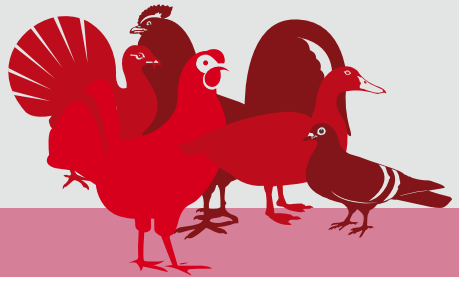
SMALLHOLDER POULTRY PRODUCTION – LIVELIHOODS, FOOD SECURITY AND SOCIOCULTURAL SIGNIFICANCE



SMALLHOLDER POULTRY PRODUCTION – LIVELIHOODS, FOOD SECURITY AND SOCIOCULTURAL SIGNIFICANCE

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Preface

This Working Paper is part of a series that describes the opportunities and limitations of smallholder poultry production. The major structural changes that have occurred in poultry production and marketing in recent decades have lead to a strong and internationally integrated poultry industry. In developing countries, however, the majority of poultry are still kept by smallholders in less intensive systems. The advantages of these systems are the low levels of inputs that they require and the unique products they produce. These systems are practiced by people who have few other options and it is important that they survive as long as they are needed for social reasons, food security and livelihood support.

The paper utilizes a Sustainable Livelihoods Framework to review how smallholder poultry contributes to households and livelihoods. It finds that social-capital aspects of smallholder poultry production have been given little attention in research and or in development projects. Poultry has played, and still plays, important social and cultural roles in the life of rural people, not least for building social relations with other villagers. Institutional structures are not favourable to smallholder poultry production. The interventions that could enhance productivity are well recognized, but the animal health services needed to promote these interventions are, in general, poorly developed. Models for developing animal health services for smallholders are also well known, but the regulatory reforms needed are not implemented.

We hope this report will provide accurate and useful information to its readers and any feedback is welcome by the author and the Animal Production Service (AGAP)[1] of the Food and Agriculture Organization of the United Nations (FAO).

[1] For more information visit the FAO poultry website at: http://www.fao.org/ag/againfo/themes/en/infpd/home.html or contact: Olaf Thieme – Livestock Development Officer – Email: olaf.thieme@fao.org
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Smallholder poultry production – livelihoods, food security and sociocultural significance

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SUMMARY

Smallholder poultry production is practised by most rural households throughout the developing world; despite the fact that its contribution to livelihoods appears to be of little nominal value when observed by researchers and other outsiders. This paper utilizes a Sustainable Livelihoods Framework to review how smallholder poultry contributes to households and livelihoods. The Sustainable Livelihoods Framework emphasizes the vulnerability context of rural livelihoods and the need to consider many types of "capital" in the analysis of livelihoods. The paper finds that social-capital aspects of smallholder poultry production have been given little attention in research and or in development projects. Poultry has played, and still plays, important social and cultural roles in the life of rural people, not least for building social relations with other villagers. While income and consumption have been considered the main rationale for keeping village poultry, the methodologies applied in identifying the contribution of poultry keeping to income and food security does not permit a comparison of findings across the reviewed material. The review confirms the widely recognized contribution of smallholder poultry keeping to the income and internal household position of women.

Institutional structures are not favourable to smallholder poultry production. The interventions that could enhance productivity are well recognized, but the animal health services needed to promote these interventions are, in general, poorly developed. Models for developing animal health services for smallholders are also well known, but the regulatory reforms needed are not implemented. The outbreaks of highly pathogenic avian influenza (HPAI) resulted in policies and regulations that have significant impact on the future structure of poultry production and trade. Although it is too early to assess the long-term effects of HPAI on the poultry industry, there are emerging signs of restructuring – with a shift away from small-scale commercial production towards larger-scale production. Village production is, however, likely to persist.

1. INTRODUCTION

This paper is concerned with poultry reared outside the ambit of industrial production. Poultry are widely acknowledged as the livestock of the poor, and poultry production is part of most smallholder farming systems. Guèye (2000) writes that 85 percent of rural households in sub-Saharan Africa keep chickens or other types of poultry. Poultry are equally

important to smallholders in Asia (FAO, 2003a; Islam and Jabbar, 2005) and Latin America (Mallia, 1999; Kyvsgaard, 2007). This paper sets out to review the contribution of poultry to smallholder livelihoods – economically, as well as socially and culturally – and to smallholder household food security. We look both at its direct contribution to family reproduction, in the form of meat and eggs, and at its indirect contribution, i.e. when poultry are sold or traded and when birds play a role in maintaining social networks and ritual life.

Smallholder farming systems and smallholder society

Before we address the specific question of smallholder poultry production we seek to place it in its context, namely the "smallholder farming system". This term refers to the many diverse forms of production found in smallholder societies across the world (Netting, 1993). Usually, the "smallholder farming system" is conceived in terms of what it is not: not capitalist, not large scale and not technology intensive. It is often thought of as being not fully modern and – as a collection of people and practices in the process of change – soon to disappear. However, what is interesting about smallholder faming systems is not their survival from the past, but rather their continued significance in the present. Depending on definitions, as many as a billion people worldwide are presently engaged in smallholder activities. Smallholder farming systems coexist with industrial production systems and specialist cash-crop producers, and share land and resources with transhumant pastoralists.

The household is the primary unit within the smallholder farming system, with age and gender determining the division of labour. But there is also capacity for cooperative management of resources. Smallholders emphasize intensive agricultural practices, they continuously seek to adapt to constraints and opportunities; sometimes they also include migration as part of their survival strategy. According to Netting (1993), smallholder farming systems are a particular kind of adaptation to scarcity; smallholders worry first of all about family reproduction and survival. Smallholder farming systems may be viewed as social systems that are part of the larger-scale political and economic context, as well as being part of specific ecological environments (Netting, 1993; Chambers, 1993; Ellis and Freeman, 2005).

Smallholder societies are characterized by different types of exchange. Within the family, a simple form of exchange is reflected in the division of labour. Families may also recruit "outside" labour from the community and from their kin groups, and of course enlarge themselves through marriage. Weddings and funerals are examples of rituals marked by exchanges (gifts, help, mourning contributions) that serve to express relationships of affiliation and solidarity. Religious rituals are also marked by exchange (offerings, sacrifices) and are, again, of social and symbolic importance. Put simply, the social dynamics of smallholder society are played out in terms of transactions; smallholder farming systems must therefore be able to produce both for subsistence and for exchange. Transactions may be directed towards meeting immediate family (or individual) needs – for example animals are sold to obtain cash that is used to purchase grain or medicine, tools or clothing – or poultry may enter into the larger social economy as gifts, offerings or even tribute.

Poultry in smallholder systems

Smallholder farming systems worldwide constitute a myriad of different ways of providing livelihoods for rural families, depending on: i) agro-ecological conditions; ii) sociocultural factors; iii) access to markets at the local, national and international levels; and iv) possibilities for generating income from non-farm activities. However, there appears to be a remarkable similarity in the role of poultry in (rural) farming systems across regions, agro-ecological zones and cultures (e.g. Aini, 1990; Guèye, 2000; FAO, 1998). The following characteristics of village poultry are shared by many countries and cultures.

Most rural communities keep poultry. Village poultry is kept with minimal input of resources and is considered by most smallholders as supplementary to the main livelihood activities. The birds scavenge to find feed and are rarely provided more than kitchen leftovers, although supplementation with cheap grains or leftovers from the keepers' own grain production does occur. Sheds, if provided, are made of local materials. Poultry keepers lose many birds as a result of diseases and exposure to predators, but little attention is paid to the health and protection of birds. The birds are mainly indigenous, sometimes mixed with foreign breeds. The productivity of village poultry is low as a result of the above characteristics, but the little output obtained from keeping poultry contributes to household income and provides access to high-quality protein, which is generally in short supply.

This description refers to the very low-input poultry production that is typically found in villages. Obviously, there are forms of production that involve more input of resources. Several attempts have been made to define the characteristics of different poultry production systems. Here, we present the classification developed by Rushton and Ngongi (1998) and the FAO (2007) "sector" classification.

Rushton and Ngongi (1998) distinguished the following types of smallholder poultry production:

- the scavenging system – a form of production characterized by low inputs, with birds allowed to wander freely and scavenge for all or most of their food;
- the free-range system – in which poultry are provided with some supplementary feed, night-time housing and, occasionally, water; and
- the semi-commercial system – in which poultry are provided with feed and water and kept in fenced-in areas.

A very similar classification is put forward by Sonaiya *et al*. (1999).

With the growing threat posed by highly pathogenic avian influenza (HPAI) in recent years, there has been an attempt to classify poultry production according to the level of biosecurity observed and the associated marketing systems (FAO, 2004a; FAO/OIE, 2007).

The classification outlined in Box 1 has been used to devise animal health policies and strategies targeting the various production systems or "sectors" as they have been labelled (FAO, 2004a; FAO/OIE, 2007). The hierarchy expressed in this classification – higher levels of biosecurity in Sectors 1 and 2 than in the smallholder sectors (3 and 4) – cannot, however, be directly used to infer the level of risks associated with various types of poultry production. It has been shown that "commercial-scale" flocks can be at considerably higher risk of infection than "backyard" flocks (Otte *et al.*, 2006).

As can be seen from Box 1, Sector 4 is characterized as a village and backyard activity in which birds are mainly consumed locally, whereas Sector 3 represents smallholder com-

BOX 1
Classification of poultry production on the basis of biosecurity level

- Sector 1: industrial integrated system with a high level of biosecurity and birds or products that are marketed commercially.
- Sector 2: commercial poultry production system with a moderate to high level of biosecurity and birds or products that are sold through slaughterhouses or live-bird markets.
- Sector 3: smallholder commercial poultry production including waterfowl, generally with low levels of biosecurity and birds or products that are usually sold through live-bird markets.
- Sector 4: village or backyard production with minimal biosecurity and birds or products that are consumed locally.

Source: FAO/OIE (2007).

mercial poultry production with more developed market linkages or market integration. In this paper we concentrate mainly on Sector 4 and, to a lesser extent, on Sector 3.

Analytical framework

Here we present the main components of our analytical framework, notably the concepts of sustainable livelihoods and food security.

Sustainable livelihoods framework

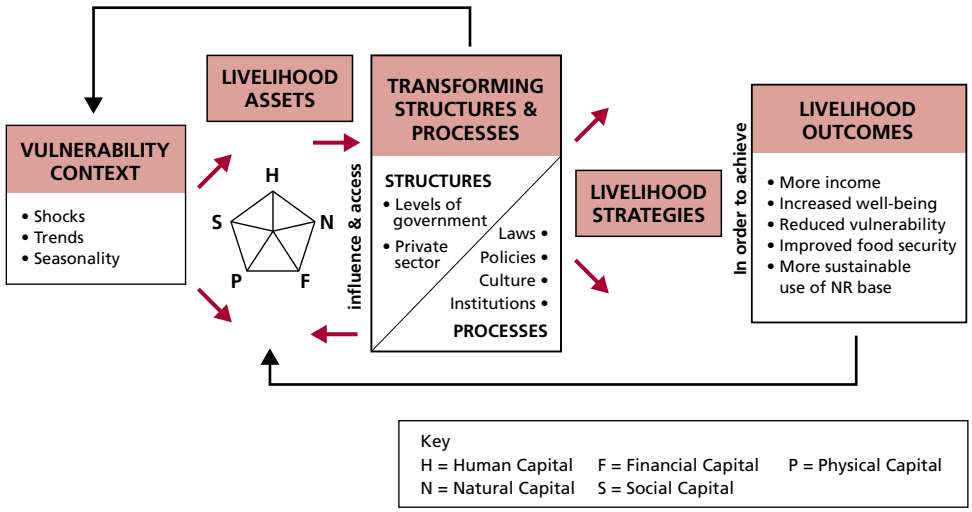
In order to structure our review of smallholder poultry production and its socio-economic and sociocultural importance, we apply a "livelihoods framework". As noted in the introductory paragraph of this paper, the importance of poultry to smallholder households across the world is widely acknowledged. But the question remains: how, more specifically, do poultry contribute to the livelihoods and food security of the poor and to what extent can this contribution be quantified and qualified?

In attempting to address this question we turn to the concepts of livelihoods and food security.

According to Chambers and Conway (1991, p. 6)

> *"a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation, and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term."*

FIGURE 1
The sustainable livelihoods framework



Source: DFID (1999).

The works of Sen (1984; 1999) and Chambers (1991; 1993) have been of particular importance in the development of livelihoods as an analytical framework for understanding poverty and food insecurity in smallholder societies. The livelihoods approach puts the people – the farmers or smallholders – at the centre of the analysis. It has developed participatory and holistic approaches with which to understand poverty and the processes that sustain poverty.

The United Kingdom's Department for International Development (DFID) developed a set of guidance sheets on the application of the "sustainable livelihoods framework" (DFID, 1999). The framework (Figure 1) has been widely used to visualize the concept of livelihood in its political and institutional environment and the relationships between livelihood assets and outcomes.

The sustainable livelihoods framework identifies five types of assets (physical, natural, financial, social and human) that individuals or households can draw upon selectively in the pursuit of desired outcomes, such as increased income, reduced vulnerability and improved food security. Access to assets is mediated by policies, institutional structures, processes and social relations, which in turn influence the households' and the individuals' livelihood strategies and livelihood outcomes.

The concept of food security

The concept of food security is closely linked to the concept of livelihoods. Analyses and assessments of the food-security situation in poverty-stricken areas have increasingly included a livelihood perspective. The following definition of food security – formulated at the World Food Summit in 1996 – is widely used:

"Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."

(FAO, 1996).

Food insecurity, the opposite of food security, can therefore be described as a condition in which people lack the basic food intake necessary to provide them with the energy and nutrients required for fully productive lives. It can either be temporary (transitory food insecurity) or continuous (chronic food insecurity). Vulnerability is (as it is to the concept of livelihoods) key to food insecurity, as it relates to people's lack of ability to cope with hazards (e.g. drought or flooding).

There is no easy way to measure food security; it is a complex phenomenon determined by the interaction of a broad range of agro-ecological, environmental, socio-economic, political and biological factors. Most food-security monitoring systems draw heavily on two information sources: (i) crop and/or livestock production data; and (ii) market price information. Given the predominance of production data, local food security is often equated with production outcomes. However, this merely describes the availability of food at national or subnational level. A more complete account of a household's food security would also include both the food produced by the household members and the cash they earn and use to purchase food, how nutritious their diets are, and how food is distributed and used within the household. To simplify the concept of household food security it may be broken down into three key dimensions: (i) availability of food; (ii) access to food; and (iii) utilization of food. Whereas food availability is mainly related to the communal, regional or national levels, household food insecurity is mainly a function of access to, and utilization of, food (Dasgupta, 1993)

A household's *access* to food in the short, medium and long term is a function of the various factors that constitute the livelihoods framework, i.e. the vulnerability context, livelihood assets, transforming structures and processes, livelihood strategies and livelihood outcomes. Whereas income level and food production are the main factors contributing to rural households' access to food, a household's food security or insecurity is also linked to its capacity to cope with shocks, trends and seasonality. Food security is, thus, closely linked to the concepts of risk, vulnerability and hazards, as poor households, by definition, do not have a substantial buffer (assets or income) to face stress related to natural disasters such as drought, floods or pests, and thus risk running into situations of food deficit. A household's *utilisation* of food, – the intrahousehold distribution of food, including sanctions against the use of certain food items, for example, by pregnant women and children – will affect the food security situation of individual household members (Smith and Haddad, 2002).

The type of food that is available for consumption also matters. Nutritional well-being is in itself positive, but the nutritional status affects the cognitive and human capital development and labour productivity and is thus also important for economic growth. Undernutrition in general, and micronutrient malnutrition in particular, may establish itself early in life, so children are very vulnerable to household food deficits (Dasgupta, 1993). Millions of people worldwide – especially in low-income countries – suffer from micronutrient deficiencies as a consequence of diets consisting of little more than staple foods such as rice or

maize. Animal-source foods are excellent sources of essential micronutrients such as iron, zinc and vitamin A, and many nutrients are better absorbed from animal source foods than they are from plant source foods. The contribution of animal source food consumption to diet quality and nutrition is indisputable (Randolph *et al.*, 2007)

The structure of the paper

The intention of this paper is to explore the particular role of poultry in smallholder livelihoods and food security and in the sociocultural aspects of smallholder life. In order to do so we begin with a discussion of poultry in relation to income and food security. Here we emphasize the particular issues and constraints faced by smallholders when marketing their poultry, and examine the direct and indirect effects of poultry on nutrition and food security. Our next topic is the issue of social exchange and the more general social and cultural significance of poultry for smallholder society. This is followed by a section focusing on gender aspects of smallholder poultry systems. We end with a summary of our findings and their implications for future studies and interventions in the field of smallholder poultry production.

2. FOOD SECURITY – INCOME, CONSUMPTION AND SAVINGS

Introduction – studies on the socio-economics of smallholder poultry production

The role and importance of poultry for rural livelihoods has emerged as a critical issue following the outbreaks of HPAI in Asia and Africa (WPSA, 2007; Baba, 2006; Traoré *et al.*, 2006; Akunzule, 2006). Some countries aim at controlling HPAI by increasing the concentration of the poultry sector in integrated production systems with high biosecurity standards and reducing or eliminating free-range production. This has fuelled discussions regarding the effects of such policies on rural livelihoods (Branckaert, 2006; GRAIN, 2006a; GRAIN, 2006b; WPSA, 2007). These developments call for a clearer picture of the role of poultry in the livelihoods of Sector 3 and 4 producers.

Knowledge of the socio-economic and sociocultural 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. Alam, 1997; Saleque, 1999; Riise *et al.*, 2005; Huque, 1999; Houndounougbo, 2005; Subrahmanyam and Murthy, 2006, FAO 2003a; FAO 2003b; FAO, 1998; Islam and Jabbar, 2005). Such studies struggle with the methodological problems posed by confounding factors associated with the various support activities that are included in many development projects.

In contrast, academic research on village poultry tends to focus on disease-related issues – see, for example, the reviews by FAO (2004b), Permin and Madsen (2002) and Permin and Bisgaard. (1999). In comparison, knowledge of the socio-economic and sociocultural roles of poultry in the livelihoods of smallholders is, unfortunately, less robust and less diversified. Aklilu *et al.* (2007a) reflect on this balance in the research on village poultry:

"Research to improve village poultry production tends to focus on technical aspects of poultry keeping in the belief that these constitute the principal constraints. It is however, increasingly recognized that marketing opportunities are crucial to capitalise on improved technologies by generating cash income …Understanding of marketing structure and functioning is a prerequisite for developing market opportunities for rural households."

Reviewing the material available on socio-economic matters it becomes clear that a detailed analysis of the role of village poultry in smallholder livelihoods and food security with comparisons across countries and regions is subject to some limitations. The data gap for Sector 3 (smallholder commercial and semi-commercial producers) is even greater than for Sector 4, as Sector 3 producers have been subject to less interest than Sector 4, probably indicating that smallholder commercial operators are considered to be of little interest in terms of prospects for poverty reduction. A recent study carried out for FAO/WHO (ACI, 2007), however, sheds light on the structure of the poultry sector and its dynamics in the context of HPAI in Viet Nam.

FAO introduced the biosecurity dimension in the classification of poultry production sectors (FAO, 2005). We present a brief overview of the structure of the poultry sector before looking at Sector 3 and the associated livelihood opportunities and then at Sector 4 with indicators of the role of village poultry production in food security and income generation. Following this discussion, we look at what appear to be key *institutions, structures and processes* (Figure 1) that influence the poultry-related *livelihood strategies* of rural households.

The structure of poultry production

Using the classification system developed by FAO, Rushton *et al.* (2005) provided an overview of the structure of the poultry sector in five Asian countries. Similar overviews are available for Africa, less so for Latin America or other Asia countries. Based on a description of the situation in sub-Saharan Africa (Guèye, 1998) (excluding Nigeria and South Africa) the structure is similar to that presented for the Lao People's Democratic Republic, i.e. no Sector 1 production, relatively insignificant Sector 2 production, some Sector 3 production, and the majority of producers and the majority of poultry stock in Sector 4.

Changing structures and opportunities for smallholders

Various dynamics are currently changing the structure of the poultry sector. In 1999, Delgado *et al*. (1999) labelled the massive changes taking place in the livestock sector the "livestock revolution". The label covers the complex of trends, processes and effects that characterizes global livestock demand and supply. In brief, the growth in global demand for meat and other livestock products is tremendous – fuelled by population growth, economic growth, urbanization, changing diets and reductions in the relative prices of livestock products.

The market for poultry meat is growing faster than that for any other meat product, and is projected by the International Food Policy Research Institute (IFPRI) to maintain this position in the coming decades (Delgado *et al.*, 2001). Rising demand has fuelled a structural change in the production and supply of poultry meat, with production for the global market concentrated in the hands of relatively few large companies, characterized by vertically

TABLE 1
The distribution of poultry production units in five Asian countries based on a biosecurity-based classification

Country	Sector 1	Sector 2	Sector 3	Sector 4
Cambodia	Believed not to exist	68 broiler units 9 layer units 1 hatchery 57 pullet raising units Estimated to be around 400 000 birds	40 broiler units 65 layer units 20–30 duck hatcheries 951 duck units Estimated to have 400 000 chickens and 851 000 ducks	99.9% of the farms (1.9 million) and 90% of the poultry population (11.96 million chickens and 2.73 million ducks)
Indonesia	9.7 million poultry, export oriented, but with a large proportion of the production for national consumption	58 million poultry for the national market	32.4 million poultry	174 million birds producing 175 million birds per year and 43.5 million eggs
Lao People's Democratic Republic	Believed not to exist	Relatively insignificant	10% of the poultry population concentrated around Vientiane	90% of the poultry population
Thailand	70% of national production. This sector has an important export market	20% of production	36% of farms and 20% of population	61% of producers and 10% of the population
Viet Nam	Relatively insignificant	20–25% of production	10–15% of production, but very few producers	65% of the production with a significant proportion of the population involved. Possible 70% of the population

Source: Rushton *et al.* (2005).

integrated production and marketing. Smallholders in rural areas of developing countries face severe constraints to taking advantage of market opportunities and must pay high costs to overcome market imperfections brought about by poor physical and institutional infrastructure (Delgado *et al*., 1999).

There is a considerable degree of market segregation between broiler meat and meat from chickens from scavenging or semi-scavenging flocks. Meat from village chickens sells at a premium price, often in the range of 50-100 percent higher than broiler meat on a per bird basis, i.e. the premium may be even higher when measured in terms of weight, as the carcass weight of village chickens is often lower than that of broilers (Riise, 2005 personal communication)[1]. However, smallholders have limited means and market access with which to capture new market share, and face increased competition as a result of

[1] Patrick (2004) reports even higher premiums with prices of local chickens up to 3½ times the broiler prices in Indonesia

increasing efficiency in broiler-meat production and marketing, the elimination of trade tariffs, etc (Rola *et al.*, 2003; Patrick, 2004; Delgado, 1999). Smallholders in general and the poor in particular, face problems accessing credit, obtaining market information or new technologies, purchasing inputs and accessing product markets. Price fluctuations and asymmetric power relations in the market add to the list of constraints that smallholders face (Delgado *et al.*, 1999).

These processes potentially lead to the marginalization of smallholder poultry producers, but there may also be opportunities for smallholders to benefit from the surge in demand. In the Bangladesh Poverty Reduction Strategy Paper, for instance, contract farming is regarded as a promising opportunity for smallholders to escape poverty (Government of Bangladesh, 2005).

Elimination of trade barriers exposes commercial and semi-commercial producers to competition from cheap imports and affects the local commercial smallholder sector. An example from West Africa may illustrate the effect. Small-scale commercial poultry producers' associations in West Africa (e.g. Senegal and Cameroon) complain about the harsh effects of dumping cheap subsidized frozen chicken cuts from the European Union following the removal of import tariffs. It is claimed that the elimination of import tariffs has wiped out hundreds of thousands of jobs in the small-scale poultry sector in West Africa (FinalCall.com, 2007). In Cameroon alone, more than 110 000 jobs were lost over a seven-year period between 1996 and 2003, and national broiler-meat production fell by almost 40 percent between 2000 and 2003 (Nguedjio, 2005). Obviously, these developments affect the livelihoods of smallholders who seek to market chicken products. The elimination of trade barriers is also regarded as a considerable risk factor for poultry producers in the Philippines (Rola *et al.*, 2003) and in Indonesia (Fabioso *et al.*, 2004).

The outbreak of HPAI/H5N1 constitutes a recent, but serious, threat to the poultry sector, although the nature of the threat to Sectors 1 and 2 is very different from that affecting Sectors 3 and 4 (Grain, 2005). While Sector 1, and to some extent Sector 2, are threatened by export bans related to reported outbreaks in the national industry, Sector 3 and 4 producers are mainly threatened by disease-control measures that impose bans or restrictions on Sector 3 and 4 production systems (WPSA, 2007).

Sector 3 - Small scale commercial poultry production

We begin this section by considering the socio-economic profiles of sector 3 operators and the nature of Sector 3 production systems. We then turn to the question of livelihood outcomes for Sector 3 producers.

Sector 3 producers – who are they? Classifications and socio-economics

Rushton and Ngongi (1999) classify smallholder poultry systems on the basis of management and degree of commercialization – scavenge based, free range, and semi-intensive. The description of the semi-intensive system (Box1) preceded the HPAI outbreaks and the subsequent development of the "sector" classifications. However, there are some parallels between the semi-intensive category and Sector 3. Most production output, be it eggs or broilers, is marketed in wet markets and biosecurity procedures in production and marketing are limited. Flock size is, however, rather irrelevant in the biosecurity classification, and

Sector 3 may include large production units utilizing open sheds and supplying live-bird markets as well as smaller-scale production. For example, Patrick (2004) describes a case in Indonesia in which a subsidiary of the large Thai company "CP" (Charoen Pokphand) contracted suppliers with open sheds and marketed the produce in local wet markets.

The semi-intensive producers can be distinguished from Sector 4 on the grounds that they rely on market inputs such as day-old chicks and feed to maintain production. Moreover, the products are mainly destined for the market. This requires good access to markets as well as access to capital. By inference, it is therefore likely that Sector 3 operations will be located geographically closer to markets and that producers in this sector will belong to higher social strata than Sector 4 producers. As noted above, there is little published information on semi-intensive production systems, particularly on the pre-HPAI situation.

One of the most comprehensive studies available on the impact of HPAI on poultry production systems, the socio-economics of poultry production, and the trends and dynamics affecting the poultry sector is a work prepared by Agrifood Consulting International (ACI) for FAO and WHO as part of the HPAI Rehabilitation Project in Viet Nam (ACI, 2007). The study provides a wealth of descriptive statistics as well as discussions based on key-informant interviews, and provides broad analyses of the structural changes in the region's poultry sector. It must be noted, however, that the ACI report did not provide or apply any clear classification or definition of sectors in terms of the size of the production unit (both standing stock and annual production figures are used), the level of biosecurity, or any relationship between the two. The lack of meaningful classifications and definitions of biosecurity, and the questionable direct relationship between the size of an operation and its biosecurity level, seems to constitute a major barrier to the analyses of structural changes in poultry production. The problem is compounded by the fact that statistics are

BOX 2

Semi-intensive systems described by Rushton and Ngongi (1999)

"Semi-intensively produced poultry are provided with feed and water. They are kept in fenced-in areas that normally have some type of shelter. Many producers have specialized in meat or egg production and hence have an interest in improved poultry strains. Flock sizes can vary according to the type of product, with some producers keeping as many as 200 broiler birds, while egg producers may keep as few as six. The provision of feed is a high priority, since the birds are not allowed sufficient area to scavenge. In addition, mortality and loss rates are relatively low compared with other systems, since the risks of predation, theft and loss caused by poor nutrition are much lower. Health management is also important, particularly where it is not possible to change the area in which the birds are allowed to roam. Semi-intensive production units have good access to markets and most of their produce is sold. However, they do rely on external inputs such as feed, medicines and occasionally labour. In some cases, the external inputs extend to the purchase of day-old chicks from commercial breeders".

BOX 3
Classifications used by ACI in the study on the impact of highly pathogenic avian influenza in Vietnam

- Sector 1 – producers with more than 2 000 head of poultry
- Sector 2 – producers with between 201 and 2 000 head of poultry
- Sector 3 – producers with between 51and 200 head of poultry
- Sector 4 – producers with 50 head of poultry or fewer.

often unavailable, incoherent or incompatible with the chosen classifications. As the relationship between sector classification and statistical categories is not clear, the analyses of socio-economic characteristics and industry trends must be treated with caution.

The pre HPAI situation was analysed using the Viet Nam Household Living Standard Survey (VHLSS) from 2002 which covered 14 550 poultry-keeping households; a further survey, covering 1 360 households, was carried out for FAO/WHO in 2006 and used to assess the post-HPAI situation (ACI, 2007)[2].

The VHLSS showed that 97 percent of households keeping poultry are in Sectors 3 and 4, with 80 percent in Sector 4 and 17 percent in Sector 3. Of all households in Sector 3, only 17.6 percent are from the lowest two income quintiles, with 5.1 percent very poor and 12.5 percent poor. This corresponds to less than 4 percent (3 percent poor and 1 percent very poor) of the total number of households with poultry. The post-HPAI survey applied an adjusted sector classification and relative wealth ranking (based on self-perception of wealth) in three wealth groups, and only targeted Sector 3 and 4 producers. In this survey, 13 percent of households keeping chickens were in Sector 3. Among the households involved in Sector 3 chicken production, 3 percent were from the poor group, 71 percent from the average group and 26 percent from the better-off group. In other words, less than 1 percent of all households producing poultry are poor households engaged in sector 3 production, 9.4 percent are from the average group and 3.5 percent from the better off group.

The study does not include contract farmers in the Sector 3 category, but categorizes contract farmers in Viet Nam as belonging to Sectors 1 or 2 based on the size of the standing stock and on biosecurity. Contract farmers in Viet Nam would probably fall within the highest income quintile, as obtaining a contract with an integrator requires land and a shed built to the specifications of the integrator, which may represent an initial investment of up to US$12 500 (ACI, 2007).

Rola *et al.* (2003) found considerable differences in the socio-economic characteristics of (informal) backyard broiler producers and (formal) contract farmers in the *Philippines.* Contract farmers are characterized by higher socio-economic status, political affiliation, greater educational attainment, and greater financial capabilities with access to both formal and informal credit.

[2] Unfortunately the classifications used in VHLLS and the ACI 2006 survey are not similar.

BOX 4
Contract farming

Contract farming involves two parties – the *integrator* and the *grower**. The integrators are vertically integrated firms that achieve economies of scale through controlling the entire processes from production through marketing. They provide the growers with production inputs such as day-old chicks, feed, and medicines and vaccines, as well as supervisory services. Growers may be smallholders with production capacity of a few hundred broilers, or they may even be medium- or large-scale operations.

Through a contractual agreement with the integrator, the grower receives the required inputs and is assured of a fixed selling price. The contract, thus, reduces the risk the farmers would otherwise face with respect to the quality of their production inputs and price fluctuations in the market. Although contracts may differ in nature, there are normally no cash advances. The grower, thus, receives the inputs on credit and pays back upon delivery of broilers at target weight to the integrator (Patrick, 2004; Farrelly, 1996; Begum, 2005). The ACI (2007) study indicates that in Viet Nam, the Thai CP group does not provide the inputs on credit to growers. That would imply a significantly higher investment by the grower than in countries where inputs are provided on credit. On average, the contract farmers in Andhra Pradesh, India cover less than 3 percent of total input costs. There are in-built penalties for lack of compliance with contract outputs, so farmers do not default on delivery dates, average weight or quality of the broilers, and do not sell off the birds to external buyers (Ramaswami *et al.*, 2006).

The integrators benefit from the contracts as they are able to maintain tighter control over all the vertical stages of production, including the inputs used, the quality of the final product and the timing of its delivery of predetermined quantities (Glover, 1987) The strength of the contractual relationship lies in the fact that the interests of the growers and the integrator are aligned by the contract. The question of which smallholders are able to enter into and benefit from contract farming and under what terms such contracts are successful has attracted some attention in the literature.

*The terms used in different publications differ to some extent. The company which provides production inputs and collects full-grown broilers for processing and marketing is referred to as *the firm, the principal* or *the integrator.* We use the latter. The farmer who is contracted by the integrator to feed the broiler chickens is often referred to as *the farmer, the outgrower, the grower, the agent,* or *the contractor.* We use the terms *grower* or *contract farmer.*

> *"Integrators normally look for these types of people ... [as they] need the local political connection in order to facilitate successful compliance with legal and other types of regulatory policies affecting the business operation."*
>
> *Rola et al. (2003, p. 13).*

The Philippine contract farmers, although highly integrated into industrial production systems may be classified as Sector 3 on the basis of biosecurity, as products are marketed in wet markets:

"Despite the highly concentrated and vertically integrated production structure of the commercial broiler sector, a large proportion of broilers are sold as live birds through the wet markets because of consumer preference for fresh meat. The three major market segments that are serviced by the integrators are: wet market (50 percent), HRI (hotels, restaurants and institutions) (40 percent) and supermarket (10 percent)."

Chang (2004, p. 24)

Backyard broiler producers, in contrast, are generally less privileged, have no political or business affiliation, and have little or no access to formal credit due to high interest rates and their lack of collateral. The backyard broiler producers are believed to practise poultry rearing as a secondary or tertiary source of income (Rola *et al*., 2003). Non-commercial livestock activities are conventionally the domain of women, whereas men tend to dominate commercial business. There are, however, targeted credit programmes that encourage women to engage in commercial livestock operations (ibid.).

In a comparison of 80 contract farmers and 120 non-contract farmers in Lombok, ***Indonesia,*** Patrick (2004) found that contract farmers were significantly younger than non-contract farmers and had significantly better educational attainment, access to credit, houses, sanitation and off-farm incomes. Non-contract farmers had more irrigated land and more livestock assets than contract farmers. The area of land owned was less than 0.5 hectares for both contract and non-contract farmers. The survey did not include a wealth ranking, but the difference in educational attainment and access to credit between contract and non-contract farmers suggest that contracts are inaccessible to poor or average households. According to Fabiosa *et al.* (2004) 90 percent of the broiler supply is from contract farmers or producers with other kinds of direct partnership with integrators. In other words, the Indonesian poultry sector is highly concentrated.

Contrary to the situation in the Philippines and Indonesia, Ramaswami *et al.* (2006) found that in Andhra Pradesh, ***India,*** integrators deliberately select contract farmers that are of lower social standing than independent small-scale operators.

"Poultry processors [integrators] choose as contract growers those whose skills, experience and access to credit make them relatively poor prospects as independent growers."

Ramaswami et al. (2006, p. 32).

This does not, however, imply that contracts are available to poor households, but rather that contract farmers need not be from the highest wealth categories.

Begum (2005) looked at the age, educational attainment and experience of contract and non-contract farmers in **Bangladesh,** and found significant differences between the two groups only in terms of age. The data are inconclusive, but suggest that contract farming in Bangladesh, as in India, may not be confined to the wealthiest groups.

Available data on the socio-economic status of contract and non-contract farmers, thus, indicate considerable country variation in the strategy of integrators with regard to the profile of the farmers they contract. In Viet Nam, the Philippines, and to large extent

BOX 5
Contract farming in Bangladesh

Aftab Bahumukhi Farm Ltd (ABFL) in Kishoregonj started contract growing poultry in the early 1990s. The number of parent-stock birds housed per year increased from 2 000 in 1995 to 220 000 in 2001. Similarly, the number of birds in broiler contract farms increased from 12 500 to 235 000 in 2001. The company imports day-old chicks of parent stock from abroad and distributes them immediately to the contract growers. They also provide essential support services such as quality poultry feeds, medication and vaccination, training, credit and technical support. The company then buys back hatching eggs from the contract farmers at a guaranteed price of Tk2 per egg, meaning a net grower's profit of approximately Tk30 000 per month from 2 500 parent-stock birds. The day-old chicks are then distributed to contract broiler growers, who are also provided with the support services listed above. On average, some 12 000 broilers are sold per day (10 000 as live birds and 2 000 as dressed boilers to be sold in Dhaka city). The contract growers make an average income of Tk5 per kg of broiler (production cost per kg is Tk55 as against the guaranteed price of Tk60 per kg). In 2001, 1 500 rural households benefited directly from broiler contract farming, with another 600 households benefiting indirectly.

Source: adapted from Government of Bangladesh (2005).
US$1 = 66.1 taka (Tk) – exchange rate as of 1 October 2005.

in Indonesia, it appears that integrators find their contract farmers among the better off and the higher social strata, whereas in India and Bangladesh there appears to be less of an entry barrier to the participation of less affluent households in contract farming. In all cases, however, the entry barrier is considerable, as the farmers are required to invest in the production facilities needed – apparently with limited or no support from the integrator. Patrick (2004) reports that in Indonesia, contract farmers were also required to have electricity installed in the production facility; the initial total cost of production facilities was estimated at 20 million rupiahs or approximately US$2 200. As describe above, the entry barrier in Viet Nam can be even higher.

In South Africa, however, Vermeulen *et al.* (2006) found that:

> *"Although the entry barriers are high, a limited number of smallholders are contracted to supply poultry and eggs. In the poultry industry, some large companies indicated that they have significant plans to expand smallholder involvement in their supply."*

Smallholder involvement in contract farming in sub-Saharan Africa appears to be very limited and most small-scale commercial operators are independent of processing and marketing companies. However, as information sources are very scattered and incomprehensive, a classification and socio-economic characterization of Sector 3 operators in sub Saharan Africa has not been attempted.

Income and employment opportunities in Sector 3

The data from Viet Nam were, as noted above, derived from the VHLSS for the pre HPAI period (2002), while the post HPAI survey was carried out for FAO/WHO in 2006 (ACI, 2007). Both surveys show that Sector 4 comprises producers from all wealth categories, while Sector 3 producers are mainly from the average or higher wealth groups with few participants among the poor. It is, thus, clear that the income level of Sector 4 producers should not be equated with the income level of the poor, nor should Sector 3 be directly equated to the non-poor. The VHLSS and FAO/WHO survey data on income by sector are summarized in Tables 2 and 3. Note, however, the above remarks regarding the problem of incoherent sector classifications.

While the two surveys provide similar figures for the average income level of Sector 4 producers (2.10 percent of total household income), there is a large difference between the two studies with respect to the income level in Sector 3 – 4.8 percent and 15.1 percent in the VHLSS and the FAO/WHO surveys, respectively. The difference could reflect the fact that some of the households considered to be in Sector 3 for the purposes of the FAO/WHO study would, as far as the VHLSS figures are concerned, fall within Sector 2. Such a

TABLE 2
VHLSS (2002) data for household income from poultry, by sector in Viet Nam (percentage of total household income)

	Sector 1	Sector 2	Sector 3	Sector 4
	>2 000 kg poultry per annum	201–2 000 kg poultry per annum	51–200 kg poultry per annum	<51 kg poultry per annum
Poultry	47.90%	12.10%	3.70%	1.30%
Eggs	2.30%	4.10%	1.10%	0.80%
All poultry products	50.20%	16.20%	4.80%	2.10%

Source: ACI Study Team calculations based on 2002 VHLSS sample of 29 532 households (14 522 poultry households) (ACI 2007) (summarized by the authors).

TABLE 3
FAO/WHO survey (2006) data for household income from poultry by sector in Viet Nam (percentage of total household income)

	Sector 3	Sector 4
Chickens	7.30%	1.60%
Ducks	7.80%	0.50%
All poultry products	**15.10%**	**2.10%**

Source: ACI Study Team calculations based on 2006 FAO/WHO HPAI Survey (ACI, 2007) (summarized by the authors).

discrepancy could stem from the use of a different basis for categorization; it appears that VHLSS were using annual production of poultry in kilograms (Table 2), whereas ACI in the study for FAO/WHO used the standing stock of poultry in same intervals (Box 3). Standing stock would give a higher annual production figure; hence, Sector 3 based on stock would overlap with Sector 2 based on volume of production. It is noteworthy that Sector 3 smallholders in the FAO/WHO survey earn as much as 15.1 percent of total household income from poultry keeping, indicating a considerable dependence on poultry production by smallholders in Sector 3. The official Sector 2 in the VHLSS survey, with poultry keeping contributing of 16.2 percent to household income, could very well be equivalent to Sector 3 operators in terms of the biosecurity standards observed; this interpretation would support the findings in the FAO/WHO survey regarding the earnings that Sector 3 operators obtain from poultry production. Smallholders' own consumption is included in the income figures by accounting for home consumption on the basis of income foregone at farm gate prices (ACI, 2007).

The livelihoods opportunities for small-scale commercial and semi-commercial poultry producers in the ***Philippines*** were assessed by Rola *et al.* (2003) based on a "rapid reconnaissance" of a few contract and backyard farmers. The authors found that income and employment opportunities for smallholders were limited in both categories. Backyard poultry farmers' income and employment opportunities were found to be limited by the problems that they faced in penetrating formal poultry markets because of an oligopsonistic formal market structure dominated by large integrators. As backyard poultry producers, thus, tend to sell their produce in their respective communities and local markets, the authors consider the prospects for income and employment to be limited and declining. The formal sector producers, i.e. the contract growers, face the prospect of falling import tariffs, which would boost imports of cheap poultry meat, resulting in declining income and employment opportunities. Although Chang (2004) agrees that the poultry sector in the Philippines faces pressures arising from the expected elimination of import tariffs and the resulting imports of cheap frozen meat, she sees positive prospects for the local sector, including the backyard producers. The statistical data on chicken populations by type – broiler, layer and "native" – show that native chickens constitute 60 percent of the total national chicken population (Chang, 2004). The annual growth rate (calculated as average growth rate from 1990 to 2002) of the backyard indigenous chicken population[3] is, interestingly, as high as 3.93 percent – more than double the population growth rate for the broiler population, which over the same period was 1.72 percent. This growth rate in the population of native chickens would suggest that income and employment opportunities for smallholders keeping poultry are in fact much better than suggested by Rola *et al.* (2003).

With reference to the livelihoods framework presented above, the fixed price mechanism utilized in contract farming can be seen as a means of reducing livelihood vulnerability to market fluctuations. The fixed prices insulate growers from market-price fluctuations.

[3] Several terms are used for the birds kept in traditional scavenging and free-range production systems: indigenous chickens; local breeds; local types; native chickens, local varieties, etc. They are actually not breeds, as the genes of birds with different genotypes are all mixed up. Such chickens are even to some extent used in semi-commercial systems, as they may be preferred by consumers. In the official statistics in the Philippines, they are termed native chickens.

However, this insurance provided by the integrator is likely to come at a cost to the growers, with the fixed price being below the long-term average market price. However, it appears that little work has been done on such insurance premiums in relation to smallholder broiler contracts.

Patrick (2004) estimated annual household incomes using the average gross-margin levels of contract farmers and non-contract farmers in Lombok, ***Indonesia***. The average annual gross margin of contract farming was found to be as high as 14.3 million rupiah (approximately US$1 600).[4] The gross margin does not reflect capital costs, so actual household income from contract farming is slightly lower than US$1 600, but remains far above the mean annual household income (approximately US$400) of non-contract farmers. Access to capital is a critical entry barrier into contract farming – Patrick (2004) estimated the initial investment in production facilities to be approximately US$2 200.

To sum up, there is very limited information available on the socio-economics of Sector 3. The information that is available, suggests that access to capital may be a considerable barrier to entry, and that Sector 3 producers are non-poor. Although it is reasonable to infer that Sector 3 is geographically located where there is good market access, i.e. in relative proximity to urban areas, there is little available information on the localization of the sector.

Sector 4

We begin this section by considering the socio-economic profiles of Sector 4 operators and the nature of Sector 4 production systems. We then turn to the question of livelihood outcomes in Sector 4 households.

Sector 4 producers – who are they? Classifications and socio-economics

When the recent biosecurity based classification was proposed, Sector 4 was probably defined with Rushton and Ngongi's (1999) classification of scavenge-based and free-range poultry systems in mind.

It is a broadly accepted rule of thumb, confirmed in numerous studies that about 60 to 80 percent of rural households in developing countries keep poultry in either scavenge-based or free-range systems. The two systems are also referred to as "village poultry", although the production system is also widespread in peri-urban areas. As such a large percentage of households are included in this sector it does not make much sense to characterize Sector 4 producers as poor *per se*. In fact, households from all income levels engage in Sector 4 poultry production. However, it is broadly accepted that a large majority of poor households are found within Sector 4, as upward movement to Sector 3 requires resources unavailable to most poor households. Sector 4 relies on the scavenging feed resource base and is found anywhere such resources are available.

Income and employment opportunities in Sector 4

Although village poultry is found in all developing countries, two countries, Ethiopia and Bangladesh, stand out as having been studied more intensely than most other countries

[4] Using the US$ to IRP rate of 8 900 (2003).

BOX 6
Scavenge-based and free-range systems as described by Rushton and Ngongi (1999)

Scavenge-based poultry systems

This form of production is characterized by low inputs, with birds allowed to wander freely and scavenge for all or most of their food. The size and the composition of flocks vary widely. In some areas, supplementary feeding is practised; however, this is not widespread and is often subject to the seasonal availability of surplus grain. Housing is generally not provided, but the birds may be housed in the family dwelling at night or encouraged to roost in trees near the homestead.

The production levels of scavenging birds are usually considered to be poor, especially when compared with those of commercial chickens. They normally produce an average of 10 to 12 eggs about three times a year with an average hatchability rate of 80 percent. Chick mortality rates are characteristically high and an estimated 70 percent of chicks die before they reach the age of six weeks owing to a combination of disease, predation and scant feed resources. Furthermore, offtake rates are low in this system, and the principal market for the produce is the household and gifts for friends. Flock sizes are small with an average of five to ten birds, and little investment is made in terms of time, management or money. In general, these systems have poor access to markets.

Free-range poultry systems

Free-range poultry are provided with feed, night-time housing and, occasionally, water. While not confined to a pen during the day, they are expected to scavenge for a large proportion of their feed. Most of the feed used is produced at home and, in some cases, is directed towards vulnerable groups, such as hens with a brood of young. Night-time shelter is often ineffective as protection against predators such as snakes. While water is sometimes made available, it is not usual to have water drinkers that serve the needs of young chicks. While the mortality rate in this system is lower than in the scavenge-based system, there are still considerable losses, mainly owing to poor nutrition, poor access to water, and disease. However, predation is less of a problem than in the scavenge-based system and offtake rates are higher. Producers of free-range poultry have reasonable access to markets and the sale of eggs and birds is common. The main input purchased is feed, with veterinary care as a minor input. Flock sizes are similar to those of the scavenge-based systems, but some capital investment is made in terms of housing and human investment to manage the feeding and offtake.

Source: adapted from Rushton and Ngongi (1999)

in terms of Sector 4 and the contribution of poultry to rural livelihoods. Both countries are among the poorest in their regions and among the most prone to recurring natural calamities such as drought (Ethiopia) or flooding (Bangladesh). Bangladesh is renowned for decades of development projects using poultry as a tool for poverty alleviation, while Ethiopia is one of the few countries were studies of village poultry are not driven only by project interventions. The recent FAO/WHO study on Viet Nam (ACI, 2007) provides a fruitful contribution to the socio-economic data available on Sector 4.

Ethiopia

A unique aspect of almost all studies and surveys carried out in Ethiopia on village poultry rearing and its role in rural livelihoods is that they appear not to be linked to project interventions in poultry production.

Aklilu *et al.* (2007a) examined village poultry consumption and marketing in the Tigray region of northern Ethiopia through a longitudinal study of 131 farms, – half male-headed and female-headed households – located in three different areas with low, high and medium market access, respectively. They found that households sell more of their poultry products, both eggs and birds, when located closer to the markets, while home consumption of eggs and birds is fairly similar in the three locations, implying that close-to-market producers have higher production output than producers located at a greater distance from the market. Female-headed households had smaller consumption and sales than male-headed households, but calculated per family member, female-headed households had higher sales and consumption than male-headed households. The consumption of birds within the household is low in all categories examined with mean annual figures as low as three to four birds.[5] Mean annual consumption of eggs varied between 7.1 and 9.7 eggs per family member in male-headed households and between 9.5 and 12.6 eggs per family member in female-headed households. The paper does neither provide annual poultry income nor total household income.

Based on a study of 250 households in different agro-ecological zones, Tadelle *et al.* (2003) found that the income from poultry was particularly important to the poorest of families, who devote more time and effort to their poultry than the better-off families do. Tadelle *et al.* (2003) found mean annual consumption and sales figures in the same range as Aklilu *et al.* (2007a) – mean annual sale per household was 5.5 birds, while mean annual consumption was 3.1 birds. Mean overall household consumption of eggs was 23.3 percent of all the eggs produced, while 27 percent was sold and the rest used for reproduction of the flock. The figure is given in terms of percentage of all offtake, but based on mean production figures a total annual offtake of eggs for consumption can be calculated at 56 eggs per household. Tadelle *et al.* (2003) found that cash income from poultry varied among wealth groups, with poor households earning more cash from poultry than better-off groups.

- Around 80 percent of poor women earned more than 100 birr (US$11.5)/year from poultry keeping.

[5] The standard deviations are relatively large though.

- Around 33 percent of better-off women earned less than 100 birr (US$11.5)/year from poultry keeping, compared to 20 percent of poor women.
- In four study areas, 55 percent of poor households earned between 100 and 300 birr (US$11.5–34.6)/year.
- In one study area, 77 percent of poor women earned more than 300 birr (US$34.6)/year.

Although it was not possible to calculate a mean income figure by wealth rank, the findings clearly show that the poor are more engaged in marketing poultry than the better off. The paper does not present total household income levels for the households included in the survey, so the rate of poultry income relative to total household income is not available.

Bush (2006) was tasked to assess the potential impact of an outbreak of HPAI H5N1 in Ethiopia on the livelihoods of village poultry producers. The assessment was based on a livelihood baseline survey of the Southern Nations, Nationalities and Peoples' Regional State (SNNPR) in southern Ethiopia. The survey was carried out in 2005 by the Disaster Preparedness and Prevention Agency (Government of Ethiopia), using the Household Economy Approach[6] with the aim of improving food crisis early warning in the region, and therefore involved a much more comprehensive examination of livelihoods in the region than would be provided by any species-specific (e.g. poultry) study. Bush also carried out targeted village interviews with women poultry producers. She concluded that:

> *"If the poultry sector is wiped out, poor households will suffer income losses of an estimated 2 – 10 percent of baseline annual income (the SNNPR livelihood baseline). The village interviews suggested a higher income loss of 12 – 15 percent."*

In reference to the household economy survey she gives a figure of 800–1200 birr (US$92–138) for a typical annual household cash income among the poor (ibid.).

Comparing the income-loss figure from the household economy survey reported by Bush (2006) with the income figures reported by Tadelle *et al.* (2003) and Aklilu *et al.* (2007a), it appears that the former figure underestimates poultry income. Tadelle *et al.* (2003) report that poultry income makes a contribution of more than 10 percent to total income. If this under-representation of poultry income in the household economy survey is confirmed, a possible explanation could be a gender bias which results in women's income not being recorded or being underestimated. This could be due to a gender bias in the survey design or because women deliberately do not wish to reveal their poultry income to their husbands (or to enumerators). As a systematic under-representation of poultry income in general household economy surveys and food security mapping surveys could

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[6] A methodology developed for food-crisis assessment, but which can be used in a wider range of contexts to inform policy-making and programming. The approach is based on the use of quantitative and qualitative methods to model the rural economy using information relating to a reference year in which conditions are known – see for example http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/EXTTOPPSISOU/0,,contentMDK:20591374~menuPK:1443598~pagePK:64168445~piPK:64168309~theSitePK:1424003,00.html and http://www.savethechildren.org.uk/en/54_2331.htm

affect policies and lead to a neglect of the needs of smallholder poultry producers (see section on veterinary services later in this paper) it would be worthwhile to investigate this issue further.

Bangladesh

Whereas studies from Ethiopia are not linked to interventions, the opposite is the case in Bangladesh. The country is known for the so-called "Bangladesh Poultry Model"[7] for smallholder poultry development in rural villages, which has been described and assessed in several publications and reports (e.g. Alam, 1997; FAO, 2003a; Fattah, 1999; Islam and Jabbar, 2005; Riise *et al.*, 2005; Saleque, 1999; Seeberg, 2003).

The contribution of poultry to income and food security has been studied in impact assessments undertaken mainly during project implementation or at project completion (e.g. Alam, 1997; Nielsen, 2000; Darudec, 2002; Seeberg, 2003), with one post-project study (Riise *et al.*, 2005). The only data available on non-intervention situations are those presented as control groups in some of the impact studies. As is the general case with impact studies, there are numerous methodological problems related to assessing the impact of the interventions – partly due to the composite nature of the interventions, which in the Bangladesh Poultry Model include supply of microcredit, formation of village groups, establishment of a system for the supply of Newcastle disease vaccines, feed and cross-bred hens, as well as training in husbandry practices such as housing, supplementary feeding, protection of young chicks and brooding. All studies undertaken during project implementation observed that credit obtained by village poultry rearers (always women) were invested in a wider portfolio of household income generating activities.

All methodological difficulties taken into account, the studies may provide an indication of the contribution of poultry to the livelihoods of the poor in Bangladesh. Islam and Jabbar (2005) in their review of all impact studies carried out prior to 2005, found that village poultry keepers (called key rearers in the Bangladesh Model) earned a net monthly income of approximately US$4 in 1994 (based on BRAC, 1995), and US$3.3 in 1995 (based on Alam 1997). Riise *et al.* (2005) carried out post-project impact studies in two intervention areas (two years and seven years after project closure, respectively) combined with an end-of-project study in a third area, and found a similar mean monthly income from poultry – US$4 – in all areas.

The post-project study showed that the mean monthly income figure was constant over time when measured in US dollars, and indicated that the participating women had sustained their interest in keeping poultry for income generation. The study by Riise *et al.* (2005) also shows that poultry-rearing practices have been stable over time.

Alam (1997) examined the ***dietary effect*** of participation in the poultry projects in Bangladesh and found remarkable changes in household diets (Table 5).

Based on a 24-hour recall method, Nielsen *et al.* (2003) compared the food intake and consumption patterns of women who were participating in a project aimed at improving vil-

[7] Also referred to as the BRAC (Bangladesh Rural Advancement Committee) or the BRAC-DLS (Department of Livestock Services) poultry model.

lage poultry production through improved husbandry practices and disease control to those of non-participating women. They found that while consumption of chickens and eggs was negligible in both groups, the group adopting the improved practices had a significantly higher intake of fish. It was suggested that this effect was related to higher income from improved poultry production, as households adopting the husbandry and health practices sold more eggs and chickens than households not adopting the practices.

In a comparison of height for weight[8] among non-adopting and adopting households, both women and girls from the adopting households weighed on average 7 percent more than those from non-adopting households. Nielsen *et al.* (2003) associated this weight difference with an income effect, as adopting households did not consume significantly more eggs or chicken meat than non-adopting households, but they produced and sold more eggs than non adopting households. In other words, whereas Alam (1997) found that the

TABLE 4
Income from poultry in Bangladesh recorded by studies in 1994 and 1997 and 2005

Year	Income from poultry per month (US$)	Percentage of household income	Control
1994	4	n.a.	n.a.
1997	3.3	13.2%	4.3%
2005	4	n.a.	n.a.

Source: for 1994 (BRAC 1995), for 1997 (Alam 1997); for 2005 (Riise *et al*., 2005).

TABLE 5
Households' weekly intake of food before and after project participation in Bangladesh

Food item	Before	After	Change in percentage terms
Grain (kg)	13.6	15.2	11.8%
Eggs (number)	2.2	4.3	95.5%
Chicken meat (grams)	56	99.8	78.2%
Fish (grams)	143	206	44.0%
Other meat (grams)	1 051	1 477	40.6%
Vegetables (grams)	3 180	4 084	28.4%
Milk (litres)	0.5	1	100.0%

Source: Adapted from Alam (1997).
Note: The data in this table refer to so-called key rearers, who are equivalent to smallholders in Sector 4.

[8] Anthropometric indicators can be used as indicators of nutritional status. Height-for-age z-score (HAZ) is generally considered an indicator of long-term, cumulative nutritional status, whereas weight for height Z-score (WHZ) reflects short-term, immediate status.

poultry projects had direct effect in terms of increased consumption of eggs and chicken meat as well as an indirect income effect (improved income being used to purchase other food items, Nielsen *et al.* (2003) highlighted the significance of the indirect income effect.

An impact study carried out by Darudec (2002) confirmed the positive effect on income and consumption.[9] The above-mentioned methodological problems related to confounding factors, i.e. the composite nature of the interventions, are relevant for both the studies cited in this section. As discussed in more detail below, the poultry projects had positive effects in terms of mitigating gender inequalities.

Viet Nam

As noted above, the VHLSS survey recorded poultry incomes as low as 2.1 percent of total household income among Sector 4 producers. It is important to note that all wealth categories are involved in Sector 4 production, even the better off and rich, implying that the average total household incomes of producers in this sector is more or less the average of all household incomes across the rural population. To identify the importance of poultry production for those Sector 4 farmers that are poor, a comparison with income by wealth group/income quintiles is useful. Poultry incomes by income quintile or wealth group are given in Tables 6 and 7.

TABLE 6
VHLSS (2002) – household income from poultry by income quintiles in Viet Nam

	Very poor	Poor	Average	Better-off	Rich
Poultry	3.50%	3.10%	2.70%	2.60%	2.40%
Eggs	0.70%	0.70%	0.70%	0.80%	1.60%
All poultry products	4.20%	3.80%	3.40%	3.40%	4.00%

Source: ACI Study Team calculations based on 2002 VHLSS sample of 29 532 households (14 522 poultry households) (ACI, 2007) (summarized by the authors).

TABLE 7
FAO/WHO survey (2006) – household income from poultry by wealth groups

	Poor	Average	Better off
Chickens	7.90%	1.60%	2.00%
Ducks	8.00%	1.30%	3.20%
All poultry products	15.90%	2.90%	5.20%

Source: ACI Study Team calculations based on 2006 FAO/WHO HPAI Survey (ACI, 2007) (summarized by the authors).

[9] A more comprehensive review of the Bangladesh experience using poultry as a tool for poverty alleviation is found in FAO (2003b).

Again, there are large differences between the two surveys that require an explanation. Part of the reason for the large difference between the income level in the "poor" group of the FAO/WHO survey and the income level in the "very poor" and "poor" income quintiles in the VHLSS survey may be ascribed to the weight given to income from duck keeping in the FAO/WHO survey. The percentage of the poor who keep chickens in the FAO/WHO survey is 85.7 percent, while only 21.1 percent of the poor keep ducks. It appears warranted that the duck income in the poor group should be adjusted downwards. That alone, however, cannot explain the differences between the results of the two surveys. At least two additional factors could contribute to the discrepancy.

First, the VHLSS survey is a general household living-standard survey while the FAO/WHO is a survey particularly addressing the question of poultry income as a share of overall income. Bias may enter the general survey if the person in charge of the poultry income (most often a woman) is not a respondent in the survey. This would tend to result in an under-representation of poultry income relative to overall household income. Bias may also enter in the poultry-based income survey (FAO/WHO survey) if the person in charge of non-poultry income-generating activities is not a respondent in the survey. This would tend to produce an over-representation of poultry income relative to other income. Second, while the income quintile groups (VHLSS) are formally based on income, the wealth groups (FAO/WHO survey) are based on self-perception of poverty, which necessarily introduces factors other than income into the classification.

In conclusion, there may well be biases in both surveys – which might point towards an intermediate figure for the contribution of poultry to household incomes. Notwithstanding these considerations, the VHLSS figures for the relative contribution of poultry keeping to household income do show a trend across the income quintiles, with the poorer households being more dependent on poultry income.

With regard to the relative shares of home consumption and sales, Sector 4 producers sell 39 percent of poultry products and consume 61 percent. The "very poor" and "poor" income quintiles sell 51.3 percent and 52.5 percent, respectively, and consume 48.1 and 47.1 percent (ACI, 2007)

United Republic of Tanzania

A survey of 200 households in the United Republic of Tanzania, of which 100 were adopting Newcastle disease vaccines (intervention) and 100 households were not (control), found that compared to non-vaccinating households, the vaccinating households: i) generated significantly larger flock sizes;, ii) experienced reduced bird mortality; and iii) had a higher offtake of birds (Alders *et al.*, 2005). Figures were provided for the offtake of birds during the three months prior to the survey (three-month recall study), but no figures were given for offtake of eggs. The paper gave no average or mean prices, but if the average farmgate price a farmer received for a bird was US$1.4 as reported by Mlozi *et al.* (2003), then the market value of offtake in adopting households in one district (Dodoma) was approximately US$9.4 as against approximately US$6 in non-adopting households, with the equivalent figures in another district (Mtwara) being US$4 and US$3. The difference may reflect a difference in market access (with Dodoma having the better access). The offtake is reported for three months, but it is questionable whether offtake figures from three months could

be transformed into annual figures because of the seasonality of i) market prices, ii) household food security (hungry months), iii) Newcastle disease outbreaks, and iv) need for cash to meet household requirements and family expenditures (e.g. school fees). Poultry income as against overall household income cannot be assessed in this case.

Bolivia

Paterson *et al.* (2001), based on a longitudinal study of ten households in a non-intervention setting in Bolivia, noted that chickens were mainly used for consumption, whereas ducks and small mammals were mainly used for cash income. Households were selected according to whether they were representative of the local communities, but no wealth ranking was presented in the paper. All households were located in the Bolivian lowlands; seven of the ten households were immigrants from the Bolivian highlands, the rest were lowland families. The authors estimated that the average market value of annual chicken production was approximately US$150, but with great variation between households. No households produced less than US$100 worth of products from their chicken flocks. The annual market value of duck production was US$60. Average or mean total annual household cash income was not reported.

Afghanistan

The effect on incomes and consumption among participants in a poultry project in Afghanistan was assessed based on an end-of-project impact survey covering 4 540 respondents FAO (2003a).

The effect of the project interventions on all key indicators of improved income and consumption were perceived as very positive by a large majority of women poultry keepers. While the actual size of poultry income and the share of household income were not measured, the responses indicate a strong potential for increasing the contribution of poultry to rural households by improving husbandry and poultry health practices in Sector 4.

Savings as a way to reduce vulnerability

Poultry stock, in addition to its productive utility, constitutes a form of savings that can be converted into cash rapidly and with relatively low transaction costs – a so-called "livestock bank". This may enable households to smoothen fluctuations in consumption. The savings function of livestock in general is widely acknowledged, even in more affluent households where larger livestock represent larger units of savings and small ruminants and chickens represent smaller units (Marstrand *et al.*, 1996). However, converting stock to cash affects future production outputs, and as village poultry stocks are often small, the savings utility of village chickens is generally limited but popular (Guèye, 2000). In Ethiopia, farmers sell poultry to cover immediate but small expenses, thereby avoiding the sale of larger animals such as goats and sheep. Thus, as noted by Aklilu *et al.* (2007b), even as farmers build up their asset base, poultry is considered to be an important means to reduce vulnerability.

In poor households with limited livelihood assets, a few chickens may be the only livestock owned. However, as livelihoods progress and some surplus birds are accumulated owners may convert their poultry assets into other livestock. Bartering chickens for goats, as reported by Guèye (2003b) and Riise *et al.* (2007), can benefit livelihoods and food secu-

TABLE 8
Effect of project interventions in poultry husbandry and health in Afghanistan

	Sale of eggs		Profitability		Consumption of poultry meat		Egg production		Time spent on poultry husbandry	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased	4 257	93.8%	4324	95.2%	3 207	70.6%	4 106	90.44%	1 519	33.46%
Decreased	71	1.6%	60	1.3%	747	16.5%	228	5.02%	2488	54.80%
No change	144	3.2%	109	2.4%	495	10.9%	124	2.73%	463	10.20%
n.a.	68	1.5%	47	1.0%	81	2.0%	82	1.81%	70	1.54%

Source: FAO (2003a).

rity by providing more secure and valuable savings and insurance to bolster against shocks, as well as a source of milk for consumption or income from sales.

Such enhancements to livelihood assets and outcomes are not necessarily reflected in income and consumption figures for poultry production, and they are not quantified in the literature reviewed for this paper. In a study on food security and household response strategies to natural hazards and calamities in Ethiopia (Fewsnet, 2006) it is estimated that the exchange of two goats for grains would cover roughly 10 percent of annual food needs in an average poor household. With a 1:5 conversion rate from chickens to goats, this would imply that one chicken is worth 1 percent of annual food needs for a poor household in Ethiopia.

Fafchamps *et al.* (1998) sought to quantify the use of livestock as buffer stock based on panel data from Burkina Faso in West Africa, but the study only included data on small ruminants and cattle, not poultry. The study indicated that livestock transactions played less of a consumption-smoothing role than is often assumed:

> *"Livestock sales compensated for at most thirty percent, and probably closer to twenty percent of income shortfalls due to village-level shocks alone".*
>
> *Fafchamps et al. (1998).*

It is an open question whether the inclusion of poultry sales for consumption smoothing would have affected the results.[10] In a review article on livestock banking, Marstrand *et al.* (1996) find several references reporting that livestock owners have preference for using small livestock for consumption smoothing, perhaps confounded by gender (Quisumbing and McClafferty , 2006).

[10] One may note that leaving poultry out of the study may induce a gender bias and hence skewed conclusions on the consumption-smoothening function, as it is often women that produce and sell poultry, whereas men tend to control the marketing of other livestock.

Institutions, structures and processes

Will few exceptions village poultry production has been neglected as a means of sustaining or developing livelihoods. This neglect has been shared, among others, by policy-makers, extension agents, veterinary services, researchers, and training and education institutions (Livestock in Development, 1999). The last two decades have seen a gradual change in this pattern based on positive results obtained by investing in training and provision of veterinary services, notably delivery of Newcastle disease vaccine (e.g. in Bangladesh (Dolberg in FAO, 2003b) and Mozambique (Alders *et al.*, 2004)). There is growing understanding of the value of poultry for poor rural households and of the challenges and barriers poor poultry rearers face in reducing the loss of birds and improving offtake for consumption, income or other purposes.[11] However, poultry rearers in Sector 4 are still marginalized and have limited or no access to services.

The reviewed material appears to suggest several institutional and structural factors that have an important influence on poor people's ability to enhance poultry income and consumption and their interest in doing so. These include veterinary services, market access, training and advisory services (extension) and microcredit. Here, we briefly note some of the main issues in what could also be termed "the enabling environment" of smallholder poultry production; it is not the objective of this paper to provide detailed review of the enabling (or disabling) environment.

Markets for village poultry

Village poultry owners produce birds for consumption and, as discussed in more detail below, for gifts, sacrifice and other purposes, and not least for sale. Especially for the poorer poultry keepers, selling the offtake brings critical cash earnings to the household. Market demand, structure, prices, trends and seasonality influence income opportunities from poultry production. Transaction costs and the structure of the marketing system are important here. If the producer brings the birds and eggs to the market then market skills become important.

Market demand and prices

The demand for poultry products in most of Asia is dramatically different from that in most of sub-Saharan Africa. While South and Southeast Asia have experienced decades of high annual growth rates in demand for broilers and eggs (intercepted in some countries by the 1997 financial crisis), sub-Saharan Africa has experienced much more modest growth in demand.

The high growth rates in commercial chicken and egg production in Asia have coincided with a sustained market for village chickens, albeit frequently considered to be a "niche" market (Raha, 2003; Chang, 2004; Riise *et al.* 2005; Conroy *et al.*, 2005). Reliable data on the volume of this "niche" market are difficult to obtain and may not exist, and there appears to be little or no research into the relation of this market to the broiler-meat market

[11] The admittance of the International Network for Family Poultry Development to the World Poultry Science Association may illustrate this growing acceptance.

in terms of price elasticities. The "niche" market is characterized by price premiums on village birds reflecting a consumer preference for their meat, which is considered tastier and of higher quality than broiler meat. (Raha, 2003; Deka *et al.*, 2004; Riise *et al.*, 2005).

In Bangladesh, Riise *et al.* (2005) found an average price difference of more than 60 percent on village birds as compared to broilers, but found no significant price premium on local eggs compared to commercial eggs if measured per egg, as the prices of commercial and village eggs were almost the same. Measured in terms of weight, however, this translates into a price premium on eggs from village poultry, as these eggs are much smaller than the commercial ones. The growing market demand is urban based, and is, thus, associated with economic growth and fuelled by high urbanization rates and growing rural–urban migration. Raha (2003) examined the income elasticity of demand for poultry in different wealth categories and found the elasticity to be almost 3 in the low-middle income categories. A one percent increase in income in the low-middle income group would, thus, fuel a 3 percent increase in household poultry consumption.

According to Guèye (2000) and Minga *et al.* (2000), in large parts of sub-Saharan Africa, the majority of poultry meat in the national market is provided by the village producers. The preference for village poultry meat as compared to commercial broiler meat is also found in sub-Saharan Africa (Houndonougbo, 2005; Thomsen, 2005; Guèye, 2000; Mlozi *et al.*, 2003) and in Latin America (Mallia, 1999). As in Asia, the majority of demand is urban based.

Tadelle and Ogle (2001) report that in Ethiopia, the local breeds are considered to be the only birds fit to use for ritual sacrifice and for gifts. Aklilu *et al.* (2007) documented how prices can rise to more than twice their normal levels during the main social and religious festivals. Houndonougbo (2005) also report significant price fluctuations associated with seasons and festivals in Benin.

Distance to markets, transaction costs and marketing structures

Distance to markets significantly affects the revenue gained by village poultry producers in Ethiopia (Tadelle, 2003; Aklilu, 2007a), but it is reported not to significantly affect farmer prices in Bangladesh (Riise, 2005). Population density in Bangladesh is one of the highest in the world and the rural transport of goods is highly efficient – affecting farmgate prices positively. Mlozi *et al.* (2003) examined the revenue generated by intermediaries in rural parts of the United Republic of Tanzania, and found that the farmers' share of the market price was much lower than the share obtained by the intermediaries. It is not clear to what extent the risk of loss faced by the intermediaries is included in the calculations; this risk may be considerable, as farmers tend to select the most weak or diseased birds for sale. Obviously, the risk should be accounted for in the calculation before reaching conclusions regarding the exploitation of farmers, as should the distances involved and population density.

The lack of a proper infrastructure for the sale of rural poultry is identified by Kyvsgaard (2007) as a constraint to generating revenue from poultry production. The transaction costs can be significant if the markets are far from the household, and this decreases the price obtained by the farmer. Transaction costs are, obviously, related to the volume of goods (birds, eggs) transported – the low production output in villages is associated with

high transactions costs. Woolcock *et al.* (2004) claim that marketing is not a constraint for smallholders in Mozambique and the United Republic of Tanzania in the short to medium term, pointing to the fact that increased volume of production through control of Newcastle disease and training would boost supply and lower transactions costs per bird brought to the market. However, poor market access will inevitably have a negative effect on farmgate prices in far-from-market areas.

The major constraints to the marketing of rural poultry observed by Gausi *et al.* (2004) were low prices, followed by low marketable output and long distances to reliable markets. Similar findings are reported from South Africa by Naidoo (2003), with poultry normally being sold at local markets. Mandal *et al.* (2006) found that direct marketing was prevalent in their study area in India – eggs and birds mainly being sold at the farmgate or at the consumers' doorstep, with fewer being sold to local shopkeepers and fewer still being sold at markets.

Transaction costs related to distance from markets appear to be significant in sub-Saharan Africa and in Latin America, but less so, or not at all, in Asia. Contribution of poultry to income is related to market distance; one implication of this would be that research on the livelihood impact of village poultry production cannot meaningfully be analysed without including market distance as a variable.[12]

The market response to highly pathogenic avian influenza

The HPAI outbreaks that have occurred in several countries since 2003 have been associated with major and unprecedented shocks in the global poultry market (Morgan, 2006; FAO/OIE/WHO, 2006) – first a fall in supply resulting from export bans, and later, as the disease spread to many countries, a drop in global demand (FAO, 2006a). While some countries are still struggling to control the virus (FAO, 2006c), global and national poultry markets are adjusting to the situation. The long-term effects of HPAI on market structure is not yet clear, but short-term effects resulting from consumer response and protective action suggest that there will be substantial long-term effects on national poultry markets (ACI, 2007; FAO/OIE/WHO, 2007; Figuié, 2007; FAO, 2006c).

In Viet Nam, the HPAI outbreaks gave rise to a widespread fear of eating poultry, which reduced consumer demand for poultry products by one third (Figuié, 2007) and reduced the frequency of poultry consumption particularly among the urban population. Six percent of consumers have stopped eating poultry, and there is a noticeable shift towards buying directly from producers known to the consumer or from supermarkets (Figuié, 2007).

The consumer response has coincided with regulatory reforms banning live-poultry markets, which have resulted in a fall in the number of poultry markets in Ho Chi Minh City from 1 550 to seven (ACI 2007). Lately, consumers' concerns have shifted from a fear of consuming poultry to a fear of slaughtering birds, reflecting growing confidence in food-

[12] Obviously the exchange rate between poultry and other commodities is relevant in this respect, as other commodities may also be cheaper in far-from-market areas. This would tend to reduce the significance of the transaction-cost/market-distance effects. However, as revenue from poultry is often used for coping with cash constraints related to health care and school expenditures (rather for purchase of food) the exchange rate with other commodities may not level out the market distance effect.

hygiene practices. It has also been observed that consumers tend to consider poultry from industrial farms to be more risky than poultry from small farms (Figuié, 2007), although there is no consensus regarding this trend as Sector 3 producers and sellers have lost market share while Sector 2 producers have adapted better to the market effects (ACI, 2007; McLeod *et al.*, 2007). Sector 4 farmers have been less affected, as they sell to neighbours and in local markets. However, a reduction in marketability has been observed even in Sector 4 (ACI, 2007).

Countries where there are HPAI outbreaks appear to experience a short-term decline in local poultry prices followed by price recovery or even a rise to price levels above the pre-outbreak level (FAO *et al.*, 2005; McLeod *et al.*, 2007; FAO, 2006c).

The market in Egypt was affected – even before the occurrence of any cases of HPAI had occurred in the country itself – as a result of outbreaks in Turkey. Prices plummeted by 50 percent (FAO, 2006c) as demand fell. A particular feature of the situation in Egypt related to the separate but correlated markets for commercial broiler meat and meat from local breeds – the latter enjoys a 30–40 percent price premium and was observed to be more stable than the commercial broiler meat market (FAO, 2006c). In the post-outbreak period, prices regained strength, but Sector 3 and 4 operators recovered at a slower pace than larger operators. The government measures to control HPAI outbreaks, which included mass culling and bans on live-bird markets have affected the traditional poultry producers in Sectors 3 and 4 by causing mistrust in the government particularly as a result of a loss of market access (FAO, 2006c).

Although it is too early to draw conclusions regarding the long-term effects of HPAI on Sectors 3 and 4, it is quite evident that bans on live-bird markets will affect the structure of national poultry production and marketing. The consumer responses to HPAI have led to market shocks with substantial reduction in poultry demand and prices followed by partial recovery of demand and full recovery of prices. The long-term effect on demand for, and prices of, poultry from Sectors 3 and 4 is questionable, as consumers' attitude towards products from small producers is unclear and may not be stable.

The Sector 4 producers invest few resources in poultry keeping and use it more as a means to reduce livelihood vulnerability rather than as a main economic activity. The main impact of HPAI on Sector 4 will thus probably be a reduced use of poultry keeping to have savings for small cash needs. It remains to be seen whether Sector 4 producers will find viable and attractive alternatives or whether they will continue with poultry keeping and accept that it involves new risks related to HPAI in addition to established risks such as Newcastle disease. The impact on Sector 3 producers will result from changes in consumer demand and government control measures, and is likely be more severe for the individual producer as their stakes in the poultry business are greater.

Microcredit

Several smallholder poultry projects, notably in Bangladesh, have involved microcredit components (e.g. FAO, 2003b). Alam (1997) associated the benefits achieved from poultry production with the farmers' access to credit and training. Todd (1996) presents a strong case for linking credit and livestock services, as empirical evidence shows that women in Bangladesh tend to invest a first loan in small livestock. The appropriateness and effect of

including microcredit components in poultry interventions has, however, been questioned, as involvement in microcredit programmes, and the need to meet payments on time (often bi-weekly throughout the year), exposes resource-poor and highly vulnerable livelihoods to yet more vulnerability (Webb *et al.*, 2002; Houndonougbo, 2005; Seeberg, 2003; Kryger *et al.*, 2005).

Webb *et al.* (2002) report that a large majority of the hard-core poor in the Income Generation for Vulnerable Group Development (IGVGD) programme considered it impossible or too risky to engage in a credit programme. Some respondents had observed severe consequences of failing to repay the debt (ibid.). Webb *et al.* (2002), thus, conclude that microcredit may not be the appropriate way to improve income generation and reduce vulnerability among the hard-core poor. Kryger *et al.* (2005) note that tying loans to training activities for village poultry production may lead to the exclusion of poor households whose income flows make them unattractive to microcredit operators.

Seeberg (2003) reports that NGOs tasked with training women in poultry husbandry as well as providing credit services, tended to disregard the training duties and the need to organize women in producer groups, while focusing on loan recovery. As the necessary knowledge of poultry production and health was not developed and the necessary social organization was not promoted, the women failed to produce sufficient benefits from poultry production to repay their debts (ibid.). Access to credit did, however, have positive effects in that it increased women's access to capital that could be invested in various economic activities, including their husbands' activities. Houndonougbo (2005) found no added income effect among project participants provided with microcredit relative to those not provided with microcredit. Even Todd (1998) notes that the risk associated with investment in smallholder poultry is so large – due for example to Newcastle disease – that credit programmes lending to the poor for livestock production must provide insurance services.

In conclusion, while microcredit programmes, and in broader terms microfinance, may facilitate access to capital for investments by poor households, which can contribute to enhanced income and food security, the poorest producers in Sector 4 are unlikely to consider access to credit as the key constraint to achieving higher output from smallholder poultry production. Linking livestock (poultry) projects targeting poor households with microcredit provision has been promoted with success in Bangladesh, with remarkable impact on household food consumption and income (Alam, 1997) (all methodological problems related to compounding factors taken into account). It should not, however, simply be concluded that making microcredit provision available to Sector 4 producers will have positive effects on livelihood outcomes or vulnerability, or that it is necessarily an important component of the institutional structure required for productivity improvements in Sector 4.

Veterinary services and training/extension

Newcastle disease is the main killer of village poultry. Controlling the disease is widely recognized as the single most effective intervention in village poultry production (Spradbrow, 2001; FAO, 2004b; Alders and Spradbrow 2000; Woolcock *et al.*, 2004; Udo *et al.*, 2005; Dwinger *et al.*, 2006). Other diseases may negatively affect poultry health and productivity (e.g. Magwisha, 2003; Idi, 2004) and improved husbandry practices have the potential to

enhance the health and productivity of village poultry. Such interventions become relevant when Newcastle disease is controlled (Udo *et al.*, 2005; Sarkar and Bell, 2006). However, the majority of village poultry producers have poor access to veterinary and extension services, and hence are either unaware of the benefits of disease control or unable to access the vaccines and drugs needed to protect their birds. When animal health services are not available and bird mortality is high, awareness and interest in improved husbandry practices does generally not exist.

The key barriers to developing the outreach of animal health services to poor areas are widely recognized as being the high **transactions costs** of serving poor and the fact that it often involves large geographical areas in which the **demand** for services may be relatively low or undeveloped (Ahuja, 2004; Catley *et al.*, 2004).

In terms of the **demand** for animal health services, Ahuja *et al.* (2003) noted that poor households use animal health services less than better-off households partly because the poor paid relatively more for the services. The demand for animal health services was found to be linked to access to output markets and the general awareness level of the household, but not linked to the rate of subsidy of veterinary services or products if they existed (ibid.). In other words, poor livestock owners show willingness to pay for animal health services, but may have lower awareness of, and access to, the services. The willingness and ability of poor poultry owners in remote villages in West Africa to pay un-subsidized prices for Newcastle disease vaccines has been part of the business potential for private veterinarians in the region (Samaké, 2006; Quinet, 2006). This willingness and ability by the poor to pay for vaccines is also reported from southern Africa (Costa, 2008; Harun, 2008).

In terms of the **transactions costs** associated with servicing poor areas, it is generally acknowledged that neither government veterinary services nor conventional private services (in which a trained and certified veterinarians carry out all the tasks involved) are appropriate means of reaching out to the poor. For decades, the debate on developing the outreach of veterinary support to rural livestock producers has revolved around the role of the public and private sectors and various forms of civil society organization engaged in animal health-related activities (e.g. De Haan (ed.), 2004). Various models of organizing animal health services with extensive outreach have been developed, and numerous NGO and donor-funded projects have implemented them. Such models include various forms of community-based or member-based animal health services, often trained by external NGOs. Networks of animal health assistants and community animal health workers supervised by trained and certified private veterinarians have also emerged as an effective way of improving the outreach of animal health services (Ahuja, *et al.*, 2003; Catley *et al.*, 2004). Although such networks have proven successful, upscaling the model to nationwide coverage has met constraints of a regulatory or political nature related to the legal division of the roles of the public and private sectors, not least with regard to the regulations associated with the sale of drugs (Catley *et al.*, 2004; Ahuja *et al.,* 2003).

Catley *et al.* (2004) note that the profitability, and hence viability, of private veterinarians' businesses lies much more in the sale of drugs than in the provision of other services. In Mali in West Africa, it was found necessary to monopolize drugs sales in the hands of registered veterinarians in order to ensure the economic viability of their services. Another cornerstone of the development of private veterinary outreach in Mali was the establish-

ment of animal health mandates, which tasked the private vets with disease surveillance in large geographical areas and compensated them for this service (Samaké, 2006). This form of organization is reported to have boosted the outreach of animal health services considerably, and has been estimated to be several times more efficient than externally funded NGO-based services (Samaké, 2006; Quinet, 2006).

The impact of HPAI on the animal health policies and the movement of birds is noted above, with some concern regarding the effects on smallholders. However, it is too early to assess the long-term effects of HPAI on policies and regulations relevant to the provision of animal health services in poor areas.

In conclusion, there is no doubt that the provision of Newcastle disease vaccines and other animal health services can contribute to improving the productivity of village poultry. Where the services have been provided and awareness of the animal health services raised, the poultry owners, even the poor, show willingness and ability to pay for the services. There are viable models available for developing such services, but regulatory reforms are needed to support the models.

3. SOCIAL AND CULTURAL SIGNIFICANCE OF POULTRY IN SMALLHOLDER SOCIETIES

Introduction: smallholder poultry – more than a resource for poverty alleviation

As shown in the preceding section, smallholder poultry keeping has potential to improve the incomes of poor people in developing countries. With the "Bangladesh Poultry Model" initially leading the way, many development interventions have sought to use poultry as a means of economic empowerment (Askov Jensen, 1999; Islam, 2003). However, in order to fully understand the potential of village or free-range poultry production to support smallholder livelihoods, we must also appreciate the social and cultural roles that poultry plays.

Poultry – whether chickens, ducks, guinea fowl or other species – serves multiple purposes within smallholder communities, apart from those of a strictly economic or nutritious nature. Birds and eggs are traded and consumed. But this is not simply a matter of food. In this section we examine the range of motives for smallholders to keep and raise poultry. For example, birds are given away as gifts, they are sacrificed to ancestors and divinities, or they are consumed as part of ritual and secular celebrations – thereby strengthening important social bonds. In some societies, chickens may be used to foretell the future through divination rites. As such, poultry play an important cultural and social roles as well as being used to meet individual economic goals

In this section we focus on Sector 4 production systems and explore the utility of poultry for smallholder societies, more specifically their significance for social relationships and for cultural and spiritual life. To use the terms of the Sustainable Livelihoods Framework, we investigate the contribution of poultry to smallholders' livelihood outcomes and, more specifically, its potential for increasing the well-being and reducing the vulnerability of smallholder families. In order to do so, we start by presenting some general considerations regarding the sociocultural importance of animals in smallholder societies, drawing on rural sociology and anthropology. Then we move on to discuss the more specific case of poultry

as used in gift-giving and for maintaining relationships of exchange and reciprocity. We also take a look at how poultry forms part of ritual and symbolic life in smallholder societies.

Animals and smallholder society: small but significant chickens

Domestic animals have social, cultural and symbolic roles in human society that transcend their practical use as food, as providers of labour or as commodities. Animals are often sold – and bought – in order to realize social and cultural needs; for example, in the case of poultry, a ceremony may require a bird of a particular colour, which is most conveniently acquired at a local market. Moreover, smallholders engaging in animal husbandry target particular holidays – Eid, Tabaski, Christmas, Easter, etc. – when the consumption of poultry and goats is culturally important. Examples from Africa, Latin America and Asia also serve to illustrate that in smallholder societies, animal ownership is a measure of social status, competence and prestige. Moreover, it is an investment that can bring significant returns, both socially and economically (Bohannan, 1959; Geertz, 1972; Villareal, 2001). The gender aspects of this observation will be further discussed below.

Because their animals are "multipurpose", smallholders have reasons for keeping animals – and for joining livestock development projects – other than those strictly related to economic interests. Classic examples of social relationships still mediated by and with animals include bridewealth and dowry payments (Goody and Tambiah, 1975; Robertson, 1991) as well as sacrifices to divinities or ancestors (Ibrahim and Abdu, 1996; Tadelle and Ogle, 2001; Naidoo, 2003) and gift-giving among kin and fellow community members (e.g. Harvey *et al.,* 2003; Mathias, 2006; Conroy *et al.,* 2005; Aklilu *et al.,* 2007b). While the two latter types of sociocultural events do concern small animals, including poultry, larger animals such as camels, cows and buffaloes tend to dominate exchanges related to marriage.

Sharing food is a form of sociocultural communication in most cultures. Animal-derived foods, which are considered particularly nutritious and are replete with associations with nurture or slaughter, can have particular significance (Sonaiya *et al.,* 1999; Guèye, 2005; Tadelle and Ogle, 2001). Finally, animals in smallholder societies take on emotional and aesthetic value – a point which is richly illustrated by the kind of animal-human relationships that are associated, for example, with cock-fighting (Geertz, 1972). Likewise, women and children, who are often the ones to manage the household poultry on a day-to-day basis, will closely monitor the behaviour and condition of each individual bird (Harvey *et al.,* 2003; Thomsen, 2005).

Social science and poultry studies

Although poultry are the most commonly kept domestic animals, they seem to a large degree to have escaped the specific attention of the social sciences. At least that is the impression provided by literature searches for "smallholder poultry", "backyard poultry" "village poultry" and the like. It is not, as we shall see below, that poultry are socially unimportant. Rather, a sense of scale is at work here, and social scientists – along with veterinarians and agronomists – have tended to focus on larger animals, particularly cattle, but also goats and pigs. For example, there is a body of ethnographic literature devoted to animal–human relationships, particularly those found in pastoralist societies. Much poultry-related

material is associated with development interventions, and thus focuses on technical matters – particularly the introduction of new health and feeding technologies or marketing practices –or on economics (Riethmuller, 2003; Bravo-Baumann, 2000; Mathias, 2006).

When poultry do become visible in the social science literature it is usually because they enter into or enable social, cultural and religious activities that are themselves the focus of interest. One classic example is a study of the Sudanese/Congolese Zande people and their use of chickens in magical divination rites (Evans-Pritchard and Gillies, 1976). Moreover, as illustrated below, chickens are the gifts ***par excellence*** in most smallholder societies, and they are served to significant guests, thereby reinforcing social networks and kinship ties. As such, poultry becomes an asset in terms of smallholders' "social capital". It should be borne in mind that smallholder societies that are shaped by scarcity, often by poverty, are particularly dependent on maintaining relationships that are not economic in nature but based on reciprocal exchange, kinship and community fellowship.

Smallholder poultry keeping: seasonal dynamics and multiple functions

Smallholder agricultural systems – and smallholder poultry keeping – exhibit pronounced seasonality and take into consideration a number of ecological, economic and sociocultural factors. Depending on smallholders' production strategies, as well as on the climate, the size and composition of poultry flocks vary over the seasons of the year, as do the degree of commercialization, consumer demands and other uses of the birds (Huque, 1999; Thomsen, 2005; Tadelle and Ogle, 2001; ACI, 2007). Moreover, poultry keeping tends to be closely integrated with smallholders' other livestock-keeping activities – mainly goat, sheep, pig and fish rearing – and with their crop cultivation (Mathias, 2006). Table 10 seeks to illustrate these complex relationships, with climate, culture and markets; it is based on observations of smallholder poultry production in Benin, West Africa.

The table shows the dynamic nature and seasonality of village poultry production. Production of village poultry (row 3) is linked to ecological factors and labour demands (rows 2 and 6) as well as to ritual/religious practices and consumption patterns (row 4). Major ceremonial activities (row 5) fall in the seasons where poultry is more readily available and when prices are highest – something that is also reflected in smallholders' marketing practices. The table thus reminds us that smallholders are involved in market relationships and that local consumption is not simply a matter of food – ceremonies and harvest celebrations are also activities that add to the social capital of the families, kin groups and communities.

Guèye, writing mainly on the basis of West African material, provides figures that place poultry at the bottom of an animal value scale (e.g. Guèye, 2002). Likewise, Todd uses data from different Asian contexts to illustrate the relationship of poultry to other animals and their relative economic importance: Todd's so-called "livestock ladder" equates poultry with poverty and landlessness, and cattle with wealth and land ownership (Todd, 1998). Nonetheless, as Todd (1998) and Guèye (2005) also argue, low value units are essential to accomplish larger social projects; poultry may be exchanged "upwards" for goats and from there to cows. A Nigerian (Haussa/Foulani) proverb depicts this system of exchange where livestock may facilitate upward social and economic mobility:

TABLE 10
Seasonal patterns in smallholder poultry keeping and other activities – southern Benin

Season	Long dry period November–March	Long rains April–July	Short dry period August–September	Short rains September–October
Crop cultivation	harvest but otherwise relatively quiet	intensive work in fields	harvesting	sowing
Poultry activities	most productive poultry period, good poultry health but occasional Newcastle disease and predation	least productive poultry period, poor poultry health	possibility of Newcastle disease	low poultry productivity, poor poultry health
Seasonally affected uses of poultry	sacrifice and consumption, high poultry prices = main period for selling birds	sales only if needed (in case of food shortage), low poultry prices	sacrifice and consumption, poultry prices rising	sales (school-fees) lead to temporary fall in poultry prices
Religious ceremonies	fétiche ritual and ceremonies + Christian festivals, New Year	no fétiche ceremonies because of rain	harvest ceremonies	no fétiche ceremonies because of rain
General conditions of life	time of leisure and sufficient food	time of hard work and food shortages	harvest brings food and money	some work in fields

Source: adapted from Thomsen (2005, p. 53).

> *"If you don't have the means needed for possessing a cattle stock, go buy a hen; you can be sure that the neighbour's cock will find her. With the proceeds from the sale of the chicks, buy a sheep (ewe); the neighbour's ram will equally find it. Then, on the basis of the sales of lambs, buy a heifer"*
>
> *Adapted from Guèye (2005) and Ibrahim and Abdu (1996).*

Different poultry species and locally identified types of chickens

Variations in ecology and sociocultural preferences result in different poultry species dominating smallholder production systems in different regions of the world. Data from Asia, (Viet Nam, India and Bangladesh) indicate that chickens and, to a lesser degree, ducks are the most commonly kept type of poultry in this region (ACI, 2007; Joensen, 2002; FAO, 2003b; Huque, 1999). For Latin America, mainly based on data from Central America and the Andean countries, the picture looks much the same, although in some parts of the continent turkeys may replace ducks as the second most important type of poultry after chickens (historically, turkeys were regarded with high esteem among highland indigenous Indians). In some communities geese are also kept (Mallia, 1999; Paterson *et al.,* 2001; Harvey *et al.,* 2003). In Africa also, chickens dominate smallholder poultry production. Other commonly found species are guinea fowl, ducks, turkeys and pigeons, with the first two being the most numerous of the four (Guèye, 2000; Sonaiya, 2000; Tadelle and Ogle 2001; FAO, 2006b).

However, as the case of West Africa shows, ecological conditions along with ethnic and cultural preferences result in variations in smallholder poultry-keeping patterns between and within countries and agro-ecological zones: While in the lush and green coastal zones of West Africa, smallholders mainly keep chickens alongside small numbers of the other types of poultry, the picture changes as we move north towards the drier Sahelian areas; here guinea fowl tend to equal, if not even outnumber, chickens (FAO, 2006b; Thomsen, 2005; Bonkongou, 2005). Mallia (1999) draws a similar conclusion with respect to the diversity of smallholder poultry keeping in Central America. She concludes that factors such as ethnicity, culture, climate and terrain (mountainous, low-lying or coastal areas) determine smallholders' choice of poultry species, while adding the problem of infrastructure to the list. It seems that in all regions cocks serve as the "alarm clock" of any rural smallholder community (Mathias, 2006).

As elaborated in more detail below, along with ethnic affiliation, gender may also affect the individual smallholder's choice of breed as well as the symbolic values attached to different types of poultry (Guèye, 2003a; Thomsen 2005). In any case, practically no matter where in the world we turn our heads, chickens tend to dominate smallholder poultry production. Therefore, more material – and probably also more traditions – exists on the social and cultural practices associated with this species, something which is reflected in our coverage of the topic.

Although often lumped together and broadly termed "local" or "indigenous" chickens by scientists – as opposed to improved breeds – smallholders will usually identify a number of different types of chicken, depending on production qualities (egg laying, mother-hen abilities), colour, size and feathering. Table 11, adapted from Thomsen (2005) and Tadelle and Ogle (2001), defines some of the qualities and uses ascribed to different varieties of chickens (and chickens of different sex and age) found in village communities in southern Benin and central Ethiopia. Ibrahim and Abdu (1996), also writing from West Africa (Nigeria), have developed a similar table.

The table shows that specific uses are ascribed to specific types of chicken, depending on their looks (colour, feathering, etc.), on their sex and age, and on the associated local beliefs; some may be used in rituals, while others are for consumption or for guests. For Benin, the improved breed, termed "Yèvegboclo" and the mixed "Koungbo" chicken stand out from the local varieties as they are not used for sacrifice or rituals, a remark that is also made by Tadelle and Ogle (2001) in relation to the Ethiopean smallholder poultry keeping. As shown in the third column (least for the Beninese data) the usage of the birds affects their market price, although as illustrated in Table 10, a certain degree of seasonality also plays a role here, i.e. a particular type of chicken may be used for rituals which are mainly held during a limited period of the year (see also Tadelle *et al.,* 2003).

In the case of the Haussa/Fulani of Nigeria, certain varieties of chicken are also recognized as having particularly good skills as mother hens. The Haussa/Fulani people find that the rural environment demands a good deal of aggressiveness within a mother hen, as she scavenges with her chicks and has to fight off other birds and protect the chicks from predators. The value of these traits is reflected in local proverbs; for example a person who endures obstacles and pursues his or her goals is said to have the "heart of a chicken" (Ibrahim and Abdu, 1996). Finally, particular types of birds may be recognized as having

TABLE 11
Locally identified types of chicken, southern Benin and central Ethiopia

Name of chicken type (for Southern Benin: in local Sahouè language)	Characteristics	Main uses	Market value
Mono district, Southern Benin			
Djagblé	Erect plumage	Can be eaten, but not to be served to guests or used for fétiches	Low price
Kètè	Small in size, short legs	For eating purposes only	Low price
Kohlo	Naked neck	May be used for receiving guests, but not for fétiches	Low price
Kpèkoui	Speckled plumage, white/black, small in size		n.a.
Ofin	Grey plumage, resembles the colour of ashes (ofin means ashes in the local language)		n.a.
Ogbo	"Woollen" plumage, resembles the fur of sheep	May replace sheep at rituals	Expensive
Ohon	Black and white/"bluish" plumage	May be used for fétiche rituals	Among the more expensive
Owin	"Curly" plumage, resembles a broom	Used for the fétiche called Owin, worshipped when children are born with their face turned upwards	Among the more expensive
Sanhouè/Sanwè	White plumage	The most preferred for fétiche rituals	Expensive
Vava	Red plumage		n.a.
Wi/Wiwi	Black plumage (wi means black in local language)	In some places used for fétiche rituals	
Yèvogboclo exotic/ improved breed	Bigger in size, meaty But more vulnerable to diseases, less tasty (in local language "Yèvo" means "white people", the name thus refers to races originating within large-scale Western production systems)	Typically kept for breeding purposes: for mixing with local chickens	Expensive
Koungbo	Bigger in size, fast growing (a mix of Yèvogboclo and local types)	Raised for purposes of eating and selling	Expensive
Central highlands of Ethiopia			
n.a.	White cock	Sacrificed for good harvest and rains, in October and May	n.a.
n.a.	Red cock	Sacrificed for good harvest and rains, in October and May	n.a.
n.a.	Red and black spotted cock	For Ethiopean New Year (middle of September)	n.a.
Gebsema	White and black spotted cock	Sacrificed to obtain protection from evil things, e.g. disease	n.a.
n.a.	White pullet	For keeping in the house	n.a.
n.a.	Red pullet	Sacrificed to ancestors, in June or May	n.a.

Source: adapted from: Thomsen (2005, p. 46) and Tadelle and Ogle (2001, p. 532)

curing abilities; in some African countries there is a demand for white-feathered chickens for medical purposes (Guèye, 2000).

Poultry gifts and feasts: strengthening smallholder reciprocity and social networks

Having introduced in general terms the relationship between smallholders and their poultry, we now move on to the more specific social and cultural uses and roles of poultry in smallholder society. Reciprocity, exchange and gift-giving are important elements of social reproduction in any society. In smallholder societies, reciprocity is expressed through exchanges of goods and services between individuals and groups. Gifts and invitations mark not just relationships – "he is my friend" – but also expectations that the relationship will continue.

Poultry meals and feasts

Across smallholder societies around the world, poultry meat and eggs are used for the feasts held to celebrate festivals such as Christmas and Easter (Christian festivals), Tabaski and Eid (Muslim festivals) and Tet (Vietnamese New Year). They are also an important part of the meals served at special events such as marriages and funerals (e.g. Guèye, 2000; Naidoo, 2003, Thomsen, 2005; Aboe *et al.,* 2006; Aklilu *et al.,* 2007b; ACI, 2007).

In the Philippines, fertilized duck eggs with embryos – known as *balut* – are a particular delicacy. The eggs are collected from smallholder producers, prepared by specialists, and sold as a street food – though with gender and medical overtones, as *balut* is believed to enhance male sexual performance (Magat, 2002). Chang and Dagaas (2004) note that *balut* accounts for some 90 percent of duck-egg production in the Philippines – where over 75 percent of ducks are raised for eggs under backyard conditions. While *balut* is primarily a Philippine delicacy, prepared duck and chicken eggs (e.g. salt eggs and "hundred year" eggs) are appreciated in much of Asia, and this market is generally supplied by smallholders (Magat, 2002; Chang and Dagaas, 2004).

If an important visitor or a relative arrives, a bird or two may be slaughtered in order to prepare a good meal. In Ethiopia, for example, special guests are invited to share the so-called *doro wat* national dish, which is made with both chicken meat and eggs and is considered to be an exclusive feast (Tadelle and Ogle, 2001). Likewise, Yan (1996) notes that in northern China, cooked dishes are exchanged as a means of maintaining good relations.

Data collected in various rural communities in India also show that a considerable proportion of the poultry produced are used for this type of social purpose, particularly so when there is no nearby market for selling and when local cultural factors favour socio-cultural uses over economic ones. In contrast to smallholders in Tamil Nadu, who emphasize sales, Rajasthan residents use up to a third of their poultry "for guests" (Conroy *et al.,* 2005). It might be noted that, for both groups, the category "home consumption" may also, to some extent include chicken meals served at special occasions or when visitors arrive. In the case of Ghana's Accra Plains, Aboe *et al.* (2006) find "special occasions" and "visitors" to be among smallholders' main reasons for keeping chickens (slightly more so among men than women poultry keepers), although "income" and "meat" (for consumption) remain the most important objectives for these Ghanaian smallholder poultry producers.

As the examples from smallholder communities around the world show, poultry – in the form of poultry meals served to visitors and relatives – becomes a means for maintaining social relations and networks. It thus, in the terms of the Sustainable Livelihoods Framework (DFID, 1999) becomes a means of assuring the social well-being and reducing the vulnerability of smallholder households. By maintaining good social relations, the household avoids exclusion from their community and their clan, and thereby improves the likeliness that others will step in to help if hard times should arise.

Poultry as gifts

In smallholder society, poultry are commonly exchanged as gifts. Smallholders give away live birds as a gesture to visitors who may bring them back home, and to neighbours and relatives – e.g. to thank them for helping out with agricultural work. Examples can be found in Asia (Conroy *et al.,* 2005; Yan, 1996), Africa (Naidoo, 2003; Tadelle and Ogle, 2001; Aklilu *et al.,* 2007b) and Latin America (Harvey *et al.,* 2003). Birds may also be given to relatives who wish to start poultry keeping but do not yet have their own poultry and lack the means for the initial investments (Thomsen, 2005). Aklilu *et al.* (2007) find that in northern Ethiopia, live chickens are the most common gift presented to sick people. In Peru, a chicken or a duck may serve as a birthday or anniversary present (Harvey *et al.,* 2003).

Just like serving a good (chicken) meal, the practice of giving away live birds as gifts is a way of confirming reciprocity and maintaining important social relations within the community as well as with relatives who live farther away (FAO/IAEA, 2002).

Poultry as cultural communication: ritual, sacrifice and symbolism

In smallholder society, poultry are an integral part of spiritual and religious life. As noted above, in African settings certain types of chicken may be associated with specific rituals and sacrifices or with religious or magical beliefs (Tadelle *et al.,* 2003, Tadelle and Ogle, 2001; Thomsen, 2005). Also, a number of symbolic meanings are ascribed to poultry. As such, some specific types of poultry, mainly chickens, may be kept for the sole purpose of using them for specific ritual actions, rather than for consumption or sales, although as shown in Table 11, and confirmed by Ethiopian data (Tadelle *et al.,* 2003), some of these birds may also fetch a better price than those destined only for consumption.

The role of poultry in ritual sacrifice and divination rites

Examples of the use of poultry in ritual sacrifice stem mostly from Africa. Rituals are undertaken for many different reasons, and it is mainly chickens – and chicken blood in particular – that are used for these purposes. Tadelle and Ogle (2001) and Ibrahim and Abdu (1996), reporting from African field studies, describe how chickens of different colour, sex and age may be used for purposes such as assuring good harvest returns and for honouring ancestors or spirits. However, poultry sacrifice also takes place in Asia. In a study of Indian smallholder poultry keeping, Conroy *et al.* (2005) found that around 10 percent of village chickens in rural India are used for sacrifice.

In Zande society, on the border between southwestern Sudan and the Democratic Republic of the Congo, chickens play a crucial role. The so-called "poison oracle" is poison administered to young chickens. Once consumed by the chicken, the oracle is told about

the events to be explained and the suspicions to be confirmed. It responds to the supplicant's question by either killing the chicken or letting it survive. The oracle shapes the way that men – only men may address it directly – cope with the social world; using it is part of being adult. Evans-Pritchard and Gillies (1976, p. 281) conclude that:

> *"In every Zande household there is a fowl house, and fowls are kept mainly with the object of subjecting them to oracular tests".*

As such, poultry are of great importance to Zande men – and to Zande society in general.

In other African countries – for example in Senegal (Guèye, 2000; Guèye, 2005) – poultry act as alternative "capters" of evil spirits directed towards the family or family members. Among the Haussa and Fulani ethnic groups in rural Nigeria, it is common for each family member to have a specific animal, for example a chicken, ascribed to them. According to Ibrahim and Abdu (1996), this animal plays the role of a "protective totem". This, the Haussa/Fulani believe, means that if a malevolent spirit tries to attack the person with illness or misfortune, the ill-effects will strike the animal instead.

Tadelle and Ogle (2001) and Naidoo (2003) find that Ethiopian and South African (Zulu) traditional healers, respectively, may prescribe the sacrifice of a specific bird in order to cure a sick person or to "bless", or bring good luck to, a future activity – for example, if an accident has killed someone's relatives and protection against more accidents is needed. In such cases, the sacrificed birds are usually eaten after the ritual.

Cock-fights

Apart from serving ritual and "social networking" ends, poultry also provide socially valued and significant entertainment, notably in the form of cock-fighting which is practised in smallholder societies across a number of the world's regions. In contrast to poultry sacrifice and divination, which are widespread in Africa but seem to be less common in Asia, cock-fighting, so to speak, "reverses" the picture. Examples of the practice are relatively plentiful in Asia compared to sub-Saharan Africa, for which we found no reports at all. Ellis (2007) and Finsterbusch (orig. 1929, reprint 1980) describe the spread of this activity from South and Southeast Asia to the rest of the world. They also argue that the spread of domestic poultry from South Asia was linked rather to the drama of the cock-fight than to the needs of the pot.

Studies of the social importance of cockfighting for village society are few in the social science or development literature, but a simple search for "cockfight illegal" on the Internet returns thousands of hits and evidence that the practice continues in Asia, Europe, the Middle East and the Americas. Some material on cock-fighting does exist, including a collection of texts by Dundes (1994) with examples of cock-fighting in Bali, the Philippines, Spain, Brazil and the Caribbean. This material reveals the historical depth of cock-fighting and confirms the persistence of the activity. Moreover, it discusses breeding and training strategies and describes the emotional and aesthetic value that the birds take on. Most importantly, the material points to the symbolism and significance of the fights, notably the fact that cocks are associated with men and masculinity. The male owners give great importance

to their cocks, their looks and fighting power, and they nurse and guard them. As such, a strong symbolic parallel is drawn between the cock's performance in the fight and the man's – and his clan's – honour and strength (Geertz, 1972). Unfortunately, however, the existing body of literature does not include extended accounts of the broader social context of cock-fighting for smallholder society, nor of its economic importance and the expenditures or investments involved. Likewise, the actual number of game-cocks kept in a given region, even in areas where breeding and fighting is widely practised, remains unknown.

Prohibitions and consumption taboos on poultry

The consumption of poultry is generally less laden with prohibitions than that of other livestock (e.g. Hindus cannot eat beef and Muslims cannot eat pork). However, there are certain ethnically/culturally determined taboos in relation to the consumption of poultry. For example, in western Senegal, girls cannot eat pigeons as they are believed to negatively influence their future fertility, and in southern Senegal, the eating of eggs is prohibited to children. With regard to the latter taboo, sayings exist that children can go blind from eating eggs (Guèye, 2000; Riise *et al.,* 2007). Likewise, in northern Ghana, a proverb predicts that "a child that regularly eats eggs will become a thief as the good taste of eggs will make the child want to eat eggs daily" (Sonaiya *et al.,* 1999). As a result, more eggs are left for hatching than would be if the children were allowed to collect and eat the eggs. In many African countries, some parts of the chicken are reserved for eating only by specific family members; for example, the gizzard and sometimes also the neck are restricted to the men (Guèye, 2000). Moreover, Guèye (2000) and Sonaiya *et al.* (1999) report that in some parts of the United Republic of Tanzania, Kenya and Ghana, women are not allowed to eat poultry meat or eggs.

4. GENDER ASPECTS OF SMALLHOLDER POULTRY PRODUCTION

In our review of smallholder poultry production, we have used the Sustainable Livelihoods Framework to address questions of income, consumption and sociocultural issues. However, the analysis so far has mostly remained at household level or described individuals in broad terms, as smallholders or farmers, without addressing more specific gender aspects and intrahousehold relations. In order to get the full picture of smallholder poultry production, its characteristics and its potential in poverty alleviation, this section therefore looks in more detail at issues of household division of labour and livestock-related decision-making.

Despite all the regional differences in smallholder poultry production, one observation seems to remain the same, whether talking of smallholder households in Africa, Asia or Latin America – namely that the day-to-day management of poultry is undertaken by women, often with assistance from their children. 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 (Guèye, 2000; Bravo-Baumann, 2000; Mathias, 2006; Rushton and Ngongi, 1998; Tadelle *et al.,* 2003; Tung, 2005; Ibrahim and Abdu, 1996; Mapiye and Sibanda, 2005; FAO, 1998).

It should be noted, however, that according to ACI (2007) reporting from Viet Nam, and the more general observations of Mathias (2006), the division of labour tends to change

when poultry production intensifies, i.e. when it moves from being a small-scale Sector 4 activity to a medium-scale Sector 3 activity. In such cases, women's involvement decreases while that of men increases. In this section, however, we will continue to focus on Sector 4.

Despite the typical division of tasks within smallholder households, which gives women the main responsibility for poultry-keeping activities, 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. Different scenarios prevail in different parts of the world, depending on sociocultural norms and intrahousehold relationship practices, i.e. whether husband and wife run one common economy or each their own separate economies. Whereas in some cases poultry ownership rights are clearly defined and the woman or the man – and sometimes even a child – is the entitled owner of some or all of the birds, in other cases the poultry belong 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 (FAO, 1998; Guèye, 2003a). Interestingly, ACI (2007) finds gendered differences in ownership and decision making patterns depend on the species in question; while Vietnamese women have the final say in relation to household chickens, their husbands decide about the ducks.

This section describes various regional scenarios for smallholder poultry production and gendered ownership. In doing so, we bear in mind that the actual rights that formal ownership give a woman – or a man – may differ from one regional context to another. As noted in the preceding section, the majority of the data dealing with smallholder poultry production have been collected in relation to poultry development interventions. Interestingly, as we discuss in the final part of this section, considerable changes to aspects of ownership and decision-making power may be brought about when these poultry projects step into the picture.

The question of the distribution of ownership among household members has implications for the use of the poultry products and the income generated via their marketing (e.g. Bravo-Baumann, 2000). Moreover, women and men have different access to capital and other resources, and they act from different positions – as husbands and wives, parents, sons and daughters in-law, etc. – depending also on their age and wealth status. All this affects their agricultural activities, including those of poultry keeping (Mapiye and Sibanda, 2005; FAO/IAEA, 2002). This section of the paper aims to look into gender issues in relation to smallholder poultry production, including not only aspects of ownership and decision-making, but also consumption, marketing of poultry products and the use of the income generated from the sales. Although considering "gender" does not mean looking only at women, but rather at the relationship between women and men and their mutual roles and responsibilities, it is a fact that poultry in Sector 4 belongs to a large extent within women's domain. This section, thus, places particular emphasis on women smallholders' various poultry keeping strategies and the way in which this kind of animal production may come to function as a tool for empowering them, economically as well as socially, and particularly so when being targeted by development projects.

Women and poultry – and exceptions to the rule

In our review of the existing material on smallholder poultry production, we have identified

three main reasons why poultry belong mainly within women's domain. However, we have also come across exceptions to the rule, i.e. cases where men undertake poultry keeping activities or dominate the rearing of particular poultry species due to specific interests.

Why poultry belong within women smallholders' domain

Women are involved in smallholder poultry production for three main reasons:

First, when compared to larger livestock, poultry do not require much investment. As they are usually left to scavenge for their feed during daytime, they only require a little supplementary feeding (depending on the season of the year), a night shelter and, occasionally, some veterinary treatment and vaccination. Moreover, in contrast to larger animals, poultry are not highly valued in terms of social capital, i.e. the prestige the animal brings to its owner. Depending on the locality and its livestock-keeping traditions and cultural norms, men usually prefer keeping larger animals such as goats, sheep or, better even, cattle. Although women smallholders may keep a few goats, it is usually the man who creates the conditions for investing in buffalos, cattle and large flocks of goats and sheep (Villareal, 2001; Joensen, 2002; Thomsen, 2005).

Poultry, on the other hand, requires little initial investment and generates quick and frequent returns, something which fits well with the types of day-to-day expenditures – food stuff, schoolbooks etc. – that women smallholders face as the main household caretakers (Todd, 1998, Thomsen, 2005). Also, the size of any potential economic loss in the event of theft, predation or disease among the animals is less with chickens (although poultry, due to their small size, are of course more easily taken by predators or stolen than are cows or goats). For all these reasons, poultry are generally accepted as "women's capital" (Villareal, 2001).

As an example, Altamirano (2005) reports that women of the Bolivian highlands prefer chickens to other, larger, animals. Although they are also the ones to take care of the family sheep, goats and pigs, they have to consult their husbands with respect to decisions about the use of these animals. In the case of chickens, the women themselves may make decisions about consumption and sales.

Second, poultry are kept at the homestead. Poultry keeping is, thus, an activity that the women can undertake without having to leave the household, where they will usually be occupied by domestic duties such as cooking, cleaning and caring for children. As such, they do not have to allocate a lot of extra time to managing the poultry (the daily cleaning of the poultry house, feeding, etc.) as compared to other income-generating activities, such as day labouring or petty commerce, which require them to leave their homes for many consecutive hours (e.g. Bush, 2006; ACI, 2007).

Third, in places where religious beliefs or societal norms require that women do not leave their household compound or village, at least not without being accompanied by a male relative, poultry keeping is a suitable income-generating activity. This is because, as mentioned above, the tasks related to poultry keeping can be carried out without leaving the home. However, in such cases the women will still depend on male relatives or intermediaries for the marketing of their poultry products (Seeberg, 2003; FAO 2003b), something which is discussed further in the following section.

Exceptions to the rule: when men take particular interest in poultry

Exceptions to the rule that poultry keeping is dominated by women do exist – men may sometimes also take particular interest in poultry keeping. In Benin and Togo for example, men keep species such as guinea fowl, turkeys and pigeons. These types of poultry are more rarely kept and are considered more difficult to manage than chickens. To some men, there is, thus, a certain prestige attached to keeping these types of poultry, as well as to keeping large flocks of birds (Thomsen, 2005). Guèye (2003) also reports from East and Southern African cases of male involvement in poultry keeping, notably in areas where there is no tradition of keeping large stock or where circumstances such as war or natural disasters have decimated larger livestock and, thus, led to an increased male interest in poultry.

Among the examples mentioned in Section 3 of circumstances in which men take particular interest in poultry, we find ritual practices and sports, notably cock-fighting. With respect to the first, we mentioned the Sudanese/Congolese Zande men who use chickens in divination rites (Evans-Pritchard and Gillies, 1976). When it comes to cock-fighting, Asian men do not lag behind their African counterparts. As described in Section 3, this activity is laden with symbolism of masculinity, and the men who take part place great emphasis on taking good care of their cocks (Geertz, 1972; Dundes 1994).

Smallholder poultry-keeping strategies

Depending on their gender and age, on their access to resources and their household standing, smallholders have different motivations for keeping poultry and, thus, apply different production strategies (Mapiye and Sibanda, 2005; FAO/IAEA, 2002). For men, these may relate to questions of prestige or ritual use, as well as to other sociocultural issues dealt with above – gift-giving, reception of visitors, etc. As has been shown in studies from Benin (Thomsen, 2005), Nicaragua (Brorholt, 2000) and Viet Nam (Joensen, 2002), women smallholders of different ages keep poultry differently and for different reasons. This has to do with their social position and stage in life. Women's roles and responsibilities within the household, as well as their own needs and those of their dependants, will differ according to whether they are:

- a young woman who is newly married and thus a daughter-in-law in a new family;
- a relatively young woman with several small children to take care of;
- a middle aged woman with older children requiring, for example, payment of school fees; and
- an old woman, grandmother, living within the compound of one of her sons.

In Asia (Viet Nam) as well as in Latin America, a particular poultry-keeping practice is found among young women who are recently married and have, thus, left their native homes; they keep chickens both in their new and in their previous homes, in order to maintain some economic independence from their husbands and families-in-law (Brorholt, 2000; Joensen, 2002). Through this practice, the women also reduce the risk of losing all their birds at the same time – for example in the even of disease outbreaks. Brorholt (2000) also describes mothers providing their newly wedded daughters with fertilized eggs as a symbolic gesture for bringing fertility with them into their new homes.

In West Africa, a young woman without any children may engage in buying and selling poultry, moving between villages and markets to do business. In contrast, women with small children or women who are old and weak are forced to stay at home for most of the time and are, thus, more likely to invest time and energy in their own poultry production, with help from children or grandchildren (Thomsen, 2005). A similar point is made with respect to old Vietnamese women – ACI (2007: page56) notes that to these women:

> *"raising chickens is seen as a job creation activity, making the elderly feel 'a bit more useful' with the additional benefit of additional income"*

Brorholt (2000) notes that in Nicaragua, Central America, not all women keep poultry. For the women to undertake this activity there must be a stable supply of maize and other cereals to use for feeding. The woman, therefore, depends on her husband and his production of these inputs. Thus, poultry are found only in the well-functioning, resourceful households. As such, poultry keeping is an economic opportunity for women and, at the same time, an illustration of whether or not a household is resourceful, whether it has sufficient social and economic capital.

In other parts of the world the picture looks different. According to Tadelle *et al.* (2003), Saleque (1999) and ACI (2007) who report from Asia and Africa, better-off households will normally keep poultry as a "side activity", whereas poorer households will invest more energy in their poultry keeping as it is one of their main income sources. In either case, it is mainly the women who own and manage the birds.

Being mainly a women's activity, knowledge of good smallholder poultry keeping practices is passed on from one generation of women to the next; women learn from their mothers or grandmothers how to raise chickens in the best way, how to apply herbal treatments, etc. As such, the girls assist their mothers in the daily management of the birds. Often, the girls – and sometimes also the boys – are given a bird of their own, which they take responsibility for and raise. This is done in order to test the children's abilities as livestock keepers (Harvey *et al.*, 2003; Thomsen, 2005).

The level of knowledge about poultry keeping among the women depends, of course, on whether or not there is a tradition of keeping poultry in the local area. If a poultry development project begins activities where there has previously been no experience of raising poultry, the situation differs from that in an area where smallholders are familiar with this kind of livestock keeping. In the latter case, the women's practices will end up being a mixture of old and new, conventional and traditional (Mathias, 2006; Thomsen, 2005).

Gender aspects of poultry income and marketing

It was concluded in Section 2 that the income from Sector 4 smallholder poultry production remains supplementary to the total household economy and small in absolute terms. It is often described as farmers' "petty cash" (e.g. Rushton and Ngongi 1999). However, even if it remains inferior to other household income-generating activities, poultry keeping nonetheless constitutes an important source of income for female smallholders (e.g. Aklilu *et al.*, 2007; Baldé, 2005; Bush, 2007; Riise *et al.*, 2005). This is linked to the fact that many of these women have few other alternatives for income generation. Moreover,

as mentioned above, poultry keeping can be managed as a side activity next to the many other tasks women fulfil.

A study from Bangladesh revealed that poultry keeping is the main income-generating activity, sometimes the only one, for a large majority of women smallholders with marginal or no land holdings (Riise *et al.*, 2005). Likewise, when comparing poultry-keeping activities to vegetable growing – their other main source of cash income – Senegalese women declare their preferences for the former because they are always sure to have a market for the chickens, whereas the market for the vegetables is more unstable (Riise *et al.*, 2007).

Marketing

In West Africa, women smallholders prefer marketing their poultry on their own if the local markets are not too distant from their village. When markets are within reach, the prices obtainable there are higher than those offered by the intermediaries who come to the village to buy birds. At times, the price at the market can be twice that paid by the intermediaries (Thomsen, 2005; Riise *et al.*, 2007). Another reason for the women preferring to sell the birds on their own, also noted by Aklilu *et al.* (2007) for East Africa (Ethiopia), is that by letting her husband take the birds to the market, the woman risks losing control over the spending of the money earned (Riise *et al.*, 2007).

Sometimes, however, women are left with no choice, and thus depend on intermediaries to take their birds and, occasionally, eggs to the market.[13] 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. Under these circumstances, the 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 (Riise *et al.*, 2007; Guèye, 2003; Tung, 2005; Aklilu *et al.*, 2007).

Another reason for the women not taking their birds to the market is that in some parts of Africa, as for example in northern Benin, northern Ethiopia and the United Republic of Tanzania, men dominate livestock markets (and also engage in poultry keeping, as noted above). Therefore, 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 (Aklilu *et al.*, 2007a; FAO, 1998; Houndonougbo, 2005; Thomsen, 2005).

In Bangladesh, where women in rural areas are often restricted from moving outside their village, the situation is somewhat similar; here, women smallholders also depend on intermediaries for marketing their poultry products, particularly eggs which are commonly sold (Seeberg, 2003; Riise *et al.*, 2005). The same situation might apply in other Muslim countries where women smallholders have limited access to public spaces and, thus, may face problems converting their poultry produce into money or other goods.

With certain parts of West Africa, such as southern Togo and southern Benin, being the exception (Thomsen, 2005; Thomsen *et al.*, 2005), African intermediaries are also mainly

[13] Contrary to Asia and Latin America, eggs are more rarely marketed in Africa as African farmers prefer leaving eggs for hatching (Aboe *et al.*, 2006; Baldé, 2005; Sonaiya *et al.*, 1999; Tadelle *et al.*, 2003). For Senegal, Baldé (2005) report only 10 percent of the eggs to be sold whereas in Ethiopia, 26 percent of the eggs are marketed (Tadelle *et al.*, 2003).

men who move between villages and markets on bicycles or motorbikes and sell on to consumers, to hotels and restaurants or to other traders (e.g. Aklilu *et al.*, 2007a). In northern Viet Nam, in contrast, the majority of vendors are women who move between poultry producers and markets by bicycle or motorcycle (Mathias, 2006; Tung, 2005).

The use of poultry money

Women use the money obtained from marketing poultry products for a range of purposes. They buy food items (e.g. spices or cooking oil) and clothes and they pay for medical treatment (modern as well as traditional) and for children's school fees and school equipment, such as books and pens (Altamirano, 2005; Aboe *et al.*, 2006; ACI, 2007; Bush, 2006; Riise *et al.*, 2007). Some women also exchange poultry for larger animals such as goats. In Senegal, for example, it takes five to six hens to obtain a small goat (Guèye 2003b; Guèye, 2005; Riise *et al.*, 2007). Furthermore, for women who take part in development programmes that offer access to microcredit, poultry income may also be used for the monthly repayment of loans, or for investing in other income-generating activities such as petty commerce or agriculture (e.g. renting land from neighbours, buying agricultural tools or engaging in various types of food processing) (Aboe *et al.*, 2006; Zoma, 2006) – activities that may also help to generate the money needed for the repayments (Thomsen, 2005).

Poultry as women's social and economic capital – ownership, decision-making power and development projects

In a traditional African context, i.e. where there are no investments in veterinary care or poultry housing and the chickens are left to scavenge on their own, poultry mortality is high and there is seldom much output to be gained from poultry keeping in rural areas (Alders and Spradbrow, 2000). Birds are usually considered to belong to the entire household and serve as gifts, as a good meal on a special occasion, or as a safety net in case of unforeseen expenditures. Under these conditions, a woman will rarely kill a bird, even if she is the one to prepare the meal, nor will she take it to the market, without having the agreement of her husband (e.g. Guèye 2003).

However, there is evidence that the situation changes when women smallholders start to invest more work and money in their poultry keeping, notably when they have become beneficiaries of a poultry development project. In such cases, when the poultry production becomes "project business", there tends to be a more clear-cut distinction with respect to ownership and decision-making in relation to the use of the birds. The poultry – and the money – then tends to remain within the context of the project and, thus, "in the hands of the women" (Altamirano, 2005; Joensen, 2002; Seeberg, 2003; Riise *et al.*, 2007; Thomsen, 2005).

To a certain extent, development projects and women's related investments in poultry production (and the profits obtained) change the way in which poultry are used and perceived. In other words, the chickens are "freed", although not completely, from their traditional domain where they play an important role as objects for gift-giving, exchanges and rituals, and move into another, economic, sphere in which they become the answer to women's growing need for cash income. Whereas previously when a guest was received in a household the woman was expected to prepare a meal with chicken meat, she may now refuse,

with the excuse that her birds are reserved for selling (e.g. to paying back a microcredit loan). As such, poultry become not only "project business" but also "women's business", and thus remain free of husbands' interventions (e.g. Thomsen, 2005; Riise *et al.*, 2007).

Poultry projects as a source of economic empowerment for women smallholders

With poultry belonging mainly within the women's domain, many development agencies choose to focus on this specific activity when wanting particularly to target women smallholders. These development interventions involve training women in simple technologies such as poultry health care (vaccination and treatments), housing and supplementary feeding. Sometimes they also involve offering women access to microcredit schemes (FAO, 1998; Islam and Jabbar, 2005).

A poultry development project running in the south of Senegal and the Gambia has led to the women beneficiaries experiencing an improvement in their economic situation and their status within the household. As they have obtained a certain degree of economic independence via making their own money from poultry keeping, they no longer need to consult their husbands regarding the smallest economic concerns, but may instead take action themselves. Although the money made from poultry is less than what the husband may make by, for example, growing and selling cash crops, it enables the women to contribute to some of the household expenditures and to influence decisions about how money is spent, thereby creating a somewhat more even relationship, economically speaking, between husband and wife (Riise *et al.*, 2007). In Bangladesh, where large-scale poultry programmes have been running for a number of years, the picture looks much the same. The large majority of the women report themselves to be in charge of deciding how to spend the money made from selling poultry products (Riise *et al.*, 2005).

Via their poultry money, women smallholders thus become economic agents, similar to their husbands. However, with the women generating income of their own, they also assume a greater responsibility for household expenditures such as school fees, food and clothing. While before, the man might have been the only one to bear this responsibility, he now also expects her to contribute.

Poultry projects increasing women smallholders' social capital

Poultry development interventions end up offering the women beneficiaries much more than economic profits; along with economic empowerment comes social empowerment. At the individual level, when a woman starts to generate her own income, she improves her status and decision-making power in relation to household matters such as the children's upbringing and general expenditure. Moreover, she feels more confident and independent as she gains control over resources and no longer needs to consult her husband about the smallest economic matters (e.g. Riise *et al.*, 2007; Riise *et al.*, 2005; Seeberg, 2003; Bravo-Baumann, 2000).

At community and village level, there may also be certain positive "side effects". To the women smallholders who join project groups, often termed "poultry interest groups" or "farmer field schools", and meet up once a week or even more frequently, the poultry activities become a gateway to socializing with other women. These groups often continue after the termination of the actual project activities. When the groups meet, they not

only discuss poultry keeping, but also exchange experiences on topics such as children's upbringing and relations with husbands. As such, the women become more aware of their own situation and their rights and possibilities (Riise *et al.*, 2007; Thomsen, 2005; Guèye, 2000; FAO, 2003a)

To sum up observations regarding the benefits of poultry development interventions to women smallholders we end this section with a quote taken from the report of an impact survey of a poultry development project in Afghanistan:

> *"In addition to the direct production effects, the programme has also enabled large numbers of village women to come together, discuss issues (not only poultry) and find a way of learning and communicating with each other … It has helped to increase self-confidence of many village women who never had any kind of formal training before in their life."*
>
> *FAO (2003a, pp. 33–34).*

5. SUMMARY AND IMPLICATIONS

The purpose of this part of the paper is to provide a brief summary of the findings with regard to the role of poultry in the livelihoods of smallholders – i.e. in Sectors 3 and 4 – and the implications of these findings. The livelihoods framework underscores the roles of reduced vulnerability and multiple assets as a basis for sustainable livelihoods and livelihood outcomes. The livelihood outcomes of poultry keeping mainly include income, consumption and social capital.

Income and consumption

The general rule of thumb says that approximately 80 percent of rural households in developing countries engage in smallholder poultry production, of which the majority is in Sector 4. This rule of thumb is supported by the material reviewed. Poultry keeping is found among all wealth groups within a country's rural population and provides some utility to their livelihoods. Sector 3 producers, however, do not include all wealth groups, as the poorest strata of the rural population do not have the means to engage in semi-commercial and commercial production, which is relatively capital intensive. The majority of poor households keeping poultry are in Sector 4.

Sector 3 producers are, by definition, producing to supply wet markets; they may be independent producers or growers contracted by integrators who control input supply and marketing. While independent producers in Sectors 3 and 4 retain a substantial market share in domestic poultry markets in many countries, and thus have viable income and employment opportunities, there are strong forces shaping the future structure of the poultry sector. First, economic growth, urbanization and changing consumer preferences are strong drivers of rising demand for poultry products. Second, economic liberalization, with reduced or eliminated trade barriers, fuels fierce international competition in the poultry sector. Third, but not least, regulatory responses to HPAI have the potential to change the domestic poultry sector with pressures leading to increased concentration of the sector and a higher degree of industrialization. The future of wet markets and, thus of the market outlet for Sector 3, depends both on regulatory matters and on whether the

consumer preference for live birds is sustained or reduced. Future income and employment opportunities in Sector 3 are, therefore, in question. The material available on the current situation of income and employment opportunities in Sector 3 is very scarce, but the recent study from Viet Nam (ACI, 2007) provides a good basis for designing studies to learn more about the processes at work and their impact. The scarcity of studies on Sector 3 ***implies***, among other things, that we lack knowledge of the effects of regulatory initiatives, global trade and the industrialization of the poultry sector.

Sector 4 poultry production is not the mainstay of livelihoods in any wealth category, but poultry provides a contribution to household income that can be very important for poor households. The view that poultry is the livestock of the poor is confirmed by studies that examine the relationship between wealth groups on the one hand and share of poultry income relative to overall income on the other. The poorer the household, the higher the share of income derived from poultry keeping. Few studies, however, have used data from general living-standard surveys or food-security surveys to establish this relationship. An ***implication*** for future studies that aim to examine the size of poultry income, or the share of poultry income relative to all income, is that care should be taken to disaggregate data by wealth group. Failure to do so will result in underestimation of poultry income relative to overall income among the poor households in such survey samples.

The findings show that surveys specifically aimed at examining poultry income indicate a higher share of poultry income in total income than do general living-standard or food-security surveys. Based on available data it is difficult to determine whether this discrepancy derives from systematic biases. However the ***implication*** of the observed differences is that surveys should be carefully designed and that there is a need to employ triangulation methods to test for biases.

If general survey methods underestimate poultry income among poor groups, i.e. if the general surveys are systematically biased, for instance against women's income sources (e.g. if women do not wish to reveal income to their husbands) this could have ***implications***, as it may sustain the generally low priority given to investments in these areas. Conversely, if surveys aimed specifically at examining poultry income tend to overestimate poultry income relative to overall income, this could undermine the trust in such surveys.

The findings presented in this paper confirm the general observation that women tend to be the principal owners of poultry, and have more discretionary power over poultry income than over income generated from other livestock. Poultry keeping is also attractive to women as it can be combined with domestic duties. The ***implication*** of this is that policies aimed at improving the productivity of village poultry would have a positive effect on income opportunities for women.

In terms of the contribution of poultry to home consumption, the findings indicate two quite clear, albeit not very surprising, observations. First, when women succeed in reducing mortalities and improve productivity and offtake from their chicken flock, it has a positive effect on household consumption. This may be a direct effect, through increased consumption of own poultry products or, if poultry is sold and proceeds are used to buy other types of food, a combination of both may apply. Second, the poorer a household, the more value is given to poultry and the higher the priority given to selling poultry products relative to home consumption. An ***implication*** for poultry development initiatives is to acknowledge

the priorities of poor people rather than to expect that the investment in such initiatives should be measured only in terms of home consumption of poultry products, even if enhanced intake of animal-source foods by poor households was an expected outcome.

Agricultural communities experience seasonal income fluctuations. The use of "poultry savings", also termed "livestock banking", is one way of mitigating income deficits that may occur in certain seasons. Income smoothing through poultry sales is an important function of poultry in smallholder societies, and because of this role as a form of small savings, poultry are often kept beyond the point at which they could best be marketed. Meeting expenses related to children's school attendance, health care and the like are noted as occasions when "poultry savings" are cashed in. As there is a great risk of loss attached to "poultry savings" due to high rates of mortality, the uses of poultry for this purpose indicates that no or few other saving mechanisms are accessible.

Access to capital differs between women and men, and they have different social and economic – maybe even ritual – responsibilities. Women and men may, thus, have different objectives for keeping poultry and, therefore, pursue different production and marketing strategies. Age, life stage and socio-economic standing also affect these strategies. The ***implication*** of this is to acknowledge that priorities are influenced by age and gender, and to address the respective needs of the different beneficiaries. The latter are often, but not exclusively, women with little or no financial means with which to start up livelihood activities. As such, the point of departure for poultry development projects should be flexible low-cost solutions, i.e. solutions that can be adapted to the local environment – in terms of social and ecological conditions – and that can be adjusted to accommodate the economic position of the beneficiary as well as her other farming and household activities.

Income opportunities in Sector 4 are partly a function of the ***institutions, structures and processes*** that pertain to smallholder poultry production.

The market

Market demand for poultry is booming in Asia, but this is generally not the case in sub-Saharan Africa. The processes driving the surge in demand, which themselves are complex, may have considerable effect on market opportunities in Sectors 3 and 4.

While village poultry are often described as serving a niche market, there is very little evidence available as to where village poultry is a niche market and where it is the main market. One indicator of market demand for village chickens, especially from Sector 4, is the price premium attached to village poultry reported in several studies. This reveals consumer preferences for village poultry, but gives little information about the potential share of the total poultry market, or of the volume of the "niche" market.

An ***implication*** of this knowledge gap is the impression that the niche market is static with little development potential, while in fact it ***may*** be a source of livelihoods for many people in Sector 4.

Transaction costs associated with locations that are at far from markets can be substantial, and render farm prices considerably lower than town market prices. This is confirmed by the literature reviewed for this study. The ***implication*** of these transaction costs is that it is impossible to derive income figures from farm-level production and productivity figures if these are related only to data on market prices. Any attempt to link production

and productivity data to income should, therefore, apply farmgate prices. To avoid biases in income surveys, the sample population should preferably be disaggregated in terms of distance from the market or farmgate prices.

Veterinary services and training/extension

It is widely acknowledged that vaccination against Newcastle disease would have significant effect on productivity and outputs in Sector 4. However, Newcastle disease vaccination of village poultry, along with other interventions enhancing poultry health and productivity, requires outreach of animal health services to poor areas. Models for effective and efficient outreach are available, but have not been scaled up to national level. Regulatory reforms are required to implement such models at national level. One ***implication*** of this is to focus more attention on removing the barriers to the required reforms.

Highly pathogenic avian influenza H5N1

The pandemic threat has motivated regulatory reforms that have placed producers in Sectors 3 and 4 in a particularly vulnerable situation. The effect of such regulations can already be measured, but it is beyond the scope of this paper to attempt predictions regarding the long-term effects on Sectors 3 and 4.

Social capital

Chickens, ducks and guinea fowl – along with other types of poultry – are more than a source of income or food. Poultry also serve a number of social and cultural functions, and poultry production, thus, has a potential to increase the social well-being and reduce the vulnerability of smallholder families. This argument is supported by many examples of poultry's importance to the social and spiritual aspects of smallholder life. These include sacrifices to divinities and ancestors, gift-giving and reception of guests. Through these uses of poultry, smallholders take part in the social and ritual life of their community and sustain their social networks.

Despite the sociocultural role of poultry in smallholder life, this is often underestimated in development-related literature and in actual development projects, which tend to focus on technical aspects of production and on the economic benefits of livestock keeping. However, without considering the social and cultural aspects of smallholders' livestock keeping, there is a risk that development interventions will fail to provide smallholders with the appropriate assistance. This is because, where livestock keeping is concerned, smallholders do not act only on the basis of economic rationales, but also seek to fulfil their social and cultural obligations towards kin and fellow community members. Fulfilling such obligations contributes to building and maintaining social capital, which is part of the asset structure in rural livelihoods.

The ***implication*** for development interventions is, therefore, to acknowledge the importance of such practices and accept that poultry will not necessarily be marketed at the economically optimum time.

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ABBREVIATIONS

ACI	Agrifood Consulting International
ASF	animal source foods
BRAC	Bangladesh Rural Advancement Committee (Bangladeshi NGO operating in several countries)
CP	Charoen Pokphand (a Thai company)
DFID	Department for International Development (United Kingdom)
DLS	Department of Livestock Services (Bangladesh)
FAO	Food and Agriculture Organization of the United Nations
H5N1	a subtype of the influenza A virus
HPAI	highly pathogenic avian influenza
HRI	hotels, restaurants and institutions
VHLSS	Viet Nam Household Living Standard Survey
WHO	World Health Organization of the United Nations