of women. Another weakness is that the budgets come from donors, since organizations do not allocate any funds from their core budgets to gender issues. Seventy-five percent of the organizations surveyed do not make gender-sensitive budgets at all.

Skills and capacities: Researchers surveyed expressed willingness to train in participatory research and gender analysis methodologies. The survey showed that there is limited knowledge of gender concepts, methods and tools for gender analysis. Lack of skilled capacity to take the lead in institutionalizing gender within organizations was apparent. In terms of trainers and finances, there are limited opportunities for capacity-building in gender. Organizations in the DRC can, however, take advantage of (or emulate) gender training structures that exist elsewhere in the Eastern and Central Africa region. The existing gender expertise in the DRC (although limited) is also a good start.

Procedures and instruments: In job advertisements, women are generally encouraged to apply as a way of increasing the number of females in the organizations. The constitutional provision for women's representation in public institutions and organizations provides a good opportunity for women. However, rules governing organizations have not been revised to take gender issues into consideration.

Culture: Although there is a favorable attitude toward female staff in agricultural research organizations, decision-making processes do not include gender considerations in most organizations.

Human-resources management and equal opportunities: In spite of the equal-opportunity law, there is little female representation in high-ranking positions. This demonstrates a discrepancy between the law and reality.

Responsibilities: Forty-seven percent of research organizations have integrated gender issues, and 56% have a think-tank related to gender. The pressure and initiative taken by donors to encourage agricultural research organizations to include gender aspects in their investigations is an opportunity for the institutionalization of gender.

At the program and project level

Project identification: Developmental organizations are increasingly willing to integrate gender issues in their projects. However, this is mainly done at the request of donors, which means that the practice is not sustainable beyond the funded project. The major threat in this is that lack of funds may reduce the willingness to integrate gender in programs and projects.

In problem analysis, the concerns of the few women involved are taken into account. Women's limited means to provide for their lives is also considered. The problems most commonly dealt with relate to inequalities in living and monetary conditions, and skills relating to the means of work. In spite of this, problems linked to unequal relationships between men and women are not taken into account. Lack of appropriate methods and tools hamper the analysis and contextualization of

the problem. In stakeholder analysis, direct beneficiaries are usually identified. However, other stakeholders are excluded, resulting from lack of appropriate stakeholder analysis methods.

Conception and formulation: At the project-formulation stage, direct beneficiaries are 82% men and 18% women. Women's practical needs that are addressed, include: increase of income, reduction of workload, adoption of new technologies, improvement of living conditions (health), access to education and micro-credit, and implementation of agricultural projects.

However, the project indicators are limited to the number of men and women who are beneficiaries and not to the progress made in connection with the inequalities between men and women.

Project activities require the participation of men and women together or women alone and they relate to: management (8%); participation (30%); sensitization (20%); access to the factors of production (23%); improvement of living conditions (20%) (percentages refer to activities with women-only participation).

In setting objectives, in 25% of projects both women and men participate, while women-only participation is 17%. The fields concerned cover productive activities such as agriculture, income-generating activities and employment, and reproductive activities such as health, food and child care.

Execution: During implementation, there is partnership with women's organizations and mixed organizations. Although women and men participate, there are more women participants than men. Beneficiaries participate in the annual planning. Women's involvement relates to physical participation (in numbers) and it has little effect on the benefits resulting from projects and from the decision-making process at all levels (households, communities, etc.). Opportunities to counter this problem exist in the willingness of the government to promote women's representativeness in public institutions and organizations, and the presence of many intellectual women to deal with project implementation.

Monitoring, evaluation and communication: Beneficiaries are involved in monitoring of the projects. However, data-collection is limited to counting the participants (both men and women) and there is evidence of ignorance of gender-related monitoring methods and tools. Reports are not released to the general public, as they are intended for donors only. The local and regional agricultural gender experts trained through the former ECAPAPA/ASARECA project offer training possibilities in monitoring, evaluation and communication.

Conclusion

No organization is exempt from gender considerations. This is true for ministries, NGOs, private companies, and all others. Each organization has its own institutional culture and values. Its identity determines its manner of integrating gender perspectives. Each organization puts together individuals (women and men) who subscribe to or oppose the principle of equality between men and women, independently of the policy of the organization.

Putting a gender perspective as a priority within an organization requires individual and organizational change. These requirements define not only tasks (described in a contract), but also to a certain extent behavior.

Gender in agricultural research organizations and development projects is a new issue in the DRC. It has been introduced through donor initiative and support since 1990.

The gender issue is not yet fully integrated in research organizations, especially in agricultural research and public utility organizations. The lack of an educated or well-trained gender-research resource person and limited allocation of financial resources to gender issues within agricultural research organizations are the major challenges to be addressed.

At the project and program levels, analyses made in accordance with project cycle included identification, conception–formulation, implementation, and monitoring and evaluation. Projects and programs have been identified that include gender aspects, in order to take advantage of donor funds. Of the initiated projects and programs, 44% are in agriculture, 35% in income-generation, and 21% in employment-creation. No relevant gender analysis was made because of lack of knowledge related to gender methods and tools. Only the identification of beneficiaries has been done with a view to gender issues.

Most of projects and programs (82%) involved both men and women, and the remaining 18% women only. Projects and programs aim at women's practical needs, rather than considering strategic needs to transform some social, cultural and public utility institutions, which still perpetuate inequalities between men and women.

The selection of indicators within agricultural projects and programs relates only to the number of women and men that are beneficiaries; they do not measure changes in women's and men's roles.

The implementation of projects and programs was done in partnership with women's organizations, even where both men and women are the main actors.

Gender analysis in cassava production system in the DRC

Background

Cultivated in almost all tropical areas, cassava (*Manihot esculenta*) is a staple food for millions of human beings, an animal feed and a raw material for industries producing food or others items.

In many tropical countries, especially those close to humid zones, cassava makes a significant contribution in calories for millions of people. Its tuberous roots supply more than 50% of the total calorie intake in DRC and Mozambique, and 35% in Angola (FAO and FIDA, 2000).

Cassava consumption in the DRC is the highest in the world. The average Congolese person consumes 453 kg of fresh roots per year, that is, 145 kg of cassava flour (FAO, 2000). The cassava leaves often used in Central Africa rank first among all leaf vegetables consumed in the DRC and especially in Kinshasa, where a household of 7 or 8 people consumes nearly 4 kg of cassava leaves per week (Kinkela and Khonde, 2001).

As raw material, cassava is the fourth main source of starch, after maize, wheat and potato. Starch is used as raw material for a whole range of food and industry products, including paper, paperboard, textiles, plywood, glue and alcohol.

As a livelihood crop, cassava ensures food security for millions of human beings, both producers and consumers. It also contributes to the socio-economic development of rural areas in producing countries.

Cultivation of cassava provides employment and income for farm workers, producers, processors, dealers and service providers—i.e. for all the people involved in the cassava pipeline, from rural producers to urban consumers. Cassava provides employment at several levels. At the production level, cassava generates employment for more than 90% of farming households in the DRC (FAO, 2000). A comparable analysis with other major food crops in the DRC showed that more than 80% of production systems are based on cassava, compared to 11.6% on maize, 5% on rice and 3.3% on bean (Nweke *et al.*, 2000).

The crop is not only for subsistence and food security, but has also become the main source of income for farming households (FAO, 2003). No food crop surpasses cassava with regard to income-generation in Africa (Nweke, 1996). Cassava cultivation generates 86% and 72% of the incomes of farming households in Bas-Congo and Bandundu provinces, respectively (Goossens *et al.*, 1994). The other major food crops make smaller contributions to the net income of farming households. Cassava also generates a high proportion of farming-family income in other provinces.

Since 2000, there has been a strong upsurge of African cassava mosaic disease, which has deeply affected the productivity of almost all farming households in Bas-Congo, Bandundu and both Kasaï provinces, as well as in most parts of the equatorial region of the DRC. In response, USAID supported a project of the International Institute of Tropical Agriculture (IITA) in the choice and introduction of mosaic-resistant varieties of cassava. Thanks to this project, research undertaken on cassava production led to the development, multiplication and distribution of healthy improved varieties, and the reduction of losses by keeping in check harmful insects and other pathogenic diseases.

In the implementation of this project, many national, bilateral and multilateral partners joined the multiplication of cassava cuttings developed by IITA, with the cooperation of the National Institute for Agronomic Study and Research (INERA) and the technical, material and financial support of international organizations and institutions such as FAO and the South-Eastern Consortium for International Development (SECID).

Today, almost all the provinces of the DRC have multiplication fields for improved varieties for helping cassava producers.

The results of our research were made possible through joint efforts of the Cassava National Program (PRONAM) and INERA, in cooperation with IITA, FAO, SECID, University of Kinshasa, NGOs and farmer organizations, with the financial support of USAID and the European Union.

The study shows partnership between agricultural research and development organizations, donors and cassava producers.

Research objectives

General objective

The general objective of the survey was to improve the technical and socio-economic management of the cassava production system by farming households involved in this production system in Bateke (Kinshasa Rural) Plateau by using gender analysis.

Specific objectives

- To identify and highlight the division of labor characteristics between men and women in household production activities;
- To identify men's and women's daily routines;
- To identify who, between men and women, gains access to and is in control of the resources relating to production activities;
- To identify who, between men and women, takes the profits generated by the sale of cassava products and by-products.

Methodology

Data collection

Data were collected through a survey using a questionnaire for farming households, and semi-direct interviews with focus groups of members of farmer organizations and groups (Kinkela, 2004–2005).

Questionnaire design

The questionnaire was drafted in line with the general and specific objectives of the survey. It focused on the following points:

1. Cultivated crops
2. Cassava varieties used
3. Attributes of cassava varieties preferred by users
4. Cassava farming system in use
5. Production system activities
6. Daily schedule
7. Producers' opinion about the production system in use
8. Access to and control of production resources
9. Access to and control of generated profits.

Sampling

The choice of sites was based on criteria related to the presence of Farmer Field Schools (FFSs) and new varieties of cassava.

Based on the FAO-established database, a sample of 236 households (i.e. 22.2%) was selected from the 1060 households supervised in the cassava production system of the Plateau de Bateke (Rural Province of Kinshasa).

Methodological principle for participatory research

The main objectives of these investigations consisted of:

1. Collecting information on how the investigated community members perceive the current cassava production system;
2. Bringing together the opinions from the groups and questionnaires.

Qualitative methods were used to better assess the impact of the project on the well-being of beneficiaries. These approaches have the advantage of being participatory, flexible and easy to analyze.

The gathering of information through this approach followed the following steps:

1. Getting in touch with the leader or key person of the area (chief of village or town, pastor, teacher or else village innovators);
2. Sensitizing participants for the meetings (focus group);
3. Conducting interviews;
4. Summarizing and analyzing the information collected.

Processing of data collected through the questionnaire

The following software programs were used: EPIDATA 3.3, SPSS 10.0 and Excel 2000. The data entry form was created in EPIDATA 3.3.

Captured data were transferred to SPSS 10.0 in order to perform, among other things, the flatbed and cross-sorting that will help to draw tables of absolute and relative frequency.

Challenges

This survey was not done without difficulties. We faced a number of problems, including:

- The use of several languages: English for the project research, French and Lingala in the field. This caused misunderstanding of some concepts between the investigators and the interviewees;
- The unavailability of the investigated people during the day extended the duration of the research;
- The distance between residences of investigated people and the accommodation site of the investigators.

Findings

Division of labor in the cassava production system

Overall situation: Cassava is the main crop of the farming production system in Plateau de Bateke for 100% of farming households. The division of labor between members of farming household (men and women) in this cassava production system has been established. Men and women make decisions together on the cassava varieties to be cultivated by the household.

With new improved varieties of cassava, the active participation of both men and women in the production system has been particularly positive (with 46% of participants being men and 54% women).

Women are increasingly taking most of the responsibility for the household's reproductive and productive tasks. Men's interventions in the cassava production system are sporadic and irregular, while the women's are permanent and regular. Women are overworked in the cassava production system. The choice of cassava production system is mainly decided by men. Unequal division of labor in the cassava production system was mentioned by at least by 60% households surveyed.

The guidance of the FFS encourages involvement of men, women and young adult children (both sons and daughters) of farming households. Both women and men producers are involved in choosing cassava new varieties and planting techniques.

A major threat has been the rejection of innovation because of additional tasks to be performed only by women (cassava microcuttings and phytosanitation activities). The heavy workload, especially of women, has also lead to loss of interest in the cassava project.

Pre-season activities: All household members are involved in the soil preparation and tasks related to the preparation of cassava cuttings. The decision on the ground is in mainly made by men (73% of cases). The increased workload resulting from the new improved cassava varieties falls mostly on the women. There are more women (61%) than men (39%) choosing and preparing cassava cuttings.

Women's heavy workload presents a threat to food insecurity, especially in women-headed households.

Farming activities: All members of farming households carry out the planting of cassava cuttings. Cassava field works, including ridging, weeding and phytosanitation, are carried out by men and women. However, there is an unbalanced division of labor related to farming works, because women and young men are more involved than men and young women in planting cassava cuttings. Phytosanitation activities required by the new improved cassava varieties (innovation) are carried out exclusively by women.

Recourse to mechanical tools may be an option to the arduous farming activities related to cassava. There is also the possibility of recourse to producers associations (*tontines*) for help with laborious activities.

Harvest and post-harvest activities: Some cassava harvest and post-harvest activities are carried out by all members of farming households.

Women and young men are the main actors in the harvest of cassava compared to men and young women.

Women transport cassava products on their heads, as these products are very heavy. Where available, yokes of oxen can be used for transportation of cassava products. The existence in the site (Plateau de Bateke) of an animal training center for haulage seems to be an option for animal transportation for cassava products.

Daily schedule of men and women: Women, men and young adults (both men and women) spend part of their daily time in productive and reproductive activities, in marketing and for the community. The workload of men's and women's daily schedules are unequal. The women's daily workload is heavier (17 working hours per day) than men's (12 hours). Women perform productive,

reproductive and processing activities, as well as the sale of cassava products. Men on the other hand perform very few reproductive and productive cassava activities.

The overload of women's daily schedule does not allow them to get involved in socio-cultural (training, leisure, taking part in associations, etc.) and community activities (unlike men). Women suffer the effects of most decisions related to socio-cultural and community activities being taken by men. Women's opinions are not taken into account in the community decision-making process.

Women are completely dependent on, or under the domination or control of, men. There are difficulties for women to adopt agricultural innovation, because they are not involved in the process; consequently, they display a low rate of agricultural innovation adoption.

Introduction of projects that relieve women's load in reproductive activities (water supply system, rural electricity) can help relieve their heavy workload, especially in domestic chores. Introduction of socio-cultural and community projects for women (women's associations, women's NGOs, women's microfinance, etc.) also help them in improving their financial status.

A major problem is that women are unable to accomplish some reproductive and productive activities because they are so much busier than men. The heavy workload for women is also a threat to their health. It is a threat to cassava productivity and can lead to the failure of the cassava production system.

Access to and management of resources in the cassava production system in Plateau de Bateke / Kinshasa

Land: Land is used, to various extents, at the same time by women (49.5%), men (44.8%), young men (3.2%) and young women (2.5%). The management of the land as an essential resource of the cassava production system and falls almost exclusively to men (98.4% of cases). Conditions of access to land are the same for men and women. Land is not a constraint in the site. The fact that women have access to land but not the control over its use makes them lose motivation to invest in it. They lack interest in farming activities because of lack of land ownership.

Cassava cuttings: All household members have access to cassava cuttings, but men and women have control over the cuttings of cassava varieties. Women have more access to cuttings of local cassava varieties (70% of cases) than men (30%). The cuttings of improved varieties of cassava are more under the control of men (63%) than of women (37%).

Farming equipment: The farming equipment is accessible to both women and men. The use of farming equipment in the cassava production system is almost exclusively by men (98.4%)

Workforce payment: Access to paid workforce in the cassava production system is more a privilege of men (69.9%) than of women (26.9%). The decision for hiring the paid labor for cassava production falls within the jurisdiction of men in most cases (95.8%).

Pesticides and fertilizers: The use and control of pesticides and fertilizers lies mostly with men.

Farm mechanization: Farm mechanization is used by both men (54%) and women (46%). The access to farm mechanization is shared by both men and women, but the control of mechanization activities falls exclusively to men.

Training: Training on cassava production involves more women (86% of cases) through the Farmer Field Schools. Most men are not interested in attending FFS. Ninety-six percent of women participate in FFS training with the permission of their husbands.

Supervision: Men have more access (88% of cases) to become leaders of NGOs and farmer organizations. Projects for setting up women's NGOs and organizations should be encouraged. Women leaders should be identified and encouraged to take up leadership in agricultural NGOs and farming organizations.

Profits generated in the cassava production system

Sale of cassava products: The production system supplies cassava-based products on the markets for household food security and income-generation. Products include fresh tuberous roots, dried cassava (*cossettes*), *kimpuka* (fermented cassava), fermented flour, cassava leaves, *chikwangue* (boiled fermented cassava) and non-fermented flour.

Women are in charge of selling any or all cassava products and by-products—up to 61% of cassava tuberous root sales, 84% of cassava *cossettes*, 90% of *kimpuka*, 87% of fermented flour, 76% of *chikwangue* and 84% of non-fermented flour. The weak preservation and storage facilities related to cassava products and by-products is a problem.

The proximity of the city of Kinshasa, with roughly 10 million inhabitants, as a huge cassava products and by-products consumer centre is an opportunity for the sale of cassava products. There is also regular transportation to Kinshasa. Being the largest city in the DRC, consumption of cassava products and by-products is high in Kinshasa.

Collection of the income generated by the sale of cassava products and by-products: Women collect a high proportion of the income generated by all cassava products and by-products: up to 72% for cassava *cossettes*, 67% for *kimpuka*, 74% for fermented flour, 79% for cassava leaves and 87% for non-fermented flour. This income is used for household needs such as purchase of other foods and non-food items, healthcare, children's education, and clothes. However, women sometimes lose their income to thieves. Theft of cassava products and by-products may also occur in the field, village or market, denying women their much needed income.

Control of income generated by the sale of cassava products and by-products: The *control* of income generated from the sale of cassava products and by-products falls mostly to men: up to 66% for tubers, 83% for cassava *cossettes*, 74% for *kimpuka* and 70% for cassava leaves. These percentages clearly indicate that men get control over benefits generated by the sale of cassava products and by-products, even though women are at the core of the production, processing and trading.

Men's control over the benefits generated by cassava products and by-products discourages women from continued involvement in the cassava improved varieties projects.

Men sometimes commit the income to expenditures that are not beneficial to the entire household, such as drinking, girlfriend relationship, and getting married to another woman.

Conclusion

Cassava is a basic and excellent crop for home consumption, guaranteeing food security, and generating incomes in order to alleviate poverty in farming households.

The general objective of this survey was to determine how farming households could improve the performance of the current cassava production system in terms of technical management and socio-economical aspects, in order to improve their well-being, through the 'gender analysis' approach.

From the information collected, it appears that tasks and responsibilities are shared out between men and women within the households involved in the cassava production system. However, women are overloaded compared to men in reproductive and production activities: the daily schedules of men and women clearly show women's daily overload—17 hours, compared to men's 12 hours.

The activities carried out in cassava production before and after the advent of new varieties of cassava remained almost the same, except for microcutting and phytosanitation ushered in with the new varieties of cassava. This extra work is mainly borne by women.

Men's responsibilities proved to be more sizeable in community activities. However, with new varieties, farming organizations, encouraged through Farmer Field Schools, begin to play a key role in community activities.

The resources required in the cassava production system remained the same before and after the introduction of new varieties. Most of these resources are accessible to everybody, except for fertilizers, pesticides and animal traction that are reserved for men and in many cases to young men.

The profits from the production system, whether financial, material or acquisition of know-how, are equally accessible to men and women. However, decision-making on the use and allocation of these profits is exclusively reserved for men.

This survey has shown that the current cassava production system has a number of opportunities (training, supervision, peasant organizations and groups, Farmer Field School, etc.) to improve its performance. However, there are many great challenges, which, if not mitigated, will block the blooming of the cassava production system. These include:

- The overload of women in reproduction activities;
- The women being almost absent from and the men being omnipotent in the control of resources and profits generated from the cassava production system.

Improvement of the performance of the cassava production system in the Plateau will be possible once the above-mentioned challenges are addressed, or at least mitigated. This is the price required to pay for sustainable development of the cassava production system related to gender issues.

Recommendations

As the introduction of new varieties caused an increase of women's workload, all interest groups of the cassava production system should be challenged. Thus, the research team recommends the integration of this data in the designing of any new development project.

The appreciable involvement of young adults in the cassava production system widens the target groups for training, popularization and supervision of this category of people.

The research team recommends to parties involved in development in rural and farming areas to sensitize communities, peasant organizations and groups, as well as households, on good governance, including women's involvement not only for access to resources and profits of the activities, but also and especially for the control of such, which alone can guarantee sustainable progress.

Given the women's overload in domestic activities, the research team recommends on the one hand that parties involved in development in rural and farming areas should sensitize men to involve themselves in these activities, and on the other hand that development projects should invest in some activities (e.g. water conveyance, power supply in rural areas) to reduce the hours involved in performing some daily tasks.

Given that clean cuttings of new varieties of cassava were available only to some interviewed households, the research team recommends wide dissemination of these improved cassava varieties, which are sought after by many farmers.

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Towards gender mainstreaming in an agricultural research system: Organizational assessment of gender aspects in Ethiopian Institute of Agricultural Research (EIAR)

Yeshi Chiche and Agajie Tesfaye

Introduction

Background

In the historical development of agricultural research in Ethiopia, the process of technology generation has been transformed from an academic interest and theoretical concern to a participatory, problem-focused and policy-oriented activity. Different approaches have been used to make agricultural research effective and efficient. These have included package testing, farming systems approach, and participatory rural appraisal.

Each process has played a significant role in sharpening the research focus toward being problem-oriented and demand-driven. From the various approaches, we have learned that farmers adopt improved technologies step by step depending on their own priorities, based on their social, cultural and economic circumstances; and that the local problems and needs of farmers vary from location to location because of different local circumstances. Farm-survey results have helped researchers to understand the complexity of the system, to respect farmers' knowledge, and to define research topics accordingly. However, there was little room to consider gender aspects in the research process, particularly in the research planning process.

Gender is an important factor that is globally recognized and widely used as a development component to contribute to increased research efficiency. The technology adoption and utilization process can be better facilitated when gender factors are incorporated in the research process, particularly in the needs assessment, problem identification, planning, implementation, evaluation and dissemination processes. Several studies indicate that the role of women in agriculture has been overlooked and that this has contributed to the delay in the adoption of agricultural technologies (Yeshi, 2002). Many global efforts consider gender as an important component of development intervention. In order to facilitate the consideration of gender in the research systems, it has to be internalized in the system and the organization's staff need to apply it in their daily activities. This could also be achieved by strengthening gender-responsive research in such a way that it can adequately addresses the interests of all who are responsible for maintaining livelihoods through farming, i.e. both women and men farmers.

Towards the end of 1999, the first gender-sensitization workshop was launched in the former Ethiopian Agricultural Research Organization (EARO, now the Ethiopian Institute of Agricultural Research, EIAR), as part of a strategy to institutionalize gender planning in agricultural technology generation and transfer processes. The idea was to create gender-awareness among agricultural researchers and develop a strategy to integrate gender-analysis aspects in agricultural research activities. To this effect, EIAR has established a Gender Focal Unit in the Research Extension Farmer Linkages Department at its headquarters. However, gender analysis is not sufficiently used in the organization for addressing specific problems. On the other hand, little or no evidence is available for identifying constraints that hinder the effective implementation of the mainstreaming activities.

In 2004, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the CGIAR Systemwide Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation (PRGA Program) initiated a project entitled 'Building Capacity in Gender Analysis and Gender Mainstreaming in the National Agricultural Research Systems (NARS) of ASARECA.' This provided a good opportunity to learn how to conduct an organizational assessment and understand the current status of institutional operation in terms of gender mainstreaming. Thus, a project was developed to understand existing gender-mainstreaming efforts, its challenges and prospects, and to determine possible options for improvement. In this project, a gender-analysis case study was also conducted with the objective of generating gender-disaggregated information on one of the crop–livestock mixed farming systems of the country. With the knowledge and experience gained from this project, an action plan was developed for wider and further execution of case studies at various research centers of EIAR representing different agro-ecologies and social contexts. EIAR has allocated additional funds from its Agricultural Research and Training Project (ARTP) to conduct case studies in various parts of the country. However, this report deals only with the findings of studies conducted during 2004–2006 using ASARECA–PRGA Program project funds. The report has two parts: the first part presents the organizational assessment, and the second part presents a summary of the findings of the case study using gender-analysis methods for a selected district with mixed small-scale farming.

Part one: Organizational assessment of gender mainstreaming in EIAR

Objectives

The objectives of the study were:

1. To assess the technical, behavioral and cultural dimensions of EIAR in mainstreaming gender;
2. To identify the problems that hampered the implementation of gender-responsive research in the organization;
3. To suggest appropriate intervention options to overcome the constraints and facilitate the process of institutionalizing gender.

Methodology

Framework of the study

Three major areas of interest were evaluated for gender sensitivity.

- Technical dimension: organizational policies and actions, tasks and responsibilities, and professional expertise (human resources).
- Behavioral dimension: organizational initiatives for considering gender issues in developing internal policy, and other decision-making activities.
- Cultural dimension: logo of the organization, and other collaborative and influential partners in relation to gender.

A checklist was developed to verify the major areas of concern and to maintain the flow of ideas in understanding available opportunities, constraints and factors that affect institutionalizing gender in the research process, to be used for identifying practical priorities for action. Rapid assessment was done using participatory techniques. Most of the individuals were interviewed face to face, while five researchers responded by mail.

Within this framework, information was captured through the following methods:

- Review of secondary data from various sources, including research-strategy documents of various research areas of the institute;
- One-to-one interviews with research staff using semi-structured checklists;
- Focus-group discussions using checklists with groups of research staff;
- Observations of the research review procedure;
- Observation of attitudes and reaction of staff toward gender issues.

Selection of study sites

The study sites were selected on the basis of the following indicators:

1. Representativeness of the research centers in terms of location and representation of senior staff;
2. Availability of resources (time, money and human resources) to conduct the study;
3. Accessibility of the centers.

Accordingly, the headquarters (HQ) of EIAR, Holetta Research Center (HRC), Debre Zeit Research Center (DRC), Melkassa Research Center (MRC), and Kulumsa Research Center (KRC) were selected for the study.

EIAR HQ is located in Addis Ababa (the capital city), while HRC, the center for highland crops and livestock research, is located 45 km west of Addis Ababa on the highway from Addis to Nekemte. DRC is known for wheat and poultry research and is located 42 km southeast of Addis Ababa on the highway from Addis to Harar. MRC, the center for lowland and horticultural crops research, and KRC, known for barley and wheat research, are located at 117 and 170 km, respectively, southeast of Addis Ababa on the way from Addis to Assela.

Target groups

The study focused on the following staff as major target groups, because of their position:

- Director general
- Deputy director general
- Sector directors
- Center managers
- Department/division heads
- Program/project leaders

- Senior researchers.

These target groups were selected to investigate the status of gender from the point of view of research managers and technical staff. Research managers were considered to assess the existence of a favorable environment for gender mainstreaming. Technical staff were considered to investigate their conceptual understanding of gender and their experiences in the application of gender in their research processes. Moreover, consideration of technical staff helped to identify and prioritize problems in the application of gender in the research systems.

Sampling

The target population of the study was research staff of EIAR, aimed specifically at those who were directly related to technology generation in terms of developing research proposals and setting research agenda, conducting surveys, identifying existing practices and research priorities, conducting on-farm experiments, providing farmer training, etc. Senior researchers from different disciplines were randomly selected and interviewed individually and in groups from different research centers.

Data synthesis and report writing

The required data were collected in two main stages. The first stage was secondary-data collection from relevant sources: exhaustive literature search was conducted from published materials, unpublished sources and websites. This stage helped to gain a general understanding of the contribution of gender in agricultural research, the concept of organization (definition, structure and operations) and the issue of mainstreaming gender and other aspects. In the second stage, primary information was collected from the target groups. The approaches used to collect data were group discussions, and key-informant and individual interviews. A checklist was used as a tool to collect the required information. The data collected are summarized in the following sections.

Limitations of the study

Although the number of women researchers in the organization is few, not all of them were captured in this study, and stakeholders outside the research centers (e.g. Ministry of Agriculture and Rural Development) were not consulted.

Major findings

Technical dimension

Policies and action: Various references indicate that the Government of Ethiopian shows strong commitment to support and strengthen gender-related activities at the national level. Public ministries, institutions and organizations are encouraged to have women's affairs offices and to increase the representation of women in different forums. This indicates that the government is giving special focus to women's contributions in social, economic, cultural and political affairs (Bogalech, 2000). Some of the indicators of this are:

- Ethiopia has accepted the global and African regional platforms for actions for the development of women;

- The national constitution allows equal rights for women and men in all areas of social, political and economic development;
- Ethiopia has developed a national policy for Ethiopian women;
- Ethiopia has established a Women's Affairs Office in the Prime Minister's Office and recently established a Ministry of Women's Affairs.

Special focus is also given to amend some parts in the constitution of the country that are assumed to be gender blind (Ethiopian Women Layers Association, personal communication).

Organizational policy of EIAR: The gender factor is incorporated in the strategy of the EIAR, which states as "*Focus on gender responsive research is one of the principles and values of the organization*" (EARO, 2000; EIAR, 2007). The same principle has also been incorporated in research strategies at sector and center levels. EIAR has also established a Gender Focal Unit (GFU) within the Research Extension Farmer Linkages Department.

Even though the gender factor is mentioned at different levels in the strategy of EIAR and the GFU is established, the implementation of gender-responsive research moves at a slow pace. EIAR is making an effort to strengthen the GFU by restructuring in such a way that the Unit will be established with its own budget and mandate. Moreover, there is an effort to strengthen the unit by recruiting additional staff and fully equipping the office facilities. This indicates the commitment of EIAR to focus on implementing gender-responsive research activities.

Tasks and responsibilities of the Gender Focal Unit: The first national gender-sensitization workshop was held in October 1999. The aim was to launch a foundation for the introduction of gender concerns into the agricultural research system through mainstreaming gender into the operational system and making agricultural research gender-responsive. During this workshop, scientific papers were presented and the experience of the Kenya Agricultural Research Institute (KARI) was shared. It is believed that this workshop created awareness for EIAR staff mainly on concepts and relevance of gender in the research system. The workshop resulted in the delivery of supportive measures for the establishment of the Gender Focal Unit within the organization.

Based on the recommendations of this workshop, the Gender Focal Unit was established with the following major tasks and responsibilities:

- To organize and manage needs-based gender training for researchers, technicians and support staff in a cost-effective manner;
- To provide relevant information and technical assistance on a regular basis to researchers and other stakeholders;
- To establish and maintain linkages and contacts with national, regional and international organizations, and strengthen the national capacity of the research system with regard to gender analysis;
- To identify and communicate with potential funding organizations that can contribute and make an input to different aspects of gender concerns;
- To prepare periodic reports on a regular basis concerning the performance of the focal point and related information.

Given this objective of making agricultural research gender-responsive through mainstreaming gender in different research undertakings, the GFU has developed well-defined terms of reference and also prepared a 5-year action plan that is subdivided into phases: capacity-building, generating gender-disaggregated dataset, creating networks with local, regional and international organizations. This includes:

- Development of strong analytical skills among staff, using participatory and consultative planning methodologies;
- Data collection and analysis of gender relations, differences and their interaction in terms of livelihood strategies, access to and control over resources, and participation in decision-making in production, reproductive activities, community management and their effects on food security and natural-resource management;
- Monitoring and evaluation of progress and impact on the livelihood of women and men farmers in rural households;
- Networking among the international, national, federal and regional research and higher learning institutions, non-governmental organizations and other related sectors and ministries.

Gender expertise (human resources): The number and qualification of women staff in EIAR is few at all levels, except at the level of Certificate where the number of women slightly exceeds that of men (Figure 1).

At the initial stage, only one gender expert was assigned to tasks and responsibilities related to gender mainstreaming in the institute. The problem of assigning additional staff to the GFU was associated with the approval of the function, structure and official recognition of the Unit. However, understanding the need, one additional staff was assigned to assist in GFU activities and also contact persons were assigned at different federal research centers. In addition, some researchers made great efforts to assist the GFU in organizing the sensitization workshop, collecting gender-disaggregated data and providing technical feedback.

Behavioral dimension

Policy influence: EIAR has encouraging plans to support the GFU. The management of EIAR has realized the importance of gender-responsive research for the generation, transfer, adoption and utilization of agricultural technologies. As a result, EIAR is making an effort to strengthen the GFU in fully equipping the office facilities, assigning additional gender experts, and providing logistical services for fieldwork. Moreover, EIAR has special interest in encouraging and facilitating opportunities that contribute to capacity-building and obtaining financial assistance to strengthen the GFU. EIAR appreciates the assistance offered by regional and international organizations, such as ASARECA/ECAPAPA and the PRGA Program.

It was also realized that there were outsiders that encourage gender-sensitive research. Respondents were aware about the influence of regional, international and non-governmental organizations on the inclusion of gender in the research activities. There are some experiences in collaborative research activities, such as the Nile Valley Regional Project (of the International Center for Agricultural Research in the Dry Areas, ICARDA), Vertisol Project, and the African

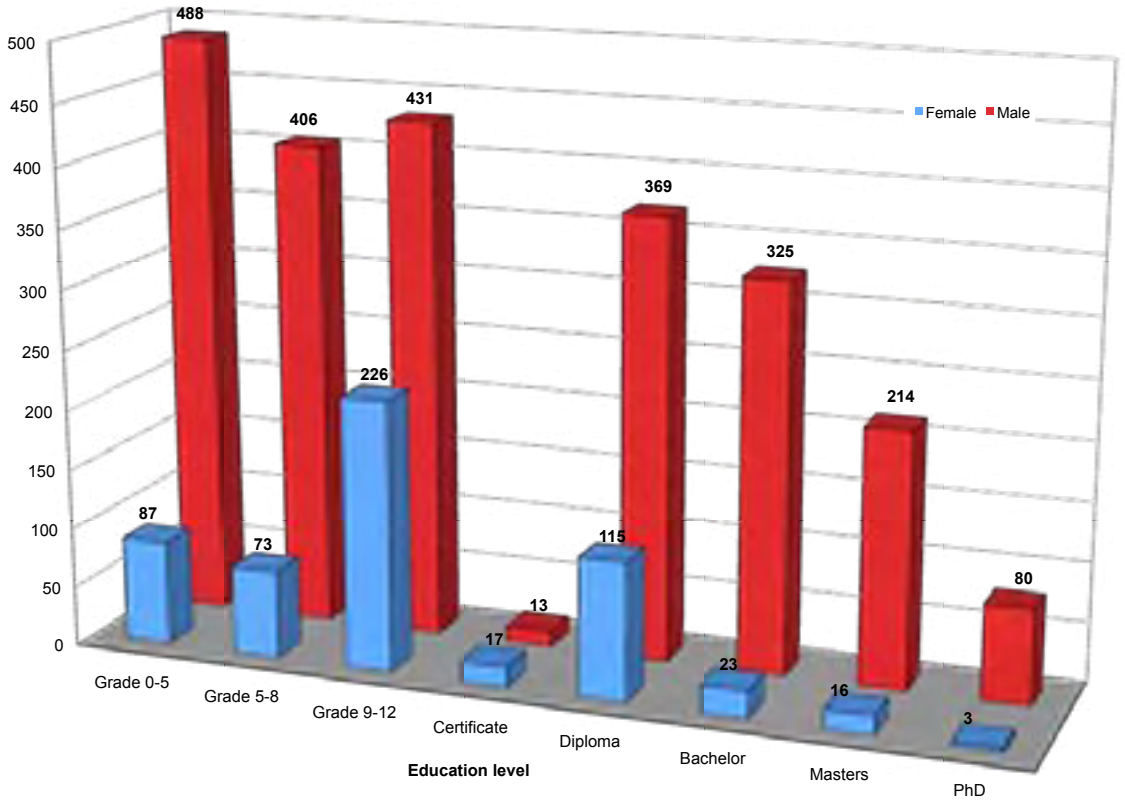

Figure 1. Proportion of male and female staff in EIAR (March 2005).
Source: EIAR, Human Resource and Statistic Department 2005.

Highlands Initiative (AHI). These projects required women farmers to be involved in on-farm research activities. Some other international organizations, such as the International Potato Center (CIP) and the International Maize and Wheat Improvement Center (CIMMYT), have also required gender aspects in their research activities. Some respondents also mentioned that NGOs, such as Africare and FHI, focus on women in their development activities.

Decision-making: According to all the respondents, the gender factor has never been taken into account as a criterion in approving new research proposals that are financed from the government treasury (up until 2005 when this study was conducted). Decisions on the new proposals are made on the basis of their technical acceptability and significance. There were no monitoring and evaluation criteria used to inspect the implementation of gender in the research process.

Room for innovation: Almost all of the staff interviewed showed interest in conducting gender-responsive research. They believed that consideration of gender aspects contributes to better designing and effective utilization of technologies. However, there is no incentive mechanism that encourages research staff to incorporate gender in their activities. No special award or credit for researchers that are eye-openers for gender-responsive research. In contrast, some of the respondents felt that gender-responsive research should not be fueled by incentives, but rather it has to be part of the regular duties of each research program that needs to be considered whenever and wherever the need arises.

Cultural dimension

Symbol: Outsiders' view of EIAR with regard to its focus on gender – Outsiders consider EIAR as an organization that contains highly qualified staff with relatively better salary, better working environment and motivation (compared to other public institutions). However, at the time of this study, very few respondents had come across any outsiders with a view about EIAR's gender-responsiveness. This might be because gender itself was a relatively new concept for the country in general and for EIAR in particular at that time.

Representativeness of EIAR logo vis-à-vis the existing research agenda – Almost all the researchers perceived that the current logo of EIAR does not adequately represent the existing research agenda. According to the respondents' view, the current logo represents mainly crop and livestock sectors, while EIAR encompasses a wider range of research sectors, such as natural resources and social science. They suggested that, even though it is not possible to include everything in the logo, it should be designed in a way that better reflects the social-science and natural-resources research aspect to make the image more complete.

Cooperation: Linkage of Gender Focal Unit with other stakeholders – The GFU has technical linkages with federal and regional research centers, though the linkage is not yet strong enough. The linkage mechanism is mostly related to the provision of technical backup, advice and participation in technical forums. However, more linkage and cooperation is sought for the future to assist and facilitate implementation of gender-responsive research. The GFU is interested in establishing either formal or informal linkages with relevant stakeholders with common interests, to strengthen the contribution of gender aspects in the research-for-development processes.

The GFU also has linkages with other governmental organizations, such as the Ministry of Agriculture in provision of technical backup about needs assessment for gender capacity-building. Moreover, it has linkages with other governmental offices, such as the Civil Service Commission, in experience-sharing on practical implementation of gender aspects.

The linkage of GFU also extends to regional and international organizations. For instance, GFU has linkages with ASARECA/ECAPAPA, ASARECA/SWIMNET and the PRGA Program. These linkage focus on capacity-building and experience-sharing across countries. This linkage mechanism has helped considerably in enhancing the implementation of the tasks and responsibilities of the GFU through enriching practical skills and supplementing financial capacity.

Attitude: With regard to the concepts of gender, findings indicate that there are very few researchers in EIAR that have a full understanding of gender concepts and the need for establishing a GFU.

Why was the gender focal unit established in EIAR?

- Establishment of GFU is related with establishment of women's affairs in government offices as several ministries have established Women's Affairs Offices.
- "It is the fashion of the day," whereby organizations declare that they are considering gender in their agenda.
- It is an influence of external agencies, such as donors and international organizations.

- EIAR might have realized the importance of gender-responsive research and then taken action to establish GFU.

Understanding of gender (What comes to your mind when you think of gender?)

- "I feel gender stands for women."
- "I perceive gender is related to sex, to mean female and male. I don't have further understanding about gender than this."
- "Gender seems to me the role of females in agriculture."
- "According to my understanding, gender refers to just women and men, but biased to represent women."
- "I learned that gender is participation of women and men in every aspects of life: in agriculture, in social matters, in political issues, in household matters and other aspects. I believe that both have to cooperate with each other and live in harmony."
- "I understand that gender is a struggle for equality."
- "It is all about looking at the needs of both men and women."
- "Gender is about cultural and community structure emphasizing on women."
- "To me gender means male and female, but I understand the concept beyond sex differentiation."
- "Gender is the role of women in society."
- "Gender is share of responsibility according to sex and age."
- "Gender is involvement of women and men in production. Their participation and roles in technology generation process does not come into my mind quickly."
- "I used to understand that gender is feminist movement. However, after I got exposure to gender-related training, that has changed my attitude and I have also seen practical examples of how gender-unresponsive research leads to failure of a technology."
- "I perceive that gender is to mean 'ladies,' as it is traditionally said 'ladies first' … I also heard that gender does not mean ladies only."

SWOT analysis

To promote gender-responsive research in EIAR, strengths, weaknesses, opportunities and threats (SWOT) were also assessed during the study. Gender-responsive research can be enhanced further by sustaining the strengths, making use of the opportunities and addressing the weaknesses.

Policy actions

Strengths	*Weaknesses*
• Availability of conducive national policy • Gender focal person appointed in the institute • Reflection of gender aspects in the new direction of agricultural research	• Gender aspect is not clearly stated in different sector strategies • Gender analysis is not implemented as expected
Opportunities	*Threats*
• Positive aspects of the management of EIAR • Special focus by the government on gender equality	• Too many assignments and busy schedule of staff • Relevance of gender in research not very well captured

Human expertise

Strengths	*Weaknesses*
• Encouraging recruitment of women research staff • Some research staff already conduct some gender-related activities and projects • Availability/assigning contact person at federal research centers	• Few female research staff • Low technical capacity on how to integrate gender • Limited efforts to implement gender-responsive research even for those who are aware • Limited contact and networking
Opportunities	*Threats*
• Conducive national policy support (some affirmative actions)	• Low priority • Little understanding of relevance of gender in agricultural research • High staff turnover

Funding

Strengths	*Weaknesses*
• Availability of research funds from the government • Support for GFU from other financial sources through EIAR	• Inadequate allocation • Short-lived funds from external sources
Opportunities	*Threats*
• Support from the World Bank • Support from the ASARECA/ECAPAPA–PRGA Program projects	• Some researchers don't value incentives • Unsustainability of funds from other sources

Organizational culture

Strengths	*Weaknesses*
• Availability of qualified research staff • Some initiatives from individual effort	• Gender is considered as "women issue" by most researchers • Gender is related to few individuals or disciplines only
Opportunities	*Threats*
• Young and motivated staff coming in • Understanding of the significance of gender-responsive research is increasing among research staff	• Relevance of gender not very well understood • Limited availability of female professionals

Part two: Gender-analysis case study

In addition to the organizational assessment of gender in EIAR, a gender case study was conducted in Kersana Kondaltiti district of West Shewa zone, which is characterized by mixed crop–livestock farming systems. There is limited experience within EIAR in collecting gender-disaggregated information. As a result, research planning was not adequately gender-responsive. Generating gender-disaggregated information, therefore, helps to plan gender-responsive research at planning, implementation, dissemination, and monitoring and evaluation stages. This in turn enhances technology uptake and utilization by the beneficiaries.

Objectives of the case study

The objectives of the gender-analysis case study were:

- To collect gender-disaggregated data in the mixed crop–livestock farming systems;
- To identify constraints that limit the productivity of farming;
- To suggest appropriate intervention options to help overcome the constraints.

Methodology of the case study

Quantitative data were collected by selecting 103 sample women and 202 sample men (a total of 305 sample respondents) drawn randomly from a population. A structured and pre-tested questionnaire was used to collect quantifiable data. Supplementary information was also collected using qualitative survey approaches and applying some commonly used participatory rural appraisal (PRA) tools and techniques.

Summary findings of the case study

The findings indicate that there is gender disparity in access to public resources, such as education, extension and credit services. A higher proportion of men (55%) obtained access to higher levels of formal education than women (19%). In crop production, exposure of men to extension services is also considerably more (48%) than that of women (3%). Moreover, 51% of men obtained access to

extension services in livestock production as compared to only 5% of women. Disparity between genders in access to credit services is narrow (89% of men and 66% of women) as compared to other services.

Land preparation and planting is the role of men (95%) more so than women (5%). The share of men was also higher (78%) than women (22%) in feed harvesting and collection. However, the share of women and men was equal in weeding. Reproductive roles (household-maintenance activities) were the major responsibilities of women.

There was also gender disparity in access to and control over resources: in most of the cases, men had more access to and control over resources and benefits. In 43% of households, income from sale of cattle was controlled by men, while it was controlled equally in 38% of households.

Decision-making is mostly equal for men and women, even though men take the upper hand in some cases. For instance, in making a decision to sell cattle, 47% of households said the decision was made jointly by a man and a woman, while 34% of households said decision-making was mostly done by men. On decision-making related to land-use issues, it was joint for 55% of households and mostly by men for 33% of households. Gender dynamism was also observed in the farming systems. According to 15% of respondents, roles that used to be major responsibilities of men have changed to women in crop production. Roles that used to be major responsibilities of women have also changed to men in livestock production, as reported by 11% of respondents.

In general, it can be concluded that there is gender disparity in farming activities. In some cases men take the major responsibility, while in others women take the lead role. Men have more control over a larger proportion of benefits than women. Men also have more access to public resources (such as education, extension, credit) than women. However, the decision-making system in farming is mostly equal for men and women. Therefore, technology development and generation should take into account the existing gender issues in the society (needs and interests of both men and women). The agricultural technologies to be generated should meet the needs and interests of women and men as per the major roles they play. Rural saving systems should be strongly promoted (establishment of saving associations, etc.), as should better utilization of income for livelihood improvement in household nutrition, family health, education, etc. Women should also be made beneficiaries of public resources (more schools in the vicinity of villages, more female extension extents, organizing women for collective action, etc.).

Conclusion

Despite the incorporation of a gender-sensitive focus in the organizational, sector and center strategies, the establishment of the GFU, and some individuals' efforts, the implementation of gender aspects in EIAR still needs more effort to be fully internalized.

Most of the researchers (respondents) had never participated in any kind of formal gender training. Some had had a single exposure about the concept and relevance of gender to agricultural research, i.e. the first national sensitization workshop in 1999, while a few said they had heard about gender just as a passing remark while discussing with friends, and sometimes through public media. Although a good proportion of staff seem to have an understanding of gender that goes beyond 'women,' none of those respondents who had never been exposed to gender-related training had any idea about the importance and application of gender in agricultural research. A few researchers

who had relatively better knowledge and skills have attempted to apply gender in their research activities, even though this has been limited to involving a few women farmers during on-farm research demonstrations. However, almost all respondents during the organizational assessment believed that gender components can play a significant role in enhancing development endeavors and facilitating the faster uptake of technologies.

A consequence of the limited human resources at HQ level, and their involvement in several assignments, was minimal interaction and infrequent communication.

The gender-analysis case study revealed gender disparity in access to public resources (biased in favor of men, e.g. education, extension and, to a lesser extent, credit); productive and reproductive roles; access to and control over resources. However, a lot of decisions are made jointly by a man and a woman in the household. Some dynamism has been reported in farming systems, with responsibilities switching between men and women.

The findings of the gender-analysis case study suggest that gender-disaggregated information should be considered a prerequisite for planning gender-responsive research. It is, therefore, believed that the gender-mainstreaming process has to be further strengthened to ensure gender-responsive research is implemented at all levels.

Recommendations

There is a need to put indicators and requirements to incorporate gender aspects into project proposals and research reports. There is also a need for an incentive mechanism to convince researchers to use gender techniques, and to focus on determining causes of food insecurity, poverty and national development strategies. It is also good idea to strengthen linkages with federal and regional research centers, other government departments, regional and international organizations. To facilitate gender-mainstreaming in EIAR and to ensure planning of gender-responsive research, the following actions are recommended.

- Incorporating gender in the strategies of research programs at all levels, from HQ to division levels. Currently (2008), gender aspect is incorporated mainly in the strategy of EIAR, sectors and centers. However, it has also to be incorporated in the strategies of divisions and sections.
- The GFU has to be strengthened in terms of trained human resources, financial capacity, adequate gender-related literature, office facilities and communication systems (such as Internet access), not only at HQ, but also at all federal and regional research centers.
- Gender contact persons need to be assigned at regional and federal centers to create sustainable links with GFU at HQ level, and also to ensure technical support, monitoring and evaluation for their respective centers.
- An extensive capacity-building plan has to be developed to organize gender training for the technical and administrative staff throughout the national agricultural research system.
- Newly recruited staff should be enlightened with the relevance and techniques of gender analysis in agricultural research.

- Sensitization and intensive training need to be organized to create adequate awareness on gender concepts, gender-analysis techniques, how to prepare gender-responsive research plans, etc.
- Research-proposal writing and review procedures should incorporate criteria for gender-responsiveness and accountability.
- Research strategies need to be revised and updated by considering gender aspects.
- Manuals related to gender concepts, gender-mainstreaming techniques and gender-analysis tools need to be prepared and distributed to all research centers for reference.
- There should be close monitoring and evaluation of gender-responsive research to identify problems early and provide timely corrective measures.
- A mechanism should be designed to balance the number of women and men staff in the national research system.

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Experiences and lessons learned in the mainstreaming of gender analysis and participatory research in national agricultural research systems: The case of Kenya Agricultural Research Institute (KARI)

Jane N. Ngugi, Dave J.W. Nyongesa and Violet Gathaara

Participatory Research and Gender Analysis (PRGA) project and its contribution to the mainstreaming of participatory research and gender analysis in KARI

The overall goal of the PRGA project in KARI was to enhance the Institute's efforts towards mainstreaming participatory research and gender analysis. These efforts have been ongoing since the early 1990s. The use of participatory approaches in the Institute started in 1991 through adoption of Farming Systems Approach to Research, Extension and Training (FSA-RET) during the implementation of its adaptive research program (Matata *et al*., 2001). However, this approach did not achieve high levels of technology adoption among the targeted groups and farmers' yields continued to be 50% less than the potential (Kooijman and Mbabu, 1998). The FSA-RET approach targeted farmers as a homogeneous group (small-scale farmers or the rural poor) and took no account of gender differences or cultural norms. Women farmers—although they contribute 80% of the labor in food production and 50% in cash-crop production—were not targeted in research activities (Kooijman and Mbabu, 1998). This led to the recognition that the incorporation of gender concerns in the research process was necessary. KARI's gender-mainstreaming process started in 1995 with the establishment of the KARI Gender Task Force (GTF) that was entrusted with the role of harmonizing all the initiatives taken to enable research scientists and the entire system to take into account gender issues in their research activities (Curry *et al*., 1998; Ngugi and Odera, 2000). The terms of reference (TORs) of the task force were (1) to review the past and current status of gender issues in agricultural development with special emphasis on success stories, constraints and appropriate case studies; (2) identify institutional issues with respect to the integration of gender issues in KARI and other relevant institutions in agricultural development; (3) develop implementation strategies; and (4) develop a plan of action.

Through the PRGA project, activities have been implemented that have contributed toward the achievement of these TORs. These activities were: (1) organizational analysis to assess the status of participatory research and gender analysis in KARI; (2) case studies to assess the outcome and impact of gender sensitivity in research projects; (3) enhancing KARI's capacity to conduct gender-sensitive participatory research; and (4) planning further gender-mainstreaming strategies. The first three of these activities have contributed to the achievements TORs 1 and 2, as well as documenting the impact of KARI's gender-mainstreaming efforts at both institutional and project levels.

At the organizational level, the PRGA project has re-awakened the gender-mainstreaming process that was close to stagnation since the end of National Agricultural Research Project two. No specific funds had been put aside for gender-related work and no gender workshops had been funded since 2003. Gender has been termed a cross-cutting issue and its incorporation in research processes taken for granted or left to individual scientists' interest. The PRGA project also enhanced KARI's capacity by training of two gender trainers and equipping newly recruited scientists with participatory research and gender analysis knowledge/skills. The project has also fostered networking and collaboration between KARI and other NARS. The case studies will be

useful as training materials and justification for gender-sensitive research, while the proposed action plan once implemented can push the gender-mainstreaming process to completion.

The outcomes of each of these activities are discussed below. The fourth activity used the lessons learned from the first three and the input from the KARI gender advisors to plan further gender-mainstreaming efforts.

Organizational analysis

The organizational analysis focused on the level of gender awareness and KARI's capacity to incorporate gender in its research activities. Data were collected through desk research, and by conducting interviews with a randomly selected sample of 15 KARI centers using two sets of semi-structured questionnaires administered on 24 (71% men and 29% women) management staff and 243 technical staff (72% men and 28% women). Both quantitative and qualitative data were collected, focusing on the three dimensions and nine elements of an organizational framework (Groverman and Gurung, 2001).

The results revealed a high recognition of gender concerns (97% of the researchers and 92% of the senior managers). Among the key reasons given for this recognition are that gender analysis leads to focused and targeted research (30.2%), increases technology adoption and project efficiency (23.3%) and contributes to farmer empowerment (22.5%). Most scientists were aware of KARI's gender-mainstreaming efforts (63% of researchers, 78% of managers). Recognition for gender is also reflected the last two strategic plans. The KARI Strategic Plan, 2000–2005 (KARI, 2000) states that "*In pursuit of its mission, KARI proactively seeks to acquire and contribute knowledge and creative solutions that are participatory and client-oriented; holistic and system-oriented; gender sensitive and affordable to its stakeholders*." In the KARI revised Strategic Plan, 2005–2015 (KARI, 2005), socio-cultural and gender issues are identified.

The tasks and responsibilities during the gender-mainstreaming process have been well defined. The GTF was entrusted with planning and implementing the gender-mainstreaming efforts, a role that has now been taken over by the gender coordinator. At each KARI center, there are at least two trained gender advisors who are expected to give the necessary gender input to their center's research activities. The representation of women in the top management has also increased from just 2 assistant directors (ADs) in 1995 to 3 ADs, 3 center directors (CDs) and one on the Board of Management (BoM). To emphasize the importance of gender in agricultural research, a gender conference was held in KARI in 1998, with both internal and external participation. Additional efforts that have been made include updating of the KARI guidelines for proposal writing to include gender concerns and regular publication of gender-related articles in the *KARI Highlighter* and annual reports.

Continuous emphasis on the importance of gender has been made during all research forums and particularly during the center research advisory committee (CRAC) meetings held annually in all KARI centers to discus new and ongoing research activities. The gender coordinator and members of the GTF attend these meetings and give gender input. Monitoring of the gender-mainstreaming process is done during the same meetings and also by paying attention to gender during the annual beneficial assessment (BA) exercise. Gender sensitivity is also among the criteria used during the judging of the best projects for display at the biennial KARI scientific conferences.

Expertise in gender has been created among the research scientists through implementation of GTF's gender-sensitization program. Two rounds of gender workshops were conducted from 1996 to 2003 in all KARI centers. GTF reports show that more than 28 gender workshops have been conducted, training over 410 scientists and their collaborators in the extension services. As part of the sensitization program, willing scientists were also encouraged and funded for both short- and long-term gender training outside KARI. The respondents confirmed this—most of them (67% for participatory research and 71% for gender analysis) indicating that they had been trained in the late 1990s and early 2000s. To sustain the gender-sensitization program, five gender trainers were trained and initially worked alongside hired consultants to facilitate gender workshops. The establishment of a gender and agricultural research database (KARI GARD) in 1997 to make gender-related literature available to researchers both in soft and hard copies in the KARI HQ library also enhanced the gender expertise. The mechanisms in place to sustain the gender-mainstreaming process within the Institute include trained trainers, continuous gender inputs during research forums, and an incentive system of rewarding scientists who incorporate gender analyses in their papers that are presented during the KARI biennial scientific conferences. Within KARI, the attitude among the top management on gender sensitivity is quite good. This has enhanced the positive image of the organization and makes management respond positively to any outside call on gender concerns.

On the socio-political dimension, both existing documents and the views of the respondents show that there was some influence from development partners during the initial stages of KARI's gender-mainstreaming process. All the KARI donor coordinators at the time were members of the GTF and funded all the activities proposed by GTF. Some 33.3% of the senior managers and 16% of the researchers noted this influence. However, there are indications that KARI also played the major role in implementing the process, since top managers participated fully and supported all the GTF activities. The heads of various programs were GTF members, while the ADs and CDs participated in the preparation of the gender conference. The managers also attended a half-day gender-sensitization workshop held at KARI HQ in 1998 and the gender conference. The involvement of women in the GTF has been high: four of the initial members were women, among them a gender activist from Winrock International. On the room-for-maneuver dimension, an incentive to enhance the incorporation of gender concerns in projects was started in 2000 that involved giving a trophy and cash award to the three most gender-sensitive papers presented in the KARI biennial scientific conference.

In the cultural dimension, KARI has changed from its past male-domination culture to involving female scientists in research project teams, as well as targeting both male and female farmers in research activities. These changes were reported by 31% of the researchers and 28.6% of managers during the organizational analysis. Multidisciplinarity is emphasized and practised in all research projects. The past practices among the research scientists of targeting male farmers has been replaced by use of farmer-groups approaches, such as the farmer field school (FFS) and community-based organizations (CBOs). In 2000, KARI introduced a new concept, the Agricultural Technology Information Response Initiative (ATIRI), which intended to empower farmers to demand the Institute's technologies directly or through the extension personnel under the Ministry of Agriculture. Emphasis is on ensuring a balanced participation of men and women in these groups. Most of the ATIRI groups are women's groups. KARI's publications and dissemination materials, including its policy document—i.e. the Strategic Plan 2005–2015 (KARI, 2005)—calendars and

proceedings demonstrate this change by their reflection of gender issues and gender involvement. A summary of the organizational changes achieved in KARI so far is given in the appendix.

As a result of these changes, research scientists have started to incorporate gender concerns in their research activities—33.3% of the respondents reported to be doing so occasionally and 17.7% regularly. The respondents cited the advantages of this inclusion to include participation of men and women farmers, and proper targeting of technologies to users. Among the participatory approaches used in KARI, the Farmer Field School was rated highest (34%) in achieving the set project outputs. A review of KARI annual reports and conference proceedings identified a number of projects that had included gender concerns during their research cycle.

The 7th and the 8th KARI biennial scientific conferences had 17% and 10.3% projects with gender-disaggregated data, respectively, while the annuals reports of 1998 and 2002 had 16% and 10% of such projects. Two of these projects were selected for case studies reported in the next section of this chapter.

Case studies

The case studies were carried out to assess the contribution of gender incorporation on technology adoption and farmers' livelihoods. Considering the complex nature of socio-cultural setups of the Kenyan farming communities and their impact on agricultural development initiatives, the use of case studies is an appropriate approach for assessing the outcomes of gender-mainstreaming efforts (Mettrick, 1993). Through these case studies, a deeper understanding of the gender-mainstreaming efforts, their impact and limitations in terms of enhancing technology development were to be identified. The study findings will assist KARI in planning further gender-mainstreaming strategies, while the case-study results will be used to develop tailor-made training materials for gender-responsive agricultural development.

The specific objectives of conducting these case studies were to: (1) identify projects implemented in KARI using gender-sensitive participatory approaches; (2) assess the gender participation in the identified project activities; (3) assess the impact of gender-sensitive participatory approaches on technology adoption; and (4) assess the contribution of such adoption toward empowerment of women and youth in target farming communities. A summary of the selected projects is given in Table 1.

Indigenous poultry case study

This project was implemented in western Kenya, by research scientists in KARI-Kakamega and won first price in the gender-sensitivity category of the 9th KARI biennial scientific conference, 2004. The project activities started in 1997 with a participatory rural appraisal (PRA) conducted in four villages to assess the indigenous poultry-production enterprise and to identify potential interventions for its improvement. The PRA report documented the major constraints to indigenous poultry production, the gender relationships and the available opportunities for improvement (Box 1). It was also found that most of the respondents (96%) in the households covered in this study kept, on average, 15 or more indigenous chickens.

Table 1. Projects selected for case study

Project title	Project goal	Target group	Gender concerns insorporated
The improvement of indigenous poultry production in western Kenya	To equip farmers with technologies to improve indigenous poultry production	Farmer groups	Gender analysis done Gender participation ensured Attempt made to challenge existing gender relationships
The soil-management project in the North Rift Valley region	To achieve increased and sustainable crop and livestock production through soil-management practices	Farmer-research groups Farmer Field Schools	Seasonal and daily calendars for men and women included in the PRA report Gender concerns incorporated during later stages of project implementation

Box 1. Baseline data on indigenous poultry production

Major constraints	Existing gender relationships	Available opportunities
• Disease outbreaks • Death of young chicks • Predation by birds and other animals • Lack of veterinary assistance • Lack of inputs to buy supplementary feeds and construct housing for the birds	• Women played the major roles in the management of the chickens • Male household heads controlled the cash and other cultural benefits that accrued from the chicken raising	• Equipping farmers with knowledge and skills on the protection of young birds, and brood management • Development of an elaborate and sustainable disease-control program • Targeting of all household family members in livestock activities • Meeting the strategic needs of women farmers through sensitization of male veterinary agents and also making efforts to train female agents

Gender participation

The respondents were drawn from four farmer groups—New Bulindo PLAR group (5 men, 15 women), Bulemia farmers' group (6 men, 6 women), Siloam farmers' group (13 men, 7 women) and Vitinyaliza farmers' group (15 men, 1 woman)—both men and women farmers participated in the project activities. Although there were more men respondents (39) than women (29) in the sample selected, the total membership of the four groups had more women than men (Figure 1). Hence, there were more women who participated in chicken enterprise than men. The good participation for women can be attributed to the gender concerns taken care of in the project that included: timing of meetings, convenient venues, encouragement of vulnerable groups, strategies planned to overcome cultural barriers and use of appropriate language (Cornwall, 2003).

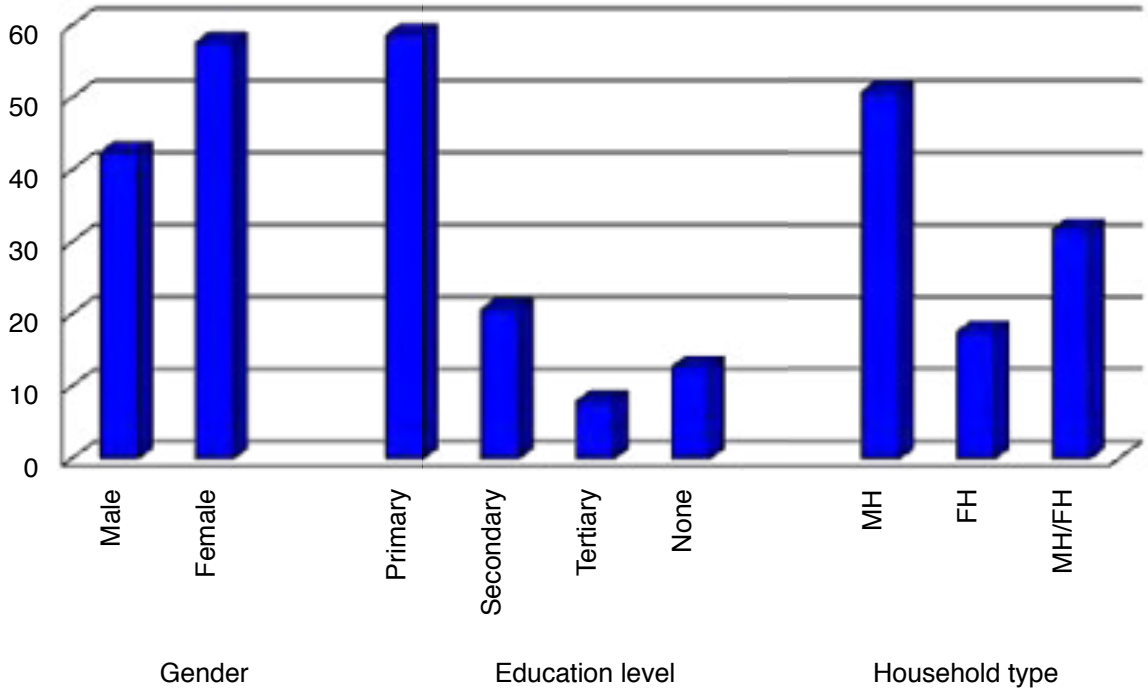

Figure 1. Respondents' biodata (percentages).

When asked about decision-making during the project implementation, it was revealed that all were involved as follows: researchers (28%), men and women combined (22%), men alone (19%), and women alone (6%). This observation is attributed to the fact that the majority of group leaders were men despite indigenous poultry enterprise being traditionally a women's activity. The skills and knowledge acquired were on: (1) diagnosis of poultry diseases, (2) vaccination of birds, (3) supplementary feeding and required quantities; (4) housing, (5) flock selection, (6) egg selection, and (7) brooding management. This was a tremendous achievement when compared to the 1999 report that over 74% of the farmers were not aware of vaccinating birds against diseases (KARI Annual Report 1999; Okitoi *et al.*, 1999).

Technology adoption

The project achieved high adoption rates for the technologies disseminated to the farmers, which resulted in a shift from free-range production systems with little or no supplementary feeding, disease control and planned breeding, to a well-managed indigenous poultry production system. The adoption levels for the technologies learned by the farmers were as follows: brooding management technology (99%); disease control (95%) and supplementary feeding (92%). Modern housing was the least adopted technology (only 34% of the respondents). Women scored highest in adoption levels for brooding management (100%), but lowest in modern housing (30%). For the modern housing, lack of resources to buy material was cited as the major constraint for all, but the fact that house construction is a 'man's role' may have been a limiting factor for the women. Most respondents preferred to house their chicks in a coop known as 'Lisera.' Among the other constraints to improved indigenous poultry rearing were access to vaccines and drugs due to lack of cooling facilities in the local shopping centers, cost of inputs, predation (especially of chicks)

and theft. Farmers have devised the following preventive measures that are reported to be highly effective.

- Keeping chicks warm by keeping them in insulated baskets (women only) or in plastic containers in warm water, or allowing them to sleep near fireplaces.
- Male farmers painted red on chicks' backs to reduce both bird and human predation. The farmers claimed that the predatory birds are blind to red color, while human predators associated the coloring with witchcraft.

Impact on poultry performance

The project has had notable positive impact on the indigenous poultry performance in that the population of birds, their quality and egg-laying capacity has increased. Farmers are using more hens and eggs for brooding, leading to more chicks. Disease control, housing of chicks and supplementary feeding have increased the survival rates of the birds. The mean number of birds per holding increased across all types of bird (Table 2). Of all the women respondents interviewed, 67% had 4–6 hens and 83% had 5 pullets. Among the male respondents, 55% had 6 hens and 63% had 5 pullets. There were few cockerels at the time of the study, because many had been disposed of during the December festivities. The egg-laying capacity has risen from 5–15 in 1999 to 10–25 eggs per laying cycle. Considering that one cycle lasts 4 months, then an individual hen can lay up to 75 eggs per year. Most of the farmers used 4 hens for brooding, with a mean hatching rate of 11.5 chicks per hen. More than 50% of the women used more eggs (12–15) for brooding than men (10–12). This indicates women's willingness to intensify their production. The synchronized breeding that involves removing the chicks from the brooding hen after hatching and giving her more eggs to sit on had enabled farmers to increase their flocks within a short time. The chicks are reared away from the mother hen and kept warm with artificial heat in insulated baskets or hot-water containers.

Table 2. Poultry performance

Indicator	Status in 1999†	Status in 2005	
		Range	Mean
Eggs laid per hen in laying cycle	5–15	10–25	17.7
Number of brooding hens	Check	1–6	4.7
Eggs brooded per hen per cycle	6–15	10–20	12.5
Chicks hatched per hen per cycle	11–15	8–18	11.5
Surviving chicks per hen per cycle	6–10	5–16	8.7
Mean number of birds			
Chicks	7.1		18.4
Pullets	2.4		6.5
Cockerels (immature males)	1.1		5.4
Hens	3.4		9.4
Cocks (mature males)	0.8		1.3
Total number of birds	14.7		41.0

† Source for 1999 data: Okitoi *et al.* (1999).

The sale of birds is making a significant contribution to household incomes to the extent that the respondents view indigenous poultry production as a major source of income. Eggs and chicks are rarely sold (reported by 66% and 97% of the respondents, respectively). The main sources of income are the cocks, with mean seasonal income of KES 1004.7, followed by pullets at KES 729.5 and cockerels at KES 633.0. These incomes are directly proportional to the mean prices for each kind of bird with cocks selling at KES 400. Table 3 shows the sum and mean sales achieved by the respondents during the December 2006 festivities.

Table 3. Average and mean poultry sale prices (KES)

	Chicks	Eggs	Pullets	Cockerels	Hens	Cocks
Average price	—	4.00	100.00	200.00	200.00	400.00
Mean sale prices	90.10	322.70	729.50	633.00	2,208.00	1,005.70
Total sales revenue realized	5,500.00	20,978.00	46,690.00	39,250.00	141,295.00	66,375.00

Impact on farmers' livelihoods and gender relationships

The gender participation and gender awareness created during the project influenced changes in gender relationships. The income from poultry has led to financial empowerment of women, enabling them to meet their basic household needs. Some women indicated that they had opened bank accounts. Meanwhile, the youth had increased access to and control over their income. The overall impact of these incomes include: improvement in households' food security, reduced household conflicts, and men no longer have the burden of providing for minor household items such as salt and sugar that are now met from the proceeds from sale of eggs. However, the respondents cited some persistent cultural practices that need to change to enable the indigenous poultry enterprise to achieve its full potential. Box 2 lists the changes in gender relationships mentioned and those that need changing.

The strategies suggested by the farmers (during the focus-group discussions) for enhancing the indigenous poultry enterprise were: (1) increased cohesiveness among the existing farmers' groups, and (2) initiation of a rotating group fund among group members to assist each other in construction of poultry houses.

Soil Management Project in North Rift

The Soil Management Project (SMP) was initiated in 1994 to address the low and declining soil fertility in western Kenya. The project's goal was to achieve increased and sustainable crop and livestock production through improved soil-management practices (Nyambati *et al*., 2003). Several low-cost sustainable technologies were developed with four farmer cluster groups during phase I of the project (1994–2000).

According to the project's principal investigator, Dr Francis Muyekho, no specific gender emphasis or gender analysis was done in the initial stages of the project, but was in the later stages. However, the project reports show that some attempts were made to understand the gender issues in the targeted community by collecting gender-related information during PRAs. Seasonal and daily calendars for men and women were included in the PRA report. Decision-making patterns indicated that most decisions on farm management were made by male household heads, while

Box 2. Changes in gender relationships and cultural issues yet to change	
Changes in gender relationships	**Gender issues yet to change**
• Taboos that prevented women from slaughtering chickens and eating eggs have been overcome • Women can now sell eggs and birds and control the income • Women have access to poultry-production technologies • Increased involvement of men in indigenous poultry • Increased access to and control of resources and benefits (income, cultural benefits) for women • Participation of women in decision-making processes at both household and community levels • Social–financial empowerment for women	• Movement of live birds during funerals and festivities that leads to spread of poultry diseases • The mandatory traditional requirement of slaughtering two cocks during circumcision of a son that leads to loss of good poultry breeds • The prohibition on daughters-in-law sitting in a meeting with their fathers-in-law • Loss of access to and control of own flock for female youths on event of marriage that has discouraged this gender group from participating in the poultry project • Prohibition of women from eating certain parts of chicken (back and gizzard) that are reserved for men • Married woman not allowed to slaughter chicken for her visiting mother • Taboos that prohibit disposal of dead birds in pit latrines. This leads to poor disposal of such birds by throwing them in the bush and contributes to spread of poultry diseases

women made decisions on household roles. This information indicates the gender awareness of the researchers. The following technologies were developed and disseminated to the farmers: (1) compost-making, (2) handling and storage of farmyard manure, (3) methods and rates for inorganic-fertilizer application, (4) green manure, (5) improvement of cattle diets by use of legume supplements, (6) *tumbukiza* (planting Napier grass), (7) soil conservation methods (maize stover lines, sweet-potato strips, makarikari and vetiver grass strips), (8) soil conservation structures, and (9) integrated pest management (IPM: bean haulum ash, neem extracts, hot pepper).

The adoption rates by 2000 were lower than expected because of lack of a defined dissemination system. The project assumed that farmers would take up the technologies and pass them to others since they were fully involved in the technology development processes. This did not happen. However, the second phase of the project focused on scaling up the developed technologies to more farming communities through the use of farmer-participatory research (FPR) and FFS approaches. Gender emphasis was made in this phase to ensure the participation of both male and female farmers, as well as in the research team.

Gender participation

Both men and women farmers of different ages and education levels participated in the activities of all the FFS—Matunda (67% male, 33% female), Cheptuya (78% male, 22% female), Yuya (27% male, 73% female), Busime (25% male, 75% female) and other minor groups (Tantana, Totum, Takwesi, Chepkunga, Kadogonyo, Upendo, Mtelemko, Biholua) with a total 28% males and 72% females. The bio-data of the respondents show that the majority (64%) had primary education and 25% secondary level; 59% of the households were male-headed, while 31% and 10% were male-headed/female-managed and female-headed, respectively.

The majority of the respondents (97%) felt that the project was well implemented and they had learned various technologies. The respondents observed that gender concerns—including appropriate timing of meetings, convenient venues, encouragement of vulnerable groups and use of appropriate languages—had been incorporated in the project. Forty-four percent (44%) of the respondents reported that farmers had been involved in the project's decision-making process. However, most of the respondents (71% in Matunda, 50% in Cheptuya, 90% in Yuya and 100% in Busime) noted that no strategies had been planned to overcome cultural barriers and this affected gender participation.

Box 3 lists the issues raised and suggestions made by the farmers on how best they should have been addressed. Most notable of these is the overburdening of women in livestock rearing, caring of children and fetching water from long distances. Access to and control of land was the main issue for male youth.

Box 3. Issues affecting gender participation and suggestions for addressing them

Issue affecting gender participation	Suggestions on how to address the issue
Women	
• Overburdening of women with productive (herding of livestock) and reproductive roles (fetching water from long distance, cooking lunch for school children)	• Increase access to water by sinking boreholes • Hold FFS meetings during weekends • Encourage community to grow fodder
• Women's lack of control over land	• Equitable gender division of household roles
• Culture prohibits women from attending meetings and making decisions	• Sensitize the communities to work as partners in development activities
• Negative attitude of men toward women	• Exposure through exchange tours
Men	
• Migration of men in search for pasture • Drinking of illicit brews	• Encourage community to grow fodder
Youth	
• Lack of access to and control over land to adopt technologies	• Strategies to ensure increased access to and control over land for youth
All farmers	
• Ignorance of development activities that are not accompanied by handouts	• Sensitize communities to appreciate that development activities are for their own good • Exposure through exchange tours to other farming communities

Technologies learned and adopted by farmers

The farmers indicated that they had *learned to use*: green manure (23%), IPM (22%), *Tumbukiza* (18%), fertilizer application (15%), handling/storage of farmyard manure (10%), compost-making (7%) and cut-off drains (5%). None of the respondents indicated that they had leaned any soil-conservation methods. The technology adoption levels were low, with the highest levels being for compost-making and handling/storage of farmyard manure, each adopted by only 10% of the respondents. Other technologies *adopted* were cut-off drains and fertilizer application (8% each), and *tumbukiza* (6.7%).

There were slight gender differences in the technologies learned and adoption levels among male and female farmers and types of households. The male farmers indicated that they learned *tumbukiza* (25%), fertilizer application (25%), handling/storage of farmyard manure (25%), use of green manure (21%) and IPM (11%), while female farmers reported having learned IPM (32%), farmyard manure (21%), *tumbukiza* (13%), and handling and storage of farmyard manure (13%). Handling/storage of farmyard manure was adopted by a third of female-headed households. Compost-making and cut-off drains were adopted most among the male-headed households. The crops with high adoption levels were maize (98.3%), beans (85%), sweet potato (52%), soybean (41%), vegetables (41%), Napier grass (31%), millets (29%), *dolichos* (29%) and sorghum (17%).

The respondents cited lack of inputs and labor as major constraints to technology adoption. The other constraints cited were: (1) lack of market for the legumes; (2) labor shortage, because *fanya juu* soil-erosion management is labor intensive and the soils are hard during the dry season; (3) inadequate farmyard manure due to cattle movement in search of pasture; (4) termites that destroy the grass strips; (5) livestock eating crops, since farm is not fenced; (6) drought; (7) compost making and application is labor intensive; and (8) poor market prices for vegetables during rainy season.

Impact of project on crop yield and farmers' livelihoods

Large increases in crop yields were reported by 64% of the respondents in Matunda, 89% in Cheptuya and 71% in other FFSs, while Yuya and Busime had moderate increases. These yields have led to increased food/nutritional security for the entire community and increased household incomes. Yuya reported the highest mean annual incomes of KES 20,378.00, followed by Cheptuya (KES 9196.00), Busime (KES 8710.00), and Matunda (KES 5287.00). This income was mainly from the sales of maize and beans.

A gender-analysis matrix on the impact of the technologies on the farmers' livelihoods showed that the labor demand for women increased and their financial empowerment had increased from the sale of the crops introduced by the project, particularly legumes and vegetables. Increased food and nutritional security was reported for all household members.

The majority of respondents in all the farmer groups (Cheptuya, 78%; Matunda, 94%; Yuya, 90%; Busime, 75%) observed that the project and the technologies adopted had influenced changes in the existing gender relationships in the following ways: (a) unity among family members leading to fewer conflicts; (b) joint decision-making among household members; (c) women participating in public gatherings and airing their views; (d) women's financial empowerment from sale of vegetables; (e) involvement of men in traditional women's roles such planting and weeding;

and (f) men and women can sit together in meetings. The activity profiles show that both men and women were involved in the all the activities of the technologies introduced by the project. However, men play the major role in the purchase of fertilizers and in labor-intensive activities. Men also have more control over land, livestock, fertilizer and household income.

Enhancing KARI's capacity to conduct gender-sensitive participatory research

Although the capacity in KARI to conduct gender-sensitive research was reported to be good during the organizational analysis, the level of gender incorporation in projects was low. The high turnover rate of research scientists, with consequent recruitment justifies the need for regular enhancement of the participatory research and gender analysis capacity. Since gender concepts are new and in some ways contravene the cultural norms of the scientists and call for an attitude change, regular refresher courses are also necessary. It is expected that such training would increase the level of gender incorporation in projects.

Through the PRGA project, a 2-day training workshop was held in KARI-Kabete for scientists who had not had any previous gender training. There was a total of 17 participants from nine KARI centres (National Agricultural Research Institute [NARL], KARI Biotechnology, Katumani, Thika, Muguga Vet, Embu, Molo, Naivasha and Kiboko). Various disciplines (maize breeding, crop protection, socio-economics, biotechnology, animal health, agro-climatology, biometrics, range management, animal genetics) were represented. The fears expressed at the start of the workshop were mainly on misunderstandings that gender is a women's issue, not easy to handle at farmer level and it can interfere with the cultural setup of the African communities. The participants' expectations were to understand the gender concepts, its importance in agricultural research and how to incorporate gender analysis in research.

The topics discussed included: participatory-research concept and methodologies; gender terms and concepts; gender issues in agricultural research for development; gender-analysis tools; and engendering the research project cycle. Two video tapes were shown to illustrate the need for targeting both men and women in research for development.

Lessons learned

The organizational analysis showed that KARI's participatory-research and gender-analysis mainstreaming efforts have achieved some significant changes in its organizational structure. Both management and scientists have developed a positive attitude toward gender and the technical expertise to carry out gender-sensitive research is high. Mechanisms to initiate and sustain the gender-mainstreaming process are already in place. The research scientists have started to incorporate a gender perspective in their research projects (one-third of respondents reported doing so occasionally and 17.7% regularly). The two case studies chosen (among others from the KARI database) confirm that the Institute scientists have embraced gender concerns in their research activities.

The case studies demonstrate that incorporation of gender concerns in projects leads to participation of male and female farmers, development and transfer of appropriate technologies,

KARI participatory research and gender analysis workshop participants

and proper targeting of technologies to potential users. The outcomes of such projects are high levels of technology adoption for women, particularly in farm enterprises that are traditionally owned by them, such as indigenous poultry. However, existing gender relationships can hinder technology adoption, as shown in the soil-management case study. The impacts of these projects are increased production and household incomes, and improved livelihoods for the entire household and community.

From the KARI PRGA workshop we learned that further training is required to target newly recruited scientists, and refresher courses for other scientists to enable them to internalize and appreciate the importance of gender-sensitive participatory research. However, there are a number of challenges and limitations to KARI's gender-mainstreaming efforts.

Challenges and limitations

The first of these challenges is the lack of a clearly articulated gender policy in KARI that can be effectively communicated to its researchers and also no specific budget for gender-related work at the organizational and program levels. Assumptions are made that since gender is a cross-cutting concern, all programs and projects will capture gender-related information. However, review of programs shows that this is not happening, except in programs where development partners make inclusion of gender concerns mandatory. A number of scientists also do not seek advice from their center gender advisors (44% of respondents in the organizational analysis). Among the reasons given for this failure was the unavailability of those advisors because they were occupied with their own projects.

Lack of accountability for gender in programs and projects at the institutional level leaves gender incorporation as an individual initiative rather than an organizational or program commitment. Lack of sustainability of the long-term gender-mainstreaming strategies, particularly capacity-building,

incentives and regular meetings for the GAs, compounds the situation further. No gender-awareness or training has been done at KARI since 2003, despite an increase in the number of scientists. The trophy and cash award for best gender papers was also omitted during the 10th KARI biennial scientific conference of 2006. The holding of regular meetings for the gender advisors to refresh knowledge, share information and experiences, enhance networking and rekindle their spirit to continue with the gender advocacy has not been sustained. This is made worse by the delay in addressing institutional gender concerns of the gender-mainstreaming process. However, although no gender-based differences were reported during a 'gender and the work place' study conducted in 2001, some institutional issues were reported during the organizational analysis. These included lack of staff involvement in decision-making on issues relating to their welfare, lack of incentives, bias by male scientists, and inadequate information flow between headquarters and the centers.

The fact that the initial drive in the gender-mainstreaming efforts in KARI came from a development partner contributes to gender being viewed as a foreign concept by some researchers. There is lip-service to the need for gender sensitivity within the Institute, without real commitment on the part of some of the managers. The role of the center gender advisors has not been officially recognized or included in their terms of reference or performance contracts, so they do not devote quality time to gender work. The diverse cultural backgrounds, beliefs and professional disciplines lead some researchers, especially breeders and laboratory-based staff, to feel that gender concerns are not relevant to their scientific research. Gender-blind policies, culture and the unequal gender relationships among the farming communities hinder the implementation of gender-sensitive research.

The fact that the gender-mainstreaming process was donor-driven and that most of the people involved (including the gender advisors, KARI gender trainers and the gender coordinator) are female gives the researchers the impression that 'gender' equals 'women' and is a foreign concept. Failure to consider gender concerns in the recruitment process has resulted in having more male than female scientists. The low (less than 20%) incorporation of gender concerns in projects is an issue of great concern.

Despite the positive achievements that the Institute has had in the mainstreaming of gender concerns in its research programs, there are still certain handicaps. Visiting gender advocates, such as the PRGA Program review team and the ASARECA gender support person, are a clear indication that as an institute not all is lost. The director of KARI and members of the top management met twice with the team and promised to support gender-mainstreaming.

Opportunities

There are numerous opportunities that KARI and the two PRGA change agents can take advantage of in enhancing the gender-mainstreaming process. For the change agents, the fact that a gender-mainstreaming process has already been initiated serves as a base on which to strategize further gender-mainstreaming efforts. Moreover, KARI management has shown willingness toward gender-mainstreaming efforts among the NARS within the region. The representation of women researchers in the management (3 Assistant Directors, 4 Centre Directors, and 1 on KARI Board of Management) is a clear sign that the Institute is heading in the right direction. KARI also collaborates with other organizations especially the parent Ministry of Agriculture, Ministry of Livestock, and NGOs that are emphatic on gender concerns and this should help the Institute to do more in its gender-mainstreaming efforts.

The strong recognition of gender concerns in political circles—particularly the presidential statement in 2006 that one-third of the staff in government offices should be women and the current emphasis from the head of public service through the ministry of gender, culture and social services that all state corporations should demonstrate gender responsiveness—should be taken seriously by the Institute. This will form a basis for bargaining for more women representation in KARI and ensuring that the research processes and outputs represent the interests of different gender categories of stakeholders. If the support from ASARECA through the PRGA Program is sustained, it will re-kindle the gender-mainstreaming efforts in KARI and other NARS in the region. Continued funding and documentation of the case studies could yield training materials for use in future training of the Institute's new staff. KARI should hold second and subsequent gender conferences to enable researchers and their collaborators share experiences. Support should be given so that the KARI GARD is regularly upgraded to include information of gender concerns among the major farming communities in KARI mandate districts and made available to scientists in their centers. Such information can challenge policies that perpetuate unequal gender relationships. Finally, the farmers' willingness to challenge existing gender concerns and traditions that affect their participation in agricultural development activities, as reported in the case studies, gives the researchers an opportunity to develop intervention strategies jointly with farmers.

Proposed action-planning for enhancing KARI's gender mainstreaming process

The action plan was proposed by a team of KARI scientists, including two senior managers, in a seminar held on 30 October 2006 at KARI-NARL. The objective of the seminar was to discus the status of the participatory-research and gender-analysis mainstreaming process in KARI and the contribution of the PRGA project to this process, with a view to planning further strategies to continue the process. The participants came up with the following recommendations that focus on the four elements of an organizational framework.

Acknowledgements

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Political commitment	**Technical capacity**	**Accountability**	**Organizational culture**
• Include gender in the mission statement • Emphasis on gender in all planning meetings • Develop a gender policy • Gender unit and focal points strategically located • Avail a specific budget for gender • Recruit appropriately and adopt affirmative action during recruitment	• Carry out a detailed assessment to understand the status of gender-mainstreaming in KARI • Continuous capacity-building for all staff and collaborators • Update the training materials • Develop training manuals for farmers • Conduct specific gender training for the different programs	• Create incentive mechanisms • Include gender in the monitoring and evaluation systems and develop indicators to capture gender sensitivity in projects • Include gender sensitivity in performance appraisal • Screen all proposals and reports for gender sensitivity • Include gender in the TORs of KARI staff	• Have a gender column in the *KARI Highlighter* • Hold regular gender seminars where outsiders are invited to give talks on gender • Include gender presentation in the KARI HQ Friday seminars

Figure 2. Participants' recommendations.

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Appendix: Summary of the organizational structure changes achieved in KARI

Organizational dimensions	Mission / mandate	Structure	Human resources
Technical dimension	***Policies / actions***	***Tasks & responsibilities***	***Expertise***
	• Gender included in strategic plan • Emphasis in research forums • Attention during KARI beneficially assessment† • Gender as criterion to judge best projects	• Establishment of GTF • Appointment of gender coordinator and center gender advisors • Holding of a gender conference • Updated KARI guidelines for proposal writing • Gender articles in the *KARI Highlighter* and annual reports • Women in top management	• Two rounds of gender workshops for scientists and their collaborators • Gender advisers trained • Trained trainers • Top managers sensitized • Establishment of KARI GARD
Socio-political dimension	***Policy influence***	***Decision-making***	***Room for maneuver / innovation***
	• Donors were GTF members • A representative from Winrock International was GTF member	• A woman on KARI BoM • Women in KARI management • Participation of GTF in Centre Research Advisory Committee meeting	• Incentives given • Equal employment and training opportunities given to men and women scientists
Cultural dimension	***Organizational culture***	***Cooperation***	***Attitude***
	• Involvement of men and women as farmers or researchers portrayed in publications in photos and drawings	• Multidisciplinary teams emphasized • Use of farmers' groups • Collaboration with stakeholders	• High recognition of gender and its importance • Projects are incorporating gender aspects • Scientists seek gender input from the Gender Advisors

† An annual exercise to assess how participant farmers have benefited from project initiatives.

Challenges for gender mainstreaming in Centre National de Recherche Appliquée au Développement Rural (FOFIFA), Madagascar

Danièle Ramiaramanana, Léa Randriambolanoro, Rabary Bodovololona and Simon Razafimandimby

Introduction

The Centre National de Recherche Appliquée au Développement Rural (FOFIFA) in Madagascar, created in 1974, has a mission to conduct research related to rural development. Its activities lead to the generation of improved technologies adapted to the conditions of rural areas and contributes to increasing the incomes of rural populations. FOFIFA has six research departments (Agronomy, Rice, Technology, Forest and Pisciculture, Animal and Veterinary, Research, and Development) and seven regional research centers.

In 2004, the Eastern and Central Africa Programme for Agricultural Policy Analysis (ECAPAPA), one of the programmes of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), in collaboration with the CGIAR Systemwide Program on Participatory Research and Gender Analysis for Institutional Innovation and Technology Development (PRGA Program) organized several workshops on 'Gender Mainstreaming for Enhancing Research Efficiency.'

After the analysis of FOFIFA's activities for integrating gender and participatory research approaches, the Madagascar team conducted a project entitled 'Challenges for Gender Mainstreaming in FOFIFA.' The project aimed to study the possibility of institutionalizing gender approaches within FOFIFA. To achieve this goal, the experiences of various organizations were analyzed. Regional and national workshops were organized to identify the opportunities for, constraints and threats to gender mainstreaming.

The study revealed the current status of the integration of gender issues in the activities of the participating organizations in Madagascar, and identified elements to be considered for gender mainstreaming in FOFIFA. The main outcome of the project was to identify opportunities for and constraints to gender mainstreaming in FOFIFA.

The project had the following phases:

1. Survey of researchers' knowledge on gender issues
2. The gender concept in the different services and projects in Madagascar
3. Survey of one organization that was applying the gender approach to achieve its goal
4. Awareness-raising among the researchers and research partners, through exchanges of information during regional and national workshops, to obtain recommendations from participants for the institutionalization of gender approaches in FOFIFA.

The methodology focused on interviews and exchanges with stakeholders such as researchers, heads of services, and managers in FOFIFA and its partners. Existing documents on gender in Madagascar were reviewed. Researchers were asked to complete a questionnaire on their awareness of participatory approaches and gender concepts. Some 45 researchers participated in the survey

in 2005 and 46 in 2006, of who 24% were female. Most (73%) were more than 45 years old, and 35% of the researchers had worked for FOFIFA for more than 15 years.

Background

Context of gender in Madagascar

Gender concept is not a new idea in Madagascar; so, organizations and programs understood the project and we were able to gather information on gender issues.

The National Policy of Women Promotion (PNPF)

The National Policy of Women Promotion was established in 2000 with the principal objective to reduce the disparities between men and women, and between rural and urban dwellers in order to establish balanced development, particularly between women and men. PNPF has five components, mainly concerning the economic status of women:

1. Improvement of the income and economic state of women, particularly the most deprived (rural women, women-headed household, etc.)
2. Improvement of the level of education and training of girls and women
3. Promotion of the right to health and women's rights on reproductive health
4. Reinforcement of women's rights and of their participation in decision-making
5. Improvement of the institutional system for the promotion of balanced development between men and women.

The National Action Plan for Gender and Development (PANAGED)

History and justification: By adopting the Beijing Platform of Action during the 4th World Conference on Women in 1995, the Malagasy Government signatories accepted the equality of the sexes and the emancipation of women as fundamental principles of human and durable development. This engagement was reaffirmed in the Millennium Declaration (United Nations, September 2000), which recognizes the need for promoting gender equality and the empowerment of women as an effective means to fight poverty, hunger and disease, and to promote sustainable development. Indeed, the inequalities related to gender (i.e. social and economic role differences between men and women) are factors in all forms of poverty. Thus, these inequalities must be targeted by each intervention in the fight against poverty, not only for ethical reasons, but also for effectiveness.

Therefore, many countries, including Madagascar, committed themselves to integrate a gender dimension in all their development interventions and implement specific policies and programs for the reduction of inequalities between women and men. This strategy—'*mainstreaming*'—calls for the analysis of policies and programs to identify any gender-differentiated impact and to adjust the policies and programs to ensure that their actions contribute to the achievement of equality between the sexes.

Objective and components: PANAGED, which ran for 5 years (2004–2008), integrated a gender dimension across all development interventions. Its objective was to integrate gender issues in organizations, programs and development projects. It had five components:

1. Action-research for better definition of the actions to be carried out.
2. Lobbying of staff of different development organizations and programs, to convince them that the integration of gender is not only a question of ethics, but also of effectiveness.
3. Capacity-strengthening, comprising:
    - reinforcement of the staff in charge of promoting gender, i.e. in the current governmental configuration, the Ministry of Population, through the General Directorate for the Promotion of Gender, and at the provincial level, the Population Directorate;
    - building capacity (training) on gender, not only within the Ministry of Population (initiator of the plan), but also for the organizations working on gender issues and involved in the implementation of PANAGED (Ministry of Health, Ministry of Agriculture, Livestock and Fisheries).
4. Communication (design, production and diffusion) of lobbying and training material.
5. Monitoring and evaluation: annual, mid-term (2005) and final (2008) evaluations. The system of monitoring and evaluation not only had to produce documents periodically on the achievement of the objectives of the three programs of the Action Plan, but also to help institute the collection and analysis of gender-disaggregated data for different services (health, education, and particularly in the sectors which are not used to disaggregating their data by gender, e.g. agriculture, industry, police, justice).

Specific programs: PANAGED also envisaged two specific programs to improve situations of obvious inequality noted within the development of the PNPF framework—the economic efficiency of women, and their legal and social conditions (two sectors not always considered in ministerial actions).

Improvement of the Economic Efficiency of the Women had five components:

1. Rural and suburban women's access to the factors and means of production—this action is justified by the difficulties encountered by some women, particularly women household heads (widows, divorced or separated, unmarried mothers), in accessing land and credit;
2. Support to women in the informal sector, in which most of urban and rural women are involved, in spite of the precariousness that characterizes this sector;
3. Women's access to the formal sector;
4. Lightening of the domestic tasks of women—it was noted, in urban as well as rural areas, that the time devoted by women to their domestic duties (in particular care of children, old and sick family members, household duties, water collection, and cooking) limits the time that they can devote to productive work;
5. Economic and social insertion of uneducated girls—this action aims to give girls who left school early the capacities which will enable them to assume their future responsibilities (mothers, development workers and citizens).

Improvement of the Legal and Social Condition of Women also has five components:

1. Support for the application of rights for all—letting the target groups know about their rights and possible options, and setting up an observatory (oversight body) of women's rights;
2. Promotion of the right to information and training—women should have opportunities to receive information and training, illiteracy has to be eliminated;
3. Support to social and legal reforms—aimed at improving the framework of women's lives, in particular for women in difficult situations, such as household heads and women working in factories;
4. Work on violence against women, including domestic violence—this important aspect has three components: assistance to the victims of violence, reinforcement of the sanctions against the perpetrators of violence, and creation of a social dynamic for the work against violence;
5. Improvement of the representation of women in decision-making—this is justified by the weak representation of women in public life, except for judicial power and in the management in private organizations. The development of this situation, which is not dependent on qualifications, is dependent on effective lobbying and reinforcement of the *leadership* capacities of women.

The Gender Network in Madagascar

Implementation history

Several organizations and entities are interested and implicated in the actions on 'gender.' Exchanges between these entities in the meeting organized by Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) in Antananarivo in 1997, with the collaboration of ONE (National Office for the Environment) and Swiss Cooperation, resulted in the idea of establishing a 'network' structure to support these exchanges.

Mission: The principal mission of the Network is to promote the gender concept and approach in development actions:

- To contribute to development by integrating a gender approach
- To contribute to the equitability of the roles and ensure equitable development by integrating a gender approach.

Objectives: The Network aims to contribute to the effective integration of gender in the policies and programs of economic and social development, and also to take an active part in the implementation and monitoring of the policies, strategies and laws related to gender equality.

The Network's specific objectives are to:

- Generate data and information, competences and knowledge of members
- Reinforce synergies and cohesion among members
- Propose and promote strategies for gender approaches

- Inform and sensitize development actors on gender dimensions
- Reinforce the gender capacities of development actors.

Among the five specific objectives, the most important is that the Network must sensitize its members on the concepts, approaches, methodologies and gender tools, and facilitate effective integration of the concepts in members' activities.

Operation: Any (legal) entity or individual willing to be involved in the promotion of gender in development can be a member. Shared responsibilities are the rule. Meetings are organized periodically (every 2 months) by a system of rotation around all the members. The organization that hosts the meeting issues the invitations and looks after the participants, handles the facilitation of the meeting, and prepares the meeting report.

Structure: The Network is a platform for exchange of information and documentation. It keeps a flexible, informal structure, which contributes to the quality of the results of Network activities. The Network is organized as follows:

- The General Meeting
- A main Coordinator appointed by the General Meeting
- A permanent Secretary
- Various Technical Committees.

Activities: Many activities are undertaken by the Network, such as the collection, collation and diffusion of information, organization of training, and national and regional workshops; and production and diffusion of information on gender. The Network prepares and implements a strategy of communication and contributes to the establishment of an Observatory (oversight body) on gender.

Members: A number of organizations (national and international) are members of the Network. Twelve of these were interviewed: GTZ, FFE (Friedrich Erbert Foundation), CARE, FORMGED (Training gender and development), USAID, ONE, SAHA (Sahan'Asa sy Fampandrosoana), MINPOP (Ministry of Population), UNDP, UNFPA (United Nations Population Fund), UNICEF, and CRS (Catholic Relief Services). The international organizations work mainly through projects and targeted development programs—for example, USAID brings support to women's associations and public institutions, UNICEF deals with the health of children and mothers.

Projects and programs on gender in Madagascar

The final report, gender profile in Madagascar by the Japan International Cooperation Agency (2005), showed that there were 56 projects and programs that integrate gender concepts in Madagascar (some of them ended in 2009).

- Projects that targeted marginalized people (women, girls, children, etc.) covered several sectors of development, relating to the improvement of women in general, but also education, health, agriculture and economic activities.
- Several ministries—MINPOP, MSPF (Ministry of Health and Family Planning), MAEP (Ministry of Agriculture, Livestock and Fishery), MENRS (Ministry of National Education and Scientific Research), and MICDSP (Department of Industry, Trading and Private

Sector), public and private partners—INSTAT (Institut National des statistiques agricoles), SAF-FJKM (Sampan'Asa Fampandrosoana – Fiangonan'i Jesoa Kristy eto Madagasikara), and ONE—, and various Communes[1] and Associations (associations of women, small enterprises, etc.) carry out these programs.

- Several donors contribute to the funding of these projects: USAID, EU, World Bank, FAO, UNDP, French Cooperation, OMS (Organisation mondiale de la santé), WWF, ONUDI, UNFPA, GTZ; and the Malagasy Government.

AGERAS/ONE and PSDR (projet de Soutien au Développement Rural) use ASEG (Socio-economic analysis by gender) in the organization of their activities, diffuse this method to the implementing agencies, and conduct capacity-strengthening.

The gender approach is not new in Madagascar—it was initiated in the late 1990s. Between 1999 to 2003, many organizations integrated gender issues in their activities:

- UN organizations (UNDP, UNFPA, UNICEF) mainly targeted ministerial institutions, regional and local institutions and NGOs and, more specifically, women, children, young people, the rural world and marginalized people (UNFPA).
    - Several activities on integrating gender were carried out: gathering of gender-disaggregated data, the establishment of a gender thematic group in the United Nations organizations—UNDP elaborated a strategic framework for intervention targeting marginalized zones; UNFPA coordinates the gender thematic group; and UNICEF was involved in gathering data on child protection.
    - The main working method was capacity-building of the staff of the UN organizations and the projects and programs working with them, but UNFPA also uses several means of support such as information, education and communication (IEC), social-mobilization and lobbying.
- Technical and financial partners, such as CARE Madagascar, FFE and GTZ, provided access to training and sensitizing of project personnel through workshops and other methods (e.g. participative approach).

The gender concept within FOFIFA: Results of the investigations in 2005 and 2006

Questionnaires were distributed to researchers. In 2005, some 45 researchers provided feedback on the investigation, and 46 responded to the questionnaire in 2006 (of whom 22 participated in 2005). Thus, a total of 67 researchers participated in the investigation. Questions in the surveys for the two years were not exactly the same.

Objectives of the investigation

The principal objective of the investigations was to evaluate the awareness level of FOFIFA's researchers to gender concept. Specific objectives were to:

[1] 'Commune' is the smallest administrative unit in Madagascar that has a direct relationship with the national government.

- evaluate the knowledge, comprehension and integration of gender within FOFIFA;
- evaluate the gender experiences—positive points, negative points, problems encountered, and opportunities which arise for the improvement of the effectiveness of research;
- identify the researchers' needs for support as regards integration of gender.

Awareness of participatory approaches and gender concepts

Participatory approach

Participatory research approaches were already known and understood by 87% of researchers. Knowledge and awareness of the participatory approach were acquired from training and workshops (63% of the researchers), or from practical applications in collaboration with the projects and programs that integrated the participatory approach. FOFIFA, with various international organizations and regional networks, organized training and workshops which benefited FOFIFA researchers. Half (50%) of the researchers that were familiar with the approach had acquired the concept between 1994 and 1998, which was the period when FOFIFA collaborated with the International Rice Research Institute (IRRI). Many training activities and workshops were organized by IRRI.

Gender concept

In 2005, over half (58%) of the researchers said that they were familiar with the concept of gender. Some knew the concept by reading documents, and others participated in training or workshops on gender issues. Compared to the participatory approach, the acquisition of knowledge and the awareness of gender concept was very recent (within the previous 3 years). The concept was passed on to the researchers through training and workshops, most of which were organized by ASARECA. Over half (57%) of the researchers familiar with the concept collaborated with the networks of ASARECA.

Researchers' understanding of gender concept

Researchers' comprehension of gender differed depending on the way they learned the concept. Those who were self-trained or informed only, explained gender as women's emancipation. However, a broader vision in term of strategic needs differentiated by social category or professional group was understood by researchers who had more experience (practice and training) with the concept.

For the first category of researchers, self-trained by documentation, considering gender in their activities meant giving responsibility to women in the society, village community and workplace. Women have to be integrated in decision-making and in planning and implementation. The methods used promote partnership between women and men, respecting their differences and ensuring their participation in an equitable way. It recognizes the contribution of women to development and gives them the means to make this contribution. Relationship between men and women, their activities and their constraints are analyzed.

Researchers who benefited from the workshops on gender understood gender as recognizing the differences between men and women in the design of an activity. It is an approach that differentiates beneficiaries and stakeholders in the action undertaken. Gender concept considers

the differentiated strategic needs of socio-professional groups or social categories. Members of a family are considered as social groups. Each category has its specific needs and interests, and therefore actions are not the same. It is a concept that takes into account the difference between the sexes, social categories, age groups, ethnic groups and races in the formulation, decision-making, realization and evaluation of the results of an action.

Comprehension of gender by the trained researchers was quite different. Gender concept is to consider the implication of women in all the fields of the development. It is an approach with more consideration of the intervention of women (effective participation) in project activities. Men and women have their own responsibilities in any activity. Women and men have the same right in the design and implementation of and decisions relating to activities. Opportunities given to each have to be considered. Gender approach takes into account disparity, equality or equity between men and women in terms of well-being. Men and women can undertake the same activity. Actors' place and role in the process of development—according to their individual and collective characteristics (sex, age, education, ethnic group, religion, etc.)—are important.

The researchers who knew gender concept by information and/or practice had a simplistic view. They specified that involving women, children and marginalized persons in project design, and having more women than men in the implementation of the activities, are the actions to be done in favor of women. For this category of researchers, gender should consider social groups and ages, not only men and women.

Integration of gender by FOFIFA researchers

We noted various ways that FOFIFA researchers integrated gender issues.

1. Process imposed by the partnership and convention. The projects, NGOs and organizations collaborating with FOFIFA already integrate the concept in their activities:

- Methodology mentioned in the conception of the collaboration or partnership
- Agreement between the partners of the project.

2. Participatory approach with consideration of gender issues. End users, such as farmers, are involved in different stages of research (diagnosis, methodologies, validation and results feedback). Field visits are organized to allow beneficiaries (men, women, associations, village communities, local authorities, etc.) to evaluate and choose the technologies they like.

3. Innovating and committed approach for gender. The FOFIFA PRIAM (Participatory Research for Improved Agro-ecosystem Management) research project entitled 'Improvement of participatory research at community level by the integration of gender analysis in PRIAM sites Antsirabe Madagascar' applies the tools and methods of gender rigorously.

4. Thematic research (all disciplines) or research undertaken in controlled sites (laboratory, experimental fields). The researchers do not appreciate how to consider the concept of gender in the design, control and evaluation of activities.

In several FOFIFA departments conduct activities that consider gender issues: livestock, tuber crops, environment, leguminous crops, farm equipment. All of these activities are undertaken in collaboration with projects or programs.

Self-evaluation of the perspectives of gender integration in agricultural research in FOFIFA through analysis of experiments

The researchers recorded positive results in integrating gender issues in their activities. The advantages are many, as much in the design and control of the activities, as in the results and impacts.

Considering gender in the design of activities results in better knowledge of the context. Problems encountered by different social groups and their needs are well identified and their needs prioritized.

For monitoring, responsibilities are shared among all stakeholders, who feel responsible and find their respective interests. FOFIFA researchers think that the implementation of their activities is easy. There is competition for better productivity, better cohesion between farmers, and good participation of each actor.

Concerning research results and impacts, FOFIFA researchers stated that there is early evaluation of constraints to adoption of 'new technology.' Adoption of these technologies is assured because they match farmers' needs. Diffusion of results is faster, spill-over of the technology is easy. Those who took gender issues into account in their research found that sustainability of their actions was not a problem. Farmers' capacities were improved during frequent discussions of the actions. Differences between men and women in terms of decision-making and impact on living conditions were reduced and human dignity was respected.

However, the researchers encountered some problems in integrating gender issues in their activities, at various levels. In Madagascar, tradition and culture put men in a higher position than women, especially in rural areas. Giving more responsibility to women dissatisfies men. The approach, which is dependent on socio-economic and cultural concepts, is sometimes subjective. Ethnic problems may appear. Farmers are more concerned about results than durability of the actions.

At the level of the community, there are also problems which may restrict the use of gender approaches. Low education level of the farmers, mainly of the women, makes the exchanges difficult. There are also divergence and conflict of interests among community members and, since women and poor farmers is not well regarded by the community, their needs and interests are not respected.

Among researchers, some have problems putting their knowledge into practice. They found a lot of concepts and implementation procedures in the literature. There is divergence among partners. The lack of leadership in FOFIFA for gender issues is another constraint. Taking account of the different beneficiaries and vulnerable groups at the same time is difficult to manage in research. Working in a multidisciplinary team is encouraged in FOFIFA, but some researchers found it difficult. Some researchers said that in participatory diagnosis, socio-economic and financial problems affect technical innovations—the technical problems of research are likely to be forgotten and delays are imposed by difficulties in coordinating the actions and the availability of different actors.

Opportunities for the integration of gender for the improvement of FOFIFA's research

By integrating gender in the participative process, which is already mainstreamed, FOFIFA will improve its research and the relevance of its results.

(a) Relevance of research to users' needs

Do not conduct research for research's sake, but research to solve development problems of the country, and in particular the problems of farmers: These factors must be considered in conducting research activities, so that real needs of all social groups of farmers are taken into account.

Gender methods are a tool aimed at making research correspond better to reality, and therefore achieve positive impact. It is the best applicable method in the realization of a project, for the following reasons:

- At the end, the different groups of beneficiaries know the positive and negative impacts of the research, as well as the resources to be utilized.
- It is the best way to make everyone participate.
- It is the best tool for defining the objectives and working out the related strategies.
- Each actor has his or her own interests in the use of research results (e.g. for cotton: productivity for the farmers, output with shelling fiber for the cotton company, quality of fibers for the exporters).
- The involvement of the beneficiaries in the process of research facilitates the adoption of the resulting technology.
- External vision is needed for the evaluation and final choice of technologies to be proposed for scaling out.
- The different categories of people can distinguish the different aspects of the problems to be solved, leading to more precise research results.
- The women and men do not always have the same ways of seeing things, or the same priorities.

(b) 'Obligation' of teamwork

By agreeing to work together, and jointly defining the objectives and work program, the partners (including various categories of end-users) *commit* themselves to fulfilling the work through teamwork. Thus, the continuity and the success of the activity can be ensured by:

- The involvement of the different stakeholders in different processes of research;
- The availability of more complete and reliable information, which will enable optimal decision-making;
- The complementarity between the social groups (man, woman, etc.), making it possible to obtain the best results more easily and quickly;
- *Empowerment* acquired by all the target population during the process, making the communities more responsible for their development because they feel capable in what they undertake.

(c) Effectiveness, efficiency and sustainability

Gender and participatory approaches are not only a guarantee of effectiveness and efficiency, but also of the sustainability of the actions.

- The participatory approach is more effective for adoption of new technologies. It is already applied in both research and development.
- The gender approach is an additional instrument making the actions yet more effective if it is explained, understood and practised well. It must be applied at all levels (directorate, center, station) and in all the stages of research.
- These dimensions condition the future development and effectiveness of the actions. They also condition the sustainability of the initiated actions and the effective appropriation of technologies.
- The different categories of actors and beneficiaries should be involved for a rational and durable exploitation of natural resources.

(d) Equality/equity

The two approaches (gender and participation) are complementary and together constitute a complete process toward decision-making and the search for equity. This is because:

1. No one is excluded: the development is no longer the business of one group of people, but requires the involvement of everyone.
2. The participatory approach and gender issue should bring appropriate solutions to the problems of underprivileged beneficiaries.
3. Each site has its specific perceptions and practices.
4. The two approaches are tools to promote equality among men, women and young people regarding chances and opportunities for economic and social development.
5. Men's and women's ideas can be complementary and enable improvement of several aspects of the activities.
6. These approaches document the roles, responsibilities, representations of stakeholders, the reasons for their actions, visions and different interests considered in resource management.
7. By applying the participative approach, gender can be integrated.
8. The mutual respect of the individuals contributes to a better performance of the activity. Discussion creates a work environment favorable to a better result.

Needs for support expressed by the researchers

The needs for support expressed by the researchers can be classified in four points and differentiated according to the level of knowledge and awareness of researchers:

	Non-trained researchers	Trained researchers
Raising awareness	X	
Update awareness		X
Capacity-building (tools, methods and practices)	X	X
Capacity-building on implementation	X	X

The majority of researchers in FOFIFA need to improve their capacity (implementation, tools and methods)—their knowledge needs to be updated.

Specific needs

For each point, some specific questions and concerns were noted by the researchers.

(a) Acquisition of knowledge for the untrained researchers

- Acquisition of the concept (participatory and gender), with concrete examples.
- Gender concept is rather vague. Perception is different and varies according to the literature and organization. The words can have several meanings. It is necessary to make a rigorous and precise definition for each use. How to define in a common vision of the concept and to apply it in reality?
- How to combine the two approaches for a better application of the methods?
- Emphasize more on the socio-economic aspect.
- Consideration of gender approach in the design of the research activities. In which type of research should we take the gender issue into account?

(b) Update of knowledge for the trained researchers

- Revision and documentation.
- Debates and reflections, information and communications toward a common vision or perception of the concepts of gender.
- Familiarization with the tools and methods, and their application in all project development stages.
- In which type of research should we take gender issues into account?

(c) Capacity-building

- Methodology of approach: How to practise gender sensitivity? For better understanding the concepts and avoiding the possible difficulties in their application.
- Practical training courses.
- Experience-sharing (successes and failures).

- Management of conflicts in a community.
- Monitoring of the diffusion and impact study (related to gender).
- Technical capacity strengthening: how to consider gender issues in each specific activity to be implemented.
- How to relate gender approach with the conventional methods currently used in research.
- Utilization of results: facilitation in diffusion and dissemination.
- Methodology to categorize the different beneficiaries and to determine the vulnerable or marginalized groups.

(d) Support for the implementation

- Methodological and technical advice.
- Resources.
- Human resources.

Researchers noted that actions should also be undertaken at end-user level. The objective is to sensitize the beneficiaries:

- To reinforce 'education for all': change of mentality of the population, the field agents and the different responsible persons.
- On acquisition and control of the different tools and means of communication for sensitization; setting-up/restoring the systems of partnership and complementarity between target users and various other stakeholders.
- Intensification of sensitization in the coastal areas. To improve awareness of the role of women in development.

Gender experiences in FOFIFA

FOFIFA has already integrated gender issues in some of its activities. Successful experiences concern the project undertaken in collaboration with ECAPAPA, which was conducted in Vakinankaratra region and entitled 'Improvement of participatory research at community level by the integration of gender analysis in PRIAM sites, Antsirabe, Madagascar.' The study aims to integrate gender analysis with the PRIAM approach in order to improve and consolidate the achievements of participatory research within FOFIFA.

Feasibility of the institutionalization of gender within FOFIFA

Methodology

The methodology comprised organizing regional workshops in six research centers of FOFIFA and a national workshop. The objectives were to have a common understanding of the gender approach

and to evaluate the possibility of achieving institutionalization (opportunities, constraints, threats and actions). A synthesis of these regional workshops was given during the national workshop, and orientations and strategies for institutionalization of gender within FOFIFA were identified.

Participants, both men and women, in the regional workshops were researchers and representatives of FOFIFA partners. The national workshop took place on November 9, 2006 in Antananarivo. There were about 30 participants from various organizations: FOFIFA, General Directorate for the Promotion of Gender of the Ministry of the Population, ONE, FFE, Gender Network in Madagascar, FIFAMANOR (Fiompian Fambolena Malagasy Norveziana), and Project FSP/FORMED (Fonds de Solidarité Prioritaires / Formation en Genre et Développement) and various NGOs

Before the evaluation of institutionalization, it was necessary that the participants of the workshops had the same level of understanding of gender concepts, and a joint definition of what institutionalization means.

Regional workshop participants' understanding of gender

According to the workshop's participants, gender approach aims:

- To identify the real needs of the rural zone.
- To share information and experiences.
- To integrate the consideration of gender in all activities (research, development, etc.) to support development.
- To implement a project at community level from a participative diagnosis. Beneficiaries participate effectively in the project.
- To consider gender in the development and implementation of the development plan.
- To improve the level of participation in different fields.
- To implement a strategy for the collaboration and identification of solutions by and for the different gender groups.
- To classify the activities according to gender group.
- To improve the way to conduct activities.
- To change the behavior of all stakeholders.
- To act for a balanced development: rural–urban.
- To share the responsibilities.
- To seek equity.
- To know the rights and responsibilities of everyone.
- To share the responsibility among men and women.
- To analyze life in a society and the rights of everyone.
- To analyze the situation, identify the causes of the problems, and find the solutions for sustainable development.

- To learn about the role of men and women in community development.
- To share responsibilities and benefit in an equal way.

There was not much difference between the regions in terms of the understanding and perception of the gender concept. In the High Plateau (areas of Vakinankaratra, Analamanga and Alaotra Mangoro), gender groups were for many of the participants the social categories, while others referred to professional social groups or actors or the sex and age (man, woman, adult, young person, child).

In the coastal areas, however, participants insisted much more on the strategic need for equity between men and women, and for specific actions for the marginalized groups (generally women).

Explanations and comments from the discussions

Tendencies: historical, religious and socio-cultural determinism: The culture and religion place men in a dominant position compared to women, elders compared to young people, parents compared to children, etc. This results, in practice, in the marginalization of groups socially dominated in their daily activities. Whatever the social categories relating to gender (wealth level, educational level, age group, specific groups, etc.), the difference between men and women always exists.

The importance of these figures can change according to the context. The conditions or factors favorable to changes of practice are:

- *Education and educational level*: men > woman; literate > illiterate; high plateaux regions > coastal areas
- *Access to information*: urban > rural; rich > poor; literate > illiterate; high plateaux > coastal
- *Religion*: Christian > Islamic
- *Community life*: involved > not involved
- *Economy of production*: market > subsistence
- *Conditions for income improvement*: high plateaux > coastal

Considerations for the gender concept in development: There are contexts, particularly in the coastal areas, still in the education phase, both at the schools and at the household level.

In Madagascar, integrating gender issues in different fields should be done carefully, otherwise it can result in rejection by men, particularly those who may feel that this concept may take away their decision-making power. In each activity, practices:

- Must recognize the uniqueness of everyone and their needs. All stakeholders should have equal opportunities—their strengths and weaknesses have to be respected.
- Can progressively modify the gender relationship by a better distribution of the roles and means, introduction of new technologies, and extension of activities calling into question the old division of work.

- Must take into account the differences and the complementarities of everyone.

Application of the gender approach must take account of two parameters considered to be fundamental so that it effectively improves life for everyone in the society:

- Its adaptation to the context and the project, while insisting only on gender dimensions that are important factors of success and impacts. Impacts can change according to the context and the project.
- Its harmonization with favorable customs and habits.

Institutionalization of gender

To be able to analyze the feasibility of institutionalization of gender within FOFIFA, the aim of 'institutionalization' was defined. It is the strategy to ensure sustainability of interventions, and to ensure success (results, impacts) and a process (associated with suitable tools) to create knowledge, sensitivity, conviction and responsibility.

Dimensions to be considered

On the basis of this definition, a list of dimensions to be considered for institutionalization was developed by the participants of the regional workshops. The list was reformulated and validated during the national workshop.

For the institutionalization of gender, FOFIFA must organize its actions around the following points:

1. Technical capacity
2. Attitudes and behavior
3. Structure and internal monitoring and evaluation
4. Tools
5. Finance
6. Human resources
7. Formal application of the concept in the programming cycle
8. Environment of research
9. Integration of gender in the policy of FOFIFA.

Feasibility

Technical capacity:

Opportunities	Constraints and threats
• 45% of the researchers had received training in gender (30 of the 67 researchers surveyed)† • 58% of the researchers were familiar with the gender concept (26/45)‡ • 87% of the researchers considered themselves familiarized with the participatory approach (39/45) • Positive experiences of FOFIFA on PRIAM project • 9 of FOFIFA's 21 senior staff (directors, heads of services, heads of departments and head of center) are women • There is a gender network in Madagascar • A National Action Plan for Gender and Development (PANAGED) has been elaborated • Madagascar is a member of many of ASARECA's networks • The technical and financial partners working in Madagascar are sensitive to gender	• Disparity and differences in opinion on the vision of gender • Lack of resources for training and information • Lack of trainers in FOFIFA • Lack of communication between partners

† 67 researchers were surveyed in total (2005–2006).
‡ 46 researchers were surveyed in 2005, but not all of them responded to evey question.

Attitudes and behavior:

Opportunities	Constraints and threats
• A National Action Plan for Gender and Development (PANAGED) has been elaborated	• The Vision of some organizations is not encouraging: "Research is not open to others" • Difficulty to change the behavior due to the high average age of the researchers

Structure, monitoring and evaluation:

Opportunities	**Constraints and threats**
• FOFIFA has different services: Programming and Monitoring and Evaluation (PgSE), Communication (UCOM) and Scientific and Technical Information (UIST) • FOFIFA is a decentralized institution with regional centers and regional stations	• Resources (human, material, financial) used by different services of FOFIFA are limited

Tools:

Opportunities	**Constraints and threats**
• The situation of FOFIFA is favorable for the development of the tools: experiences of FOFIFA/ASARECA (PRIAM, AHI, etc.) • Presence of social scientist in the Department of Research and Development • Existence of the UCOM (communication) and UIST (documentation) in FOFIFA • FOFIFA is connected to networks • Experiences of the members of the Gender Network in Madagascar	• Divergence of points of view concerning the application of the approach • Lack of development of the experiences in agricultural development

Financial issues:

Opportunities	**Constraints and threats**
• The technical and financial partners are sensitive to gender • UN organizations recommend the integration of gender in development projects	• FOFIFA does not have sufficient resources to develop the approach • Discontinuity/precariousness of the financing (national and external) of research

Human resources:

Opportunities	Constraints and threats
• FOFIFA is a decentralized organization with regional centers and regional stations • There are many young graduates in search of work	• Problem of recruitment (official service) • Lack of budget to hire new staff • The researchers of FOFIFA are poorly motivated (because of their status level and weaknesses in the management of their career)

Formal application of the concept in the programming cycle:

Opportunities	Constraints and threats
• Experiences of FOFIFA/ASARECA (PRIAM, AHI, etc.) • A National Action Plan for Gender and Development (PANAGED) has been elaborated • Experiences of the members of the Gender Network in Madagascar • Consideration of gender issues in the projects constitutes a conditionality of eligibility by the donors	• Influence of culture, customs and habits • Because of the lack of information, some of the leaders and technical agents are not motivated, which leads to a lack of perception of the effectiveness of gender • Few practical experiences in agricultural development in Madagascar • Because of low purchasing power, the population is still concerned about basic needs • Difficulty in integrating the concept in thematic research

Environment of research:

Opportunities	Constraints and threats
• 45% of the researchers are trained in gender (30 of the 67 researchers surveyed) • 58% of the researchers are familiar with gender concepts (26/45) • 87% of the researchers said they were familiarized with participatory approaches (39/45)	• Socio-cultural issues

Integration of gender in FOFIFA policy:

Opportunities	**Constraints and threats**
• A National Action Plan for Gender and Development (PANAGED) has been elaborated • The majority of the technical and financial partners are convinced and likely to collaborate • Project proposals taking into account gender issues are easier to get funded by donors than those which do not	• The opinions of the decision-makers and of the line authorities are ignored • The integration of gender is not yet considered in most of the regional programs • FOFIFA is not well known (mission and mandate) • Disparate and divergent vision of the gender concept • Insufficient understanding of gender

Action plan

Considering the opportunities, constraints and threats listed above, the following actions were identified by the regional workshops and the national workshop.

Technical capacity:

- Information, awareness-raising at different levels:
  - Production of supporting materials such as posters, briefs and brochures
  - Wide diffusion of gender issues (website)
  - Reinforcement of technical capacities on communication, lobbying and media coverage.
- Training:
  - Theoretical training for the researchers and partners who have already received training on gender; exchange of experience
  - Theoretical training for FOFIFA employees (researchers, etc.) who are not familiarized with the concept
    - Production of training materials
    - Sensitization and training on gender concept
  - Practical training for the researchers
    - Experimentation on the process in different contexts and situations
    - Workshop or exchange of experiences (application)
    - Production of a guide on how to use the gender concept.

Structure – organization:

- Integration of gender in the activities of the PgSE service (Support, Monitoring and Evaluation):
  - Reinforcement of the capacities of the PgSE service
  - Identification of 'gender' indicators in all the phases of the program cycle
- Institutional analysis to evaluate the integration of gender concept in FOFIFA (evaluation will be done by someone from outside FOFIFA)
- Development of the PgSE, UCOM and UIST services for the development of gender concept:
  - Reinforcement of the task force (UCOM, PgSE, UIST)
  - Production of a database on gender issues (UIST).

Integration of gender in the policy of FOFIFA:

- Analysis of the existing policy
- Updating of the policy document of FOFIFA by integrating gender issues and referring to the PANAGED.

Conclusion and future action

The study was extremely instructive with regard to the challenges of integrating gender issues into FOFIFA's research and development work. Some lessons were learned from the reviews of national experiences. Regional workshops enabled FOFIFA to raise awareness, share experiences and collect important information, which enabled evaluation of the feasibility of institutionalizing gender within FOFIFA.

The synthesis of the findings, which were re-discussed and validated during the national workshop, shows that FOFIFA has advantages and limits for gender mainstreaming. There is a favorable internal context (all of the entities familiarized with the participatory approach, existence of researchers trained in gender, some of the researchers and staff are women) and external context (PANAGED, Gender Network in Madagascar, FOFIFA is member of several networks of ASARECA). Human resources are a limiting factor (limited number of employees, average age of researchers relatively high), as is the precariousness/discontinuity of the financial resources.

The final objective of the study was achieved: more than a simple evaluation of the feasibility of institutionalization of gender within FOFIFA was done. Key actions were identified according to opportunities, constraints and threats.

The challenges have been identified, and implementation of the actions is a logical progression. This will involve publishing (in different forms) the findings and the initial results, developing an action plan on the basis of the actions identified, and seeking technical and financial partners for the implementation of the plan.

Influencing change in the Institut des Sciences Agronomiques du Rwanda (ISAR) through gender analysis in participatory research

L. Dusengemungu, M. Rucibigango, S. Mukakalisa, P. Badege, D. Mukankubana, C. Nyiraneza and J. Mbanda

Introduction

In developing countries like Rwanda, including gender in poverty reduction strategies should help achieve poverty reduction goals. The aim should be to reduce gender disparities, since "greater gender equality correlates with higher economic growth and less poverty" (World Bank, 2001).

Women are significantly more active in African agriculture than men: women carry out over 70% of the total African agricultural labor and up to 90% of the labor engaged in food production (Blackden and Bhanu, 1999). Conversely, men have much greater access to farm inputs and earn much more farm income than women.

The participation of farmers, especially women, in the design, development and testing of technologies is crucial for achieving benefits that improve the livelihoods of small-scale farmers.

The general objective of the ECAPAPA–ISAR sub-project of the ASARECA–PRGA Program gender-mainstreaming project was to influence change within ISAR; specifically to: (1) assess the institutional gender awareness in ISAR and accelerate gender participation in climbing-bean production through improved technologies; (2) build capacity in gender mainstreaming and gender analysis among ISAR scientists; and (3) raise the awareness of gender issues among ISAR managers and scientists.

Methodology

Organizational assessment

The ISAR Gender Team was composed of six scientists (4 women and 2 men). Documentation and questionnaires were used to assess the current ISAR policy in relation to participatory-research and gender-analysis issues. To achieve this, administrative documents like station reports and gender journals were consulted, and ISAR managers and scientists were interviewed.

The gender distribution among ISAR staff was assessed by reference to ISAR annual reports. The gender perceptions of ISAR managers, researchers and technicians were assessed at the beginning of each of the two gender-awareness seminars, in March and September 2006.

A SWOT (strengths, weaknesses, opportunities and threats) analysis was conducted on the prospects for implementing gender mainstreaming within ISAR.

Field experience: Farmer participation in climbing-bean production (case study)

Forty-two male and female farmers were interviewed to assess their participation in climbing-bean production and marketing.

Training workshops were conducted for farmers by a multidisciplinary team of ISAR scientists (Socio-economics, Beans, Agroforestry, Soil and Water Programs) on climbing-bean production,

diseases and pests protection; and agroforestry nurseries and use of tithonia. An exchange farmers' field visit on family agroforestry nurseries in Gitarama was organized to enhance the farmers' understanding of the benefits of the technologies.

In addition, on-farm trials and agroforestry nurseries were established by 42 farmers from Musasu, Huye (formerly Kiruhura) district (21) and Runyinya, Huye (formerly Nyakizu) district (21). The selection of participant (host) farmers was random from the list provided by ISAR technicians working with farmers in those areas (Javeau, 1985). Data from on-farm trials were recorded on forms and analyzed using SPSS software. Again, a SWOT analysis was conducted.

Training

Training workshops were organized for ISAR change agents and other ASARECA members in Nairobi, Addis Ababa and Entebbe with gender experts. Participants at these workshops acquired skills and knowledge on gender issues.

Gender awareness raising

Using the gender skills and tools learned, gender-awareness sessions were held twice in Rubona for ISAR managers and scientists to formalize and strengthen gender-based networking among scientists for improving farmers' livelihoods considering gender as one of the strategies. Again, a SWOT analysis was conducted.

Results and discussion

Organizational assessment

The proportion of women staff is still very low among researchers (Table 1), technicians (Table 2), administrative staff and casual laborers (14%, 40%, 34% and 31%, respectively). This indicates that there is a low level of integration of women in research activities. This is a result of the historical low level of integration of women in education nationally, especially in science and technology studies. Consequently, women have performed poorly in recruitment interviews even when they have been considered. Hence promotion of gender equality in the research domain remains difficult.

Table 1. Gender distribution of ISAR researchers by education level

Sex	PhD	MSc	Ao (Bachelor's)	Total	Percentage
Male	3	11	34	48	86
Female	*0*	*3*	*5*	*8*	*14*
Total	3	14	39	56	

Source: ISAR reports 2005.

During January and February 2005, the 12 ISAR stations used mainly men as casual laborers (73% and 65%, respectively). Women need to be integrated into ISAR activities like planting, weeding and harvesting.

Table 2. Gender distribution of ISAR technicians by education level

Sex	A_1	A_2	Total	Percentage
Male	17	31	48	60
Female	*4*	*28*	*32*	*40*
Total	21	59	80	

Source: ISAR reports 2005.

The assessment of the perception of ISAR managers and researchers showed that there is great need to create awareness on gender concepts within ISAR.

SWOT analysis

- *Strengths:* MINAGRI (Ministry of Agriculture) and the Rwandan Government support is guaranteed for gender mainstreaming in ISAR. Three people trained in this area are still working in agricultural research.
- *Weaknesses:* Attention to gender issues is low for some scientists, technicians and laborers (for example in recruitment and the formation of working groups). All the ISAR agents (researchers and their technicians) have little knowledge and limited skills in gender issues. Several small training sessions might help upgrade their knowledge and skills. There is also a tendency for scientists to consider gender as a simple socio-economic issue and not scientifically.
- *Opportunities:* Among ISAR top management, those who are trained support the concept of incorporating participatory research and gender analysis into the research ethos.
- *Threats:* Budget is very limited for the extra time required for scientists to meet farmers' expectations, and a number of activities in the institution run concurrently (making it difficult for researchers to participate in all those they may wish to).

Field experience: Case study

Results from the farmer survey showed that beans play an important role in the food security of those interviewed, even though production was low (and decreasing). Reasons for this production decrease were mainly lack of stakes (81%) and lack of fertilizers (63%), followed by bean diseases (19%) and shortage of land (12%). The main challenge to climbing-bean production is the almost total lack of stakes (Chi-square Test, χ^2: $P<0.05$; Figure 1) (Dagnelie, 1994).

There is no problem with the beans market *per se*—farmers make up the majority of consumers. However, because of the lack of stakes, farmers concentrate on bush beans in spite of their low yield; the average area planted is 0.18 ha for bush and 0.12 ha for climbing beans (*see* Figure 2). However, 74% of sampled farmers favor climbing beans because they are not affected by heavy rains and give high yield (triple the yield of bush beans; ISAR, 1997–2002).

Variety Mamesa (G 2331) was chosen to solve the bean production problems mentioned by farmers in the survey. However, subsequently there was severe drought. The problem of stakes was considered: the farmers themselves identified (from Gitarama farmers' experience) the introduction of agroforestry nurseries for each family with calliandra and leucaena as successful for increasing production.

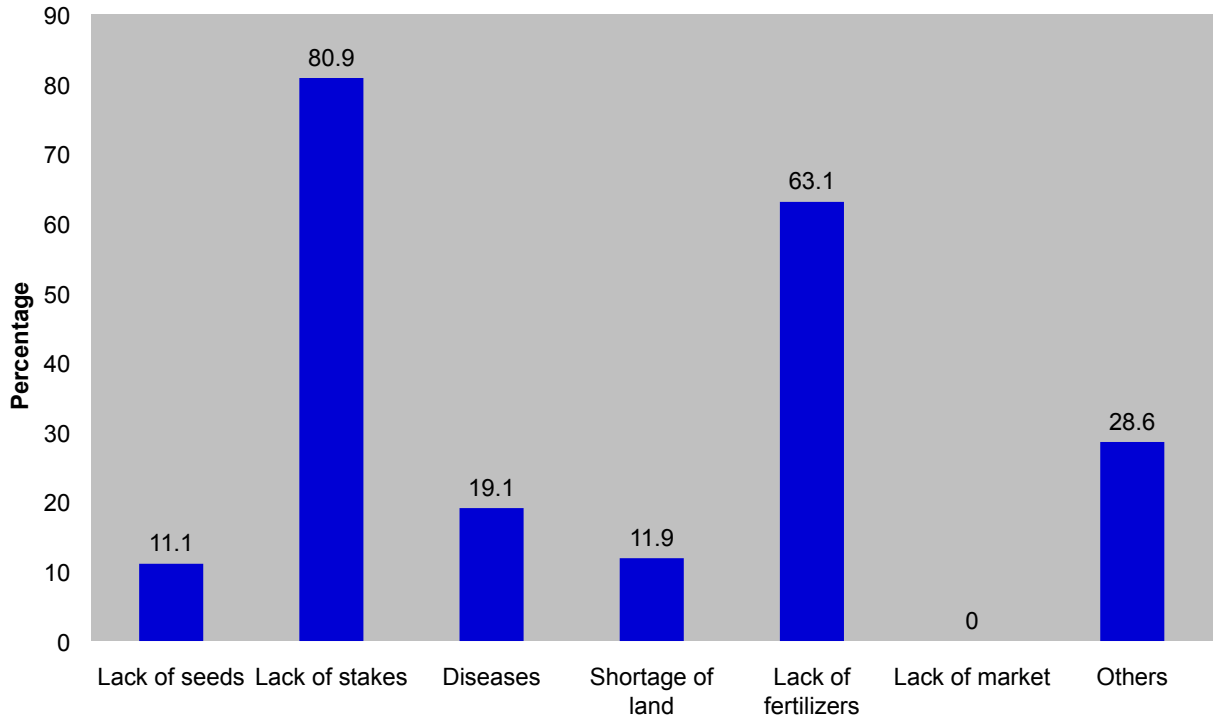

Figure 1. Main problems facing climbing-bean production.
Source: Farmer survey, October 2005.

Some of the climbing beans didn't climb because of the weather; thus no stakes were needed as no production was expected.

Farmers were encouraged to use inorganic fertilizers together with green and compost manure—some inorganic fertilizers (such as NPK) were bought to encourage them. Green manure like tithonia was tried later in the trials; farmers grew the trees themselves around their plots.

Women are overloaded with bean production activities in addition to their usual home duties. In the traditional system, women did more than 60% of the land preparation (thus, men did less than 40% of the land preparation); more than 75% of the weeding; and more than 70% of the harvesting. Women were also more involved than men in transporting, drying, winnowing, storing and marketing beans (60%, 57%, 79%, 65% and 61%, respectively). Women also conducted 76% of the bean pest and disease control. However, new technologies have the potential to change the gender balance. For example, when beans were planted in lines, men did the majority of the weeding (86%); this is because use of the *nyirabunyagwa* (very small traditional hoe for weeding) has been greatly reduced (23.5%) and replaced by the normal hoe (76.5%). No man will use the *nyirabunyagwa* hoe—according to the farmers interviewed, in Rwandan culture, "men will never even touch *nyirabunyagwa*." There is a need for a winnowing technology that men are prepared to use, and one is under development.

Some divergence was evident in selection criteria for bean varieties between farmers and researchers. Researchers consider disease resistance (68%), high yield (30%) and soil adaptation (3%) as the necessary and sufficient criteria for beans to be promoted and adopted by farmers. For farmers, the criteria were ranked as follows: high production (85%), resistance to dry season (i.e. drought tolerance, 72%), red color (71%), good taste (49.5%), large size (33%), early maturing

Figure 2. Importance of climbing beans within farmers' plots.
Source: Mrs Nyiramyasiro's plots designed by herself in Musasu.

(13%), proximity and therefore easy access to the nearest market (6%), and resistance to diseases (4%). There is a need for farmers and scientists to use these criteria in developing better varieties for increasing production and to meet consumers' needs.

SWOT analysis from this field experience revealed the following. *Strengths* were the knowledge and skills obtained by farmers on climbing-bean technologies; the willingness of farmers to improve bean production and soil conservation; and the availability of technicians well trained in bean, agroforestry, and soil and water management technologies along with a good team of crop-protection scientists. *Weaknesses* were that farmers have to learn how to plant in lines and appreciate the benefits of this agricultural technology. The creativity of farmers in relation to new technologies facilitating their daily work is very low. As *opportunities*, ISAR has improved varieties of climbing beans, agroforestry trees, etc. The small land area used by farmers can be

Banana-leaf pots for agroforestry seedlings (Gitarama farmers' demonstration)

Climbing-bean production destroyed by the severe drought

overcome by increasing production on small plots (agricultural intensification). The main *threats* comprised bad weather, pests and diseases, and lack of livestock (beans are sometimes produced only when the plots are fertilized with manure).

Training

The participants trained in the project workshops were expected to become gender change agents, spearheading gender mainstreaming in their respective organizations. For ISAR, only three scientists participated to these workshops—Mrs Rucibigango Mary, Mrs Mukakalisa Solange and Mr Dusengemungu Leonidas.

Before the end of the project, an evaluation both in the field and within the NARS of ASARECA was conducted by the ECAPAPA gender focal person. This evaluation helped to guide the gender-institutionalization process in the NARS of all the countries. Later, the Rwanda team received a group of international reviewers from ECAPAPA/ASARECA.

International training in Addis Ababa

SWOT analysis revealed that these international workshops built the participatory-research and gender-analysis capacities of the three ISAR scientists, who were then able to conduct gender-awareness sessions for all ISAR scientists. Donor support is available for project proposals integrating gender issues. Those are the main *strengths* from the training workshops, in addition to the positioning of the gender team in ISAR's Technology Transfer Unit. The lack of documentation on gender in Rwanda was solved through the provision of documents from the training sessions (the documents were put in the ISAR library).

As *weaknesses*, we listed personal behavior of scientists and lack of capacity to handle so many issues at the same time in project implementation. Meanwhile, the *opportunities* are: availability of trainers and the availability of external donor funds for gender-sensitive projects. The *threats* identified for these training workshops are the small grant provided to the team, which was insufficient to cover expenses and hence activities benefiting farmers in particular. There has also been jealousy from other scientists saying that the gender agents are always participating in international workshops.

Gender awareness raising

Two gender-awareness sessions have been held in Rubona for ISAR managers and scientists.

The first gender-awareness session (March 2006) was for heads of ISAR stations, socio-economists and other scientists representing all ISAR centers (5) and stations (14); there were 54 participants.

Participants' evaluation of the workshop indicated that the workshop was successful for the gender agents in ISAR (Dusengemungu and Kusemererwa, 2006). The workshop enabled scientists to introduce gender analysis into their daily research activities.

The second gender-awareness session in ISAR (September 2006) created more awareness on the role of gender analysis in agricultural research, and evaluated the project (Dusengemungu, 2006). The 48 participants (23 women and 25 men) came from various research stations of ISAR.

These two seminars showed that gender issues are useful for scientists in their daily research and the seminar approach might prove very useful for gender mainstreaming throughout ISAR.

SWOT analysis of these short seminars within ISAR proved that there is support from ISAR staff, except for those who had still to be trained in gender issues. Participation during the sessions was active, and gender issues were undertaken as an entry point for future research. Scientists, technicians and other ISAR staff members were very attentive during the sessions. It seemed that they all considered gender an important issue to be taken into account in all activities.

ISAR gender training, Rubona, September 2006: working-group discussion

Opportunities for gender training are that infrastructure and documentation on gender are available for all ISAR scientists. Furthermore, there is within the organization a requirement to submit a research plan every 3 months, which must clearly show gender components, participatory methods and tools. The *threats* are limited budget due to dependence on State funding, and lack of materials for implementing planned activities. There is also a problem of concurrent activities within the institution, which needs reorganization, planning and monitoring.

As a way forward, a joint action plan for incorporating gender issues in all ISAR research programs was prepared by the participants at the second gender-awareness session. It was agreed that lobbying of ISAR top management should be continued and follow-up for ISAR centers and stations should be carried out. This will be done by the ISAR gender support group.

Lessons learned

Throughout this chapter, we have highlighted many lessons learned from the institutional analysis, the field experience, the four international workshops and the two gender-awareness sessions within ISAR.

Lessons learned from the institutional analysis

Interviews with ISAR's management and scientists helped to guide ISAR's recruitment policy, which was gender unbalanced even for casual laborers, where a high level of education is not needed.

Lessons learned from the field experience

Results from interviews showed clearly the main constraints hindering climbing-bean promotion in Rwanda's rural areas (especially the general lack of stakes and fertilizers). To address these

constraints, a multidisciplinary team of scientists brought technological solutions developed on station into on-farm trials. Scientists were learning how to complement each other in the field, responding to farmers' needs. On the other hand, the agroforestry nurseries (with the whole package of technologies around calliandra and leuceana seeds) were a case of technology and knowledge transfer from researchers to farmers. Data recording and analysis was a good exercise for scientists and farmers, also relevant for future research.

The promotion of climbing beans revealed to scientists the large involvement of males in weeding when beans are planted in rows, and how men can help women in bean-farming activities from cultivation to storage. This suggests that other new technologies might also encourage male farmers into 'women's' activities, thereby bridging the gender gap in these areas. The farmers' exchange field visit on family agroforestry nurseries in Gitarama demonstrated how technologies can move quickly from one farmer to another, without having to go through scientists. The technology transfer unit of ISAR benefited from better approaches to enhance farmers' adoption—this is its primary mission.

Lessons learned from international workshops

Gender concepts were well understood by the participants, and knowledge and skills were gained both in gender analysis and leadership, especially in agricultural research. The trips organized outside the country enabled gender change agents to exchange experiences and created good linkages.

The evaluation of the project by external reviewers and the visit of the review team to ISAR were also lessons for the implementers.

Lessons learned from the gender-awareness sessions in Rubona

Conducting a seminar over one or two days is itself a learning process. ISAR's gender change agents conducted this exercise twice, so when another seminar needs to be conducted, the materials are already in place. This was good experience for the change agents. These sessions were also an occasion for scientists and technicians from all ISAR's stations to exchange ideas, not only on gender issues, but also on their daily work and how to improve it. Experiences were shared and relationships reinforced during the two sessions. It was agreed that gender should be taken into consideration in all projects. Consequently, each ISAR scientist was assigned to develop gender-sensitive proposals to generate funds from external donors interested in this domain. An action plan was set up jointly and follow-up is ongoing. The sweet potatoes program conducted a survey that incorporated gender issues in July 2007. Nevertheless, funds to enable gender change agents to move from one research station to another (to evaluate the progress in all areas) are lacking, but there is good Internet communication.

Conclusion and recommendations

Field work, training abroad and gender-awareness sessions are the strategies being used to influence gender change in ISAR. As shown, there have been changes at different levels; however, some top managers (50%), scientists and technicians (30%), farmers and ISAR stakeholders still need to be reached by gender awareness raising. ISAR staff are supporting gender activities in all research

programs through planning, monitoring and evaluation provided by the scientific director. ISAR scientists are using participatory research and gender analysis in their daily research.

Through the case study, farmers obtained improved technologies in different areas: bean production, agroforestry nurseries, tithonia as a fertilizer, etc. They are now trying to plant beans in-line instead of broadcasting as they traditionally did. Hence, men are joining women in some activities like weeding and we noted that a modern winnowing technology to benefit both man and women is under development (by the farmers with assistance from the ISAR researchers).

An action plan to pursue the use of participatory research and gender analysis in all research programs has been developed and is being implemented. However, at the time of writing (2007), ISAR had no funds for a gender focal person. Meanwhile, ISAR researchers are expected to submit gender-sensitive project proposals to donors.

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Promoting participatory research and gender analysis within the Agricultural Research Corporation (ARC), Sudan: 'Influencing change'

Ibrahim El-Dukheri and Ishtiag Abdalla

Introduction and overview

This chapter reports the results of research that dealt with gender analysis and participatory research within the Agricultural Research Corporation (ARC) system of Sudan. The objective was to demonstrate the importance of gender analysis through pinpointing or isolating gender-based differences in farming activities, access to resources, and control mechanisms. The analysis was extended to include the institutional setup of the ARC and the likelihood of making changes to mainstream gender analysis and participatory research to improve research outputs or results.

To achieve this objective, a gender analysis was carried out in selected areas of the country and gender disparities were singled out and used to argue for having gender analysis as an integral component of the ARC research methodology. The philosophy is that gender-based constraints to technology uptake and development are best dealt with using gender analysis, which reveals critical issues that should not be overlooked in the process of developing problem-solving technologies, which is the mandate of the ARC.

For practical purposes, having the capacity to do gender analysis and an enabling institutional setup that encourages and nourishes gender analysis are prerequisites to gender mainstreaming. For the first issue, capacity-building in gender analysis is adequate, but the latter may require some organizational transformation to create the necessary space for gender analysis. The gender-mainstreaming project was tailored toward these two objectives. Capacity-building in gender analysis was carried out over 2 years through various activities, including gender studies, in all the participating countries, by participants from those countries who had a fairly good understanding of gender-analysis frameworks.

As participatory approaches in agricultural research involve stakeholder analysis and draw on socio-economic and socio-cultural characteristics, they touch on gender analysis, because the target farming communities are always composed of male and female beneficiaries. The gender study made a rough assessment of the kind of participatory research done directly or indirectly by the ARC as a mechanism to judge the impact of looking into the farm–household complex (the core business of participatory research) rather than concentrating on commodities *per se*, as is commonly the case in most of the research systems in East and Central Africa, including the ARC. The results showed that there was good effort done to include stakeholders at various stages of the research cycle, but mostly during the problem-identification phase. Such involvement enhanced the sensitization of the ultimate beneficiaries and improved the chances of inclusion of poor and marginalized households.

Organizational analysis (carried out using the organizational analysis framework) indicated that the ARC was gender-blind in its research. This was shown both in the research done with a gender dimension (feedback from scientists) and, more importantly, by three 'unobservable' dimensions of the organizational analysis framework—attitudes, prevailing culture and values. But the ARC system didn't discriminate against women in the workplace and it responded proactively to developments in the surrounding environment in terms of gender aspects. This is evident from

the progressive intake of women graduates who dominate in the market, resulting from ever-increasing intake and graduation of women from universities. The fact that some gender-based needs were overlooked was part of the way the ARC system operated, where equally important, but non-gender issues that would improve the work environment were also not tackled.

Results of the study have shown the need for a more programmatic focus for the ARC to become a gender-sensitive organization, leading to better uptake of its technology by the target beneficiaries, who in some regions of the country may be composed of more women than men. The organizational analysis indicated the need for institutional and policy reforms in order to create the necessary space for gender analysis and participatory research. Changing the attitudes and culture within the ARC are feasible entry points for the required institutional reform.

Sudan has long been viewed as the potential bread-basket for the Arab World and a potentially significant player in the African arena. These perceptions, however, have never been realized—one reason for this has been the slow pace of research to solve constraints that impede attainment of high levels of production. The ARC is mandated to conduct applied agricultural research (problem-solving) in the country. To meet this objective, it operates about 17 main stations in different production domains in the country, focusing on food and cash crops of strategic importance to each region.

The mechanism of carrying out research is the 'commodity approach,'[1] with few exceptions. The commodity approach, in the way practised within the ARC system, focuses on biological improvement. Improvement in yield and yield components is the most important evaluation criterion for technology development and acceptance. Other criteria, like economic, environmental and gender aspects, might be considered in some contexts, but not necessarily at all times. The gender dimension or its analysis hardly comes into play. This implies that there is always a missing link in the agricultural innovation process for technology utilization (technology development, dissemination or diffusion, and wide adoption). The criteria for 'good technology' are technical feasibility, economic viability, social acceptability and environmental soundness (Magar, 2004; Dey *et al.*, 2005). Thus, focusing on the technical or biological aspects of the technology will show only part of the story. This is even more important when it comes to technology transfer and adoption, where the characteristics of the target beneficiaries need to be considered. Thus, it is vital to be inclusive and sensitive to all diversity issues that are inherent in the faming community—ignoring them is detrimental to the processes of technology transfer and development.

Gender is one element of the diversity that cuts across all communities. It is possible to have a community that is ethnically or religiously homogeneous, but it is not possible to find a community that is made up of men or women alone. Gender should be considered as the most important diversity component of rural communities and it has to be dealt with satisfactorily for better outcomes of research and other development interventions.

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[1] The 'commodity approach' focuses on individual crops and primarily considers the biological constraints of those crops. The farming system approach to technology development and dissemination looks into the farm–household complex and considers both the biological and socio-economic constraints of production systems, of which individual crops are only one component. As such, it has greater potential for success by addressing a wider array of beneficiary needs. By considering the farm–household complex, the approach renders itself more inclusive. There are many terminologies in the development arena that have described contexts similar to the farming system approach, all of which go beyond the farm and consider the farm–household complex as an analytical unit.

Resources and activities are the basis of all people's livelihood, whatever their level of development. However, access to resources and their quality vary considerably across farming systems and socio-economic classes, giving rise to different livelihood levels. In farming, resource endowment (quantity and quality) varies depending on (among other things) climatic variation, poverty level, type of farming activities pursued and gender. Gender-based disparities in access to resources and engagement in different activities is of paramount importance in explaining variations in levels of household performance, including food and livelihood aspects.

Estimates from the Food and Agricultural Organization of the United Nations (FAO, 1985, cited in Quisumbing *et al.*, 1995) show that women provide more than half of the labor force in the production of three-fourths of food in Sub-Saharan Africa. Aggregate data suggest that African women perform about 90% of the work of processing food crops and providing household water and fuel wood, 80% of food storage and transport from farm to village, 90% of hoeing and weeding, and 60% of harvesting and marketing (similar trends are evident in the field in Sudan). In spite of this high level of engagement of women at all levels in support of livelihood and the economy at large, their access to productive assets has been limited and not supportive of their roles. Many researchers and planners believe that achieving equitable growth and sustainable development is strongly dependent on reducing gender inequality in access to and control over a diverse range of productive, human and social assets (Magar, 2004; Dey *et al.*, 2005). Disparity in one kind of asset will ultimately result in disparity in other assets; the best example is that when men have access to and control over land (the main productive asset in traditional farming) they enjoy all the services associated with land, like extension and credit, and women become further marginalized because they are denied such access. This trend might easily grow into protracted and systematic denial of resources and finally marginalization of an important player in traditional farming.

In Sudan (and elsewhere in Africa), the availability of productive resources necessary for improving the performance of the agricultural sector is biased in favor of men.[2] Women are highly disadvantaged despite their major role in food production in Sub-Saharan Africa; often their role is undermined and neglected. If women continue to be overlooked from necessary interventions because the focus is on men, the immediate implication would be perpetual low performance of the agricultural sector. The situation might be aggravated when socio-cultural values restrict women from participating proactively outside the domain of the household.

Gender relations and division of labor are important factors that help explain disparities and variations in resources and activities. The relevance of gender in agricultural research and development, in particular gender-based constraints and their implications on agricultural technology development and management, is an important factor that needs to be further researched and tackled for sustainable enhancement in farm outputs and economic growth at large. Kabutha (2002) concludes a discussion paper on this issue by saying:

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[2] In Islam, female beneficiaries inherit half of what male beneficiaries receive of the wealth of the deceased father, but without obligation to support the family, which rests entirely on the shoulders of males (husband, brother or son). It is the right of the woman not to spend her share of the wealth in support of the household as a wife or in any other family setting, if she so chooses. With this understanding of Islamic teaching, the woman will always have a larger share of net assets, although when looking only at the rules of dividing the wealth she appears discriminated against. Most current practices across the Islamic world do not fully comply with the teachings of Islam with respect to wealth issues and so many women are left vulnerable.

> *"inadequate attention to gender in research and development results in low levels of adoption of agricultural technologies and subsequent low productivity. The fact that men and women have different social roles and responsibilities and therefore different criteria for preferred technologies points to the need for a basket of options from which men and women can choose. Similarly, men and women have different constraints to technology adoption and management. Women are particularly disadvantaged with regard to access to productive resources such as land, time, extension education, farm implements, and cash to purchase inputs. For technologies to be attractive to different clients, scientists will need to align technology adoption constraints to the circumstances and preferences of different clients."*

Exploring ways of mainstreaming gender in research is a strategic decision that helps managers of agricultural research systems capture a major opportunity for improvement, at least through increasing the number of stakeholders of research outputs and involving the real users of the generated technology.[3]

We consider gender analysis in agricultural research very much as a subset of participatory research. Participatory research is defined as involving key stakeholders strategically in the research cycle, and gender is just one attribute of the potential stakeholders in the research-to-development continuum or the agricultural innovation process.

In the context of research within the ARC, a simple and quick evaluation was conducted to explore the status of participatory research and gender analysis within the organization.

The technology development and release system within the ARC depends very much on presenting yield differences between the technology under consideration and the benchmark technology used for comparison. The socio-cultural and socio-economic aspects have often been ignored or even undermined. When the ARC has engaged or collaborated with donors, research systems or agencies that value technology criteria beyond the biological differences, it has often conducted valuable work and addressed critical issues of technology development. However, participatory research and research that incorporates and mainstreams socio-economic and socio-cultural dimensions is costly and might be time-consuming—something that neither the ARC central budget nor the scientists can afford.

To influence and rectify the situation towards more participatory research, pressure could come from adaptation of the entire system in response to the need for capturing the benefits of participatory research in general and gender analysis in particular. This would require huge mainstreaming efforts. Alternatively, female researchers might play a role in the change process, having themselves been sensitized for the purpose of gender-mainstreaming issues beyond the contemporary postgraduate training programs that offer little in these areas. The steady increase in the uptake of high-performing female scientists in the ARC—as a direct result of the increasing

[3] The adoption rate of a technology depends very much on its profitability, the degree of risk associated with it, capital requirements, policies and the socio-economic characteristics of the target beneficiaries. Farmers try out new technology to test its suitability and adaptability to their situation. Failure to include female demands in the process of technology generation simply by assuming that their circumstances are similar to those of their male counterparts will limit their ability to try out the generated technology. Such exclusion constitutes a loss to the farm–household complex, forgoing the value that would be accrued by addressing women's needs.

number of female graduates from the national universities—supports the second alternative in the change process, which may provide the critical mass required to push for or promote the required decisions in the mainstreaming efforts.

To date, the decision-making positions in the ARC have been dominated by men, but women are catching up fast and steadily. Regardless of the individuals, changing attitudes across the institutions to become pro-participatory research and gender analysis is what counts in the change process. This requires creating the necessary awareness, and having a policy for participatory research and gender analysis in place through an informed capacity-building program, which propels and promotes the mainstreaming effort.

Women's contribution to agriculture

Different studies on gender analysis in Sudan have indicated gender differences in various livelihood and access aspects like education, income, health and employment (GoS and UN, 2004). In Sudan, women take on a large share of farming activities, which differs among the regions of the country as a result of community norms and customs. Among the various regions, women in western Sudan in general play a major role in farming activities. There is some degree of specificity in the sense that women engage more in some activities than others. This marked engagement in farming activities does not change when women migrate to other regions of the country if the main livelihood of the family remains farming. The value system in western Sudan encourages women to engage in various activities pertaining to livelihood support (or at least doesn't discourage them from doing so). The extent of involvement is wide and deep in rural communities where the main factor of production is labor at all levels of crop development and animal management.

In central Sudan, Mekki (1999) illustrates the significant contribution of women in farming activities with emphasis on the gap in extension support to women, which did not address them directly. She indicates that women were involved more in poultry production than raising other types of livestock. El Shafie (1992) highlights the great role played by women in Gezira State in cotton picking, while men refrain from this activity in spite of its importance in cotton production. Elamin and Mekki (2001) show that women play a major role in the production of common bean in North Sudan and emphasize the amount of women's unpaid home and farm activities, which are time-consuming but make a vital contribution to the economy of poor rural households.

A regional study (FAO, 1999) indicates that more than 20% of households are headed by females in Sudan. The study also indicates that women's contributions to household food production amount to about 30%. It states:

> *"Women's contributions to agricultural production have been underestimated, due to the fact that their labor is mainly unpaid work in subsistence food production. Recent studies have shown that women's contributions are significant when unpaid and seasonal labor is taken into account … in Sudan women's work accounts for 34.7 percent of unpaid agricultural labor."*

This is the case because women are responsible for a wide range of time-consuming and labor-intensive tasks of crop and livestock production, including sowing, application of fertilizer, weeding, harvesting, transporting, threshing, winnowing, cleaning, sorting, grading and bagging.

These tasks are carried out manually or with simple tools. Women's labor is paid at half the wage level of men's labor (IFAD data collected in the late 1980s; FAO, 1999).

El-Dukheri *et al.* (2003) state that "farm performance, reflected in the level of meeting household caloric requirement is differentiated by gender. Female-headed households attain only 66% of the international standard of caloric consumption, whereas male-headed household attain, on average, about 76%." The differences in resource endowments and accessibility to production services are important reasons for the difference in level of maintaining the calorific requirement by gender.

The majority of subsistence farmers operate under customary tenure in which women are accorded usufruct rights to land (e.g. in the Gezira scheme, of the 120,000 farmers targeted, 11% were women; FAO, 1995). A growing number of lending institutions are extending credit to women for agricultural and livestock production, food processing and other income-generating activities, while the agricultural extension services are linked with cash crop production and thus target male farmers—women are expected to receive the information from their husbands and male relatives. Such disparity exists in the delivery of many government services, which target men in the first place.

FAO (1994) indicates that, in the forestry sector in Sudan, women and men are responsible for different types of trees and both share the tasks involved in forestry, while women handle seedling preparation.

Given the importance of women's contributions in agriculture, support for and enhancement of their role is badly needed. There is a need for a clear, concise and planned engagement to benefit the entire population. Engagement is necessary for all activities supporting people's livelihoods. As such, it is not enough to consider the head of the household (usually male) as the primary unit of analysis, because gender differences exist and gender-based constraints vary considerably and require special attention.

Objectives and methodology

The Sudan action plan centers on enhancing the capacity of selected people, analyzing the organizational setup, and producing supportive material for lobbying for expected change. The major activities cover: gender analysis in two production domains; impact assessment of a project implemented using participatory approaches in northern Sudan; organizational analysis of the ARC that included a synthesis of previous projects with components of participatory approaches or gender analysis, sensitization of ARC, and training of some of its staff (Figure 1).

The framework and the associated goal of these activities are linked to the mainstreaming efforts of gender analysis and participatory research within the research system. The findings help to produce convincing results for the required organizational transformation (both structural and mode of action) so that the outcome of the research interventions is augmented and enhanced.

Analysis, findings and results

Analysis of a set of activities is reported here for the sake of showing existing differences related to gender aspects in farming in order to use them as convincing argument for influencing change

Figure 1. The suggested action plan for 'Enhancing chances for mainstreaming of participatory research and gender analysis in the ARC, Sudan' by Sudan team members.

within the organization. The main activities to be used as tools during the intended change process are gender analysis, impact assessment of IFAD project (based on participatory research), documentation of previous participatory research projects, organizational analysis, training and capacity development, and creation of group alliances. These activities were expected to generate materials and information for sensitization and awareness-raising in the process of change.

Results are presented in two sections: Section I on gender analysis and organizational setup; and Section II on the gender-mainstreaming efforts. Section I draws heavily on the lessons learned from ARC projects and experiences in PR or farming system approaches to innovation generation, and on the results of the organizational analysis of the ARC. Section II deals with mainstreaming of gender analysis and participatory research, and the possible route to achieving this mainstreaming at ARC.

Section I: The context of Sudan with respect to gender analysis and organizational setup

Gender analysis

Women in Sudan make obvious contributions to the household economy and, consequently, in the development process. Women's engagement in various activities differs according to the socio-economic characteristics of the target group. Differences in socio-economic characteristics are evident across geographical locations in the country. The eastern part of the country has been more restrictive to women's participation and the western part more encouraging to women's participation, not only in farming activities, but also in the interaction at community level in handling many community affairs. In central Sudan, the situation is mixed, as the region itself depicts the norms and values of the various ethnic and cultural backgrounds.

Women make significant contributions in farming across the country, but especially in western Sudan. Women get involved in all farm operations and also often shoulder the laborious work of taking care of animals in backyards or during annual migration (in the case of nomadic communities). Household maintenance ('unproductive' activities like water-fetching, food preparation and household cleaning) is provided by women and these are valuable contributions in environments where any of these activities require laborious effort and time.

Gender study

The gender analysis was carried out in two domains: the traditional rainfed farming of western Sudan (Kordofan, with some exposition from Darfur) and the irrigated farming of the Gezira scheme in central Sudan. A combination of the analytical frameworks as identified by March *et al.* (1999), Lingen (1997), and Wilde and Vainio-Mattila (1995) was used.[4] The main focus of this section is to reflect on the gender roles and their implications on household economy and well-being. This includes roles played by men and women, differential access to assets and resources

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[4] A number of analytical frameworks have been developed and used, of which the common ones are:

1. Harvard Framework (maps the work and resources of men and women, and highlights the differences; it looks into activity profile, access and control profiles of resources and benefits);
2. Caroline Moser Gender Framework (aims at integrating women's issues into development and raising concerns about their subordination; looks into women's triple role in productive, reproductive and community work, and into practical and strategic gender needs; also concerns intra-household resources and decisions);
3. Gender Analysis Matrix (the Rani Parker framework—aims at determining the differential impact of development interventions on men and women; looks into the four levels of women, household, community and society; traces the impact of [a] labor rearrangement, [b] time arrangement, [c] resources arrangement, and [d] changes in socio-cultural aspects);
4. Women Empowerment Framework (the Sara Longwe model—aims at tracing the extent to which development interventions empower women; looks into welfare issues, equality in accessing factors of production, ascertaining that gender roles are socially determined and can be changed, equal participation in decision-making, and recognition of women's issues);
5. People-oriented planning framework (devised by the UNHCR, adapted from the Harvard Framework for use in refugee situations—aims to ensure that there is an efficient and equitable distribution of resources and services of development assistance; considers determinant analysis [population and context analysis] and activity analysis [who does what]).

Water-fetching is done more by women than men

Women share equally the responsibility of heavy work like loading and off-loading on a market day

by gender, as well as gender division of labor and its likely implication on technology generation and adoption.

There was an enormous gender differential in access to resources and benefits in Kordofan. This was even more pronounced in central Sudan, because of the social setup that discourages rural women's involvement in various livelihood opportunities, including farming. Performance indicators like level of production and total income show that female-headed households are effectively discriminated against, leading to low calorific intake, which is one manifestation of widespread poverty.

Gender division of labor was also marked: women's engagement in the productive sphere[5] being equal to if not more than that of men. Engagement in reproductive matters is entirely women's business and community affairs are mostly shouldered by men. This division of labor shows a big burden on women at household level, and apparent denial of the benefits that are offered through institutional arrangements like extension, credit arrangements and community training programs.

[5] There are spheres of analysis of women's engagement: the productive sphere, which is the workplace; the reproductive sphere, which is work basically for household maintenance; and the community sphere, where community affairs are handled.

Given this gender division of labor among household members, the kind of constraints that each faces will differ—this is referred to as 'gender-based constraints.' The aggregation of results based on head of household will obscure many important details associated with practices and required innovations to meet various demands of key actors at the farm level (men, women and children). It is the production of gender-disaggregated data and development of intervention plans based on such detailed information that is likely to generate the needed solutions to various constraints faced by different stakeholders of research findings or technologies.

To rectify this situation, agricultural research can play a significant role along the line of affirmative action interventions, e.g. positive discrimination to rectify the situation. Production of gender-disaggregated data that feeds into focused research protocols to solve gender-specific production constraints would be highly valued and contribute to efficiency and equity of research in the research-to-development continuum or the agricultural innovation processes.

Gender analysis frameworks can be used to generate gender-disaggregated data and, consequently, help identify gender-specific constraints in technology generation, dissemination and adoption. Gender analysis is also an essential component of gender mainstreaming in general.

Impact assessment of a participatory research project

As already mentioned, we consider that gender analysis is perfectly viewed as a sub-set of participatory research. Females are potential stakeholders and their involvement in the research process should guarantee the process being participatory. Advocates of participatory research always refer to the value added as exemplified by high adoption rates leading to better farm performance, food security, enhanced management of natural resources, and livelihood improvement. This section reflects on the impact of a project that was supported by the International Fund for Agricultural Development (IFAD) and implemented at the field level by the Hudeiba Research Station of ARC using participatory research. The project, 'Technology Generation and Dissemination for Sustainable Production of Cereals and Cool-Season Legumes,' emphasized participatory research for the dissemination of new technologies released by the ARC. The goal of the project was to improve the standards of living of the rural communities through increasing crop productivity and quality.

Prior to the IFAD project, the International Center for Agricultural Research in the Dry Areas (ICARDA) had implemented the Nile Valley and Red Sea Regional Program (NVRSRP) from 1979, generating improved technological packages on wheat and cool-season legumes to increase crop productivity and enhance farming performance. The NVRSRP was designed to use on-station research to develop improved production technologies. Following on-station research, on-farm verification trails were conducted as backup research. The on-farm research was the first step in the dissemination and transfer effort for proven technologies.

The Program also focused on demonstration fields to get the messages across. The improved technologies performed well under farmers' field conditions and showed higher crop yield and better net returns compared to farmers' traditional practices. The adoption rate was variable (Faki, 1996), and there was instability of the adoption over time.

With this background, the Sudan team participating in the ASARECA–PRGA Program gender-mainstreaming project selected the IFAD project for impact assessment, to reflect on the value of using participatory research in technology generation and dissemination. The scientists involved

Making of Khyam *(tent) is entirely the responsibility of women and is a huge labor work among the nomads in Kordofan and elsewhere in Sudan—*Khyams *are made of clothes, plastic sheets, wool materials and sticks*

Women participate equally if not more in the establishment of social infrastructure like Hafir *or water ponds (dams) in Kordofan*

Women are also engaged in cleaning of produce as part of the marketing process

Women get heavily involved in marketing of fruits and vegetables in Darfur—this is pure trade whereby women buy and sell different vegetables and fruit for profit. They do different deals and have different strategy for maximizing their profit

Women and girls involved in marketing of grains and other products in Darfur—engaging in marketing activities is the norm and not the exception in rural Darfur and to a lesser extent in Kordofan of western Sudan. The variety of engagement in Darfur is much richer, ranging from vegetables and fruits to grains and dry rations of various sorts

Creating choices and opportunities through inclusion will enhance the livelihood of the household; we need to target those who make a difference within the household with an array of choices and capacity-building programs—Mahasim Ibrahim was trained as a paravet by the North Kordofan IFAD project in 2002. She then formed her own business, which was found to be very successful during an evaluation mission in 2006. The livelihood of Mahasim and her family was greatly enhanced through the chance given to her by the project

in the ASARECA–PRGA Program gender-mainstreaming project, in collaboration with the socio-economic focal point of IFAD, carried out the impact-assessment study in 2005.

Cross-sectional data was collected, using stratified cluster sample, from 309 farmers, of which 208 were in River Nile State (RNS) and 101 in Northern State (NS). A structured questionnaire was used in the interview schedule. In order to trace impact and enhance the chances of attribution, comparison was made between participants and non-participants (control group) demonstrating 'with and without the project.' Participants were farmers exposed to improved technologies from past activities of the NVRSRP and the IFAD project, and non-participants were not participants in any of those activities.

The data collected relates to information and performance of the agricultural season 2004/05.

Findings of the impact-assessment study: There was a mixed understanding of the concept of participatory research among scientists who were part of the project. PR means strategic involvement of key stakeholders in the research cycle from problem identification to technology generation, dissemination and evaluation. In fact, clients (farmers in this case) were brought into the process only during the dissemination phase. This phase included various extension methods like farm days around on-farm trails (whether researcher- or farmer-managed). Discussion revealed that on no occasion was participatory research practised in the strict sense. This was evident during the workshop conducted at Hudeiba Research Station with the purpose of sharing understanding and experiences on the participatory research methods. Scientist didn't have the same understanding of the concept and no serious effort was made to bring everyone to an agreed understanding. This has created some frustration, especially among those who know a great deal about the concept. Another issue was the targeting mechanism which focused on the heads of households. By definition and cultural values, that position is always occupied by a man, which resulted in leaving women out of the project, although their actual contribution in productive and reproductive activities is large and often surpasses that of men. This is evident from the fact that when a female is the de-facto head of the household, male members of the family to which she belongs take up responsibilities defined by the community as male responsibilities, e.g. representing the female-headed household at community institutions. This indicates that gender was neither contextualized nor considered in the program focus.

The workshop conducted with scientists in Hudiaba Research Station created an atmosphere and space to start focused sensitization. When the concept of participatory research was explained to the participant scientists, an intense discussion and self-reflection ensued. Participants were given enough time to review and reflect on the way they were doing participatory research. At the end of the discussion, a conclusion was reached that no one was doing proper participatory research, but rather involving farmers in the process of technology dissemination and at best involving them in technology evaluation. In reality, there was little space for considering farmers' views in technology evaluation, as farmers might have considered factors other than productivity, which was the only issue the researchers had focused on.

The critical aspect about the project was that a deliberate attempt was made to involve clients or beneficiaries at least during the technology validation phase. The implication of such client involvement was that some degree of awareness and sensitization around the technology was developed, and sensitization about broader agricultural development issues was initiated.

Sensitization helps create an enabling environment for technology uptake, so the chance of making an impact on the community should have increased.

In other research stations where there is limited or no outside support for initiatives like participatory research and gender analysis, few funds are made available for experimentation on farmers' fields and multi-site testing; rather, just enough is available to help scientists carry out their normal experimental work, but not for activities that mobilize clients to engage in the technology development process. It is clear that there was lack of in-house capacity and also that there were institutional constraints that hindered carrying out participatory research in the ARC.

Part of the aim of the ASARECA–PRGA Program gender-mainstreaming project was to create awareness and sensitize researchers around gender and participatory research. An effort was made to agree on the understanding of participatory research as "strategic involvement of key stakeholders in the research cycle, i.e. from planning to dissemination/evaluation and feedback for re-planning." Issues pertaining to key stakeholders, strategic involvement and the required advocacy are important integral components of the process.

By the end of the workshop, a demand had been created for focused participatory research and gender analysis training. Scientists expressed their willingness to take time and arrange a setting for sharing information about participatory research and gender analysis. A strong motive was also demonstrated that participatory research needs to be tried out in subsequent research in order to improve the chances of impact down the road. When participatory research and gender analysis concepts and culture were shared with key policy-makers of the ARC (headquarters), the perception was positive but the understanding was mixed. The common feeling of key decision-makers was that the ARC is already doing participatory research in one way or another with strong reference to IFAD project just discussed. At best, they indicated that something has to be done, merely under the influence of regional commitment to initiatives like the ASARECA–PRGA Program gender-mainstreaming project. This is by itself a very positive sign and can be utilized if the capacity to operationalize the concepts is in place. The ASARECA–PRGA Program gender-mainstreaming project provided scope for sharing of the concepts and making noise and voice in different forums. This is in essence a sort of advocacy that will yield a result sometime in the future but needs to be backed up and sustained.

Statement on other projects with participatory components

This part reviews the experience of the four projects implemented by the ARC that adopted some kind of participatory approach. The central feature of these projects was client involvement in one way or another. The stages of technology development and dissemination follow, in a way, a farming system approach, where the role of the research dominates at station level and loosens gradually with the involvement of extension people and clients at the farm level. The process involves on-station trials that develop into on-station demonstrations and continues to interact with farmers, extension staff and policy-makers through on-farm demonstration plots.

ICARDA, NVRSRP and IFAD-funded project in Sudan: The ARC started research cooperation with ICARDA in 1979 in the northern part of Sudan under the NVRSRP that used to provide support for Egypt, Yemen, Ethiopia and Sudan. The program started as the Nile Valley Project and later developed into a program networking the four countries (ICARDA, 1996).

Historical perspective and development of ICARDA programs in Sudan: The Nile Valley Project (NVP) was established in 1979, two years after the founding of ICARDA, to improve faba bean in Egypt and Sudan through regional cooperation among the NARS. In 1985, Ethiopia became a member of the project. The ARC and ICARDA were working to identify and overcome farm-level production constraints through production and dissemination of productivity-enhancing technologies. Collaboration of the extension service was central to the effort. The project focused on four important food crops: faba bean, lentil, chickpea and wheat. The ultimate objective was to increase incomes of small-holder farmers through improving crop yield and quality. ICARDA was the primary source of germplasm for evaluation and for enhancing breeding programs, and fostering human-resource development through training. On-farm tails were used for achieving the intended objectives—the first level of client participation where space is guaranteed for inputs from farmers (ICARDA, 1996).

The NVP was transformed into the Nile Valley Regional Program (NVRP) on cool-season food legumes and cereals in 1988/89, supported by the Netherlands Government through the Directorate General for International Cooperation (DGIS) of the Ministry of Foreign Affairs. The project was designed for 3 years and extended for another 3 years, through to 1993/94, because of its impact. The donors organized an external review mission to evaluate the impact on technology development and capacity-building in Sudan, which resulted in another extension up to 1994/95 (Ageeb *et al.*, 1996). Barley was added to the program as sustainability was considered a serious issue. In this Program, a wider *participation* of various key *stakeholders* was improved as compared to the NVP. Farmers' training was also packaged in a better way to enhance the expected impact (ICARDA, 2003b).

The NVRP was later transformed into NVRSRP, with the ultimate goal of increasing incomes of small-holder farmers and improving food security through improving the productivity of cool-season food legumes and cereals, and to ensure the sustainability of production systems in the different agro-ecological zones of the Nile Valley countries and Yemen. Sharing of cross-cultural experiences was the added feature and is one of the components of better participation of target populations or clients. Six networks were established in association with ICARDA's involvement in the region (1994/95–1997/98) to find solutions to the major biotic and abiotic stresses facing the main five cool-season cereal and food-legume crops in the region (ICARDA, 2004).

IFAD/ICARDA Project: A new project under the title 'Enhancing Food Security in the Nile Valley and Red Sea Region' was funded by IFAD in River Nile State (RNS) and Northern State (NS) from 2003 to 2005. The objective was to generate and disseminate technology for sustainable production of cereals and cool-season food legumes. The essence was to build on the results and achievements of the NVRSRP and to disseminate to farmers the improved technologies developed for sustainable production of cereals and cool-season legumes. The mechanism of on-farm research systems that enlisted the full participation of farmers, extension agents and researchers was the central philosophy and approach, and permitted the development of technologies that increased production of important food crops in a sustainable manner (ICARDA, 2003a).

IFAD was emphasizing participatory research approaches. The process was generally perceived as bringing different stakeholders to work together, namely researchers, extension agents and farmers. Evaluation of technologies was done jointly. In terms of sharing information among key

stakeholders and involving all potential stakeholders, the process was good, but it didn't ensure the strategic involvement of those stakeholders in the research cycle from planning to evaluation.

The major components were:

1. Researcher-managed fields
2. Researcher-and-farmer-managed fields
3. Farmer-managed fields
4. Pilot fields (demonstrations)
5. Field days as a mass dissemination process.

Policy-makers were usually involved in the fourth and fifth stages, whereas extension agents were involved from the third stage and sometimes from the second stage.

Integrated Pest Management (IPM) Project: The Integrated Pest Management (IPM) Project was one of four projects designed specifically to address women's interests and needs. This was done proactively through special learning space created by 'rural women schools' (RWSs), where women meet and discuss various issues of concerns and receive the required training (Dabrowiski, 1997). Strategic targeting of women was the prominent feature of this project and is considered more focused client involvement. It has the advantage of sensitizing women around various development issues, taking the farming business as a vehicle for that.

IPM was advocated by FAO as a preferred strategy from the mid-1980s. IPM entails the careful integration of a number of available pest control techniques that discourage the development of pest populations yet keep pesticide and other interventions to levels that are economically justified and safe for human health and the environment.

With respect to the level of participation, project activities were regularly presented and discussed by researchers, extensionists, plant protectionists, horticulturists and representatives of farmers' unions during annual review and planning meetings, in addition to national workshops organized on selected topics. Activities usually started with preliminary observations, primary evaluations and extensive surveys to identify the constraints facing crop growers. Researchers and extensionists were invited to prepare their programs for research, demonstrations and training. The project had a steering committee, which included specialists and experts in different related fields, who provided backup for material suggestions, preparation and revision (Dabrowiski, 1997).

A pivotal setup for running of the project was the formation of Farmer Field Schools (FFSs). In such FFSs, the stakeholders participate proactively by selecting the time and place of meeting, and they also define the topics and themes to be discussed each time. Topics are basically of a farming nature, but non-farming topics also come up when there is a need. In order to run such a school, roles and responsibilities are defined, including moderation, informing participants, and preparation of the necessary logistics. During the first season, six FFSs were established, and by the 1995/96 season, there were 26 FFSs with 448 members, 6 RWSs with 163 members, and 7 pilot FFSs. Over a hundred employees were involved in managing, supervising and monitoring the schools. Realizing the need for up-to-date information, curriculum was prepared and about 35 publications were issued and distributed. Moreover, the flow and exchange of knowledge and information continued through field days, visits, technical tours, workshops and seminars,

in which various key stakeholders participated. The main aim of the IPM FFSs was to enhance farmers' knowledge and ability to become experts in their fields. So the training was directed to improve work efficiency, interaction and *empowerment*, meaning enhancement of farmers' self-reliance in challenging their production problems and organizing their efforts to improve income (Dabrowiski, 1997).

The IPM Project strengthened the inter-disciplinary collaboration among agricultural research, extension, agricultural schemes, universities and farmers' unions in developing and implementing IPM components for different crops. There was early recognition of the need for integrating women in the learning cycle and (because of the potential difficulty of joining men and women in the same school) separate schools were set up for women with different material and focus. The project succeeded in giving more space for women through RWSs and covering issues of food security, farming operations and income-generating activities, which enhance female contributions to the household and community. Thereby, women's access to resources and services was greatly enhanced and upgraded. This was considered more of an inclusion process and assisted greatly in addressing women's strategic needs.

Western Sudan Agricultural Research Project (WSARP): The Western Sudan Agricultural Research Project (WSARP) was funded by USAID and the World Bank from 1979 to 1988. Four research stations in western Sudan—Kadugli and El-Obeid in Kordofan, and El-Fasher and Gazala Gawazat in Darfur—were constructed and staffed. The four stations were originally non-functioning ARC stations. The project followed the farming system research approach. The philosophy of the approach was to strengthen the farmer–researcher–extension linkage. This approach looks into the components of technology generation based on good context analysis; technology transfer and the appropriate setup for that; and finally adoption and feedback for more adjustment if need be. It is more participatory than the other approaches used. Situation analysis (an integral component of the farming system approach) has often paid special attention to all potential actors, like women, in the farming process and accordingly their needs were carefully observed.

The process also emphasized a multidisciplinary approach to problem-solving. The start was always to carry out a diagnostic survey with multidisciplinary teams. The essence was to look at the farm-household complex in totality and not the farm alone, which requires going beyond conventional tools of investigation and using participatory approaches that equally value qualitative criteria of characterizing the entity under consideration. For the first time, the team included socio-economists (even in leadership roles). The advantage of this was better identification of the complexity of problems hindering production, and comprehensive characterization of the socio-economic context as a prerequisite for technology transfer and adoption. During technology development, a serious effort was made to engage beneficiaries in the process.

The process also focused on the household as the basic analytical unit and looked to the farm as a subset of that. This ensures that both male and female concerns and needs were addressed.

In managing the research work, the discussion of research activities took place at two levels. The first level where much of the discussion took place was the station committee composed of all the scientists in the respective station. The second level was the system committee composed of all scientists in the respective farming system (there were two farming systems, the sedentary and

the nomadic or migratory). The critical question was always: what is the relevance of the research activity to the target beneficiaries? This helped focus the research activity for the benefit of the target population.

In implementing research activities, based on holistic analysis (looking at all factors—internal and external—that influence the farm-household complex), natural scientists carried out on-station research, often in different sites, for the primary screening. Researchers often demonstrated progress to stakeholders like extension people and some farmers. Once the technology was released at the station level, the next step was on-farm testing under the management of researchers. This is another space for lots of information sharing. Also scientists do on-farm testing under farmers' management. This type of activity simulates the actual field conditions. Results under this setting reflect what should be expected once the technology is disseminated to the ultimate users. At this last stage, a lot of extension activities usually took place, like demonstration farms to be used during field days. So the whole process favored the *ultimate client*.

This farming system approach as practised created more space for client involvement and wider participation of end beneficiaries from inception of research work to final evaluation. The approach was different from the pipeline approach, which had been dominant in the ARC. The pipeline approach focuses on crops or commodities, where scientists generate the technology based on biological merits or technical considerations and hand that technology to the extension service, which is responsible for disseminating the technology.

In all the projects discussed above, there was a marked effort to go beyond the pipeline approach. The approaches used in these projects were modifications and miniatures of a typical innovation system. The innovation system is the system that considers the whole journey of the technology, right from how it was conceived to dissemination and up-scaling or out-scaling. It differs from the pipeline approach, which has very limited participation from key stakeholders.

The implication of the participation—though not as complete and comprehensive as in the case of typical participatory research—was better perception of the generated technologies by end beneficiaries and hence better chances for adoption.

Synthesis: The gender analysis in the two production domains (Kordofan and Gezira) found differential access to resources and benefits, as well as gender division of labor. Given their slightly different contexts, men and women need targeted interventions to improve their livelihoods. Since the main part of the livelihood of rural people is agriculture based, the ARC has a big stake and overarching role to play. For this role to be of benefit to all, *gender-sensitive research in a participatory manner* is the appropriate entry point, because this is almost a prerequisite for technology adoption. Engendering research or, more precisely, mainstreaming gender within the ARC system would be of paramount importance for the intended improvement.

The examples of projects with participatory components demonstrate the ability to sensitize target communities for high adoption and better impact. The sensitization would have been much better if the gender dimension had been taken into consideration seriously, as demonstrated by the IPM project, which opened space for women to take an active role in the whole process of project engagement.

Organizational analysis (gender gaps in policy, expertise, program focus and running)

Organizational analysis: Both the cultural and structural components define the nature of an organization with respect to gender. The structural components, or the organization, include the linkages and lines of command, whereas the cultural components include the programmatic aspects like type or focus of the programs and the way they are set up and managed. An agency or organization can only be described as sensitive to or mainstreamed in something if both culture and structure address that something sufficiently. In a research organization, for example, gender analysis or participatory research can be the normal way of doing business within the organization if both the culture and structure are sensitive to the concepts.

An important visible structural component is the presence of a person or unit dedicated to gender analysis and participatory research. This will not mean, however, that the issues are mainstreamed, but visible structures are important if a major change is to take place. Similarly, important visible culture is a presence of protocol or mechanism that tracks and ensures compliance with the requirement of the aspect; the best example would be an audit mechanism with associated reward (incentives) or even punishment (disincentives) for non-compliance.

Why is participatory research and gender analysis important and what is the status of the two concepts in the ARC of Sudan? This was the question that was asked in order to assess the ARC with respect to the two concepts.

A one-day inception seminar was held at ARC headquarters on 3 May 2005 in the presence of the director general, deputies and key influential policy-makers, program leaders and key principal scientists from different disciplines, stations and centers (24 participants in total). A presentation was made of the materials related to participatory research and gender analysis, and reading material in support of the presentation was available. A focused and directed discussion was held in order to solicit ideas and perceptions about participatory research and gender analysis.

Furthermore, an organizational analysis was carried out using the organizational analysis framework (Gurung and Menter, 2004) to sense the structure and culture of the ARC with respect to gender analysis and participatory research, to shed light on the constraints and opportunities, and to identify correct entry points for informed and planned mainstreaming.

Policy dimension: There was no policy regarding gender analysis and participatory research within the ARC. There were, however, specific externally funded projects that provided support and backup to participatory research (rather than gender analysis). It was the demand of these projects that stakeholders, at least beneficiaries, be involved in all steps. Special consideration was often given to women participants as being marginalized. ICARDA- and FAO-supported projects in Northern State and Gezira, respectively (i.e. the NVP and the IPM project), were the most participatory in their engagement. The WSARP was another example of client-oriented research. It was also externally funded, with a clear objective to enhance the adoption environment through better analysis of farmers' situations and developing technologies that address clients' needs and not only scientists' interests. So there was *no policy with respect to participatory research and gender analysis*; thus, an important cultural component was lacking if the ARC was to be considered gender mainstreaming.

Tasks and responsibilities: Relevant applied research is usually carried out by scientists as per job description and mandate of the ARC. Acceptance of proposals (intention to develop intervention)

depends mainly on its biological merits (technical consideration), meaning ability to enhance productivity *per se*. The socio-economic or socio-cultural aspects or dimensions of the intended technology are usually weighted low. WSARP tried to enhance participation of target communities and also gave more weight to socio-economic aspects of the technologies so that the chances for adoption were improved. It was recognized that as more dimensions of technology generation are considered, the cost increases, but the chances for adoption also increase. The high cost might have been one of the reasons for non-use of participatory approaches in technology development, but more importantly, the value added from doing participatory research counted at the sectoral or national level was not very well perceived and internalized.

Capacity: In general, there was limited capacity within the ARC in terms of understanding and applying the concepts of participatory research and gender analysis. Often, participatory rural appraisal (PRA) techniques were confused with participatory research. PRAs are diagnostic techniques that can be used along the known participatory research cycle in order to learn more, in a participatory sense, about any context along the cycle. So, perception was an issue as well as lack of capacity in ARC.

Policy influence: Though the director general and cabinet are finally responsible for providing the leadership and management required to lead the organization to its objectives, there are other sources of influence on policies that determine the direction of the organization. Some senior scientists and program leaders have significant influence on policy-making. Even some retired scientists influence policy-making, being experienced and having shouldered administration and policy-making responsibility at some point in the past. The extent of this influence varies with the personality of people in the key management positions.

Decision-making: Decision-making is the responsibility of the director general and associated subordinates at headquarters and regional stations. Program leaders and their technical staff make relevant decisions at their levels and to the limit of their authority, and are accountable to technical committees responsible for managing technical work. Program leaders allocate budget for running their programs, but do not have authority over administrative issues regarding the viability of their respective stations, liking managing supporting staff, preparing logistics and non-program financial issues, all of which are the responsibility of the station directors.

Room for innovation: This refers to the kind of encouragement and rewards that promote excellence and improvement. Evaluation methods recognize work in specific pre-set formats and evaluation criteria, and such work leads to self-promotion within the department. There is too much fanaticism on the way things are done within departments or sections. Out-of-the-box thinking is less often recognized, proactively, by provision of funding and facilitation of ideas and processes. This often leaves little room for creative ideas that might help the whole organization rather than a specific department. In this environment, one tends to live with whatever is available and avoid the trouble of working in challenging or non-recognized areas and initiatives like gender analysis and participatory research. The existing reward system therefore is not supportive of initiatives and can even be discouraging towards concepts like gender and diversity.

Symbols: The symbol of the ARC as captured in the logo calls for 'scientific excellence in agriculture' and encompasses the use of modern techniques to address low-productivity problems of important crops that support the livelihoods of the Sudanese people. It focuses on crops and not necessary livestock, which are vital in the livelihood of many Sudanese. The symbol is not explicit in looking

into overarching concepts that open the door for accepting challenges like poverty reduction and income enhancement. These concepts require the use of comprehensive programmatic approaches and methods of engagement like gender analysis and participatory research, which render interventions more focused and comprehensive. The limited scope of engagement of the ARC (focusing only on applied agricultural research with limited coverage of socio-economic aspects of technologies) and the associated limit funding venturing into gender analysis and participatory research, which require expanded circles of socio-economic and cultural dimensions.

Cooperation and learning: Cooperation exists at a personal level among scientists and other key stakeholders in the research-to-development continuum. Conversely, personal relationships sometimes hinder cooperation. Sometimes, because of disciplinary relationships and interdependency, scientists are forced to coordinate among themselves to address specific technical or biological problems (multidisciplinary approach to problem-solving). Technical committees responsible for scientific evaluation of research emphasize the technical or biological dimension of technology generation and do little to reinforce other aspects like socio-economic or gender aspects. A wide and affirmed institutional cooperation within the ARC or between the ARC and other actors in the development arena is best described as '*ad hoc*.'

Attitudes: Attitudes toward participatory research and gender analysis are negative and usually camouflaged by ignorance and limited knowledge of the concepts by senior staff. Senior management (DG and subordinates) are willing to cope with regional and global initiatives as per their job descriptions, though they often fear the financial implications of supporting such initiatives. There is leverage hinged on the willingness of the DG and his subordinates to address and cooperate in regional and global initiatives that promote scientific research and enhance its impact. Changing attitudes would be the appropriate entry point for mainstreaming participatory research and gender analysis in the ARC. If positive attitude based on good perception of the importance of gedner analysis and participatory research is developed at any level within the organization, there will be a likelihood of propelling the issue and getting it through. The pace will be faster if high-level decision-makers are sensitized, but will still be commendable if the sensitization and change of attitude has taken place at any level in the ARC.

The use of the framework has shown the status of the ARC with respect to gender analysis and participatory research. Although the analysis was not in depth because of the constraints faced, it gave an insight that helped in defining the necessary steps and plausible entry point for enhancing participatory research and gender analysis mainstreaming. The synthesis of the organizational analysis points to two main areas of interest and of possible reasonable impact for the process of participatory research and gender analysis. These are the policy dimension and the attitude of the organization. As there is no clear policy in the ARC regarding participatory research and gender analysis, influencing the introduction of such a policy will be of paramount importance. Implementation of any policy can only follow the existence of the policy itself. However, the strategic thinking and engagement should surpass the introduction of the policy. This implies looking into the environment within which the proposed policy ought to be implemented. The positive attitude of those making up the organization is the element that guarantees sustainability of the proposed change.

The action plan developed by the Sudan team focused on change of attitudes and influencing policy in favor of participatory research and gender analysis, making use of the opportunity given

by the PRGA Program support and project, which helped in capacity-building and sensitization at both scientist and policy-maker levels. There are many outside forces that encourage the ARC policy-makers to go in the direction of defining and implementing a policy—one of these is the regional initiatives of which the ARC is a part. The best example is the weight given to the issue in the ASARECA strategy and action plan.

In a broader sense, there is a lot to be done before the ARC can be judged and described as a gender-sensitive and participatory research-based organization. This is evident from the many gaps identified in the framework (almost all the cells have a sense of being negative and not in favor of the two concepts). In this situation, a sensitization program emphasizing change of attitude and capacity-building will be required.

Section Two: Gender mainstreaming 'the movement from analysis/synthesis to targeted organizational change'

The mainstreaming of participatory research and gender analysis could be a solution, to a limited extent, to the agricultural research and development problem, through integration of the main stakeholders in the process from the beginning. Typically, an innovation system approach to technology generation considers the technology as a package and puts all the requirements in place from the moment the technology is perceived up to its dissemination, adoption and impact. This requires an institutional setup that values the importance of involving all key stakeholders in the process of technology generation. This means both the structure and mechanisms to enable and promote the process of innovation must be in place, which implies a degree of institutional and policy reform within the ARC. There is always resistance and obstacles to institutional reforms—some are easy to overcome and others require more effort.

During the gender-sensitization activities within the ARC, a number of resistance sources were identified:

- *Lip service:* basically caused by inability to value gender as it should be valued. This is usually the case when internal drivers are not in place. To deal with such resistance, the best practice is to generate convincing arguments for changing attitudes and behavior. Training and capacity-building are vital.
- *Culture resistance:* caused by the negative attitudes toward gender. The term is often seen as a product of the women's movement or as jargon of development agencies, but having little to do with core science and development interventions. Statements like "it doesn't add much, we already do it as part of our routine work" are not uncommon among senior and even young scientists (men and women). The best practice would be to create adequate awareness about the concepts and their importance.
- *Knowledge gap:* caused by lack of adequate knowledge—the best practice would be the creation of adequate knowledge through appropriate media. There should be gender criteria for evaluating programs and also as a reward mechanism. This will create some kind of internal drive to encourage scientists to know more about it and use it.

Mechanisms and strategies for mainstreaming, as per the organizational analysis of the ARC center, focus on *sensitization* in the short run and institutional transformation in the long run. Sensitization is best achieved through capacity-building, whereas institutional reform requires

advocacy and lobbying, making use of all enabling factors and partnerships both locally and regionally.

To start the process of mainstreaming, two important activities were defined: training or capacity-building, and setting up a functional support group or task force to lead the process.

Training or capacity development and sensitization

The training (or capacity development) and sensitization aim to change attitudes and influence policies in the ARC. Two workshops were held, one at headquarters and one at Hudeiba Research Station. The aim was both educational and for building positive attitudes toward participatory research and gender analysis. A lot of information was shared at those workshops, which raised a lot of debate on correct understanding of the concepts and best practices.

The first workshop was the one-day inception seminar held at ARC headquarters on 3 May 2005 (see Organizational analysis above). From the group and individual discussions in the seminar, there was a positive perception about participatory research, at least theoretically. However, the inclination was that such participation would be good and of benefit in projects that extend physical material (inputs) to beneficiaries as part of a program, because a direct benefit would be felt by the beneficiaries. It was not difficult for the participants to see lack of proper stakeholder participation as a contributing factor to weak adoption of technologies. Stakeholder participation was perceived to be important during implementation rather than during the technology generation stage.

Some confusion surfaced in relation to the terms participatory research, 'PR,' and participatory rural appraisal, 'PRA.' Whenever 'PR' was mentioned, many thought of the PRA methodology. Because of this confusion, many scientists claimed to be doing participatory research in their research efforts, while the fact was that no one used participatory research properly. Once the concept was clarified, people stepped back to synthesize their thoughts and the discussion became more focused on the concept of participatory research as explained. Most of the experience with participatory research was in the dissemination of generated technologies, where selection of stakeholders comes at the very end of the process, while the process in its proper setting calls for strategic stakeholder involvement right from the beginning in the technology generation process. A major criticism of the process was donors pushing toward participatory research process, which will only be sustainable under donor support.

The first reaction of the participants to the explanation of the concept given was that participatory research seems to be workable and would be beneficial to both researchers, in focusing their technology generation effort, and to the community, by enabling them to have access to the technology in a proper manner. Technology would not be simply giving out an end product; it would rather be educating people on improved methods of doing farming. The questions remain as to which stakeholders should be involved, when and how.

One more issue that needs to be mentioned is the group's reaction to gender analysis—some of the participants said that social values and religion would be constraints to implementation. When it was explained that gender refers to the socially determined roles and responsibilities given to men and women and not the biology, it became evident that there was potential to move forward, because clarification of misconceptions provided a lot of space and common ground for bilateral and multilateral discussion and exchange of ideas and thoughts that were supportive to the process. This can lead toward improvement of the gender relationship in the workplace and in society in

general that neither religion nor social values constrain, so long as the concepts and ideas are explained and simplified. In other words, messages on gender and gender-related aspects should concentrate and focus on the technical relations needed for advancing the work and should single out the socially determined roles and responsibilities which often conflict even with religion and best practices adopted worldwide.

An important factor that should promote the gender dimension in research is growing interest at national level, where key ministries have started dealing with the issue seriously and some kind of space has been created for that. More strategic and coordinated work can be easily sought because of the available platforms at national and even state levels. These platforms can be used for delivering the required training and the ARC can play a role because of the acquired capacity that is now in-house. In the agricultural arena, the ARC is one of the main players and will often be called on to take a lead or participate proactively—a leverage that gives the ARC a strategic position to enhance the concept and promote it.

The second workshop was a 3-day training workshop at Hudeiba Research Station, River Nile State. It was meant to sensitize scientists on the issue by using their experiences in the projects that were implemented with focus on gender or at least on participatory approaches. First, the concepts, terminologies and frameworks of gender analysis and participatory research were explained. Extended sessions were then provided for exchange of ideas and to compare understanding and practices against the concepts provided. The rich discussion and the counterarguments provided were all judged necessary and helpful for in-depth understanding of the concepts and way forward. This sensitization, though preliminary, will pave the way for better and focused future programmatic engagement with respect to participatory research (gender is expected to follow).

Support group and its dynamic

A task force or support group was formed from key persons from within the ARC and other related institutions. Criteria used were:

- *Personal characteristics:* This included dedication to, or at least strong link with, the concept or similar concepts, or being in a leadership position and subjected to the challenges of the concept. It also included interest and willingness.
- *Strategic characteristics:* This included seniority or being influential and advocate for change in their respective institutions or areas of jurisdiction where they are affiliated.

Members were drawn from the main organizations supporting agriculture in Gezira State, namely, the ARC, Gezira Project and University of Gezira. A first meeting was held with the intention of agreeing on a mandate, roles and responsibilities, and working principles. The meeting was not as successful as was hoped. Some members were very supportive, while others saw limited use and influence of the task force and suggested that it might be better to discuss such initiatives at a national level with the concerned ministers. This was seen as a way of key staff from the various institutions avoiding any concrete commitment.

Discussions and exchange of ideas during the meetings indicated that many members prefer to see themselves as part of a bigger initiative not restricted to gender and participatory research. Critical evaluation of such a request or intention revealed that the term gender itself was perceived

as a stumbling block to the required transformation. This seems to be a concern that needs to be addressed.

The team transformed the support group to focus on 'critical changes' to make the ARC more *client responsive and impact oriented*. Client responsiveness and impact orientation necessarily include being more involved with gender analysis and participatory research. The transformation was seen by many as more appealing and more comprehensive than considering only gender. The group was therefore named the 'Impact-orientation Task Force.' Its mandate is to support and influence the ARC to become more gender sensitive and client oriented.

Conclusions

Gender disparity exists in almost all organizations concerned with the research-to-development continuum in Sudan. The gender analysis carried out showed disparities in the three spheres, namely productive, reproductive and community affairs. Gender-based constraints also exist by virtue of the disparities and thus require special attention by potential actors in the research-to-development continuum.

All of the organizations involved, including the ARC, are gender-blind, as confirmed by the lack of gender-based interventions and, more importantly, by the failure to consistently produce gender-disaggregated data in order to improve the people's livelihoods. The assumption is always that once the head of the household (male or female) is targeted that should be enough to bring about changes and improvement. Such aggregation tends to overlook gender-based constraints, which are influenced by the complexity of the household decision-making mechanism and gender relations. It is known that gender analysis is about producing gender-disaggregated data for planning and engagement purposes.

Production of gender-disaggregated data should be the norm within the ARC, to be used in programmatic approaches. This will enhance targeting and improve the impact of agricultural research.

Participatory research is client-oriented engagement of research and has better chances of making impact by virtue of the sensitization processes that take place along the research cycle. Projects with participatory approaches generated better results and managed to sensitize key stakeholders, which is considered the first step in the adoption of any technology. As a strategy in gender-insensitive cultures, dealing with gender as a subset of participatory research has the advantage of shifting the focus from pure gender to stakeholder involvement. This is particularly useful in cultures where gender is perceived negatively. But the focus should not be lost and should be supported with concrete engagement plans.

The organizational analysis of the ARC indicated that the organization is gender-blind. The institutional setup of the ARC needs adjustment or reform to prepare it for gender mainstreaming. Both the structures and mechanisms need revisiting. Focusing the programmatic approaches to consider the whole innovation system rather than specific commodities will render the ARC more impact oriented.

For organizational change to take place, there have to be strategic intentions within the organization.

Mechanisms and strategies for mainstreaming should capitalize on *sensitization* in the short run and organizational transformation in the long run. Sensitization is best achieved through capacity-building, whereas organizational reform requires advocacy and lobbying, making use of all enabling factors and partnerships locally and regionally. Thus, continuous training and advocacy by the task force are appropriate entry points to the required transformation.

How the project has affected change in the organization

There has been a steady increase in the ARC female staff since the 1970s due to many socio-economic changes, most prominent of which is the change in female/male ratio of intake in the higher-education institutions. Analysis of the ARC staff records indicates that the female-to-male ratio has increased from 6% in the in the 1960s to about 50% in the early 2000s (2000–2006). Likewise the percentage of female scientists in senior positions has also increased over time, 4%, 16%, 22% of professors, associates and assistants respectively of the current (2007) staff. This indicates that, in time, there is a likelihood that female scientists will hold key management positions and are likely to contribute more to gender mainstreaming.

This increase has placed some kind of pressure on the management of the ARC to create more space for the needs of women as part of the mainstreaming process. Some of the issues include thinking of the management of women's accommodation, services and other related needs.

The gender project has, in a way, utilized this thinking environment created by the existence of the critical mass of female scientists to deliver focused mainstreaming statements. Female scientists have also started thinking more proactively about mainstreaming issues and not accepting the status quo. The training given to the task force has synthesized them more toward mainstreaming issues in the sense that concepts were clarified and a lot of talk and discussion centered on selection of alternative courses of action for the task force to reach a much larger audience in order to make an impact. Male scientists have also seen the issues of gender from a different perspective (judged from the discussion and comments following the two main training events). During the training, individual experiences were shared and important lessons were reviewed. Self-criticism of previous experience was a powerful tool to internalize some of the concepts in the training.

With reference to the gender policy (apparently not in place within the ARC system), the ASARECA–PRGA Program gender-mainstreaming project contributed to the conclusion that the policy will address two dimensions: the hardware (expanding the critical mass of female scientists by increasing their intake—equal opportunities for females and males or even affirmative action to encourage female scientists) and the software (the programs that address gender issues, specifically gender-based constraints in research). The hardware dimension is progressing positively even in the absence of a policy (steady increase in number of women in the workplace of the ARC organization). A conducive and encouraging work environment is also being created slowly, but more sensitization of the key policy-makers within the ARC system is needed—here is the advantage of the gender project, which targeted the attitudes of the concerned people through capacity-building. The project input is seen as having a multiplier effect in fastening the required change once attitudes have changed.

Lessons learned from the project

A number of lessons have been learned from the project, including:

- There is space for introducing change with respect to gender sensitization and mainstreaming.
- Training and capacity-building are very powerful entry points for the required change.
- The conceptual frameworks (gender analysis and organizational analysis frameworks) for mainstreaming both gender and participatory research have multiplier effects in the sensitization of research (good approach in the scientific environment of the ARC).
- The stereotyping of the social setup as an unbreakable stumbling block in the face of social changes is exaggerated. What matters is a good understanding of the social context and, more importantly, the approach to bring about the required change.
- Previous engagement of the ARC through various programs that were more client-oriented has laid the foundation for more programmatic gender work.
- More engagement in client-oriented research, like on-farm and in-herd research, provide more space for gender sensitization through greater involvement of stakeholders.
- Externally funded projects offer better support and environment for client-oriented research under which participatory research and gender concept are better handled, but the way they have been implemented has lacked a clear phase-out strategy to ensure sustainability.
- The alliance-building with key concerned people in the research-to-development continuum is a good strategy for outreach and impact orientation of newly introduced ideas and concepts.
- Critical and tough programmatic issues and concepts are greatly enhanced and better dealt with under regional initiatives where, at least, leaders and managers get sensitized first and, by virtue of their willingness to comply and support the regional initiative, a supportive environment will be created.

Status of the gender-mainstreaming effort (mid-2008)

A set of activities has been identified for the purpose capacity-building necessary for gender mainstreaming within the ARC. Starting with sensitization and awareness-raising among key and influential staff members, followed by organizational analysis to identify gaps with respect to participatory research and gender analysis, production of training materials, through implementing impact assessment and synthesis of previous participatory research projects that have been implemented by ARC researchers, and building alliances through creation of a task force from key influential people from selected relevant organizations in the research-to-development continuum.

For the sake of enhancing the change process, the plan focused on changing attitudes of individuals, policy-makers, key program leaders, and selected influential scientists by sensitization, so that they provide the necessary support for the mainstreaming effort. The concepts of gender analysis and organizational analysis framework were capitalized on by virtue of being more 'sellable' to the scientific community of the ARC. This will continue to be the broad approach in training and capacity-building. The critical reflection done on the impact assessment and review of previous experiences of the ARC with respect to participatory research was a useful learning tool

and helped in opening space for more interaction with the targeted scientists, and some concepts are expected to be picked up in scientists' research activities.

The gender task force formed at the start of the project, which later transformed into the 'impact-oriented task force,' has put together good thoughts to push the issues of gender mainstreaming and participatory research forward within the research and development organizations. The Sudan participants in the ASARECA–PRGA Program project and the task force should put more effort to operationalize this forum beyond sensitization through:

1. Better housing of the task force and linking it with others with the same concerns;
2. Development of specific objectives with milestones;
3. Secure funding for the task force's operation.

Way forward

To mainstream gender in research, there are structural transformations that need to take place. The needed structure calls for both structural and cultural adjustment to fit the context. Changing attitudes, having policy in place, and creating regimes and conditions of rewards for compliance with the new organizational mechanism are critical factors. A road map with clear milestones should be drawn up. The sensitization part should be well-packaged and sustained for some time.

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Influencing change: Gender mainstreaming in national agricultural research system in Tanzania

Eva Kilulele Kanyeka, Deogratious Lwezaura and Ninatubu Lema

Introduction

The national agricultural research system (NARS) in the Ministry of Agriculture and Food Security of Tanzania is decentralized into seven agro-ecological zones, namely Eastern, Northern, Western, Southern Highlands, Central, Southern and Lake zones. In each zone, there is one or more research and development institutes with a mandate to develop appropriate technologies suitable for all stakeholders involved in agricultural development for the farming community.

A zone typically covers a large area of between two and four administrative regions. These are too large for efficient development and dissemination of technologies with the limited resources available. This is particularly evident in technology transfer for agricultural production at the household level, because most of the rural societies in Tanzania are not homogeneous. Rather, they are composed of household categories with specific constraints and contrasting interests. Within households, individuals differ in gender, age and inter-generational relations, which are reflected in patterns of authority, division and control of labor, access to and control over resources and benefits. Household members do have some interests in common. Within these households, women seem to be the most disadvantaged—the seriousness of their case has been documented by Howard (2003). Tanzania has witnessed substantial gains in agricultural productivity and advances in agricultural technology. These advances have bypassed women farmers from technology development to obtaining credit. Women are the sole breadwinners in one-third of all households in the world. In poor families with two adults, more than half the available income is from the labor of women and children (household survey, 2001). Women produce more than 80% of the food in Africa, 60% in Asia and 40% in Latin America. Women generally have the primary responsibility of providing their families with food, water, fuel, medicines, fibers, fodder, etc. Women favor labor-saving attributes of crop varieties, as well as early maturity to avoid seasonal hunger (Toomey, 2000). Since these preferences are strongly associated with low-income households, women's preferences are an excellent weathervane for steering breeders in the direction of poverty alleviation. In Tanzania, gender differences in technology preferences within the households have frequently been ignored.

In Tanzania, there has been a large rise in the proportion of rural households headed by women from 17% in 1991/92 to 22% in 2000/01; in the same period women have experienced the largest reductions in agricultural activity, from 77% to 63% of women reporting agriculture as their main activity. Men experienced a smaller reduction in agricultural activity.

Background

Until the early 1980s, the Tanzanian Government set policies that were generally weak in targeting community needs. Researchers responded to these policies by developing and recommending technologies which in most cases were not adopted. This is because the needs and priorities of different farmer categories were not taken into consideration.

Early initiatives to promote gender in agricultural research and extension included strategies such as the introduction of farming systems research (FSR) approach in some research institutes in 1975, the full institutionalization of which began in the late 1980s. This was then adopted by all seven research zones in Tanzania in the early 1990s. To strengthen the FSR approach, the client-oriented R&D management approach was developed and adopted to strengthen the management and organization of R&D institutes with a clear focus on gender issues.

In 1989, the Lake Zone Farming System Research Project started to involve farmer groups in research activities. Positive results accrued at the community level as farmers started to air their needs, which were clearly differentiated by gender. These were handled jointly with researchers. Farmers built up their confidence in research activities, which resulted in improved adoption of technologies.

At the beginning of the 1990s, the systematic identification of farmers' research needs was given higher priority. The 1994–1995 zonal prioritization exercise was undertaken to strengthen client-oriented research with emphasis on mainstreaming gender in the research agenda.

The Farming System Research Programme under the Department of Research and Development (DRD) stressed the need for improved client orientation and for R&D to be demand-driven to ensure correct targeting of farmers. These ideas were also included in the Tanzania Agricultural Research Project II (TARP II, 1998–2004), which had a major component of client orientation. At the beginning of TARP II, the DRD management expected that by 2003 the agricultural research system in Tanzania would have the following key characteristics:

- Demand-driven research: Stakeholders set the research agenda and influence the selection of research projects and resource allocation;
- Diversification of research supply: More suppliers of technology play a role and compete for funds through the Agricultural Research Fund (ARF), including zonal and national institutes, and universities;
- Diversification of demands: Not only public extension, but also farmer groups;
- Producers' organizations, the private sector, agro-industry and NGOs express research and information needs;
- Focus on adaptive research: The zonal research institutes concentrate on adaptive research and produce appropriate technologies that address stakeholder priorities for both men and women;
- Sustainability: Research institutes are increasingly financially sustainable because they can obtain funding for research from sources other than the government;
- Research focus should involve both men and women.

These objectives reflected the commitment to move toward demand-driven research and higher levels of efficiency and sustainability. This means moving toward addressing stakeholders' (both men's and women's) needs and priorities.

Several other gender-sensitive initiatives have also been implemented by various projects in Tanzania in an effort to promote a more holistic approach to technology development and

dissemination. These include Farm-level Applied Research Methods for East and Southern Africa (FARMESA), Client-Oriented Research (COR), in the Lake and Northern zones, and the African Highlands Initiative (AHI). For instance, in a workshop facilitated by AHI in 2002, a summary of the strengths, weaknesses and constraints of selected participatory research methods and approaches in use in Tanzania was documented and compared to conventional methods. A gender-sensitive framework for managing R&D was then developed. The principles and values of this framework have been incorporated in the implementation of the current Agricultural Sector Development Programme (ASDP) (URT, 2001b).

Gender dimensions in agriculture are best understood through gender analysis, which is an essential element of socio-economic analysis. It involves a variety of methods and tools used to explore and understand relationships between women and men, their access to resources, their activities and the constraints they face. This analysis is based on the premise that gender is a critical variable in the development process. Gender analysis makes visible the different roles of women and men, girls and boys in the family, community and in the economic, legal and political structures. It focuses on reasons for current divisions of responsibilities (roles) and benefits, and their effects on the distribution of rewards and incentives. Information from gender analysis can therefore be used to address disparities, challenge systematic inequalities, and build efficient and equitable solutions. The ASERECA gender project is trying to contribute toward this end.

Despite all these developments, gender-disadvantaged groups have continued to remain poor. A concerted effort among the various stakeholders is needed to achieve a full gender balance in all gender-sensitive research and training programs to support implementation teams, farmer organizations, and village and rural programs. Therefore, there was a need to come up with approaches to mainstream gender aspects in the NARS.

Objectives of the gender-mainstreaming project

The project's aim was to institutionalize gender issues in the NARS so that scientists develop technologies that address the needs of different gender categories. The overall objective was to assess the extent of the consideration of gender issues in technology development and adoption with a view to mainstreaming gender in the NARS; specific objectives were:

- To assess the extent to which gender issues are incorporated in the research activities of different projects;
- To outline different activities carried out in relation to gender dimensions;
- To identify existing opportunities and gaps;
- To develop project monitoring and evaluation indicators.

Approach followed for gender mainstreaming

The methodological approaches followed for gender mainstreaming in the Tanzanian NARS comprised three activities—organizational analysis, capacity-building, and a mini-survey to establish gender issues. Consultations were made involving research managers and policy-makers. Policy documents were analyzed to gauge the level and extent of gender consideration in research.

In an effort to build the capacity of researchers in gender integration and analysis, three training workshops were conducted, one in Lake Zone and two in Eastern Zone, lasting for 3–5 days each. A total of 40 researchers (16 women and 24 men) and 6 extension staff (3 women, 3 men) benefited from the training. One of the workshops conducted in the Eastern Zone was done at the end of the project. It involved training of previously trained researchers to enable them to train other researchers in the other zones. It was also a planning workshop for future activities to ensure the continuation of gender-mainstreaming efforts in the Department of Research and Training (DRT, formerly DRD).

The mini-survey was conducted in four districts of Eastern Zone—Kilombero and Kilosa in Morogoro, and Handeni and Muheza in Tanga. Stratified and purposive sampling method was used. The sample comprised 112 farmers, covering five farming systems and ten villages. The data collection methods used included key-informant interviews, observation and the use of a semi-structured questionnaire. Two types of questionnaires were used for interviews: one for farmers and the other for researchers (to solicit information on their research projects).

The following projects were sampled: seed multiplication; promotion of wild rice management; promotion of integrated pest and soil management in lowland maize; integrated rice production technologies; cowpea verification trial; and verification of medium- and long-duration pigeon pea intercropped with maize.

Findings and analysis

The consultative meetings, policy-document analysis, training workshops and survey done with various stakeholders revealed their perceptions of agricultural research strengths, weaknesses, opportunities and threats. The strengths and opportunities can be built on, while weaknesses and threats constitute the agenda that needs serious attention by the Tanzanian NARS.

Agricultural research strengths and opportunities

Gender policy in national development

Nationally, the implementation of the Women and Gender Development Policy (URT, 2000) is coordinated by the Ministry of Community Development, Gender and Children. The policy aims to: develop women by using the gender conceptual framework; and contribute to the implementation of the basic community development policy, which emphasizes education as a means for people's empowerment in recognizing their capacities, and opportunities and resources available for their development as well as that of the nation as a whole.

Tanzania believes in equality and the rights of each person, and wishes to have a society in which individuals are assured of equality, justice, freedom, and the opportunity to participate in, and use their abilities and talents to the fullest extent for, community affairs, leadership, culture and production, and to benefit from the social services available in order to develop and raise the standard of living. The Government of Tanzania has made a number of efforts in promoting women—many high-level positions in politics and various ministries are occupied by women.

Gender policy and agricultural research

The Ministry of Agriculture, Food Security and Cooperatives recognizes the importance of gender in agricultural development and has assigned the Department of Administration and Personnel to coordinate its implementation.

General observations indicate that the majority of respondents were aware of gender issues in technology development and transfer (URT, 2002). However, researchers at DRT had various levels of gender awareness. Moreover, the majority lacked knowledge and skills in gender analysis, so gender needs to be mainstreamed in their research activities. All agricultural sector policy documents emphasize gender mainstreaming though not as much as they could (URT, 2001a, b; 2004a). Forty-two percent of researchers interviewed said that policy documents have highlighted poverty reduction, lessening the burden on women, and involving both men and women in research activities; however, the majority of interviewed researchers were not sure whether the institute had a policy on gender.

Researchers were asked to give their opinions on how best the research institution could mainstream gender across agricultural research stakeholders for the benefit of poor men and women farmers. About 57% said that there was a need to create awareness on gender issues at all levels. This would imply improving the capacity of researchers, extension agents and farmers in participatory research methods and gender analysis. They seemed particularly to lack capacity in gender aspects. About 14% of the respondents said that the Ministry should increase the number of women researchers in the institute—it was considered that women researchers will be able to interact more effectively with women farmers. Although women researchers showed the same lack of gender-sensitivity in their projects as their male colleagues, there is some preliminary evidence that women tend more often to focus on issues that meet the needs of rural women.

Capacity-building for gender mainstreaming in DRT

Building the capacity of researchers in participatory research and gender analysis has been one of the most important activities of the project. The training workshops were instrumental in building capacity of the researchers on the different aspects of gender in the development of agricultural technologies aimed at addressing the needs of different gender groups. The three training workshops carried out during the project period improved the knowledge and skills of the researchers to analyze and understand the needs of stakeholders in agricultural development. The researchers trained as trainers (in the third workshop) have been motivated and have changed their mind-set toward gender consideration in research project analysis. This was indicated in some of their projects, where they used the Harvard framework (Overholt *et al.*, 1985), which they found to be a strong and useful tool in evaluating project impacts with gender consideration. For example, a small-grant project (funded by the International Potato Center, CIP) implemented in the Eastern Zone revealed that cultural and religious discrimination against women was the cause of project imperfections, because women were not able to participate. Though men were the main decision-makers in all project issues, women were useful in providing information related to the project.

The gender strategies were developed by researchers for the next 3 years (2007–2010). Under these strategies, the following outputs are envisaged milestones for the research-for-development sector in Tanzania:

- Guidelines for incorporation of gender aspects in research projects in place;

- The DRT structures for reviewing research proposals are gender sensitive;
- Gender-sensitive curriculum for Agricultural Training Institutes (ATIs) in place;
- Capacity of researchers and tutors in gender issues improved;
- Deliberate efforts to improve the balance between male and female researchers and research managers are in place.

Participants had a feeling that the project covered only a small number of researchers and development workers. Consequently, it is difficult to see any impact in a short time. In future, there is a need to train more trainers who will cover more scientists and beneficiaries of technologies.

Current status of gender mainstreaming in DRT (experience from a case study)

Recommended gender-based research priorities

Researchers were asked to identify those aspects of technology development and transfer in which men and women have different priorities. There were mixed responses, but the conclusions were that women attach much weight to labor-saving technologies and food security, while men favor income-generating activities. This implies that the focus of women in the study villages was to have technologies that reduce farm drudgery and ensure that the family becomes food secure, while men controlled the farm benefits that were generating cash (see also URT, 2003).

There were differences in perception and attitudes on the ongoing project results between men and women. (Women made up 43% and men 57% of the total respondents.) About 43% of the researchers said that there were gender differences in perceptions. All of the respondents indicated that the technologies have been useful. Women had benefited from the technologies: 29% of the total respondents (all women) said the technologies had been "very beneficial," whereas no man said that. Some 43% of respondents said that there were gender differences in access to and or control over resources that could influence research design.

Participation in technology development and transfer

Gender-responsive research management: Women had been active in participating in technology development and dissemination. Of the total (112) participants, about 77% participated in research problem identification (44% women and 33% men). Very few farmers had participated in planning stage (3% women and 5% men). The results also indicated that 46% women and 36% men guided researchers in the selection of trial sites. Without the involvement of both women and men farmers, research planning may not adequately address gender concerns in the whole process of technology development and transfer.

Although women farmers represented a higher proportion than men in problem identification and selection of trial sites, they were not adequately represented in the top management positions to be able to participate effectively in technology development and transfer. For instance, the results showed that only 15% women and 21% men had been leaders in farmer research groups in the zone. Of the seven project principal investigators interviewed, only one was a woman. The difference is most apparent at the higher levels: there were twice as many men in senior positions as women. For instance, for all zonal research centers the positions of Zonal Research and Development Director (ZDRD) and Zonal Research Coordinator (ZRC) were occupied by

men, even though there was no significant difference in qualifications (degree level) between the genders. However, one can argue that the transition to more women as professionals in agricultural research in Tanzania has been slow. Therefore women scientists have remained at low positions in the management. However, there are a few positive examples to mention: the Director for Research and Training is assisted by four assistant Directors, one of whom is a woman.

Gender priorities on technology development and transfer: Farmers indicated their priorities for technologies. These included weed control, higher-yielding varieties, irrigation, processing, storage and oxenization (animal-traction technology). It was revealed that, generally, more women were engaged in weed control and improved crop varieties than men. More than 16% women and less than 13% men collaborated with researchers in (combined) trials for high-yielding varieties and weed control. This was confirmed by the finding that identified the differences in priority agricultural technologies for men and women. Generally, women prefer technologies that are aimed at reducing farm drudgery. For instance, more women preferred technologies that may reduce weeds (50% cf. 47% of men). This is because much women's labor is spent in weeding operations. About 67% were women who prefer accessing high-yielding varieties that will improve their household food security. However, of all priorities, there were no statistical differences observed for different technologies between men and women (χ^2 at 5%). Also the priorities did not differ much between categories of women (married, single, divorced and widowed).

Men and women responded in equal proportion on storage (50% men and 50% women), which shed light for the need to invest in storage facilities. In Tanzania, storage facilities may themselves be gender biased in that 'women's crops' (such as sweet potatoes, yams) are often perishable so that storage development favors male-produced crops (such as rice, cashew nuts). The study reveals that issues of post-harvest losses and wastage are closely bound up with gender divisions of labor, and thus implicit assumptions about who will perform the necessary work should be questioned. Mapping of gender differences in patterns and research for development would assist in identifying where the main technological bottlenecks are for women and men.

Agricultural research weaknesses and threats

Both at DRT and also during the training sessions that were conducted, there has been an emphasis on following criteria for research-project screening and approval based on gender considerations in technology development and transfer. But, when it came to implementation, few researchers have considered analyzing gender dimensions of their interventions. There has been no critical analysis of the gender aspects, such as who controls and has access to resources, decision-making and, most importantly, what the research and technology priorities of each gender are.

Although researchers have released many technologies, in most cases only a few farmers have adopted them (URT, 2004b). The medium-term plan cited some of the reasons for low adoption of research technologies—in particular, the fact that farmers' needs and priorities have not been incorporated in research programs. Farmers have always been considered socio-economically, culturally and physically homogeneous, without, for example, analysis of gender aspects as they affect agricultural technology development and transfer.

One of the major weaknesses is that more funding is required to establish farmer needs by gender. Not all policy- and decision-makers in Tanzania are competent in reviewing gender-sensitive programs. Gender incorporation in agricultural research interventions, as indicated by

researchers, would need more time and funds to be analyzed compared to conventional research (where researchers usually run ANOVA and present their results)—more gender analysis tools and presentation of novel gender-disaggregated tables or results (which are lacking in ANOVA presentation formats).

Gender policy in agricultural research

As it has been observed, despite efforts being made by the government, the majority of women's needs in agricultural development have not been well addressed. The gender policy formulated in 2000 aimed at developing women by using a gender conceptual framework, which contributes to basic community development as well as to that of the nation as a whole. There have been some efforts by DRT and various projects, but they have not achieved significant impact. There is no clear gender policy in agricultural research to guide gender mainstreaming in the DRT. Although the top management in the Department is aware of gender, it is not possible for them to set aside budget to support gender-mainstreaming efforts. In addition, policy-makers are not adequately sensitized to advocate policy formulation on gender and make sure it is institutionalized and mainstreamed in the DRT. However, during the coming years, the DRT management is committed to allocate some funds to be used to scale up the efforts that have been started and to build on this project.

The analysis of research projects indicated the extent to which research activities from diagnosis, planning to field implementation have not been gender responsive. Only about 43% of the analyzed research progress reports gave data disaggregated by gender. Further, about 57% of the total progress reports were rated by respondents as partly adequately disaggregated by gender, whereas only 14% of projects were rated as adequately disaggregated by gender. About 43% of the total respondents in the Eastern Zone said that gender criteria had been used to approve the projects for funding, particularly number of women participating in a project. Of the total number of farmers who participated in the project, only about 37% were women.

Engendered project indicators

The findings from the analysis of research-project proposals and researchers revealed that, generally, project indicators were not gender-responsive. For instance, the respondents said that since all indicators were for both men and women there were no need to specify sex in the formulation of indicators. Only three engendered indicators were identified from the available list of projects analyzed: percentage of women participating in weed control; number of women feeding nutritious food to children; and percentage of women adopting processing equipment. Researchers were asked whether they find it difficult to develop impact indicators disaggregated by gender—about 57% of the total respondents saw no need for gender-disaggregated indicators in the execution of projects, while 14% said that all indicators are for men and women, and 29% of the respondents did not consider gender issues in their projects at all.

Lessons learned

Several lessons can be drawn from the 3-year project on gender mainstreaming in research-for-development.

- Mainstreaming gender analysis in agricultural technology development and transfer will not be achieved if awareness and sensitization are not carried out at all levels, particularly to policy-makers, planners, local government authorities, communities and farmer groups. Thus, there is a need to develop gender-analysis capacity in local government authorities and communities where most of agricultural technologies are being developed and implemented. It will take some time to change the researchers' mind-set on gender incorporation. The key issue is how to identify and work with drivers for change, and how to involve key internal (DRT) and external (e.g. communities, local government authorities and civil-society organizations) stakeholders. This means that gender mainstreaming in agricultural development needs to be looked at in a holistic approach of key stakeholders.
- Gender-sensitive research for development is a valuable approach to identify ways in which gender producer groups are differently affected by processes of farm-level technological change. The approach also provides opportunities in which gender biases in organizations affect the implementation and outcome of agricultural reform policies.
- Developing labor-saving technologies (e.g. ox-weeder and planter, cassava and sorghum processing machinery) can provide major social and economic benefits particularly for women and their families. Thus, any R&D endeavor will only be successful if technology preferences are analyzed critically on a gender perspective.
- The findings shed light on the linkages between gender, poverty and the demand-responsiveness of technology. Better sustained use of agricultural technological packages is significantly associated with a better gender and poverty sensitivity in the demand-responsiveness of projects, user influence and control over project implementation; sharing of research operational work and benefits during operation; and user (men, women) satisfaction. The current supply-driven agenda of innovations cannot respond effectively to the complex social and environmental realities of vulnerable rural groups.
- Development of agricultural technologies and dissemination would bring positive impact and be sustained when research projects offer informed choices to both men and women, poor and better off, thus empowering them to influence the process of research for development. This would imply that critical analysis of gender differences would influence research design.
- The use of multi-method approaches (questionnaire, focus-group discussion, key informants, group interviews, participatory learning and action-research) is particularly important for the assessment of variables such as gender-sensitive participation, resource access, control and ownership. If adopted, these approaches would help DRT use gender-sensitive planning and budgeting, policy formulation, management, and organization.
- Gender-analytical framework proved to be a strong tool for analyzing gender-sensitive variables in agricultural technology development and transfer.
- It seems that farmers find it difficult to change the gender roles due to inbuilt culture, customs and taboos, which are biased against women in societies that follow a paternal system, particularly in rural areas. For example, a married woman cannot access, control and own a cash crop, and in some places women are not allowed to participate in technology development and implementation.

- Incorporation of gender analysis and gender-disaggregated data would need more time compared to conventional biological scientific analysis and presentation using ANOVA format.
- In DRT there are well-qualified researchers who can be instrumental in gender mainstreaming.
- Agricultural technologies are in place which can be disseminated targeting the different gender categories (e.g. labor-saving technologies, food security). Previously these technologies have not been targeting the different gender categories.
- When developing technologies, there is a need to develop priorities based on gender categories, because of their different preferences. For example, the women's preferences were for technologies that solve problems of household food security, nutrition, etc., whereas men preferred technologies that increase the household income.
- Interest in gender issues can be built through continuous training of the different stakeholders. The importance of having a curriculum that addresses gender aspects in the DRT training institutes will enhance gender-mainstreaming efforts.
- Having a gender support team in the DRT system will positively steer the wheel of mainstreaming gender.

Conclusion

Experience from the study on the status and opportunities for mainstreaming gender in national agricultural research showed that a majority of respondents were aware of gender inclusion in technology development and transfer. However, a majority lacked knowledge and skills on gender analysis, so mainstreaming gender in their research remains a problem to be solved.

Findings showed that the needs of men and women differ to the extent of influencing problem identification, research design, technological choices and technology adoption. Furthermore, descriptive analysis indicates that women were in favor of labor-saving and food-security technologies, such as weed control, oxenization, processing and storage. However, women farmers' priorities (including oxenization, dairying, processing and storage) are currently not adequately addressed by researchers in the identified ongoing research activities.

At the other end of the scale, there is a need to realize the political commitment to ensure the involvement of top-level leaders who will provide support for the integration of gender-sensitive participatory approaches in research by committing staff time and resources, and instituting needed policies and procedures. Continuous and sustainable capacity-building of individuals is needed to equip them with necessary knowledge and skills that will influence change in their organizations to enable them to address the needs of the different gender categories by integrating gender-sensitive research approaches into all the work plans.

Thus, any endeavor in research for development could be more successful if technology preferences are analyzed critically on gender perspective and there must be a political will and serious commitment at all levels.

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Mainstreaming participatory research and gender analysis in National Agricultural Research Organisation (NARO), Uganda

Ruth Kabanyoro and Gard Turyamureeba

Gender mainstreaming analysis as a result of the gender-mainstreaming project

Initiating the development of a gender action plan in NARO

NARO had not had a gender action plan for a long time. In view of this, NARO—with the assistance of the Consultative Group on International Agricultural Research (CGIAR) Systemwide Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation Program (PRGA Program) and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) Eastern and Central Africa Programme on Agricultural Policy Analysis (ECAPAPA)—organized a participatory research and gender analysis planning seminar, attended by the Directors of Institutes and Theme Leaders. The main objective of the seminar was to develop an action plan for mainstreaming participatory research and gender analysis in the NARS' activities. Participants discussed issues arising from group presentations on mainstreaming participatory research and a gender analysis framework based on proposed actions under five main headings as indicated below.

A. Institutional leadership commitment

- Strengthen and operationalize the commitment to mainstreaming participatory research and gender analysis in NARO and Public Agricultural Research Institutes (PARIs).
- Operationalize existing policy and philosophical rationale of participatory research and gender analysis in agricultural research for development.
- Should unlock the social-inclusion aspects within the current mission statement and advocate for its review, and implement policies, procedures and systems so that NARO becomes gender responsive.
- Conduct strengths, weaknesses, opportunities and threats (SWOT) analysis of existing policies, procedures and systems, to identify gaps, constraints and opportunities for participatory research and gender analysis.
- Develop a strategy for addressing gaps, constraints and opportunities identified by the SWOT.
- Develop an action plan, including budget.
- Establish and facilitate a core team with specific terms of reference to lead participatory research and gender analysis in NARO.
- Identify a contact person at each PARI and at NARO Secretariat (NAROSEC).
- Contract a consultant for technical backstopping in participatory research and gender analysis as and when need arises.

B. Technical capacity

- Capacity-building and knowledge-management on gender issues.
- Train staff to increase capacity for gender analysis at all levels.
- Conduct comprehensive capacity-development needs assessment for all PARIs.
- Mainstream participatory research and gender analysis in long-range strategic planning across themes.
- Prepare a user-friendly participatory research and gender analysis manual to guide implementation of mainstreaming themes.
- Disaggregate project data, including participation of different sex, gender and socio-economic groups.
- Identify how gender factors influence achievement of project goals.
- Identify sex, gender and socio-economic groups most affected by project interventions and ensure their full participation.
- Reconfigure resources to match the socio-economic needs of the people.
- Identify and address cultural practices that undermine gender equality (beneficial and harmful socio-cultural norms and practices that can be used to enhance social change).
- Encourage holistic stakeholder participation in project development.
- Develop strategic partnerships with stakeholders who have core competencies in participatory research and gender analysis.

C. Accountability

- Develop participatory research and gender analysis indicators for monitoring and evaluation (M&E) of project processes, outputs, outcomes and impacts.
- Integrate participatory research and gender analysis in proposal-screening process.
- Disaggregate data by sex/gender and socio-economic status in reports.

D. Organizational culture

- Transform policies, contracts and grants in harmony with gender-mainstreaming goals and approaches.
- Identify good practices and lessons learned from participatory research and gender analysis methods and disseminate disaggregated information about them to staff and stakeholders at community level.
- Manage change in institutional cultures and values to enhance appreciation of participatory research and gender analysis in integrated agricultural research for development.
- Develop and establish mechanisms for harmonization and conflict-resolution.

E. A gender-responsive strategic plan developed

- Develop and disseminate gender-mainstreaming guidelines.
- Equip NARO staff at all levels with participatory approaches and gender analysis tools.
- Produce a gender-mainstreaming strategic plan.

Development of a 3-year gender proposal by the NARO participants

The vision of gender mainstreaming in NARO is to ensure sustainability of programs geared toward poverty eradication. This process seeks to strengthen the existing organizational set up, which includes policies, practices and processes that guide the development of NARO's plans and programs. These challenges require changes in procedures and operations to make them more responsive to the needs, priorities and aspirations of small-scale farming communities of poor men and women.

The research system needs to take into account the strategic gender needs of the poor. On the other hand, gender issues need to be addressed at adaptive and dissemination stages. All programs of the NARO Research Institutes (RIs) and the Zonal Agricultural Research and Development Institutes (ZARDIs) will test new approaches in building up a gender-responsive NARS. Operational methodologies for gender mainstreaming will play a key role in directing the research agenda, as well as in strengthening the development of a gender-responsive monitoring mechanism for NARO.

Mainstreaming gender in NARO means that legitimacy of gender responsiveness in technology development/generation and transfer processes is a fundamental value for agriculture research for development. This will ultimately support the achievement of social and economic transformation. NARO recognizes this as a fundamental value that should be reflected throughout the organization.

Current status of gender mainstreaming in the organization

In order to develop an appropriate strategy framework for gender mainstreaming in NARO, a Gender Task Force was established, the main focus of which was to develop appropriate interventions, measures and necessary action that will support gender mainstreaming in the organization. The Task Force reviewed primary and secondary data that were related to gender within and outside Uganda. It also developed a checklist and guidelines for data collection through consultations with various stakeholders and partners, including a cross-section of staff at NARO headquarters (NARO Secretariat); top management of NARO and RIs; relevant Makerere University faculties; selected district-based extension workers and farmer groups; government ministries, including Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Gender, Labour and Social Development (MGLSD), Ministry of Education and Sports (MOES); selected private-sector institutions; NGOs; farmer organizations; and donors. All these stakeholders were consulted for their input to the integration of gender-mainstreaming concerns in NARO's research agenda.

In the NARO medium-term plan (2001–2005), gender aspects were taken into account in all stages of the project cycle, and were also reflected at all levels, such as management, research and outreach, with the overall goal of gender mainstreaming in NARO to enhance efficiency, sustainability and better utilization of human and natural resources so as to effectively contribute

to food security and poverty eradication. The following are NARO's objectives for gender mainstreaming:

- Develop a gender strategy to guide the mainstreaming of gender in NARO;
- Enhance capacity at all levels for gender-responsive technology needs assessment;
- Develop and promote the use of gender analysis tools in agricultural research and outreach activities;
- Support the establishment and use of a gender-disaggregated database for NARO activities;
- Develop and establish a participatory M&E mechanism to assess progress and performance of NARO gender-mainstreaming initiatives.

In order to avail research-related services to male and female beneficiaries, NARO will ensure that technology development and dissemination are gender responsive and acceptable in line with the identified needs. As a result, there will be a need for strengthening linkages between researchers and clients through specific interventions. The interventions will take into account the different socio-economic and gender categories, and also the agricultural advisory service providers. The agricultural advisory service providers are experts in relevant fields that are contracted to train and empower the farming community or other categories in value chains with skills and knowledge on improvement of the enterprises. If, for example, a groundnut enterprise is prioritized by a farming community, the service provider is identified to provide the necessary skills in groundnut production. These service providers need to be equipped with gender concepts and skills as they deliver their services to the farming communities.

Gender mainstreaming will be done in all projects of NARO. Other general and specific activities will be carried out in the management and administration of NARO. Strategic guidelines will be developed for short- and long-term gender balance in staff recruitment, training, promotions and awards at all levels. Gender analysis tools will be used in research activities throughout the research cycle, which will take advantage of existing expertise in gender mainstreaming at national and district levels for capacity-building and backstopping in research.

In July 2005, NARO constituted a gender team at organizational level composed of six scientists. The team developed a gender-sensitization program, whereby a one-day sensitization workshop was held for each institute. During these workshops, the participants provided their own understandings of some gender concepts. The answers showed a range of understanding from gender blind to gender awareness across institutes.

At project implementation stage, NARO scientists and technicians use participatory approaches during the needs assessment with the stakeholders/partners. The approach helps them to understand the community, and the needs of different categories of people in a particular situation. The partners prioritize their own constraints. Scientists also use other approaches, such as vision mapping and system analysis. All the approaches used are centered on discussions with farmer groups that comprise men and women either together or separately. After the prioritization exercise, these partners are involved in the planning and implementation of research trials.

Participatory research is widely integrated in most NARO projects and a few programs have made attempts to use gender analysis tools. The gender mindset of the project leaders is positive

during the project field-implementation phase. For example, special consideration is given to female support staff that are pregnant—they are usually given less physically demanding tasks.

Facilities across research institutes tend to favor both male and female staff, although disabled staff are not catered for. This is because there are few disabled employees in the organization. However, in a few cases female staff still face the problem of lack of adequate toilet facilities. This is an area that needs to be addressed in a few of the NARO institutes.

In general terms at institute level, scientists are encouraged to integrate gender concerns in their project reports. For example, scientists at the National Forestry Resources Research Institute (NaFORRI) are aware that gender should be considered in outreach activities, since they work directly with farmers. It was clearly pointed out that, like other programs, agro-forestry activities should be gendered to target specific beneficiaries, both men and women. Scientists reported gender division of labor where specific activities are done by certain categories of people depending on skills, time and energy required. Women are preferred in drying of plywood, working in nursery beds, horticultural activities (grafting), planting and harvesting of agro-forestry products. On the other hand, men are excellent in jobs such as cutting trees, logging, collecting seeds from trees, and collecting firewood for sale.

The scientists interact with both male and female farmers in problem-identification, planning and designing research experiments. They carry out surveys where men and women are interviewed together. There are cases where women shy away from participating in focus-group discussions when they are combined with men—in such cases they form separate focus groups. These surveys bring out needs and requirements by farmers, both males and females. However, such surveys are usually dominated by men and there is a need to involve more women to increase their participation.

In participatory rural appraisal planning, men and women show different preferences, so there is a need to separate them. In the National Beans Program, for example, during the survey, women were able to specify the type of beans they need in terms of color, shape, size, taste and cooking time. Women gave reasons why certain types of bean cannot be used in their area. For instance, a white haricot bean, which is liked in urban areas because it cooks faster, was rejected in southwest Uganda, because women claimed that it goes bad very quickly. In this case, the bean program considered yield, resistance to pests and diseases, and consumer preferences in different parts of the country.

Similar considerations are noted in the postharvest handling technology program. In NARO, research on appropriate technology has been aiming to develop simple and farmer-friendly implements. It was assumed that developing and introducing agricultural engineering technologies was gender neutral, implying that both men and women could use them equally. The assumption was based on earlier surveys, which showed that women perform most of agricultural production roles such as planting, weeding and postharvest activities, although men usually help them. With gender consideration, NARO has developed gender-sensitive postharvest technologies that include:

- Hand maize sheller, which can easily be operated by women, the elderly and children, because shelling by hand is difficult and time-consuming, and yet is mainly done by women and children;

- The modified ox-plow that can be easily handled by women to ease land preparation—an activity that is mainly done by women;
- Use of donkeys is being encouraged to reduce the women's workload, including fetching water and fuelwood, and carrying produce to the market;
- Local power-saving charcoal and firewood stoves have been developed, and appropriate ovens are being popularized as part of the work on adding value to sweetpotato and cassava.

There is an ongoing process in NARO of enhancing and strengthening capacity-building for the trainers of trainers (TOTs), who have undergone training in gender-mainstreaming courses or concepts. These persons have covered over 60% of the gender-mainstreaming courses. They have also been identified as gender contact persons at their respective research institutes. They are scientists and technicians who are expected to train their colleagues at the research institutes and also the top management of NARO/NARS.

Lessons learned from the project

- Apart from the NARO Statute (1992) that provides for women representation on the NARO Board, there are no policy provisions for gender consideration in NARO. Currently (2007), there are two women on the Board, one of whom comes in by virtue of her office in a constituent ministry. The entire organization employed a total of 631 scientists and support staff that are distributed to various institutes; less than 30% of the staff are women (2007 figures).
- There is no correlation between the ranked salaries with gender distribution of office—women and men scientists with the same qualifications get the same salary.
- There are more women in the lower positions in NARO. This pattern reflects the traditional expectations, where women play more support roles rather than the administration and management functions in research. The majority of these women provide technical and clerical support. Recruitment on merit leaves out women who are vulnerable to denial of education, early school drop-out, and professional disincentives to pursue science-based courses.
- NARO management is not prepared to sacrifice competence in addressing gender. The position of NARO on gender mainstreaming is articulated in the opinion of the Director General. NARO does not believe that recruitment of more women is necessary for gender mainstreaming. It is rather a systematic change of attitudes, mindsets and thinking within the entire establishment. However, NARO entertains positive discrimination in favor of women who prove competent in a competitive process for recruitment and promotion.
- Socio-cultural and economic factors are major constraints that have continued to drag down the process of mainstreaming gender in NARO structures, management and activities. High disparity of gender in NARO staff is partly due to poor response of females to job announcements compared to their male counterparts. This is due to there being few educated females in both science and non-science disciplines. The cultural bias that denies girls access to education in Uganda also explains the low numbers of educated females in the country. Most girls drop out after primary seven and the majority by senior two, and

are married off by their parents to get dowries. Besides, a respondent observed that high poverty levels in Uganda have tended to bias education toward boys. Girls therefore tend to be marginalized, thinking that they will marry and generate dowries for their parents. Some families also look at educating girls as a waste, because after marriage girls will support their husbands and leave their parents in poverty and helpless after expending resources on their education. This has greatly reduced enrollment of girls and females in primary, post-primary and tertiary institutions, and the overall impact is gender disparity in organizations like NARO.

- Family ties, especially for young married women, have on several occasions made new recruits turn down jobs when they are posted far from their husband's residential areas.
- The office of human resources has increasingly found it difficult to post female staff to up-country centers and institutes unless one is desperately looking for employment and even if she accepts, she cannot stay for more than 2 years. She will either apply for a transfer or get another job in an organization that operates in an urban area.
- Some activities in NARO are gender specific. According to the human resource officer, candidates with physical disability cannot be recruited as drivers.
- Top positions, such as director general, directors of institutes, and centre managers cannot be filled by (relatively young but qualified) staff who have not been in the research system, because the requirement is that one should have joined NARO as research officer two, promoted to research officer one, to senior research officer and probably to principal research officer before being appointed as a manager or director. Vertical growth goes along with qualifications, implying that it is unlikely that a person with a master's degree can become a principal research officer and hence appointed a director or centre manager. In a situation where one has not passed through the steps, gender cannot help anyone very much in attaining a higher position in NARO. Thus, gender perspective looks at the impact of gender on people's opportunities, social roles and interactions.
- Successful implementation of gender mainstreaming in any organization requires a number of approaches to overcome socio-cultural and economic gender-related constraints in recruiting and retaining staff.
- Gender is perceived differently by a cross-section of NARO staff. For instance, it is perceived as a socio-economic discipline that is concerned with humanity rather than mainstream science. Therefore the natural scientists should not be bothered with it in the routine execution of research. This observation suggests that those scientists are aware about gender, but they do not appreciate the importance of gender in research for development.
- On the other hand, gender is appreciated. However, it should not be devolved to the level of individual scientists, but rather mainstreamed at the upper structural levels of the organization. This opinion differs from the principles of the top NARO management, which proposes that gender mainstreaming should be translated into change in the attitudes, mindset and thinking of every person who works for NARO.
- Sometimes, gender in its present context is perceived as a foreign paradigm, designed to disorganize otherwise stable traditional constructs that have guided society for a long time.

The current movement is viewed as a threat to family values that are likely to enhance conflicts in households and societies.

- The scientists, however, recognize the fact that gender roles in society can indeed change, but new concepts should be allowed to evolve with civilization. They perceive that gender advocates push an agenda for change that is unacceptable to them.
- There is a pragmatic category of scientists who view gender concerns in technology development and dissemination as a relevant issue to consider. These scientists appreciate the fact that technologies can be either gender neutral or gender sensitive. For example, in their proposals they often use labor burden on women as justification for developing labor-saving technologies; high nutritional requirements of women and children to justify investments in research to develop technological options in livestock and genetically engineered crop production.
- In most observations, the male–female concepts of gender dominate the perception of scientists. However, there are scientists who perceive gender issues beyond the context of the male–female relationship in society. These scientists are critical of gender concerns that bias affirmative actions toward women issues.
- Including gender in research is likely to inflate the budget for research, because it would need more time and money to hire a gender specialist.
- Gender issues will not be addressed unless the idea of women's emancipation is dropped.
- "Gender thing" is likely to make men lose their jobs.
- Affirmative action might compromise the quality of work in NARO.
- Recruitment of more female staff might jeopardize possibilities of recruiting other desired staff, since there is a staffing ceiling in NARO.
- It is clear that there is misunderstanding of the gender concepts, sensitization of staff will correct NARO staff perceptions about gender.
- Management supports the involvement of gender activities in research projects.
- There is ongoing sensitization of staff members on the concepts of gender.
- Nomination of a gender focal person in the organization is looked on as an opportunity.
- Development of a team of trainers of trainers (TOTs) in the organization as an alternative means of gender mainstreaming.
- All NARO staff need to internalize and understand the concept of gender.
- Capacity-building of NARO staff is required, particularly in gender analysis tools, since most are biological scientists by training.
- Gender analysis is not yet mandatory in technology generation and transfer.

Work plan for gender activities in NARO

Already done

- Identification of a gender team in NARO.
- Identification of gender contact persons in six institutes.
- Sensitization of older, senior NARO staff on gender concepts.
- Training TOTs in Gender Disaggregated Data 1–3 (GDD I, II & III)—these courses are conducted by gender experts who are hired by the organization.
- Sensitized top management, directors of institutes and theme leaders to initiate the development of a 5-year gender action plan for NARO/NARS.
- A task force was constituted to develop the action plan for NARO/NARS.
- A first draft of the gender action plan was developed.

Ongoing

- Preparing the TOTs for hands-on practice to enable them to train their colleagues at their respective research institutes.
- Writing gender-related proposals to secure funds.
- Proof-reading of the draft gender action plan before submitting the final document to NARO/NARS.

Planned for the future

- Establish the number of new staff members in NARO to enable the organization to plan the gender training needs at different levels of gender awareness. Recruitment of staff for the organization is a continuous process in NARO. The challenge is then to sensitize these staff in gender concepts and analysis.
- Organize seminars/workshops for new NARO staff to sensitize them on the gender concepts.
- Conduct training workshops for selected older, senior scientists, technicians and support staff to build capacity of another team of TOTs.
- Identify gender contact persons for the remaining NARO institutes.
- Organize seminars for each institute to enhance hands-on practice for the existing team of TOTs.
- Training workshops for the existing team of TOTs on advanced gender mainstreaming.
- Develop an operational gender strategy for NARO/NARS.
- Develop and test an operational participatory M&E mechanism to assess progress and performance of NARO's gender-mainstreaming initiatives.

Postscript: Gender mainstreaming in ASARECA

Michael Waithaka

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) is a non-political not-for-profit sub-regional organization of the national agricultural research systems (NARS) in the 10 countries of Eastern and Central Africa (ECA) – Burundi, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. ASARECA serves as a platform for promoting regional collaborative research to address trans-national problems and sharing of benefits and spillovers arising from such research, thereby adding value to what can be achieved at national level. ASARECA does this by: facilitating generation and uptake of demand-driven agricultural technologies and innovations; facilitating generation of policy options for enhancing the performance of the agricultural sector; strengthening capacity for gender-responsive agricultural research for development; and enhancing availability of information on agricultural innovation.

ASARECA delivers its research through seven research programs: Staple Crops; High Value Non-Staple Crops; Livestock and Fisheries; Agro-biotechnology and Biodiversity; Natural Resource Management and Biodiversity; Policy Analysis and Advocacy (PAAP); and Knowledge Management and Up-scaling. The Association also has some stand-alone support units: Partnerships and Capacity Development; Information and Communication; and Monitoring and Evaluation. Gender mainstreaming is housed in PAAP.

ASARECA has been on the gender-mainstreaming road since 2000. Over the years, two initiatives have been undertaken. In 2001, 'Gender Factor in Agricultural Research Programs (2001–2004)' was initiated, supported by the International Development Research Center (IDRC). In 2004, 'Building Capacity in Gender Analysis and Gender Mainstreaming in the National Agricultural Research Systems (NARS) of ASARECA (2004–2008)' was initiated**,** supported by the CGIAR Systemwide Program on Participatory Research and Gender Analysis (PRGA Program). These initiatives involved NARS in eight of the 10 ASARECA member countries. As a result, considerable capacity was developed in the areas of: conducting gender analysis and participatory research; mainstreaming gender analysis and participatory research through organizational change; and training of trainers in the use of gender analysis and participatory research. Participating organizations were found to be at different stages of gender mainstreaming. For example, only three of the eight participating NARS had a gender coordinator (at the start). However, by the end of the project, gender teams had been formed in most of the participating organizations. Those teams provide entry points for activities aimed at gender mainstreaming in ASARECA's partner organizations.

A major recommendation from the two initiatives was that ASARECA should play a catalytic role and provide direction, as well as ensure that member NARS and other partners mainstream gender. In 2009, the Canadian International Development Agency (CIDA) pledged support (through the World Bank managed Multi-Donor Trust Fund) to help ASARECA with the fulfillment of these recommendations. The first task was the development of a gender-mainstreaming strategy for ASARECA in the same year.

The development of the Gender Mainstreaming Strategy builds on the lessons learned from the previous initiates and was developed through a participatory approach. This was done through

a regional workshop that brought together 43 participants comprising ASARECA member NARS, civil-society organizations, researchers, farmers and development partners.

Four strategic objectives identified the workshop aim to:

1. Develop a better understanding of gender among the in the NARS and key partners;
2. Influence donors and government agricultural policies to become more gender responsive;
3. Secure adequate and equitable allocation of resources for gender mainstreaming;
4. Institutionalize gender mainstreaming in ASARECA.

In a follow-up prioritization exercise in 2010, three thematic areas were identified as:

1. Developing institutional mechanisms for gender mainstreaming in ASARECA;
2. Integrating gender in programs and projects;
3. Building capacity in gender mainstreaming in ASARECA and the NARS.

These thematic areas are the cornerstones of gender-mainstreaming efforts in ASARECA.

Abbreviations

ACP	Africa, Caribbean and Pacific (states)
AD	Assistant Director (KARI)
AGERAS	Appui à la Gestion Régionalisée de l'Approche Spatiale (ONE, Madagascar)
Agric.	Agriculture
AHI	African Highlands Initiative (CGIAR)
ANOVA	analysis of variance
ARC	Agricultural Research Corporation (Sudan)
ARF	Agricultural Research Fund (Tanzania)
ARTP	Agricultural Research and Training Project (Ethiopia)
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASDP	Agricultural Sector Development Programme (Tanzania)
ASDS	Agricultural Sector Development Strategy (Tanzania)
ASEG	Socio-economic analysis by gender (Madagascar)
ATI	Agricultural Training Institute (Tanzania)
ATIRI	Agricultural Technology Information Response Initiative (KARI)
BA	Beneficial Assessment (KARI)
BoM	Board of Management (KARI)
CADIM	Centre d'Appui au Développement Intégral – Mbankana (DRC)
CBO	community-based organization
CD	Centre Director (KARI)
CEAN	Centre d'Etude d'Afrique Noire
CEDEF	Convention sur l'élimination de toutes les formes de Discrimination à l'égard des Femmes
CEDPA	Center for Development and Population Activities
cf.	compare
CGIAR	Consultative Group on International Agricultural Research
CGS	competitive grant scheme
CIAT	International Center for Tropical Agriculture
CIDA	Canadian International Development Agency
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
COR	Client-Oriented Research
COSCA	Collaborative Study of Cassava in Africa (IITA)
CRAC	Centre Research Advisory Committee (KARI)
CRS	Catholic Relief Services
CTA	Technical Centre for Agricultural and Rural Cooperation ACP–EU
DDC	Direction du Développement et de la Coopération
DFID	Department for International Development (UK)
DG	director general
DGIS	Directorate General for International Cooperation (Netherlands)
DRC	Democratic Republic of Congo Debre Zeit Research Center (EIAR)
DRD	Department of Research and Development (*now* DRT, Tanzania)

DRT	Department of Research and Training (Tanzania)
EARO	Ethiopian Agricultural Research Organization (*now* EIAR)
EARRNET	Eastern Africa Root Crops Research Network (former network of ASARECA)
ECA	Eastern and Central Africa
ECAPAPA	Eastern and Central Africa Programme on Agricultural Policy Analysis (former network of ASARECA)
ed.	editor(s)
e.g.	for example
EIAR	Ethiopian Institute of Agricultural Research
etc.	etcetera (and so on)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FARMESA	Farm(-level) Applied Research Methods for East and Southern Africa
FFE	Friedrich Erbert Foundation (Madagascar)
FFS	farmer field school
FH	female-headed (household)
FHI	Family Health International (NGO)
FIDA	French acronym of IFAD
FIFAMANOR	Fiompian Fambolena Malagasy Norveziana (Madagascar)
FOFIFA	Centre National de Recherche Appliqué au Développement Rural (Madagascar)
FORMGED	Formation en Appui à la Gestion des Interventions de Développement (Madagascar)
FPR	farmer-participatory research
FSA-RET	Farming Systems Approach to Research, Extension and Training (KARI)
FSP/FORMED	Fonds de Solidarité Prioritaires / Formation en Genre et Développement (project, Madagascar)
FSR	farming systems research
GA	gender analysis
GARD	Gender and Agricultural Research Database (KARI)
GFU	Gender Focal Unit
GIF	Gender Integration Framework
GoS	Government of Sudan
GTF	Gender Task Force
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HQ	headquarters
HRC	Holetta Research Center (EIAR)
ICARDA	International Center for Agricultural Research in the Dry Areas
ICIMOD	International Centre for Integrated Mountain Development
ICRA	International Centre for development oriented Research in Agriculture
ICRAF	International Centre for Research in Agroforestry (*now* World Agroforestry Centre)
IDRC	International Development Research Centre
i.e.	that is
IEC	information, education and communication
IFAD	International Fund for Agricultural Development

IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
INERA	Institut National pour l'Etude et la Recherche (DRC)
INSTAT	Institut National des Statistiques agricoles (Madagascar)
IPM	integrated pest management
IRRI	International Rice Research Institute
ISAR	Institut des Sciences Agronomique du Rwanda
ISSAS	Institute for Social Studies Advisory Service
KARI	Kenya Agricultural Research Institute
KES	Kenya shillings
KRC	Kulumsa Research Center (EIAR)
M&E	monitoring and evaluation
MAAIF	Ministry of Agriculture, Animal Industries and Fisheries (Uganda)
MAEP	Ministère de l'Agriculture, de l'Elevage et de la Pêche (Ministry of Agriculture, Livestock and Fisheries, Madagascar)
MAFS	Ministry of Agriculture and Food Security (Tanzania)
MENRS	Ministère de l'Education Nationale et de la Recherche Scientifique (Ministry of National Education and Scientific Research, Madagascar)
MGLSD	Ministry of Gender, Labour and Social Development (Uganda)
MH	male-headed (household)
MICDSP	Ministère de l'Industrie, du Commerce et du Développement du Secteur Privé (Ministry of Industry, Trading and Private Sector, Madagascar)
MINAGRI	Ministry of Agriculture (Rwanda)
MINPOP	Ministère de la Population (Ministry of Population, Madagascar)
MOES	Ministry of Education and Sports (Uganda)
MRC	Melkassa Research Center (EIAR)
MSc	Master of Science (postgraduate degree)
MSPF	Ministère de la Santé et du Planning Familial (Ministry of Health and Family Planning, Madagascar)
NaFORRI	National Forestry Resources Research Institute (Uganda)
NARL	National Agricultural Research Institute (KARI)
NARO	National Agricultural Research Organisation (Uganda)
NAROSEC	NARO Secretariat (Uganda)
NARP	National Agricultural Research Project (KARI–DFID)
NARS	national agricultural research system(s)
NGDO	non-governmental development organization
NGO	non-governmental organization
NPK	nitrogen, phosphorus and potassium (fertilizers)
NS	Northern State (Sudan)
NVP	Nile Valley Project (ICARDA)
NVRP	Nile Valley Regional Program on cool-season food legumes and cereals (ICARDA)
NVRSRP	Nile Valley and Red Sea Regional Program (ICARDA)
OMS	Organisation mondiale de la santé

ONE	Office National de l'Environnement (National Office for the Environment, Madagascar)
ONUDI	Organisation des Nations Unies pour le Développement Industriel (Madagascar)
P	probability
PAAP	Policy Analysis and Advocacy Programme (ASARECA)
PANAGED	National Action Plan for Gender and Development (Madagascar)
PARI	Public Agricultural Research Institute (Uganda)
PgSE	Programming and Monitoring and Evaluation service (FOFIFA)
PhD	Doctor of Philosophy (doctoral degree)
PLAR	participatory learning and action-research
PNPF	National Policy for Women Promotion (Madagascar)
PR	participatory research
PRA	participatory rural appraisal
PRGA	Participatory Research and Gender Analysis (KARI project)
PRGA Program	CGIAR Systemwide Program on Participatory Research and Gender Analysis (*formerly* CGIAR Systemwide Program on Participatory Research and Gender Analysis for Technology Development and Institutional Innovation; *now* Participatory Research and Gender Analysis Program of CIAT)
PRIAM	Participatory Research for Improved Agro-ecosystem Management (FOFIFA project)
PRONAM	cassava national program (DRC)
PSDR	Projet de Soutien au Développement Rural (Madagascar)
R&D	research and development
RI	Research Institute (NARO)
RNS	River Nile State (Sudan)
RWS	rural women school (Sudan)
SAF-FJKM	Sampan'Asa Fampandrosoana – Fiangonan'I Jesoa Kristy eto Madagasikara (Madagascar)
SAHA	Sahan'Asa sy Fampandrosoana (Madagascar)
SAT	semi-arid tropics
SECID	South-Eastern Consortium for International Development
SMP	Soil Management Project (KARI)
SWIMNET	Soil and Water Management Research Network (ASARECA)
SWOT	strengths, weaknesses, opportunities and threats (analysis)
TARP	Tanzania Agricultural Research Project
TORs	terms of reference
TOT	trainer of trainers
UCOM	Communications service (FOFIFA)
UIST	Scientific and Technical Information service (FOFIFA)
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNHCR	The UN Refugee Agency

UNICEF	United Nations Children's Fund
UNU-WIDER	World Institute for Development Economics Research of the United Nations University
URT	United Republic of Tanzania
USAID	United States Agency for International Development
Vol.	Volume
WSARP	Western Sudan Agricultural Research Project
ZARDI	Zonal Agricultural Research Institute (Uganda)
ZDRD	Zonal Research and Development Director (Tanzania)
ZRC	Zonal Research Coordinator (Tanzania)

Appendix I: Contributors and project participants

ASARECA

ASARECA Secretariat
Plot 5 Mpigi Road
P.O. Box 765, Entebbe, Uganda
Tel.: +256 414 320556 / 320212
Fax: +256 414 321126
E-mail: secretariat@asareca.org or
asareca@imul.com
Website: www.asareca.org

*Vincent Ekiyar**
Formerly Programme Assistant, ECAPAPA

*Isaac Minde**
Formerly Coordinator, ECAPAPA

*Ruth Catherine Nankinga**
Senior Secretary, ECAPAPA
Tel.: +256 41 321751
E-mail: r.nankinga@asareca.org

*Leonardo Oruku**
Formerly Senior Technical Officer, Monitoring & Evaluation, ASARECA

*Elizabeth Ssendiwala**
Formerly Gender Project Support Person, ECAPAPA
E-mail: nyamburaliz@yahoo.ca

*Michael Waithaka**
Manager, PAAP (*formerly* ECAPAPA)
E-mail: m.waithaka@asareca.org

PRGA Program

Patricia Biermayr-Jenzano
Program Coordinator
PRGA Program, CIAT
A.A. 6713, Cali, Colombia
Tel.: +57 2 445 0000 *or*
+1 650 833 6625 (via USA)
Fax: +57 2 445 0073 *or*
+1 650 833 6626 (via USA)
E-mail: p.biermayr@cgiar.org

*Hilary Sims Feldstein**
Formerly PRGA Program Gender Facilitator
P.O. Box 59
211 Brush Brook Road
Dublin, NH 30444, USA
E-mail: hsfeldstein@earhlink.net

*Barun Gurung**
Formerly PRGA Program Coordinator
13403 Norden Drive
Silver Spring
MD 20906, USA
Tel.: +1 301 871 7316
E-mail: gurungbarun@yahoo.com

BURUNDI†

*Leonard Ndimurirwo**
Head, Socio-Economics Program
Institut de Sciences Agronomic du Burundi
P.O. Box 795, Bujumbura
Fax: +257 22 2798
E-mail: Ndimuriro_leonidas@yahoo.fr

*Dismas Nsengiyumva**
Head, Grain Legume Improvement Program
Institut de Sciences Agronomic du Burundi
P.O. Box 795, Bujumbura
Fax: +257 22 2798
E-mail: nsengidis@yahoo.fr

Democratic Republic of CONGO

*Célestin Alinasi Bahandi**
Formerly Head, Monitoring & Evaluation Unit
INERA

*Kinkela Sunda Savy**
University of Kinshasa
Department of Agricultural Economics
Mont-Amba Kinshasa
P.O. Box 838, Kinshasa 11
Tel.: +243 815201401 *or* 999915909
E-mail: charles_kinkela@yahoo.fr *or*
charles_kinkela@unikin.cd

ETHIOPIA

*Agajie Tesfaye**
Associate Researcher
Socio-Economics Department
EIAR
Holetta Research Center
P.O. Box 2003, Addis Ababa
Tel.: +251 911 458167
Fax: +251 11 2370377
E-mail: agajie_tesf@yahoo.co.uk

*Yeshi Chiche**
Gender Focal Person
Agricultural Extension & Farmers Linkage
EIAR
P.O. Box 2003, Addis Ababa
Tel.: +251 116 465445 *or* 911 408101
E-mail: babunuki@yahoo.com

KENYA

*Violet Gathaara**
Research Assistant
Kenya Agricultural Research Institute
Waiyaki Way
P.O. Box 14733-00800, Nairobi
Tel.: +254 20 4441659 *or* 4444137 *or* 722678482
E-mail: vnkuria@yahoo.com

*Jane Njeri Ngugi**
Research Officer / Gender Coordinator
Kenya Agricultural Research Institute
Socio-economics Department
Waiyaki Way KARL-NARL
P.O. Box 14733-00800, Nairobi
Tel.: +254 20 4441659 *or* 720277888
Fax: +254 20 444144
E-mail: kariprioset@clubinternetk.co

*Dave J.W. Nyongesa**
Programme Officer, PME & Impact Orientation
Socio-Economics & Biometrics
Kenya Agriculture Research Institute
Kaptagat – Loresho
P.O. Box 57811-00200, Nairobi
Tel.: +254 20 4183301–20 *or*
721932201 *or* 734857752
Fax: +254 20 4183344 / 42
E-mail: djwnyongesa@kari.org *or*
dnyongs@yahoo.com

MADAGASCAR

Rabary Bodovololona

*Lalanekenarisos Nenee**
CFAMA
B.P. 109, Antirabe 110
Tel.: +261 331270838 *or* 20 44945-83
E-mail: lntolotra@wanadoo.mg

*Danièle Ramiaramanana**
Head of Regional Research Center
FOFIFA Fianarantsoa
P.O. Box 206, Fianarantsoa 301
Tel.: +261 320252327
E-mail: fofifa_fnr@yahoo.fr

*Léa Randriambolanoro**
Formerly Head of Crops Research Department
FOFIFA

*Simon Joseph Razafimandiby**
Agro Economist
FOFIFA
P.O. Box 206, Fianarantsoa 301
Tel.: +261 32 4001319
E-mail: simon_razafy@yahoo.fr

RWANDA

Peter Badege
Head, Rubona Research Station
ISAR
P.O. Box 5016, Kigali
Tel.: +250 783 434885
E-mail: bagegep@yahoo.com

*Leonidas Dusengemungu**
Socio-economist Researcher
Institut des Sciences Agronomique du Rwanda
ISAR Rubona
B.P. 138, Butare
Tel.: +250 08617194
Fax: +250 530145
E-mail: leodusenge2000@yahoo.fr

J. Mbanda

*Solange Mukakalisa**
Research & Head of Station
Technology Transfer Unit
Institut des Sciences Agronomique du Rwanda
P.O. Box 138, Butare
Tel.: +250 530558 *or* 08517241
Fax: +250 530145
E-mail: smukakalisa@yahoo.fr

D. Mukankubana

C. Nyiraneza

*Mary Rucibigango**
Formerly Technology Transfer Unit
Institut des Sciences Agronomique du Rwanda

SUDAN
*Ishtiag Faroug Abdalla**
Research Scientist
Agric. Economics & Policy Research Center
Agricultural Research Corporation
Khartoum North – Shambat
P.O. Box 30, Khartoum North
Tel.: +249 185212421 *or* 912278780
Fax: +249 185310813
E-mail: ishtiag@yahoo.com

*Ibrahim El-Dukheri**
Formerly Research Scientist
Agric. Economics & Policy Research Center
Khartoum North – Shambat

TANZANIA
*Eva Kanyeka**
Senior Agricultural Research Officer
Ministry of Agric. Food Security & Cooperatives
Dept of Research & Training
P.O. Box 2066, Dar es Salaam
Tel.: +255 22 2865312
E-mail: ekanyeka@hotmail.com

Ninatuba Lema
Principal Agricultural Research Officer
Dept of Research and Development
Ministry of Agric, Food Security & Cooperatives
P.O. Box 2066, Dar es Salaam
E-mail: Ninatubu.lema@kilimo.go.tz

Deogratious Lwezaura

Kiddo Mtunda†*
Sugarcane Research Institute
P.O. Box 30031, Kibaha
Tumbi Sugar Street
Coast
Tel.: +255 23 2402038 *or* 744 466201
Fax: +255 2402039
E-mail: sri@iwayafrica.com

*Florence Washa**
Agricultural Research Officer
Dept of Research & Training
Ministry of Agric. Food Security & Cooperatives
P.O. Box 2066, Dar es Salaam
Tel.: +255 784 532013
E-mail: Florencelameck@yahoo.com

UGANDA
*Ruth Kabanyoro**
Research Officer
National Agricultural Research Organisation
Mukono NARO/ARDC
P.O. Box 164, Mukono
Tel.: +256 41 290232 *or* 772 646916
Fax: +256 41 290235
E-mail: ruthkabanyuoro@yahoo.co.uk

*Christine Nankubuge**
Formerly Program Manager
Eastern African Sub-Regional Support Initiative for the Advancement of Women (EASSI)

*Gard Turyamureeba**
Senior Research Officer
National Agricultural Research Organisation
Kachwekano Research Institute
P.O. Box 421, Kabale
Tel.: +256 772 448080
E-mail: gturyamureeba@yahoo.co.uk

EXTERNAL PROJECT FACILITATORS
*Ken Afful**
Senior Advisor
Organization Development Centre Incorporated
Kupondol, Lalitpur
P.O. Box 8975, Epc 443, Kathmandu, Nepal
E-mail: kenafful@odcincorp.com

*Marren Akatsa-Bukachi**
Executive Director
Eastern Africa Subregional Support Initiative (EASSI)
Plot 87 Bukoto-Ntinda Road
P.O. Box 24965, Kampala, Uganda
Tel.: +256 41 285 163 / 194
Fax: +256 41 285194
E-mail: eassi@eassi.org

*Colletah Chitsike**
Southern Africa Representative
International Centre for Development Oriented Research in Agriculture
P.O. Box 8783, Pretoria 0001
South Africa
Tel.: +27 124279919 *or* 763123118
Fax: +27 124305814
E-mail: chitsikec@arc.agric.za

*Verona Groverman**
Consultant, Facilitating in Change
Tel.: +31 206793455
E-mail: Verona@goverman.nl

(footnotes)
* Project participants.
† Participants from Burundi and Kiddo Mtunda of Tanzania attended the first workshop only.

Appendix II: Documentation of the gender-mainstreaming work in Eastern and Central Africa

The PRGA Program–ASARECA gender-mainstreaming project, and follow-up activities have generated a number of reports, many of which are available via the PRGA Program website (others are available via ASARECA). In chronological order, these are:

Kabutha C, 2004. Participatory Research and Gender Analysis Training for Agricultural Research Organizations in Eastern and Central Africa. Hilton Hotel, Nairobi, Kenya. November 11–20, 2004. PRGA Program, Cali, Colombia, 51p.

ASARECA/ECAPAPA; PRGA Program, [2005]. Building Capacity in Gender Analysis and Gender Mainstreaming in the NARS of ASARECA. Proceedings of a Workshop on Strategic Planning for Gender Analysis and Organization Change. ILRI Campus, Addis Ababa, Ethiopia. July 4–15, 2005. ECAPAPA, Entebbe, Uganda, 57p.

ECAPAPA, [2006]. Building Capacities in Gender Analysis and Gender Mainstreaming in the NARS of ASARECA. Workshop Report. Training of Trainers Workshop in Gender Analysis. Hilton Hotel, Nairobi, Kenya. June 10–17, 2006. ECAPAPA, Entebbe, Uganda, 56p.

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Ssendiwala E; Gurung B; Waithaka M. Building capacity in gender analysis and gender mainstreaming in the NARS of ASARECA. Paper presented at the 2nd ASARECA Committee of Directors meeting, July 2007, Entebbe, Uganda.

Ssendiwala E, 2007. Building Capacity in Gender Analysis and Gender Mainstreaming in the NARS of ASARECA. Evaluation Report. ECAPAPA, Entebbe, Uganda, and PRGA Program, Cali, Colombia, 22p.

Ssendiwala EN, 2007. Building Capacity for Gender Analysis and Gender Mainstreaming in Eastern and Central Africa: Progress Report September 2007. ASARECA, [Entebbe, Uganda], 23p.

Various activities, achievements and 'outcomes' of the work have also been reported in the *PRGA Program Annual Reports* 2003–2008.

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The **Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)** is a non-political organization of the National Agricultural Research Systems (NARS) of ten countries: Burundi, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. It aims at increasing the efficiency of agricultural research in the region so as to facilitate economic growth, food security and export competitiveness through productive and sustainable agriculture.

The **Program on Participatory Research and Gender Analysis (PRGA Program)** sought to mainstream gender analysis and equitable participatory research to promote learning and change in CG centers and NARS so that they could better target the demands of beneficiary groups, particularly poor rural women.

The **International Center for Tropical Agriculture (CIAT)** is an agricultural research institution that focuses on scientific solutions to hunger in the tropics. CIAT believes eco-efficient agriculture—developing sustainable methods of food production—is the best way to eradicate hunger and improve livelihoods

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ASARECA Secretariat
Plot 5 Mpigi Road
P.O. Box 765
Entebbe, Uganda

Tel.: +256 414 320556/320212
Fax: +256 414 321126
E-mail: secretariat@asareca.org *or*
asareca@imul.com
Website: www.asareca.org

CIAT Headquarters
Km 17, Recta Cali-Palmira
Apartado Aéreo 6713
Cali, Colombia

Tel.: +57 2 4450000 (direct) or
+1 650 8336625 (via USA)
Fax: +57 2 4450073 (direct) or
+1 650 8336626 (via USA)
E-mail: ciat@cgiar.org
Website: www.ciat.cgiar.org