

# Socio-economic, marketing and gender aspects of village chicken production in the tropics: A review of literature



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# Socio-economic, marketing and gender aspects of village chicken production in the tropics: A review of literature

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# Executive summary

Chicken production is an essential agricultural activity practiced by almost all rural communities throughout the developing world. However, in the earlier times smallholder chicken production was a neglected agenda in the development themes compared with its role in poverty alleviation and food security at household level. The aim of this paper is to review the literature that focus on the socio-economic, gender and marketing aspects of chicken production in the tropics. The review may indicate that chicken production played, and still plays important social, economic and cultural roles in the rural households all over the developing countries.

Most importantly, chicken is a valuable asset to the local population, especially for the disadvantaged groups and less favoured areas of rural Africa and elsewhere in the developing world. This is because chicken production contributes significantly to food security, poverty alleviation and the promotion of gender equality. However, the level of production and productivity in the tropics is still low and constrained by many social, economic, and market related factors, and the importance of poultry cannot be overstated.

The review also indicated that regardless of regional differences, in most areas of the world (e.g. Africa, Latin America and Asia), the routine management of poultry are undertaken by women, often with the assistance of children. Exception to the rule, there are cases where men take particular interest in poultry (e.g. Benin and Togo) for the reason that large flock sizes have a certain prestige value. However, ownership of rural chicken, and decision-making regarding selling, consumption and gifts reflects plurality. Nevertheless, still there are big gaps to get gender-based disaggregated data to figure out women's roles and responsibilities in the family poultry production. Therefore, a project intervention that identifies and supports women's roles in the whole chicken value chain by strengthening their decision-making power and capabilities in promoting women empowerment which helps the rural women to break the poverty cycle and helps to develop self-esteem.

The literature review indicated that in most areas of the tropics, chicken research was focused on production and productivity, and little attention was given to marketing. On the other hand, in the different literature, it is mentioned that the biological aspects of chicken production such as feeding and breeding are efficient if it is accompanied by efficient marketing systems since, efficient marketing system is rewarding to all agents involved in the production, marketing and consumption of chicken. Therefore, an efficient marketing system has paramount importance in the chicken production, and projects working in chicken production have to think of considering the forgotten market structure in the value chain. In this way it is possible to reduce transaction costs as well as increase production and productivity.

Even though the role of poultry as a potential tool to escape extreme poverty through its influence on the improvement of livelihoods has frequently been indicted there are many constraints to the development of the smallholder poultry production. In many of the literature, the main challenges for the development of smallholder chicken production in the tropics include: disease control; protection against various predators; better feeding; genetic improvement; better marketing; training and management; access to production inputs; poor infrastructure and access to capital; the lack of farmer organizations and the creation of conducive institutions and governmental policies. In this respect policies and actions need to focus on reducing the constraints related to chicken production.

Keywords: Chicken, gender, marketing, tropics

# I. Introduction

Rural smallholders throughout the world rear all species of poultry. The most important species in the tropics are: chickens, guinea fowl, ducks (including Muscovy ducks), pigeons, turkeys and geese. Local strains are used, but most species are not indigenous. In developing countries, many rural households keep poultry in their farmyard. Poultry keeping that is practiced by rural households using family labour is referred to as village poultry keeping (Jacques 2012). Village poultry is the predominant livestock species in many rural areas (Alders and Pym 2009; Moreki et al. 2010) of the developing countries comprising mainly local unimproved poultry breeds and few improved strains.

Poultry is broadly recognized as the livestock of the poor, and poultry production is part of most smallholder farming systems (Guèye 2005; Sonaiya 2007). Kryger et al. (2010) indicated that 85% of the rural households keep chickens or other types of poultry as supplementary to the main livelihood activities in sub-Saharan Africa (SSA). Guèye (2005) supported this by stating that more than 90% of rural families in most developing countries keep one or more poultry species (i.e. chickens, ducks, guinea fowl, geese and pigeons).

The role of poultry as a potential tool to escape extreme poverty through its influence on the improvement of livelihoods has frequently been indicated (Guèye 2005; Sonaiya 2007; Hailemichael et al. 2016). According to Sonaiya (2007), the importance of poultry in assisting the landless poor and the destitute is reflected in many national poverty reduction strategy programs. In most African countries, family poultry as one of the keys to accomplishing the millennium development goal of reducing the number of poor and needy (Sonaiya 2007). Almost all families at the village level in most developing countries, including the landless and the poor are owners of poultry where production is viable and low-cost technology is needed to improve production substantially (Upton 2004; Nduthu 2015).

On the other hand, other researchers and outsiders indicated that smallholder poultry production's contribution to livelihoods appears to be of little nominal value (Kryger et al. 2010). The reason behind the little minimal value of smallholder chicken production is due to the little attention given by researchers and/or in development projects for the social and cultural aspects of the smallholder poultry production system (Dolberg 2007; McLeod 2007; Kryger et al. 2010).

In Africa, poultry farming is commonly practiced, where almost every homestead keeps some types of poultry mainly for home consumption and cash income from sales, socio-cultural purpose, its low start-up capital and low maintenance costs are amongst the reasons for keeping chickens by resource poor farmers in Africa (Dwinger et al. 2001; Dolberg, 2003; Nduthu 2015; Hailemichael et al. 2016). Other scholars also mentioned that in most developing countries because of population growth landlessness increases, which means that poultry production has become the investment of choice due to its low land requirements (Permin et al. 2001; Nduthu 2015).

In the tropical regions, the production systems are based on the scavenging indigenous chickens found in almost all villages and households in rural areas (Dwinger et al. 2001; Hailemichael et al. 2016). According to Guèye (1998) and Hailemichael et al. (2016) roughly 80% of the chicken population in Africa are reared in these systems which is characterized as low input-output system (Patbandha et al. 2016). With the exception of urban areas in northern and

southern Africa, most poultry production in Africa is undertaken through an extensive system at village or family level based on the scavenging domestic fowl (Dwinger et al. 2001; Mekonnen 2007; Hailemichael et al. 2016).

According to Permin et al. (2001), 30–100% of the animal protein consumed in some villages is from this source, but, little attention is given to this means of production. This low input/output practice has been a traditional component of small farms all over the developing world for centuries and is thought to continue as such in the future (Permin et al. 2001).

Of all the poultry sectors, chicken production is an essential agricultural activity practiced by almost all rural communities in Africa, which made the best use of local resources (Mekonnen 2007; Moges et al. 2010). Currently, scientists and development practitioners at different level mentioned that smallholder chicken production plays a very significant role in poverty alleviation and food security at household level, even though smallholder chicken production was a neglected agenda in the development strategies in the earlier times (Mekonnen 2007; Moges et al. 2010). Therefore, this paper sets out to review the contribution of chicken production to livelihoods and the socio-economic, marketing and gender aspects of the smallholders in the tropics.

## 2. Poultry production—livelihood significance

### 2.1 Social, economic and poverty alleviation aspects of poultry

Village poultry can be a useful tool for food security and livelihood significance largely in poor countries for different reasons. Village poultry not only has a high share of the meat supply in developing countries, but is also a widespread traditional activity in most of these countries (Sodjinou 2011). Undeniably, more than 80% of the poultry population of the world is found in traditional family-based poultry production systems, contributing up to 90% of poultry products in some countries (Alabi and Aruna 2007; Sodjinou 2011). In a situation where landless people are many or people who have very limited formal skills to practice and participate in other income generating activities, village poultry production plays a substantial role in income generation and poverty alleviation (Fattah 1999; Aklilu et al. 2008; Sodjinou 2011).

A study in Mozambique (Harun and Massango 2001; Alders et al. 2007; Sodjinou 2011) showed the role of village poultry in the local economy, and how increased production has the potential to improve food security, assist in poverty alleviation and mitigate the adverse economic impacts of HIV/AIDS for rural populations. Alders and Pym (2009), in their study on village poultry—still important to millions—8,000 years after domestication supports that households where there is a lack of able-bodied workers, such as those affected by HIV/AIDS or those that have a disabled family member, village poultry provide a source of high quality protein and income without requiring much in the way of labour or financial inputs. In South Africa and Swaziland, poultry projects were successful in assisting families affected by HIV/AIDS (Alders 2004). Alders et al. (2007) also mentioned that because of the fact that sick people are cared by women, chickens play a significant role in providing substantial additional resources to support households affected by HIV/AIDS.

In most developing countries, for poor households, village chickens play a major role in the improvement of households food security and poverty alleviation (Adongo 2004; Moreki et al. 2010). Village poultry provides the owners of the chicken with nutritional and economic benefits with very minimal use of inputs or without any inputs. They provide their owners with economic and nutritional benefits with little or no inputs (Reta 2009; Moreki et al. 2010).

Village poultry provides a source of high quality eggs and meat which provides high quality protein to many rural households (Aganga et al. 2000; Aklilu et al. 2007, Alders et al. 2007; Moreki et al. 2010). In particular eggs give an important source of nutrition and quality protein and supply various vitamins stored for days under village conditions (Moreki et al. 2010). In areas where most farmers produce only energy-giving food crops, livestock, particularly chickens are the major source of proteins available to households (Muchadeyi et al. 2004). Iron and vitamin A deficiencies, the most commonly scarce nutrients for both adults and children, can be easily obtained from poultry eggs and meat (Piwoz and Preble 2000; Moreki et al. 2010). Even in some areas of Africa, farmers were able to secure their food base from chickens through the provision of meat and eggs (Muchadeyi et al. 2004).

Knowledge of the socio-economic and socio-cultural roles of poultry in rural livelihoods is to a great extent based on, or related to, project interventions and reported in project related formats such as baseline studies, progress reports or project impact studies (see e.g. Riise et al. 2005; Thomsen et al. 2005; Kryger et al. 2010) and academic study reports (e.g. MSc and PhD theses). A study conducted in Uganda, on social factors and quality attributes influencing preference for production of local poultry indicated that preference for production poultry was influenced by economic value (Higenyi and Muyanja 2014). The relative importance of poultry industry, particularly traditional poultry, in the livelihoods of the low-income families (rural and peri-urban) is fundamental (Kitalyi 1998; Prabakaran 2003).

In most economies of the developing countries, the importance of poultry cannot be overstated (Adebayo and Adeola 2005) as it has become the main enterprise for the smallholder farmers that have a great contribution to the economy of these countries. The authors mentioned that in Nigeria, poultry has great importance in providing job opportunity and improving animal food production. A study by Okonkwo and Akubuo (2001) indicated that about 10% of the Nigerian population are engaged in poultry production, mostly on subsistence and small or medium-sized farms. However, a study in Nigeria about socio-economic factors affecting poultry farmers indicated that for substantial improvements in the contribution of the poultry industry to household food production and economic well-being of poor farmers it needs a national support in the area of finance and input (Adebayo and Adeola 2005).

The chicken provide readily harvestable animal protein to rural households (Kitalyi 1998; Mutombo 2014) and in some areas of Africa, chicken production is important to meet the obligation of hospitality to guests. Hailemichael et al. (2016), in their study on characterization of the smallholder poultry production and marketing system, in some parts of Ethiopia indicated that there are fewer religious or social taboos associated with poultry keeping and consumption and has a symbolic importance within the context of socio-cultural and religious functions.

For example, in the northern part of Ethiopia poultry are used for strengthening marriage partnerships (Aklilu et al. 2008). According to Aklilu et al. (2008) in the local culture, particularly in remote areas, women who can provide men with food like the Ethiopian chicken stew (*doro wot*) are considered to be contributing to a stable marriage. Serving *doro wot* is also a demonstration of respect to guests (e.g. in-laws), thus strengthening social relationships which is especially important for poor households (Aklilu et al. 2008).

In Zimbabwe, the chosen taste of chicken meat made available and reserve for special guests or at ceremonial gatherings (i.e. marriage feast, weddings or funerals) (Muchadeyi et al. 2004). In Kenya, chickens are useful in a number of social, cultural and spiritual activities such as entertainments, gifts, funeral rites and spiritual cleansing (Njenga 2005; Magothe et al. 2012).

Chicken production helps the smallholders in generating incomes, are as a source of gifts, can be used in religious sacrifices and provides off-farm employment (Sonaiya 2000; Dessie and Ogle 2001; Guèye 2003). Jacques (2012) in his study on the contribution of poultry farming in the socio-economic development of Rwandan rural areas, supports the literature that village poultry are significant for their nutritional and/or economic value, and also play a significant role in society through their contribution to the cultural and social life of rural people. The serving of a chicken dish is often—in many parts of Africa—a way of welcoming high status visitors or honouring affinity and kinship (Jacques 2012). Village poultry is also a useful tool to help poor rural households to recover from disasters, and it provides a practical and effective first step in alleviating abject rural poverty (Sodjinou 2011).

Observed scholars and rural development workers noted that the contribution of poultry and their products to the household cash income are generally difficult to assess. Nevertheless, Diambra (1990) indicated that the subsector is considered as a viable and promising alternative income source for rural households in developing countries. A study in Ethiopia by Meseret et al. (2011) on marketing systems, socio-economic role and intra-household dynamics of indigenous chicken reported that households spend the money obtained from chicken and egg sale for the purchase of items for home consumption and cover educational materials and other immediate cash needs from the school. Alders and Pym (2009) and Sodjinou (2011) support that the different impact studies have demonstrated that income from the sale of poultry eggs in South Asia is used to send children to school and begin the process of asset accumulation.

Muchadeyi et al. (2004) mentioned that in Zimbabwe chickens were also sold to cover school fees, medical costs, buy food items for household consumption and paying village taxes.

Studies indicated that the role of poultry in the overall economy of the nations and its importance in strengthening the income and nutritional status of many landless and smallholder farmers has been well recognized in the last decades (Kitalyi 1998). Nevertheless, due to the lack of measurable indicators demonstrating the contribution of the rural poultry in the national economy, made the sector a low priority (Roberts and Gunaratne 1992; Dolberg 2003; Dolberg 2007; Hailemichael et al. 2016). A study by Mengesha (2013) in Ethiopia on the biophysical and the socio-economics of chicken production reviewed the socio-economics of poultry production with the aim of delivering summarized and synthesized information for the beneficiaries.

Mengesha (2013), in his study, mentioned that poultry production and consumption are progressively growing in the world and it accounts for about 33% of the global meat consumption and is expected to grow at 2–3% per year in the world. The same author indicated that, even though there exists a prediction that favours the intensification of poultry production in many developing countries, village poultry is still a profitable business, which has no market problem, and plays a key role in alleviating poverty.

It is universally known that, family poultry is an entry point to address the problems of malnutrition, food insecurity and poverty for the rural poor (Nchinda et al. 2011). Particularly Gawande et al. (2007), Dei et al. (2009) and Nchinda et al. (2011) argued that family poultry is a profitable venture. Thus, poultry is considered as a tool for improving livelihoods and alleviating poverty (Fasina et al. 2007; Kamaldeep et al. 2007). This clearly indicated that the support in promoting family chicken husbandry was meant to improve the livelihood of the poor smallholder farmers.

## 3. Gender and rural chicken production

### 3.1 Gender equity and chicken

Gender is used to designate social relations between sexes and is a way of making reference to social constructions, the social origin of masculine and feminine identities (Rodriguez Villalobos et al. 2004; Aila et al. 2012). Gender refers to the attributes and opportunities associated to being a woman or man and the relations with each other. These attributes, opportunities and relations are socially built and learned through the socialization process and as such they are dynamic, changing, and may, therefore, be modified (Aila et al. 2012). Differences and inequalities exist in most societies regarding the activities carried out by men and women in connection with the access and control of the resources, as well as the decision-making venues. Gender is part of a more complex social interweaving, and interacts with factors such as socio-economic condition, race and age (Rodriguez Villalobos et al. 2004; Aila et al. 2012).

Rodriguez Villalobos et al. (2004) illustrates that gender generally implies to the fixed and unchanging character about what men and women are, including what they should do within the household and in society in general. Such characteristics and roles are social constructions, and may be changed. Consequently, the adoption of the gender equity approach implies focusing on women and men, including their relations with each other and the natural resources. This approach seeks to avoid the prevalence of limitations or restrictions based on sexual differences in connection with the access to resources and opportunities. Gender equity promotes the elimination of economic, political and educational barriers as well as the access to basic services such that men and women may enjoy equal opportunities and equitable benefits (Aila et al. 2012).

Gender equity and equality are conditions that should be promoted on an ongoing basis, but may easily be eroded as the progress achieved, for which reason the actions promoting more equitable power relations should be steadily and sustainably pursued (Rodriguez Villalobos et al. 2004). Accordingly, Rodriguez Villalobos et al. (2004) and Aila et al. (2012) proposed a gender analysis model that integrates access, control and benefits of resources differentiated by gender, work divisions, affirmative actions and participation in decision-making. This gender analysis tool provides an insight into how gender equity might influence consumer preferences for indigenous chicken. The widespread acknowledgement of the key roles of women, particularly in small scale backyard poultry production and marketing, has not really been translated in specifically targeting women as both communicators and as recipients/beneficiaries (Velasco et al. 2008).

### 3.2 The role of women in chicken production and decision-making

Regardless of all the regional differences, whether talking of smallholder households in Africa, Asia or Latin America in smallholder poultry production, the routine management of poultry is undertaken by women, often with assistance from their children (Kryger et al. 2010; Mutombo 2014; Nduthu 2015). For example, Ahlers et al. (2009), indicated that it is a common practice in sub-Saharan Africa that indigenous chickens are owned and managed by women and

children and in female-headed households. Whereas men may assist in the construction of housing (night shelters for the animals) and in some localities in bringing birds and eggs to the market, women and children are, as a general rule, the ones who feed and water the birds, clean the housing and apply treatments (Dessie et al. 2003; Mapiye and Sibanda 2005; Tung and Rasmussen 2005; Mutombo 2014). This indicated that poultry production in the rural setting is more productive and sustainable if women are empowered and encouraged to actively participate. Furthermore, getting new information to the front line of production needs gender-based disaggregated data (Guèye 2003).

Guèye (2009) reported that the promotion of indigenous chicken production, therefore, economically empowers the rural youth and women. Nduthu (2015) mentioned that any development schemes which aim to improve and promote the chicken sectors to be sustainable should not underestimate the contributions and roles of women. Poultry production enterprise is a potential area for women's groups to: harness income, create job opportunities, improve quality of life and improve standards of living for women residing in rural communities.

A study by Okitoi et al. (2007) on gender issues in rural poultry production system in western Kenya reported that ownership of rural poultry is shared among the family members but is predominantly owned by women (63%) and children (18%). But, in their study Okitoi et al. (2007) mentioned that decision-making regarding selling, consumption and gifts to guests in rural poultry reflects plurality. On the other hand, Guèye (2005) and Mutombo (2014) mentioned that although women are generally the main poultry owners and caregivers of the birds, women usually do not make the decisions on the use of poultry and/or women are not necessarily endowed with complete ownership of the birds or with decision-making power regarding the use of the poultry products and income from sales.

The typical division of roles and responsibilities in most traditional societies implies that women have access to family poultry, but do not have full control over the production tools and the benefits gained from them (Guèye 2005). However, this is not a general case, since there are some cases where the ownership rights of poultry are evidently defined the women, men and even in some cases a child and it belongs to the household in general, meaning that final decision-making in relation to sales and consumption is likely to remain with the husband as he is the household head (Kitalyi 1998; Guèye 2003; Mutombo 2014). This is similar to Guèye (2005), who reported that women's ownership of chicken is reduced with intensification of the production and due to the social, cultural and religious activities of the people it varies between and within countries.

In some areas of Cameroon and Nigeria, it was mentioned that all the gender categories in the household are involved in managing chicken, children have the highest responsibility in housing the chicken and letting them out in the morning (Abubakar et al. 2007; Moges et al. 2010), whereas, feeding and health and hygiene management were the combined responsibility of women and children (Abubakar et al. 2007). According to Abubakar et al. (2007), in Cameroon chicken generally belongs to the whole family, with some specific ownership pattern where women owned the majority followed by children and men.

The exact figures on women's roles and responsibilities in the family poultry production needs sufficient gender disaggregated data (Guèye 2005). Besides the need for field studies and participatory rural appraisal, sustainable village poultry development does require the availability of gender disaggregated data, gender analyses which is the prerequisite for significantly promoting gender equality and resource equity (Guèye 2005).

In Africa, rural chicken is a family affair with construction of the chicken house and major decision-making issues such as sale of chicken and eggs and consumption of poultry products under the control of the men (Hailemichael et al. 2016). Survey in four African countries, i.e. Ethiopia, Gambia, Tanzania, and Zimbabwe, showed that women dominate most activities except for shelter construction and marketing (Kitalyi 1998). Similarly, Okitoi et al. (2007) indicated that ownership of rural poultry and access to benefits is not exclusively the domain of women.

Decision-making by women in the rural poultry production system was limited to non-cash related decisions while cash related decisions were made mostly by men (Okitoi et al. 2007). In another study on village poultry production systems in the central highlands of Ethiopia, Dessie and Ogle (2001) indicated that the management of chickens was fully in the domain of women whereas decision-making regarding control and access to resources varies considerably.

However, a study in Sudan on village poultry production reported that the ownership of village chickens was shared between all gender categories and all were involved in the management of the birds (Khalafalla et al. 2000).

A study by Muchadeyi et al. (2004) on the village chicken production system in Rushinga district of Zimbabwe indicated that there exists significant effect of the gender of the household head on flock sizes and composition. However, the authors recommended a systematic bias of the chicken production enterprise towards women. Muchadeyi et al. (2004) reported that women-headed households owned more chickens, implying that chickens are important to these households. Unlike large animals, which are owned and controlled by men, chickens are directly accessible to women and this is mainly because men tend not to attach much value to chickens (Pedersen 2002).

A study by Gawande et al. 2007 on the traditional rural chicken production in northern India on the role of gender and decision-making reported that women involved in different activities of rural chicken production and their decision-making pattern was also dominated. Patbandha et al. 2016 found that compared to men most women households (71.7% versus 28.3%) acted as owner of rural chicken. This is a similar result reported by Guèye (2005) that in his study he described that in the rural areas of Africa more than 70% of women are chicken owners. Different studies mention the reason why women dominate chicken ownership in developing countries. For example, Kryger et al. (2010) mentioned that it is due to the low investment nature of chicken farming compared to other livestock enterprises. The ownership of chicken is conditioned by the fact that it needs little or no special care and that most large livestock and small ruminants are managed by men (Guèye 2005).

However, according to different scholars, there are cases where men take particular interest in poultry. In Benin and Togo, men keep species such as guinea fowl, turkeys and pigeons which are considered more difficult to manage than chickens (Kryger et al. 2010). To some men, keeping these types of poultry and large flock size of birds has certain prestigious value (Thomsen et al. 2005; Kryger et al. 2010).

In general, women play a significant role in chicken management, marketing, as care providers, feeding, cleaning and other chicken activities. They are the main actors in the production of chicken, but compared with their contribution not all women control the income obtained from the chicken and in decision-making process. Identifying and supporting women's roles in the whole chicken value chain by strengthening their decision-making powers and capabilities are the main areas in promoting women's empowerment and household economic welfare which in turn enables rural women to break the cycle of poverty and develop self-esteem.

### 3.3 African Chicken Genetic Gains and gender

The African Chicken Genetic Gains (ACGG) program began in January 2015 for five years to be implemented in Ethiopia, Tanzania and Nigeria. The ACGG program's vision is to increase smallholder chicken production and productivity growth as a pathway out of poverty in sub-Saharan Africa. The program is led by International Livestock Research Institute (ILRI) with the program implemented through program partners in each region: PICO-EA, the Ethiopian Institute of Agricultural Research (EIAR), the Tanzanian Livestock Research Institute (TALIRI), Wageningen University (WUR), Sokoine University of Agriculture (SUA), the Federal University of Agriculture Abeokuta, and Obafemi Awolowo University (OAU).

The project's theory of change elaborates that production and productivity gains can be realized through access of poor smallholder farmers to high-producing but agro-ecologically appropriate chicken genetic products. The project aspiration is to reach 7,500 farmers directly through on-farm testing of selected chicken strains of which at least 70% of whom will be women. As it is indicated in the ACGG proposal narrative, the project believed that in sub-Saharan Africa rural women contribute significantly to agricultural development. However, due to a mixture of economic constraints and cultural norms, women are not fully able to realize their contributions to and benefits from the production of marketable commodities.

The project can achieve the intended objective of empowering women through two approaches. First, the project believes that ensuring gender equality and women's empowerment to be inherent in all that the project does. The project plan to approach this by addressing issues related to the limited experience, skill and awareness on gender of many partners and capacity building at all levels. ACGG will work in partnership with the respective project countries to ensure that project participants have the appropriate tools and training to engage women in the project activities.

Secondly, the project feels that gender inequalities must be directly targeted. These include: women having limited access to and control over important agricultural resources; the cultural norms and traditions that put women at lower social position in community; the absence of feedback loops for women's preferences and needs. ACGG partners have agreed that one of the first steps to empowerment is using the collected baseline data to target women's participation in the project activities. Using this goal as a target for women's engagement, the on-farm testing component will focus on women in order to capture their preferences and their needs as both consumers and producers in the chicken value chain. The information on women's preferences in the chicken value chain (VC) will be used to inform the content of the subnational and community innovation platform meetings.

The key goals of the subnational IP meetings is the full engagement of women in discussions about chicken value chain development and the design of the ACGG long-term genetic gains program. Therefore, ACGG established a target of 70% female participation in the IP meetings. The innovation platforms (IPs) meetings prioritized as they result in more direct communication with the farmer and community level input suppliers, facilitating a more direct feedback loop to farmers. The subnational coordinators and the national coordinators have engaged in the meetings, and therefore, these individuals have begun to establish these feedback loops by bringing information from the national IPs to the community level, and in exchange, bringing concerns and ideas from the communities to the national level. It is the hypothesis of the ACGG program that engaging women in positions of leadership in ACGG will support more female participation as a whole.

## 4. Poultry marketing

### 4.1 Market and marketing

Market can be defined as an area in which one or more sellers of given products/services and their close substitutes exchange with and compete for the patronage of a group of buyers. A market is an arena for organizing and facilitating business activities and for answering the basic economic questions: what to produce, how much to produce, how to produce, and how to distribute production (Kohls and Uhl 2002). According to Backman and Davidson (1962), a market is a place or sphere within which price making force operates and in which exchanges of title tend to be accompanied by the actual movement of the goods affected. The concept of exchange and relationships lead to the concept of market. Other observed scholars in marketing, for example, Kotler et al. (1991), defined market as the set of the actual and potential buyers of a product. From the conceptual point of view, a market can be visualized as a process in which ownership of goods is transferred from sellers to buyers who could be the final consumers or intermediaries.

### 4.2 Marketing channels and chains

A marketing channel is a business structure of interdependent organizations that reach from the point of product or origin to the consumer with the purpose of moving products to their final consumption or destination (Andreasen et al. 2003). Depending on the kind and quality of the product marketed, available marketing services, and prevailing social and physical environment, the channel may be short or long (Blandon et al. 2009). On the other hand, marketing chain is the numerous links that connect all actors and transactions involved in the movement of agricultural products from the farm to the consumer (Reardon et al. 2004).

### 4.3 Empirical evidence of chicken marketing

A review of past research efforts has shown that in the different parts of the world, poultry research was focused on increased chicken production and productivity and largely concentrated on the biological aspects of poultry production such as feeding and breeding (Yadeta et al. 2002). However, Yadeta et al. (2002) indicated that increased production is efficient if it is accompanied by efficient marketing systems since, efficient marketing system is rewarding to all agents involved in production, marketing and consumption of chicken. For example, in Kenya, trade in poultry and poultry products is characterized by extensive movement of live birds and their products within the country (i.e. between regions) and from neighbouring countries (Aila et al. 2012, Kyule et al. 2014). Marketing channels for live birds and poultry products (meat, eggs and feathers) are not clearly defined in Kenya (Kyule et al. 2014).

Chicken farmers in West Africa prefer marketing their chicken on their own if the local markets are not far from their village and the prices obtained are higher than those offered by the intermediaries who come to the village to buy birds (Thomsen et al. 2005; Kryger et al. 2010). In some cases, the price at the market can be twice that paid by

the intermediaries (Riise et al. 2005; Thomsen et al. 2005). Sometimes, however, women are left with no choice, and thus depend on intermediaries to take their birds and, occasionally, eggs to the market (Kryger et al. 2010). This may be the case, in Africa as well as in Asia, when markets are too distant to be reached within a couple of hours on foot (Kryger et al. 2010).

Under these circumstances, women prefer to stay at home to take care of household work, and therefore sell their birds to intermediaries passing through the village, albeit at a lower price (Guèye 2003; Riise et al. 2005; Tung and Rasmussen 2005; Aklilu et al. 2007; Kryger et al. 2010). There are cases where women are not taking their birds to the market in some parts of Africa, as for example in northern Benin, northern Ethiopia and the United Republic of Tanzania as it is uncommon—or maybe even considered inappropriate—for women to go to the market to sell their poultry; instead they sell to the intermediaries or send their husbands to the market place, which make men dominate livestock markets (and also engage in poultry keeping) (Thomsen et al. 2005; Aklilu et al. 2007; Kryger et al. 2010).

A study of rural family poultry production in the south Pacific region (Fiji, Solomon Islands, Vanuatu, Samoa, Micronesia, Palau, Cook Islands) indicated that there is little or no trade in live chickens or eggs, because they are kept mainly for domestic consumption (Sonaiya et al. 1999). However, there is the occasional commerce between relatives and friends. Under these circumstances, prices are highly variable and rarely reflect the age of the bird, live weight or production cost (Sonaiya et al. 1999; Guèye 2000; Mack et al. 2005).

Bett et al. (2009) in their study which focused on the economics of indigenous chicken marketing in the western, south Rift and north Rift regions of Kenya which focused on: identifying and investigating existing market channels, levels of profitability and the constraints and opportunities facing the indigenous chicken marketing in Kenya reported that costs of marketing and the numbers of birds and eggs and their selling prices, are some of the factors that are significant in assessing the profits to traders.

The study also found out that more men than women participated in marketing of indigenous chicken and eggs in the existing markets both in rural and urban areas (Bett et al. 2009). Consumer demand for indigenous chickens and eggs was not adequately met by traders and mostly constrained by high transaction costs (Gondwe et al. 2005; Bett et al. 2009; Martinez 2012). In Ethiopia, Tigray region, the demand of local chicken products increases with time but the supply of chicken product is still below the requirement because of constraints related to marketing and productions that made chicken productivity very low (Markos et al. 2014). In Ethiopia, there is generally a limited literature on poultry marketing system (Alemu et al. 2008). However, the limited research showed that a large number of marketing agents are involved along the poultry marketing chain (Alemu et al. 2008).

Ayele et al. (2010) describe that the Ethiopian traditional poultry sector is largely characterized as having no backward linkages with the feed grain sector. Moreover, this sector also has weak forward linkages, as only small proportion of this sector's output is sold in the local or informal markets or at the farm gate (Alemu et al. 2008). The modern poultry sector in Ethiopia comprises a few small- to medium-scale semi-commercial producers and even fewer large-scale commercial farms. Large-scale farms have strong backward and forward linkages in the economy (Alemu et al. 2008).

Moges et al. (2014) in the study of characterization of village chicken production and marketing systems in selected districts of northwestern Amhara region, Ethiopia explains that 96.9% of interviewed farmers involved in chicken and eggs marketing activities. The result revealed that there was no formal chicken and egg marketing operation in the study districts. Village chicken producers, consumers and middle men were identified to be the major actors involved in the system. Marketing of chicken and eggs in the study districts takes place in various places including farm gates, village markets, and urban market. Product type (sex, age, colour, and comb type), season (dry and wet), market type (urban and rural markets), market day types (holiday market and ordinary market days) and fasting seasons were some of the major factors that determine the price, supply and demand of chicken products in the study districts.

Moges et al. (2014) mentioned that religious/cultural holidays were highly associated with marketing and consumption of chicken products where Orthodox Christian fasting periods were highly related with decreased consumption/

demand of chicken meat and egg. Fluctuation (seasonality) in prices of chicken products was the major chicken and egg marketing constraint in the study areas. Other marketing constraints identified in the areas included the following:

- Poor supply (output) of marketable chicken products,
- Limited market outlets,
- A lack of appropriate chicken and egg marketing information,
- A lack of demand during fasting periods,
- A lack of chicken transportation and egg handling facilities, and
- A lack of credit and capital to expand chicken production marketing activities (Moges et al. 2014).

## 5. Challenges in poultry production and marketing

There are many constraints to the development of smallholder poultry production that need to be addressed. These comprise: disease control; protection against various predators; gaining access to better feed; genetic improvement; marketing; training and management; access to production inputs; access infrastructure and capital, establishing farmer organizations, and creating conducive institutions and governmental policies (Mack et al. 2005).

Sonaiya (1990), based on data obtained from field experience through surveys, study visits, on-station and on-farm research reports that the problems of smallholder poultry production are many and all revolve around disease control, feed supplementation and housing, in that order. Newcastle disease (ND) is the most important disease of poultry (Nawathe et al. 1975; Sonaiya 1990; Musa et al. 2009; Nwanta et al. 2008a; Chabeuf 1990). However, according to Sonaiya (1990), the reports of mortality of poultry by Newcastle disease vary, for example, 50% of the flock in Togo and Sudan, 70% in Nigeria, 80% in the Comoros, 90% in Zaire and up to 100% in Morocco.

However, other than Newcastle disease, the major diseases of poultry in Africa that have been predominantly identified in commercial poultry include infectious bursal disease (IBD) or Gumboro, Marek disease (MD), fowl typhoid, cholera, mycoplasmosis and coccidiosis (Chaheuf 1990; Kitalyi 1998). The most devastating disease of village chickens in Cameroon is Newcastle disease, whereas in commercial poultry, coccidiosis, IBD and MD are the most prevalent (Chaheuf 1990; Kitalyi 1998). In Nigeria, ND is the most economically important disease that devastates village poultry (Abdu et al. 1985; Nwanta et al. 2008) as it causes the death of millions of birds particularly young birds and economic losses through the slaughter of sick birds.

In Tanzania, few studies have been undertaken to identify production constraints affecting the rural chicken industry. For example, in a survey of rural poultry keepers by Yongolo (1996) as mentioned by Buza and Mwamuhehe (2001), respondents ranked: diseases (95.5%); ectoparasites (88.8%); predators (82.2%); lack of affordable veterinary services (73.3%); stock theft (60%); a lack of marketing services (55.5%); control of prices (51.1%); housing (40%); and feeding/watering (22.2%) as the main constraints in that order. Of the diseases, ND was by far the major problem cited by the villagers (Yongolo 1996).

Musharaf (1990) and Khalafalla et al. (2000) reported that in Sudan the major problem of the existing village production system is the high incidence of Newcastle disease. The disease seems to be endemic in the country with frequent epidemics and mortality could reach up to 96%.

# Conclusion

The main purpose of this review paper is to provide a summary of literature with regard to the role of poultry in the social, economic, and livelihoods of the households in the tropics. Moreover, it provides the roles of gender in the chicken production, and market aspects of chicken production. The summary of the literature indicated that chicken production is the mainstay of livelihoods of most rural households in the developing countries. Chicken production has the potential to increase the income of the household, improve food security, contribute to poverty alleviation, and assist in the mitigation of the adverse economic impacts for rural populations. However, in the literature, there is a lack of adequate evidence that shows the share of the chicken income compared to all income sources and lack of information on disaggregated data by the different wealth categories.

The review also indicated that chickens are more than a source of income, food and contributing to food security. Chickens also are key in a number of social and cultural functions; hence, chicken has the potential to increase the social well-being and reduce the vulnerability of smallholder families. This is supported by many literatures of chicken's importance to the social and spiritual aspects of smallholder households. However, despite the socio-cultural role of chicken in smallholder households, this is often undervalued in actual development projects, which tend to focus on technical aspects of production and on the economic benefits of poultry keeping.

The review may also indicate that, large number of women in the household often with the assistance of children actively engaged in the production of chicken, which helps them to generate revenue and/or complement the nutrition requirements of the family. However, most of them used their own indigenous chicken breeds, and local knowledge of chicken management. Regarding the decision-making of the revenue obtained from chicken was not consistent in the different papers reviewed. In some of the countries the decision-making regarding income from poultry showed some plurality, in some other countries it is male dominated. Whereas in other areas of the tropics it is women dominated. This clearly indicated that many countries in the tropics still face challenges related to women control and decision-making in the chicken resources. Therefore, to come with an evidence based decision, gender disaggregated data is important.

The literature also indicated that especially in the sub-Saharan Africa chicken market is not booming well, and inefficient. Transaction costs associated with locations that are far from markets are the main cause of inefficiency as confirmed by the literature. In this respect policies and actions need to focus on reducing transaction costs by improving market information and in increasing production of chicken products.

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