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Sustainable development of livestock - case for gender equality

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Abstract
The livestock sector is growing at an unprecedented rate and the driving force behind this enormous surge is a combination of population growth, rising incomes and urbanization. By the year 2050, the world's population will reach 9.1 billion and in order to feed this larger, more urban and richer population production must increase by 70% in the livestock sector. Consequently, the long-term viability of livestock systems is now being questioned. The concept of sustainable development combines environmental goals, maintaining economic viability, and the social goals, all of which have to be pursued simultaneously. But the production systems which are predominantly mixed farming systems, are undergoing a steady transformation due to increasing pressure on livestock to produce more. This interaction between crop and livestock production are likely to weaken further giving way to emergence of commercial production systems. These commercialization trends are visible in the case of dairy and poultry production. These changes are threating the traditional farming systems and entail environment and social disturbances which will further weaken the available opportunities for women in rural areas. There is a strong need for supporting traditional mixed farming systems. However, these are not gender neutral and have been criticized on this account. It is argued that gender equality as an goal should be attempted in supporting these production systems.

Keywords: Livestock, sustainable development, gender equality

Introduction
Livestock systems occupy about 30 percent of the planet's ice-free terrestrial surface area (Steinfeld *et al*., 2006) [13]. The livestock sector directly support the livelihoods of 600 million poor smallholder farmers in the developing world (Thornton *et al*., 2006) [5]. Currently, livestock is one of the fastest growing agricultural subsectors in developing countries. This growth is driven by the rapidly increasing demand for livestock products, this demand being driven by population growth, urbanization and increasing incomes in developing countries (Delgado, 2005) [1]. By 2050 income levels will be many multiples of what they are now. Urbanization will continue at an accelerated pace, and about 70% of the world's population will be urban. In order to feed this larger, more urban and richer population production must increase by 70% particularly, in the livestock sector (FAO, 2009) [2]. Also, such developments and increase in food production must not occur at the expense of future generations own capacity to feed themselves (WCED, 1987) [18].

Livestock and Global Change
There is significant uncertainty about both how livestock systems might evolve to meet the increased the demand for livestock products and what the social and environmental consequences of these changes will be. Dealing with changes in livestock systems needs to be informed by consideration of the benefits and problems they create. The benefits associated with livestock are societal, economic, and environment. At the same time, livestock and livestock systems can have negative effects locally and globally, as well as directly and indirectly. Locally, these include land conversion and land degradation. These effects need to be put into regional and local contexts both for designing suitable research agendas and for engaging in environmental debates. A variety of issues associated with animal husbandry add to the complexity of the situation, notably competition with humans for resources like land

(Herrero *et al.,* 2010) [5] and water (Peden *et al.,* 2007) [10], climate change (Steinfeld 2006) [13], socio cultural & ethical issues, & food safety and environmental pollution. Consequently, the long-term viability of livestock systems is now being questioned (Rigby *et al.,* 2001) [11]. There is a now strong social demand for sustainable livestock systems (Lebacq *et al.,* 2012) [7].

Sustainable Livestock Production

The terms "sustainability" and "sustainable development" were used worldwide by researchers, policy makers and private enterprises after the report of the World Commission on Environment and Development (WCED) published in 1987 (Hardi and Zdan, 1997) [4]. The United Nations Brundtland commission in 1989 defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs". Sustainable livestock systems should indeed be environmentally friendly, economically viable for farmers, and socially acceptable, notably for animal welfare. Broadly, the concept of sustainable development combines environmental goals, especially ensuring resource availability (avoiding negative environmental impacts) and maintaining biodiversity with economic goals (especially economic viability), and the social goals (especially social justice), all of which have to be pursued simultaneously. Environmental sustainability is defined as the maintenance and continued productivity and functioning of the ecosystem (Goodland, 1995) [3]. Economic sustainability is defined as the economic viability of farming systems, i.e., their ability to be profitable. Social sustainability is related to well-being of farmer, his family and society.

Changing Livestock production systems

Livestock in India are raised as a part of mixed farming systems. Mixed farming systems are considered environmentally most benign and sustainable because of complementarities between crop and livestock production. Animals derive most of their feed-fodder requirement from agricultural residues and by products, and in turn provide draught power and dung manure for cropping activities. Livestock production systems are broadly classified as mixed rainfed, mixed irrigated, grassland and landless/industrial (Thornton *et al.,* 2003) [15]. In India mixed rainfed system is practised on 46% of land and mixed irrigated system on 37% land. Grassland and industrial systems are limited to 4 and 13% of land, respectively. However, mixed crop-livestock systems are characterized by considerable heterogeneity in terms of species, production efficiency, management practices and commercialization.

Mixed farming systems, however, are undergoing a steady transformation due to increasing pressure on livestock to produce more to meet the growing food demand. The non-food functions of livestock, that is draught services and manure production, are declining in importance because of increasing use of bio-mechanical inputs in crop production and declining size of land holding. Thus the interactions between crop and livestock production are likely to weaken, giving way to emergence of commercial production systems based on high-producing animals and external inputs. For instance, poultry production in India has largely been transformed from a backyard activity to a commercial activity. The commercialization trends are visible in the case of dairy. Social and cultural drivers of change are having profound effects on livestock systems in particular places, although it is often unclear how these drivers play out in relation to impacts on livestock and livestock systems. The sharing of livestock with others is often a means to create or strengthen social relationships, through their use as dowry or bride price, as allocations to other family members and as loans inevitably, the cultural and social roles of livestock will continue to change, and many of the resultant impacts on livelihoods and food security may not be positive. These changes are threating the traditional farming systems and entail environment and social disturbances which will further weaken the available opportunities for women in rural areas. There is a strong need for supporting traditional mixed farming systems.

Case for Gender equality

Traditional mixed farming systems are not gender neutral and have been criticized on this account. It is argued that gender equality as a goal should be attempted in supporting these production systems. The gender equality means that women and men have equal conditions for realizing their full human rights and for contributing to, and benefiting from, economic, social, cultural and political development (UNESCO, 2003) [16]. Women compose not only around 70 percent of the poor, they also make up the majority of poor livestock keepers. Various micro level studies have highlighted the significant role women play in dairy production (Jain and Verma, 1992 [6]; Malik *et al.,* 2015) [8]. Yet, when it comes to the sharing of benefits, it usually appears to be tilted in favour of men. About 76 percent role in Animal Husbandry is performed by women (ibid). This bias originates in primitive societies, and afterwards 'upheld by institutions like family, the state and the patriarchal religions' (Mies *et al.,* 1988) [9].

Infact the UNDP has included ''the promotion of gender equality and the empowerment of women'' as the 3rd Millennium Development Goal. Gender inequality is one of the contributing factors to food insecurity, malnutrition and poverty.There is need to support traditional mixed farming systems. Because emerging commercial production systems are based on high-producing animals and external inputs and affecting environmental and social dimensions of sustainability. A new report from FAO says livestock production contributes to the world's most pressing environmental problems, including global warming, land degradation, air and water pollution, and loss of biodiversity.

FAO says "the future of the livestock-environment interface will be shaped by how we resolve the balance of two demands: for animal food products on one side and for environmental services on the other". Rapid growth of commercialized industrial livestock has reduced employment opportunities for many, according to the report (Stanford report, 2010) [12]. In developing countries, such as India and China, large-scale industrial production has displaced many small, rural producers, who are under additional pressure from health authorities to meet the food safety standards that a globalized marketplace requires. So there is strong need to support traditional mixed farming systems for attaining sustainable development but these are promoting gender inequality as discussed earlier. It is argued that gender equality as a goal should be attempted in supporting these production systems.

Conclusion

Intensive livestock farming has raised issues about environmental impacts and food security during the past 20 years. Consequently, the continued demand growth will create

pressures on the production systems and will pose challenges in terms of sustainability. And sustainability of these production systems is crucial for ensuring livelihood and nutritional security to a large number of rural poor. But production systems which are predominantly mixed farming systems, are undergoing a steady transformation towards commercialization due to increasing pressure on livestock to produce more which are visible in dairy and poultry. These changes are threating the traditional farming systems and entail environment and social disturbances which will further weaken the available opportunities for women in rural areas. So strong efforts are required to promote gender equality in supporting these traditional mixed farming systems for Sustainable development of livestock. Gender equality also goes well with all the three pillars of sustainable livestock development- environmental, economic and social.

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