



Policy Brief



Rethinking Gender in Agriculture Innovation from an Innovation System's Perspective

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Introduction

Very few scholarly materials have considered gender debates from an innovation systems perspective or even considered the impact of innovation on gender. The purpose of this brief is to reflect on the opportunities that a systems understanding of innovation provides for addressing gender issues and what this means for policy and practice in agricultural development. The brief looks at how men and women, as well as socially-excluded groups of agricultural innovators, are represented in innovation. It also considers why gender issues are important in innovation debates. It is based on the understanding that women and men have different potentials and capabilities to influence economic change. The discussion advanced takes cognizance of the diversity of innovation in terms of actors and their roles, as well as the context in which it takes place, including the political and policy environment. It also recognizes the complexity of the task of trying to analyze the gender-innovation interface, considering the underlying debates that relate to both.

Background

Gender refers not to women or men, *per se*, but to the relations between them. Gender refers to what men and women do; their degree of access, control and authority to resources and decision-making; and the abilities to discharge these duties effectively. It is a central organizing principle of societies and often governs the process of production, reproduction, consumption and distribution. Gender roles are the "social definition" of women and men and vary among different societies and cultures, classes and ages, and during different periods in history. Gender-specific roles and responsibilities are often conditioned by household structures, access to resources, specific impacts of the global economy and other locally-relevant factors. Gender relations and patterns show major differences in division of labour, access and control over production resources compared to the accruing benefits as well as decision-making on developmental matters and skills, particularly in science and technology areas (FAO, 1997, 2004). Understanding these concepts is important in research that seeks to promote gender perspectives in development-related agenda.

The existing literature explores gender issues in relation to agricultural development, food security, poverty reduction, women and development, more generally. This literature shows that gender evaluation has evolved

along different trajectories that resonate with women and development or gender and development debates (World Bank, 1989; IFAD, 2000; World Bank, 2001). We argue that these debates have not helped much in terms of development efforts impacting real change in poverty levels despite many efforts to address women and gender issues in development.

Among the policy instruments that have triggered re-conceptualisation of gender from an innovation systems perspective are the Millennium Development Goals (MDGs) which, although multi-sectoral and broad in nature, bring out the different dimensions of development (United Nations, 2000). There is a growing realization that achieving the MDGs require engaging the disenfranchised and the most disadvantaged communities. This calls for consideration of gender dimensions of different developmental activities and initiatives, particularly in Africa where poverty is rampant. Attainment of all the MDGs has gender dimensions and implications with regards to achieving sustainable development (World Bank, 2007; United Nations, 2000). Attainment of MDGs for instance, has been pegged to proper administration of Science, Technology and Innovation (STI) goals (Juma and Lee, 2005). Consequently, gender debates now include additional considerations such as development and poverty being analysed from a science, technology and innovation perspectives (World Bank, 2008; UNESCO report, 2007; World Bank, FAO and IFAD, 2009; Sujatha, 2008; Blake and Hanson, 2005). This direction is spurred by a better understanding of the complex social and institutional environment under which innovation occurs. Moreover, the role of gender in development only becomes apparent when one considers social change at different levels of the innovation system. This being the case, the MDGs as development indicators cannot singly provide pointers towards the relationship between gender and innovation.

Many reports have discussed extensively the relationship between gender, agriculture and development. Despite the undisputed point made that both men and women are known to participate in agricultural systems in different ways, the debate has been skewed towards women. Arguably, the fact that women play an important role in agricultural development situ-

ates them as key economic drivers of development, particularly in developing economies. Therefore, the role of women has dominated gender debates including those around research, development.

Understanding the dynamic processes of change related to gender and agriculture is paramount to enhancing faster and sustained agricultural growth. The gender patterns of these dynamics are important for growth and development of the agriculture sector, particularly in Africa where gender disparities tend to be greatest among the poor (World Bank, 2001). Arguably, discussions have been advanced from a very narrow perspective, basically in terms of what women can do in development and vice versa (Buvinic and Mehra, 1990). Moreover, the social dynamics embedded in technological processes seem to have been overlooked in many gender and technology studies. The interrelated social dynamics of a society form a significant component of social capital that drives technological developments. This aspect is emphasised by innovation systems scholars, who recommend a holistic approach to technological studies towards enhancing innovation capacities rather than technological capacities (Hall, 2005). This further justifies a different approach to gender and technology in order to incorporate the diversities and challenges associated with the interface between the two in terms of social and economic impact. While accounting for the different roles of women and men towards dealing with gender inequalities that limit agricultural development. Ideally, this analysis ought to be informed by empirically engendered programmes for poverty reduction (World Bank, FAO and IFAD, 2009).

Gender and why it matters in agricultural innovation studies

The literature is replete with examples that show the possible negative effects of ignoring the different roles adopted by men and women in the innovation processes linked to rural agriculture. Indeed, it has been shown that reducing gender inequality in Africa could significantly improve agricultural production and poverty levels (FAO, 2007; World Bank, 2008). From innovation studies research, it is now clear that both social and technological processes

are important for putting research into use. Notably, agricultural innovation systems target poor farmers and consumers, based on their understanding of how the systems they are involved in operate. This is value-based and is also impacted by social norms.

The available literature, however, does not provide any direction on how gender should be integrated into the new thinking around innovation processes. Arguably, in the emerging discussions around agricultural and rural innovation, gender as a variable is not accorded adequate space from a theoretical point of view.

This policy brief attempts to address this omission and thereby contribute empirically to the scarce but growing scholarship around engendering technological innovation for sustainable development (World Bank, FAO and IFAD, 2009).

Understanding the Gender Gap in Gender and Innovation Studies

The gender dimension of innovation is slowly gaining importance (Blake and Hanson, 2005; Sujatha, 2008) and the available literature seems to indicate certain possible sources of gender bias in studies measuring innovation. Innovation studies, for instance, do not generally take into account or explicitly seek out the views of women about innovation processes or their roles in innovation, and they do not consider the possibility that women's and men's contributions to innovation may differ (Crowden, 2003). Thus, gender bias may result in the exclusion of women from participating and benefiting from the innovation processes. Ranga and Etzkowitz (2010:3) note that innovation points towards the functioning of institutions and organizations and tends to ignore the gender dimension embedded in individual innovators:

“The gender dimension of innovation is usually considered as a peripheral element of the (innovation) process, which narrowly focuses on issues like the exclusion/inclusion of women in research and development, invention and innovation.” (Ibid)

They further argue that innovation is inherently gender-biased as opposed to being gender-blind,

due to the social perception of technology linked to men rather than women. Crowden (2003:10) points out that women are seen merely as passive recipients of technology rather than active participants in its development. These arguments disagree with the reports that repeatedly present women as major drivers of technological innovations, particularly in sub-Saharan Africa (World Bank, 2008).

Notably, it is now accepted that science and technology has to be accompanied by innovation if the poverty reduction MDGs were to be realised (Juma and Lee, 2005). This is because innovation thinking allows us to focus not only on new ways of doing things, but also on the related range of new ideas, institutions, practices, behaviours and social relations that shape the application of science and technology (Edquist, 1997). Innovation, in particular, embraces the continuous use of new or/and existing knowledge for economic usefulness (Hall et al, 2003; Spielman, 2005). But how this is articulated will depend on how people perceive and practice innovation (STEPS Manifesto, 2010) and on the building of requisite capacity to innovate. Research in agriculture and development has received a lot of attention, mainly due to the slow pace experienced in translating research into use to benefit poor communities (Hall et al, 2003). However, literature targeting this area has not considered the gender dimension of innovation. But this is not to imply that agro-technological approaches have been gender-blind. Indeed, debates around gender and agriculture are widely reported in the right of enhancing development through improving participation capacities of marginalised groups of poor farmers (Engel, 1995).

Rethinking the Innovation Systems framework as a knowledge-based tool for analyzing gender issues

The early participatory technology development models embraced participation tools to enhance inclusiveness of all farmers in the research, extension and development process (Mohan, 2001). This made it possible to undertake gender analysis and subsequent efforts enhanced inclusive participation as well as integration of local knowledge and scientific knowledge. This was primarily aimed at promoting better

acceptance and adoption of technologies by farmers. The agricultural knowledge information systems (AKIS) approaches promoted the gender component through greater client participation and provision of incentives. In this context, it was possible for specific needs of gendered groups to be considered. These models were, however, not translating knowledge into economic gain in terms of reducing poverty and enhancing social impact among potential beneficiaries.

A systems-based framework that could address the shortcomings alluded to above is one that adopts innovation systems principles. An innovation systems framework helps us understand innovation processes and capacities at different levels (World Bank, 2006; Hall et al, 2003, Clark, 2002; Spielman, 2005). This process is orchestrated via interactions among diverse players in the economic system, the roles they play and the way these interactions direct the transmission and use of ideas. Consequently, this enhances learning and innovation. Through this approach, the roles of different innovation agents, the types and nature of interactions between them, and the informal and informal institutions that structure the innovation processes can be analysed (Edquist, 1997; OECD, 1997; Spielman, 2005). The institutions play a pertinent role in this process. This is because the opportunities faced by the poor are largely influenced by the interactions of economic institutions with formal and informal political, social and cultural institutions (Berdegue, 2005). Institutions include social norms of behaviour, habits, routines, values, aspirations; laws and regulations, all of which are social constructs rooted in the history and culture of a given society (*Ibid*:9).

Agricultural Innovation Systems (AIS) as an analytical framework is particularly suitable for analysing innovation through a gender lens because of its emphasis on institutions and actors that create “gendered” patterns of interaction. Through exploration of feasible interventions that would enhance gender, the AIS framework gives space to different groups of agricultural innovators to access technology, inputs, services and markets, and to participate in influencing technological, institutional and policy processes. This is in addition to the fact that the framework promotes

diversity, inclusion and participation needed to build social capital, which is crucial for a viable innovation system (World Bank, 2006:6). Integrating a gender perspective into agricultural innovation is important because the involved institutional and organisational set-ups are themselves gendered. But where gender serves as an organising principle for innovation there may be implications for the efficiency and effectiveness of the innovation process. This is because gender can either challenge or reinforce existing social roles. There is insufficient empirical evidence and analysis regarding the role that gender relations play in innovation. Typically, the intersection between gender and agricultural innovation has not been explored with the sole aim of looking at how gender-oriented analysis can foster productive innovation, and how this can be used as a vehicle for gender equity.

Understanding innovation capacity in relation to gender and agricultural innovation

Departing from participatory approaches to gender and the way they have been applied to explore gender and knowledge dynamics, we begin to think about interventions that may be required to promote engendered innovation through the building of requisite innovation capacity. This calls for a reconceptualisation of the entire process of knowledge production and the working of agricultural innovation systems. The innovation capacity concept has been applied in agricultural innovation systems in reference to:

“The context-specific range of skills, actors, practices, routines, institutions and policies needed to put knowledge into productive use in response to an evolving set of challenges, opportunities and technical and institutional contexts.”

(Hall and Dijkman, 2006)

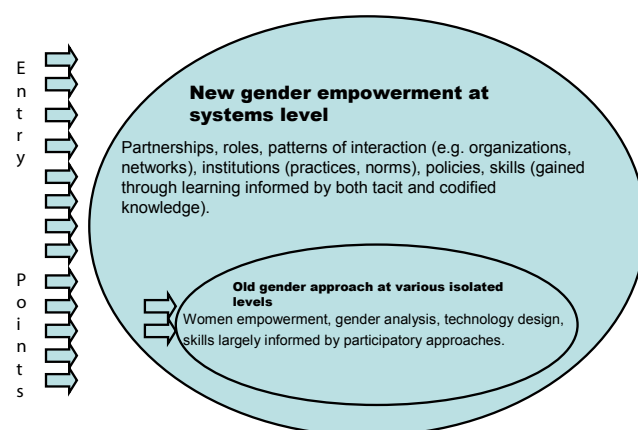
Gender inequalities occur in rural innovation due to unequal or constrained access to resources (e.g., land) and new technologies (e.g., seeds) and access to information (e.g., on market requirements that may be linked to poor extension services, poor social net-

works, and literacy level among other things) (World Bank, FAO and IFAD, 2009). Capacities among rural agricultural communities are also embedded in formal and informal networks and interactions (Spielman et al, 2009). But the sort of capacities that promote gender equality may not be understood as well, considering that gender is also influenced by cultural factors and beliefs that are highly dynamic and constantly changing. Application of innovation capacity in gender and innovation studies is confounded by a number of challenges that deserve attention. These include:

- Dealing with acute market competition, considering the heterogeneity of rural-based farmer groups
- Different sectors with diverse characteristics, which constitute the overall agricultural innovation system
- Fair representation of interests of diverse members, whether men or women, considering their heterogeneity
- Measuring social change resulting in increased involvement of women/men or socially-excluded groups in different aspects of innovation systems, considering the multi-actor nature of many technological activities

Despite these challenges, exploration of the innovation capacity concept provides an expanding range of entry points for engendering innovation through new gender empowerment at a systems level (Fig. 1). It also helps us begin to look at gender from a gender learning perspective. Figure (1) below illustrates, from a systems view, the wide range of entry points that exist upon which innovation capacity can be built. Thinking about the existing and potential entry points has many advantages if one is considering engendering the innovation process. For instance, this may help identify channels or avenues through which the welfare of socially-excluded or disadvantaged groups of agricultural innovators such as women can be enhanced. This is when compared with the old gender approach that only looked at various components of a system on an isolated basis.

Fig. 1: Gender empowerment at a system level



This holistic thinking on gender integration in an innovation system provides new insights that may productively generate debate on the gender and innovation interface towards influencing policy and practice.

Conclusion: challenges for analysis and practice

This review of innovation and gender reveals that there is a very large body of literature on the gender dimension of agricultural development. It is also noted that numerous guidelines and best practice documents have been produced. While this policy brief does not attempt to distill out what the contours of best practice might be, a number of themes are apparent. These include: making greater use of gender analysis in planning and monitoring and evaluation; women's empowerment and enhanced participation of women in development programmes and other activities. This brief has reviewed current debates about agricultural innovation — particularly that of an innovation system — in an attempt to discern whether gender concerns could be integrated into activities that seek to promote innovation. While conceptual and empirical debates on agricultural innovation systems have been relatively silent on gender issues, our main argument is that this concept provides new opportunities for taking note of gender concerns in innovation planning. There are two critical aspects of the innovation systems idea that offer great promise:

a) Shift from gender analysis to gender learning

The first is the emphasis that this idea gives to the importance of learning, both as a way of changing products and services, but also in terms of learning new ways to work differently towards different goals. By extension, the argument here is that ways of engendering the innovation process need to be learnt and by the same argument shaped by the local context in which this learning is taking place. This suggests the need for a major departure from best practice as a guide on engendering innovation towards a purposeful learning-based approach as, and how best this can be achieved. Of course, in practice, guidelines can be used as a useful experimental starting point, but what is more important is the quality of the learning process. Gender analysis might be an important mode of collecting information for the learning process, but it will be irrelevant if it is not coupled with the reframing of practices and approaches by managers of initiatives. There is no shortage of tools (for example, see www.ilac.org) to assist with this sort of learning and reflection. However, few projects, programmes and organisations have mastered and adopted these as routine practice for more general learning agendas. For the same reason that the issues of poverty and the environment have struggled to become guiding mission imperatives, gender learning will ultimately be limited by the institutional setting of development and innovation practice and the incentives this environment places on those that work there. What is very clear is that in the current institutional environment of many development programmes, simply adding gender categories to data collection protocols will not lead to gender learning in innovation practice unless the incentive regime of those implementing the programme changes dramatically. It is questionable where the market could provide the incentives for this sort of gender orientation. This leaves open the question of how public policy could achieve this goal.

b) Shift from women's empowerment to systems empowerment

The second point of value in the innovation systems perspective is the emphasis that the concept gives to

the wider notion of innovation capacity. This view of capacity goes beyond skills and actions of individuals, but encompasses the behaviour of the system as a whole and is shaped largely by the policy and institutional dimensions of that system. So while ideas such as women's empowerment and participation are laudable objectives in themselves, like gender analysis they have restricted usefulness unless the behaviour of the wider system in which they are located is addressed. More positively, understanding innovation capacity in a more systemic sense reveals many more entry points through which gender concerns can be addressed (see Figure 1). These entry points are in the policy domain, the institutional domain, in the market domain, the research domain and in the financial domain. This expanded set of entry points also emerges from the way the innovation system reveals critical processes that can be engendered: partnering; modes of interaction to share information for innovation; and the roles of actors in different innovation-related tasks. More focus needs to be placed on strengthening the wider dimensions of innovation capacity and each of the different entry points that this suggests offers opportunities for introducing gender awareness. The analytical implication of this is that gender analysis needs to take place at a systems level. Diagnostic tools for exploring innovation systems will need to be adapted to increase sensitivity of the gender dimension of the process these explore. Like many areas of development practice, shifting to these sorts of perspectives will come down to the willingness of individuals to adopt this sort of approach.

Note

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