Scope and space for small-scale poultry production in developing countries

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SUMMARY
In recent years there has been growing recognition among the development community of the role of small-scale commercial poultry production in accelerating the pace of poverty reduction and reaching out to the poorest of the poor. There is also growing evidence to demonstrate the role of small-scale poultry in enhancing the food and nutrition security of the poorest households and in the promotion of gender equality. At the same time, the market and production context of poultry production has been changing rapidly over the last two decades. Rapid economic growth and urbanization in developing countries has resulted in fast expansion of industrial, large-scale, vertically integrated, poultry production, especially in Asia. Opportunities have also expanded for small-scale poultry enterprises, resulting from improved market access and infrastructure, and a preference structure that may still favour free-range birds and eggs. As a result, there has been increased market orientation even among small-scale poultry enterprises. These changes have brought large and small production systems into overlapping competitive space, which has created both challenges and opportunities.

These changes have raised concerns about the sustainability of small-scale poultry production systems due to: (i) intensified competition from large-scale producers who can exercise significant control over the poultry value chain (including concentrated holding of genetic stock of industrial poultry by a few transnational corporations); and (ii) the public perception that small units of production may be dangerous reservoirs of diseases, specially in the wake of recent outbreaks of highly pathogenic avian influenza (HPAI). Against this background, this paper attempts to summarize the nature of small-scale poultry production, and brings together evidence regarding the viability of small-scale poultry production in the context of the expansion of large-scale production characterized by substantial economies of scale, well-organized and integrated supply chains and the ability to respond to various types of risk.

The paper argues that the main challenge for small-scale/rural poultry is organizational, not technical. Based on a review of available evidence, the paper concludes that it is important to continue to promote village poultry as a means to promote household nutrition security and livelihood support, but that concerted efforts must be made to find organizational solutions to minimize public-health risks and provide appropriate extension support on issues such as disease prevention, predation and improving hatchability. Unfor-
Unfortunately, most government extension programmes in developing countries are not oriented towards addressing the needs of poor households. Some private-sector organizations (such as Keggfarms in India) have invested significantly in the development of fast-growing and more productive birds that do not require significant additional inputs, and have also made sufficient investment in developing the distribution network for the birds. However, extension and public health support systems remain a weak point, resulting in vulnerability to exogenous shocks. A well-orchestrated public policy response in support of small-scale poultry production is, therefore, required.

Key words: small, poultry, organizational, private, public

1 INTRODUCTION

Small-scale poultry production systems – in the form of small, semi- or fully scavenging, household flocks, or slightly larger more intensive units – have developed in a large number of developing countries around the world as a source of livelihood support for the rural poor. In recent years there has been growing recognition among the development community of the role of small-scale commercial poultry production in accelerating the pace of poverty reduction and reaching out to the poorest of the poor. There is also growing evidence to demonstrate the role of small-scale poultry production in enhancing the food and nutrition security of the poorest households and in the promotion of gender equality (Dolberg, in NDDP/FAO 2004a; NDDP/FAO, 2004b) (see also the Web site of the International Network for Family Poultry Development (INFPD) http://www.fao.org/ag/AGAInfo/subjects/en/infpd/).

The market and production context of poultry production has been changing rapidly over the last two decades. Rapid economic growth and urbanization in developing countries has resulted in fast expansion of industrial, large-scale, vertically integrated, poultry production, especially in Asia. Opportunities have also expanded for small-scale poultry enterprises due to improved market access and infrastructure, and a preference structure that may still favour free range birds and eggs (Conroy et al., 2005). As a result, there has been increased market orientation even among small-scale poultry enterprises. These changes have brought large and small production systems into overlapping competitive space which has created both challenges and opportunities.

These changes have raised concerns about the sustainability of small-scale poultry production systems due to: (i) intensified competition from large-scale producers who can exercise significant control over the poultry value chain (including concentrated holding of genetic stock of industrial poultry by a few transnational corporations); and (ii) the public perception that small production units may be dangerous reservoirs of diseases, especially in the wake of recent outbreaks of highly pathogenic avian influenza (HPAI). Governments are already beginning to emphasize the possible public-health risks associated with small-scale (especially household) poultry and are discounting their contribution to income and nutrition support in poor households. A number of informed observers and researchers have, however, argued that our understanding of the epidemiological role of the different sectors is poor, and that, therefore, the emphasis on small-scale production as a source of risk may be exaggerated or misplaced (Branckaert, 2006; Rushton et al., in FAO, 2005; Otte, in FAO, 2006a; Otte, et al., in FAO, 2007). Such developments can have serious impli-
cations for poor peoples’ livelihoods, as governments, in their search for politically feasible solutions, chose easier ways out.

This paper attempts to summarize the nature of small-scale poultry production, and brings together evidence regarding the viability of this type of poultry production in the context of expanding large-scale production characterized by substantial economies of scale, well-organized and integrated supply chains, and the ability to respond to various types of risk.

The paper is structured as follows. The first section presents a broad characterization of the stakeholders in small-scale commercial poultry production, including a brief analysis of the importance of this type of poultry production in different countries. The second section presents a few models of household poultry production that may be considered to represent good practice for small-scale commercial poultry production. The third section discusses emerging challenges for small-scale poultry producers and the policy response required; it ends with some concluding remarks.

It is important to point out that the paper is based primarily on documented literature that is in public domain. Although there is a moderate amount of literature now available on small-scale poultry production, there is unfortunately a real dearth of rigorous field-based evidence on aspects of ongoing structural change in global and regional poultry production. Without making the claim of being comprehensive, it is hoped that this paper can raise some pertinent questions and further the debate on the viability of small-scale poultry production systems.

2 CHARACTERIZATION OF SMALL-SCALE POULTRY PRODUCTION SYSTEMS

We begin with a broad overview of small-scale production systems. The Food and Agriculture Organization of the United Nations (FAO) has classified poultry production systems in four categories (sectors) based on the level of integration of operations, the marketing system and the level of biosecurity.\(^1\) The scope of the discussion in this paper is limited mostly to Sector 4, with occasional references to Sector 3.

In a large number of low-income countries, backyard/household production (Sector 4) is the largest system of poultry production and a critical source of income and nutrition for poor households. In Ghana, for example, rural poultry accounts for 60–80 percent of the national poultry population (Aning, in FAO, 2006b). Kushi et al. (1998) reported that in northeastern Nigeria more than 70 percent of rural households kept chickens.\(^2\) Information from Bangladesh and Nigeria, where detailed disaggregated data on the structure of poultry population is available, indicates that Sector 4-type production accounts for more than 90 percent of the poultry population. Even in countries with a relatively large modern industrial poultry production sector – India for example – free ranging chickens running around in the backyards of rural households are a common sight especially in areas with

\(^1\) Sector 1 refers to the large-scale integrated commercial systems with high commercial orientation and high biosecurity. Sector 4, at the other extreme, refers to village-level production systems with households raising few birds for their own consumption or for local markets, and minimal levels of biosecurity. Sectors 2 and 3 fall in between these two extremes depending on the level of market linkage and the level of biosecurity.

high incidence of poverty, and account for a very large proportion of the national poultry population. Similarly, in Viet Nam, approximately half the households keep chickens in the backyard, with an average flock size of about 16 birds (Otte, in FAO, 2006a). Guèye (1998) and Rushton et al. (in FAO, 2005) provide approximate figures for the proportional contribution of birds kept under small-scale family production systems to the total poultry population in selected African and East Asian countries. The figures are presented in Table 1.

The majority of producers in Sector 4 comprise poor households with almost zero asset base, and highly vulnerable and insecure livelihoods. In India, for example, household poultry has found special favour with the poor (landless, marginal and small farmers) and among tribals, scheduled castes and other backward caste communities (Shinde and Srivastava, 2006; Mandal et al., 2006). These households have traditionally relied on small-scale, low-cost, poultry production systems to supplement and enhance their livelihoods and to begin the process of asset accumulation to climb the poverty ladder. Todd (1999) inves-

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of national poultry population in family poultry production</th>
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<tbody>
<tr>
<td>Cameroon</td>
<td>70</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>80</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>73</td>
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<tr>
<td>Ethiopia</td>
<td>99</td>
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<tr>
<td>Gambia</td>
<td>90</td>
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<tr>
<td>Kenya</td>
<td>70</td>
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<td>Malawi</td>
<td>90</td>
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<tr>
<td>Mali</td>
<td>90</td>
</tr>
<tr>
<td>Nigeria</td>
<td>93</td>
</tr>
<tr>
<td>Senegal</td>
<td>70</td>
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<tr>
<td>Sudan</td>
<td>75</td>
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<tr>
<td>Togo</td>
<td>70</td>
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<tr>
<td>Uganda</td>
<td>80</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td>70</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>25–30</td>
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<tr>
<td>Cambodia</td>
<td>90</td>
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<tr>
<td>Indonesia</td>
<td>64</td>
</tr>
<tr>
<td>Lao People’s Democratic Republic</td>
<td>90</td>
</tr>
<tr>
<td>Thailand</td>
<td>10*</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>70</td>
</tr>
</tbody>
</table>

*In the early 1990s, almost 99 percent of chickens in Thailand were in the backyard production system (Kehran, 1999)

Sources: Guèye (1998); Rushton et al. (in FAO, 2005).
tigated the relationship between years of borrowing and the type of livestock assets the households invested in, and found that households in early phases of borrowing, especially landless households with an extremely poor asset base, invested in poultry before moving on to other livestock enterprises (Figure 1). Thus, the households used poultry enterprise as an entry point to take the first step towards capital accumulation and poverty alleviation.

In general in this system, the poultry are kept under low-input, low-output conditions and managed by the women and children of the household (Shinde and Srivastava, 2006; Sethi, 2007). Typically, flock size ranges between five and fifty birds, with the birds being raised under a traditional extensive scavenging system without special inputs in terms of feeding, housing or labour. Mainly non-descript birds are reared, although in some specific areas, local breeds and cross-breeds derived from them are reared. There is little or no linkage with input and output supply chains, and the chicks are usually obtained by hatching home-produced eggs for home consumption or for limited trade within the village. The production performance of these birds is relatively poor, with 40–60 eggs and about 1–1.5 kg meat at the end of the production cycle. The birds are generally free ranging, with few or no inputs being provided. Housing in these systems is rudimentary and mostly built with locally available materials such as wood, mud bricks, sugarcane stems, bamboo and cereal stovers.

Biosecurity measures are more or less absent; although some observers believe that the natural genetic diversity found in this system provides adequate resistance to diseases and the ability to withstand disease outbreaks – unlike intensive systems. Others, however, argue that the absence of biosecurity and disease-prevention measures poses a real threat to public health and livestock production in developing countries, and emphasize the need for a more stringent and formal regulatory and production systems. Losses caused by predators and diseases are high in this system. Global estimates of such losses are not available, but Sonaiya (1990) put forward an estimate of approximately 825 million for the number of chicks, guinea keats and ducklings dying each year in Africa as a result of diseases and predation.

Survival and growth in the extensive scavenging system is affected by competition for...
feed resources in the villages (household waste, material gathered from the environment, crop residues and fodder materials, by-products from local industries, etc). Thus, the scavenging system works well where there is abundance of biomass. However, in areas where there is scarcity of natural resources, poor rainfall, and high livestock density, competition with other species for natural resources/surplus material can be severe, making it difficult for poultry to grow and survive (both due to stunting and poor ability to escape predators). Roberts (1995) argues that starvation associated with dwindling biomass availability in villages is an important factor contributing to poor growth and survival in village poultry. Under these circumstances, simple interventions, such as supplementing feed using creep feeders, can significantly enhance the survival and growth of chickens. Similar arguments and results are presented by Sarkar and Bell (2006). Other reasons for low productivity include management system (leading to overburdening of chickens with a variety of tasks, such as brooding and rearing chicks, leaving little time for productive purposes) and variability in the quantity and quality of feed (Sonaiya, 1995; Goromela et al., 2006).

Estimates of the contribution of family poultry to overall household income vary widely. Rauen et al. (1990) reported that in the Dominican Republic, family poultry contributed approximately 13 percent of household income. Setioko (1997), on the other hand, estimated family poultry’s contribution to exceed 50 percent of total household income in the transmigrant farming system in East Kalimantan, Indonesia. A survey undertaken by Riise et al. (2005a) estimated monthly income level from poultry among households to be around 200–250 taka in Bangladesh. These authors further note that this average nominal figure has been constant for almost a decade, indicating that real income from poultry has fallen over time. They observe that with a relatively low profit margin and a downward propensity, smallholder poultry farming is mainly attractive to people with low opportunity costs, i.e. those who have limited opportunities for alternative income streams.

Irrespective of the direct contribution to household income, small-scale poultry is often recognized as an important contributor to overall livelihood security. A recent study of household poultry systems in India assessed main reasons for keeping poultry by rural households. The sample comprised three categories of households: small and marginal farmers keeping poultry within the home compound; small and marginal farmers, keeping poultry in a nucleated settlement; and landless people keeping poultry in and around the house. In Tamil Nadu, a state in southern India, generation of planned and regular income was identified as the main reason for poultry keeping, whereas in Rajasthan in northwestern India, poultry were almost wholly kept for household consumption3 (Conroy et al., 2005). Studies from other parts of the world have also reported similar results. For example, Aning (in FAO, 2006b) reports income supplementation and augmentation of domestic meat supply to be the primary reasons for keeping poultry in backyards in Ghana. A number of children from poor African households have reported that payment of their school fees is dependent on the income derived from their poultry micro-enterprises. Similarly, rigorous field studies of the impact of household poultry production in Bangladesh have found significant increases in consumption of several food items (not just meat and eggs) among the beneficiaries. Nielsen (1998) found that the control group had lower

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3 This is, at least in part, reflected in the larger aggregate market in southern India that results from a larger proportion of non-vegetarians in the population and relatively higher incomes.
initial consumption levels and significantly lower consumption increases during the project period. Further, Nielsen et al. (2003) found that starvation during the lean season declined by almost 75 percent in the case of poultry-rearing households. Similar results have been reported by a number of other authors.

Small-scale commercial poultry production farms, falling under Sector 3, are generally characterized by medium-sized flocks (ranging from 50 to 500 birds) of local breeds or cross-bred stock. Farmers usually provide housing structures made of local materials, purchase part of their feed, use vaccines and veterinary services whenever available, and may even have minimal biosecurity systems in place. Such systems are more prevalent in urban and peri-urban areas; output is usually sold to nearby urban centres, with varying degrees of organization in the marketing system. While some poultry growers have relatively formal marketing contracts, others usually rely on verbal contracts. Such contracts are restricted to sale-purchase agreements and have no effect on the choice of technology, input supplies or any other service support. These systems usually serve as the transition phase between Sector 4 and large-scale commercial systems characterized by large vertically integrated production and processing units and more formal contracts with farmers growing between 1 000 and 20 000 chicks.

Both Sectors 3 and 4 have a special place in the economy of developing countries, as they contribute towards poverty alleviation by drawing under-utilized labour resources into production. While most studies acknowledge the direct impact on income generation and nutrition security, it is the impact of the subsequent multiplier effect – with farmers spending their increased income on the goods produced in the non-tradable, non-agricultural sector – that contribute even more to poverty reduction (Mellor, in NDDP/FAO, 2004c). However, these units do face significantly higher transaction costs, and as such require policy support in terms of physical infrastructure and technology transfer through extension.

3 COMMERCIAL VIABILITY, SUPPLY CHAIN AND COMPETITION WITH LARGE OPERATORS

A large proportion of household poultry production (Sector 4) is still subsistence oriented and thrives on the absence of alternative supply sources for animal protein and a lack of alternative livelihood opportunities. Traditional backyard poultry systems with low input and low output are usually characterized by a rudimentary supply chain of input suppliers and traders. A large proportion of farmers allow the hens to hatch most of the eggs produced; surplus (mostly male) birds are consumed within the household, and there is very little market linkage. Given very low productivity and low levels of marketed surplus, supply chains are difficult to build and sustain. Semi-commercial systems, on the other hand, do have market linkages on both the input and output sides, but the chains remain informal and coordination of various activities in the chain is largely based on personal contacts.

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Mellor (in NDDP/FAO, 2004c) notes that the rural non-farm sector, which includes about half the rural population, produces goods that for quality and transaction-cost reasons cannot be sold in international markets. Thus, the expansion of the rural non-farm sector critically depends on growth in local demand. Growth in local demand comes from growth in the farm sector (including livestock). Given that demand for the goods and services produced by the rural non-farm sector is highly income elastic, growth in the farm sector creates a multiplier effect which contributes significantly towards poverty reduction – not just that of farm households, but also that of other households on whose services these households depend.
Studies that have examined financial aspects of household poultry production generally report a favourable cost–benefit ratio. For example, Parthsarthy (1996) studied units of 100 layers in central India and reported a net profit of Rs 10 per 100 eggs. Another study (Johri et al., 2002), conducted in 18 villages in northern India where crosses of exotic with indigenous breed were distributed and chickens reared as scavenging-type backyard units, reported a benefit–cost ratio of 3:1. Several studies of small poultry units conducted by banks in India have indicated a profit of Rs 0.80 to Rs 1.00 per layer per month and Rs 1 to Rs 2 per broiler depending upon the market demand and the efforts made by the farmers to find a market for direct sale of their produce. “Back of the envelope” calculations from Viet Nam suggest an annual rate of return to capital of more than 700 percent (Otte, in FAO, 2006a).

Most such studies have, however, examined backyard poultry production in isolation from the larger changes in global and national poultry production. While it is useful to study the structure of costs and benefits arising from small-scale poultry production, the question remains whether these systems can remain viable at a commercial scale in the wake of the expansion of large-scale poultry production.

In the absence of sustained commercial viability, small-scale poultry production will not provide a viable mechanism for asset accumulation and poverty alleviation. We did not find any study addressing the question of the commercial viability of small and large-scale production in overlapping competitive space. Most practitioners, however, continue to maintain that village/backyard poultry is commercially viable due to significant savings on feed costs and distinct preferences for meat and eggs from local birds, resulting in significant price mark-ups over and above broilers and industrial eggs. In some cases, the price mark-up has been reported to be as high as 100 percent. Observers and practitioners also maintain that markets for the product of household and commercial systems are highly segregated and that it is unreasonable to expect that the two will come into overlapping competitive space in the foreseeable future.

According to this view, markets for village poultry are limited to neighbourhood consumers and to rural and small urban market clusters, whereas commercial poultry is mostly focused on medium- to large-scale urban markets with sufficient scale and growth opportunities; this segregation is expected to continue to provide the necessary space for small-scale poultry to coexist with large-scale operators. While the argument may hold in some countries, there are also examples of situations in which large units have displaced small-scale production. In Thailand, for example, the share of small-scale production has gone from over 95 percent a couple of decades ago to less than 10 percent now. Indeed, even the native chickens are no longer limited to backyard production by rural households and are beginning to be produced on a large commercial scale. Export of native chickens is also being contemplated by commercial native chicken producers (Change, 2004). Thus, some native products that have been immune from foreign and large-scale competition may no longer remain so in future. Modern technology, improving physical infrastructure and aggressive marketing strategies have the potential to penetrate any market as long as there is sufficient demand and profits to be made. It appears that smallholder poultry can survive only as long as markets remain segmented.

The question of “overlapping” versus “segmented” markets for small and large produc-
ers is an interesting one, as it will define the role of public policy in protecting, promoting and expanding the market space for small producers. In areas with high poverty incidence, poor market linkages and where markets for small and large producers are highly segmented, developing market linkages can pay rich dividends in terms of enhancing poor peoples’ livelihoods. But, this can also result in new competitive pressures leading to exclusion of smallholders from emerging and existing markets if they are not adequately equipped to meet the complex and dynamic demands of emerging markets. In regions where market linkages are already fairly well developed, the public policy challenge is to promote institutional innovations that can integrate small producers into the value chain (by helping them to meet food-quality and safety standards) without imposing disproportionate transactions costs. A number of such models – farmer cooperatives, producer companies, self-help groups, contract farming – have been successfully tried across the globe and have delivered good results in terms of integrating small producers into the value chain. In addition, this will also require market reform policies that encourage smallholder investment and discourage differential subsidies to large-scale operations, and provision of public goods such as research, extension and infrastructure.

The debate about “large” versus “small” notwithstanding, a number of development projects and private agencies have recognized the potential offered by small-scale poultry, either as a means of breaking the vicious cycle of poverty or as a business opportunity offered by the bottom of the poverty pyramid. Most these experiences have involved attempts to provide the institutional architecture and technological support needed to enhance productivity and to provide the necessary market linkage and service support. While there is some variation in the models across projects and organizations, most of these initiatives are geared towards ensuring a steady supply of chicks, feed and credit, as well as providing forward linkages with the market. These experiences offer important lessons for adapting/promoting institutional innovations in other parts of the world. In this paper we discuss two such initiatives from South Asia – the DANIDA, International Fund for Agricul-

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**FIGURE 2**

Elements of the Bangladesh poultry model

![Diagram showing the elements of the Bangladesh poultry model](image)

*Note: DOC = day-old chicks.
Source: Dolberg in NDDP/FAO (2004a).*
tural Development (IFAD) and Asian Development Bank (ADB)-supported household poultry model in Bangladesh, and the Keggfarms-supported Kuroiler model in India.

4 THE BANGLADESH POULTRY MODEL: A QUICK OVERVIEW

The Bangladesh poultry model – perhaps the most widely known chicken-based development experience – evolved out of a food aid project supported by the World Food Programme and the Department of Livestock Services (DLS). BRAC (Bangladesh Rural Advancement Committee) joined the initiative partly to provide credit support; they included the poultry model in their Rural Development Programme during the years 1983 to 1986. Three smallholder livestock development projects, SLDP1, PLDP and SLDP-2, were all designed based on this model.

The model has adapted and evolved, internalizing the lessons learned from within and from similar initiatives elsewhere. In principle, the model combines packages of technical training, credit and market linkages; it emphasizes promotion of backyard poultry to target the poorest female-headed households. The model also emphasized promotion of individual entrepreneurs such as feed sellers, and egg collectors. The approach was to identify target-group households with less than half an acre (approximately 0.2 ha) of land, organize village groups, provide them with training, credit and a supply of inputs, and undertake necessary supervision and monitoring. The model consisted of an integrated system of production, marketing, input-supply and service-support subsystems. Each component of the system engaged poor households and provided necessary organizational support. Most of the activities were carried out by the women themselves. The key players in the system included: (i) poultry extension workers – who provided vaccination, some basic treatment, and advice on poultry management; (ii) poultry rearers – the target group for the project, who reared layers and broilers in their backyards; (iii) chick rearing units – which reared day old chicks to six weeks; (iv) feed sellers – who provided supplementary feed; and (v) egg collectors who provided the link with market.

The model has been documented extensively in the literature. Therefore, this paper avoids repeating specific details. Essential elements of the model are illustrated in Figure 2 and Box 1. Evaluation studies of household poultry projects in Bangladesh and other countries have demonstrated that the approach has a pro-poor bias, has a significant impact on the economic and nutritional status of the poor – especially women and girls, and has a favourable benefit–cost ratio. For example, Haque (1996) reported a benefit–cost ratio of 3.1:1 at the level of the household, and close to 4:1 for the key rearer (Table 2). Encouraged by these results, new pilots based on the model have been tested in a number of countries including Benin, Burkina Faso, Eritrea, Kenya, Malawi, Senegal, South Africa, the United Republic of Tanzania, Viet Nam and Zimbabwe. Studies from various parts of the world have also shown that household poultry production has a much greater outreach to the poorest households and can therefore be an effective targeting tool.

Critics have raised questions about the sustainability of the Bangladesh model after withdrawal of donor support (see for example, Riise et al., 2005a). Still, it remains beyond doubt that the experience has demonstrated the potential offered by smallholder poultry to enhance the livelihood security of the poor. Suffice it to say that the sustainability of the model is an area of genuine concern, which in turn depends on the economic environment and support systems.
BOX 1

Beneficiaries in the Bangladesh poultry model supply chain

**Model Breeder** – Small low-cost parent farms with a breeding stock of about 50 Fayoumi hens and the requisite number of RIR cocks received either from the project site or directly from government poultry farms. These were raised under a semi-scavenging system with balanced rations for producing high-quality fertile eggs for hatching. These eggs were to be sold to mini hatcheries and to key rearers who would hatch them under local broody hens.

**Mini Hatchery** – Small low-cost hatcheries operated with solar energy and kerosene stove. Each hatchery had a capacity to hatch 1,000 chicks per month. The day-old chicks were sold to the chick rearers and key rearers.

**Chick Rearer** – Small rearing farms with a capacity of 200–300 chickens per batch and four batches per year. The chickens were reared in low-cost houses from one day old to eight weeks of age. These chickens were fed with balanced feed and sold to key rearers at about eight weeks of age.

**Key Rearers** – Small farms with about five cross-bred layers for the production of table eggs. The hens were kept under semi-scavenging conditions with 30–70 percent supplementary feed. Additionally, four local hens were kept to hatch eggs, preferably from model breeders, and rear chicks from mini hatcheries.

**Poultry Workers** – A number of poultry workers were trained to vaccinate the birds to control diseases. The vaccine was supplied free by the DLS through the Area Office of BRAC, and the poultry workers charged a vaccination fee for providing the service.

**Feed Seller** – The feed sellers were trained to mix feed or sell pre-mixed feed as supplementary feed for the poultry.

### TABLE 2

<table>
<thead>
<tr>
<th>Activity</th>
<th>Benefit-cost ratio</th>
<th>Percent poverty alleviation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chick rearer</td>
<td>1.29:1</td>
<td>31.67</td>
</tr>
<tr>
<td>Key rearer</td>
<td>3.86:1</td>
<td>28.59</td>
</tr>
<tr>
<td>Model rearer</td>
<td>1.52:1</td>
<td>32.50</td>
</tr>
<tr>
<td>Mini hatchery</td>
<td>1.60:1</td>
<td>00.00</td>
</tr>
<tr>
<td>Feed seller</td>
<td>1.06:1</td>
<td>25.00</td>
</tr>
</tbody>
</table>

* Percent households below the poverty line without the model (control) — percent households below the poverty line in model area.

5 THE KUROILER: A BIRD OF HOPE?

Faced with increasing competition from large-scale integrated transnational poultry production units, Keggfarms – a small-scale company on the outskirts of New Delhi – decided to venture into the rural market and exploit the potential offered by backyard poultry, for its own survival. After an intense study of poultry-husbandry practices in rural India, the company decided to breed a dual-purpose bird which would be as hardy as a local village bird, but would nonetheless produce many more eggs and grow significantly faster. In addition, it had to retain the feather colours for camouflage, be sufficiently agile to run away from predators, and be as disease resistant as the local birds.

Keggfarms launched the “Kuroiler” = “Kegg + Broiler” in 1993 and sold more than a million day-old chicks in the first year. By 2005–2006, the number had already reached the 14 million – a phenomenal annual growth rate of almost 22 percent sustained for more than a decade. The bird completely transformed the company in terms of geographical presence, clientele, distribution channel and so on. It shifted its operations from agriculturally prosperous areas to areas with a high incidence of poverty and vulnerable livelihoods. The company which had been in the commercial broiler business for more than three decades, completely phased out broilers and layers by 2005/2006 (Figure 3). Most important of all, however, the Kuroiler emerged as the “bird of hope” for hundreds of thousands of extremely poor families with little or no other support for sustaining their livelihoods.

Estimates of how far the Kuroiler has travelled are imprecise at best. Recent reports (DVAHEE, 2006) suggest that the Kuroiler has already touched the lives of about a million households in some of India’s poorest regions. Kegg supplies its day-old chicks to 1 500 mother units across the states where it operates – directly or through its appointed deal-

5 The “K” in the Kuroiler also derives from “curry”, the generic term for spice mix and the style of Indian cooking. Due to the hardy character of Kuroiler meat, it takes a little longer to cook, allowing the “curry” to permeate deep inside the meat, giving it a distinct taste and aroma specially suited to the Indian palette.
ers/suppliers. The mother units are operated by local entrepreneurs who keep anywhere between 300 and 2,000 birds at one time. They rear the day-old chicks up to about three weeks of age, vaccinate them if necessary, and then sell them to vendors (pheriwallas). Pheriwallas then travel to villages and sell the chicks to households at the price of about Rs 20 (US$0.5) per chick. Typically, the mother unit entrepreneur and the pheriwallas make a profit of approximately Rs 3 per bird. Finally, the rural households make Rs 250–300 (US$6.5–7.5) per month as supplementary income.\(^6\) They trade in the eggs and also sell the birds for meat (see Figure 4 for a schematic representation of Kegg’s distribution channel).

As Kuroiler day-old chicks are raised to two to four weeks of age at the mother units before being sent to village households, the husbandry, nutritional and health practices observed at mother units play an important role in the efficiency of these units and the performance of chicks down the chain. Thus, operators of mother units need training in basic brooding, husbandry and health practices. Keggfarms provides this training, either through its field staff – most of whom have prior husbandry exposure – or through structured courses in mother-unit management. When needed, Keggfarms sends experienced hus-

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\(^6\) Measured in purchasing power parity dollars, monthly income from Kuroiler raising will be approximately 32–35 dollars.
bandry personnel from its units to advise field staff on any problems that may have arisen. Additionally, field staff also provide commercial guidance to mother units, when required, with regard to sourcing/quality of feed, medicine, vaccines, market knowledge, etc.

Because of the fragmented and remote nature of beneficiary households, Keggfarms is unable to maintain any active contact or out-reach to the village households that rear poultry from three weeks onwards. This represents a critical gap, and provides an important avenue for public–private partnership related to the public-health and poverty-reduction implications of household poultry. Although this remains a critical gap, the fact that Kuroilers are performing efficiently in village conditions is now well demonstrated by the ongoing and increasing demand for them. As a policy, Keggfarms does not supply day-old chicks to villages, as this would result in huge “infant” mortality. When birds are sent at two to four weeks of age, the liveability improves dramatically.

Sustainability of the Kuroiler model derives from the interdependence of livelihoods at all levels – like the Bangladesh model in the ideal case. Sustainability of pheriwallas depends on sustainability at household level. Sustainability of mother units depends on pheriwallas; finally the sustainability of Keggfarms depends on that of all those in the chain. Unlike externally supported rural poultry projects, everyone in the Kuroiler chain is independent, and yet their livelihoods are dependent on each other. This characteristic of the Keggfarms model prompted the jury of “Business India Innovation Awards” to note that “[The business is] sustainable because it has created rural entrepreneurs. A great deal of scalability happens when such entrepreneurship is created.”

With regard to the threat of competition from larger players and other risks posed by public health and biosecurity considerations, the company believes that given the very different nature and characteristics of large-scale commercial and small-scale household production systems, the two systems are likely to continue to operate in segmented markets. Further, it is argued that the public-health risks posed by large-scale commercial systems are far greater than household-based village poultry production due to inherent resistance to diseases, biodiversity provided by the mixed gene pool in local birds, and the scattered nature of production; this minimizes, if not eliminates, the risk of large-scale outbreaks. Effective control measures taken by the Government of India in rapidly containing the recent outbreaks (instead of blaming backyard poultry production) demonstrate that well-orchestrated public–private partnership in disease prevention and control can contribute substantially towards minimizing public health risks emanating from small-scale scattered poultry production (see also Otte et al., in FAO, 2006c and FAO, 2007).

No systematic study has yet analysed the economic and livelihood impact of the Kuroiler. However, crude “back of the envelope” calculations suggest that a household unit with approximately 20 birds can get additional cash income of Rs 500 per month. For an agricultural labourer earning anywhere between Rs 1000 to Rs 1500 per month, this additional cash income is an immense support. Similarly, the pheriwalla, with an initial

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7 Kegg Farms was recently conferred an “Innovation for India” award in Social (Business) category (http://www.businessworld.in/content/view/729/784/).

8 A detailed household survey of households, mother units, pheriwallas, and selected dealers and suppliers was underway
capital outlay of a bicycle and a basket to hold the chicks, and a working capital of about Rs 2,000 to purchase the chicks, could generate a net profit of about Rs 6,000 per month—more than twice that of a family living below the poverty line.

6 FUTURE CHALLENGES FOR SMALLHOLDER POULTRY AND THE POLICY RESPONSE

Most backyard poultry production systems have little in the way of linkages with formal value chains. But with retailing undergoing rapid transformation in a large number of developing countries, especially in Asia, there is potential and opportunity for linking these small backyard producers to larger markets via more formal value chains. However, that would also bring small producers and industrial poultry into more overlapping competitive space, raising questions about cost competitiveness and sustainability. This would also perhaps raise costs of complying and competing in the increasingly safety- and quality-conscious market. In such a context, as noted above, the big policy question pertains to the integration of small-scale commercial poultry production systems into expanding value chains and the required policy interventions—such as promotion of farmer organizations (cooperatives, producer companies, contract growers, etc.)—to increase opportunities for small producers and to minimize pains during transition to large-scale poultry production. Recent studies have shown encouraging results with regard to private companies developing newer models to integrate small producers into the value chain instead of displacing them.

The main challenge for small-scale/rural poultry is, therefore, organizational not technical. It is important to continue to promote village poultry to contribute to household nutrition security and livelihood support, but concerted efforts must be made to find organizational solutions to minimize public-health risks and provide appropriate extension support on issues like disease prevention, predation and improving hatchability. Unfortunately, most government extension programmes in developing countries are not oriented towards addressing the needs of poor households. Further, although there are a large number of NGOs that are much closer to the people, development of household poultry enterprise does not appear to be on the agenda of many of these organizations. Similarly, some private-sector organizations (such as Keggfarms in India) have invested significantly in the development of fast-growing and more productive birds that do not require significant additional inputs, and have also made sufficient investment in developing the distribution network for birds. However, extension and public health support systems continue to be a weak point, increasing vulnerability to exogenous shocks.

In this context, significant investment in capacity-building and empowerment of village communities can promote change and technology adoption, and establish the foundation for village-based, farmer-to-farmer, livestock extension mechanisms. Many minor services like vaccination of day-old chicks and timely protection against poultry diseases are inaccessible to the poorest groups (especially in marginal areas); several rounds of vaccinations during the year are possible only if the relevant skills are available among farmers themselves. It would therefore be essential to impart skill training to farmers to promote self-help and

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9 At the time of writing this paper.
self-reliance for individual and community benefit. Thus, the real challenge appears to be
to develop functioning partnerships between community-based animal health workers,
NGOs, private-sector enterprises and government animal health support systems.

The bigger question, of course, is how does one promote small-scale poultry, and what
sort of policy and organizational support may be necessary to nurture these enterprises? In
areas where there is already a good tradition of backyard poultry, the requirement may
be to systematically identify constraints and facilitate provision of support services. This, in
turn, requires study of the entire production system, market chain, profitability and suit-
ability of resources. It is also important to focus research on the aspects of the market and
institutional environment that are changing, and on how these changes are likely to affect
the poor. Once some understanding is established in this respect, it will be necessary to ini-
tiate a dialogue with influential agencies to put in place the required support mechanisms
while ensuring that the process is interactive and inclusive. It is important that small-scale
poultry is seen as an integral item in the menu of livelihood options, both by practitioners
and policy-makers.

Where there is no tradition of household poultry, it is perhaps better to start in areas
where there is already some awareness of the activity. Organizational support for organiza-
tions that have local credibility and are already engaged in livelihood-support activities will
also be critical. Once again, additional efforts may be required to introduce smallholder
poultry as an additional option for livelihood support. What needs to be understood in this
case, however, is that poultry may not be the only entry point for poverty alleviation. There
are certainly other entry points available; it is important to establish a menu of entry points,
and identify those that are most appropriate for the specific circumstances.

**Role of the government and other stakeholders:** There is poor awareness among
governments of the potential of smallholder poultry in supporting poor peoples’ liveli-
hoods. That is one reason why government support for promotion of this activity is often
poor. It is, therefore, necessary to raise awareness about this option while ensuring that the
government does not overwhelm and crowd out others. In this context it is also necessary
to identify organizations that have already established some trust and credibility with local
communities, and use these organizations as a catalyst for promoting action. At the same
time, it is necessary to nurture powerful alliances, including academia, which can discuss
smallholder poultry activities and can influence the opinion of government and the political
establishment. International agencies such as FAO, and the United Kingdom’s Department
for International Development (DFID), can aid in this process by providing credibility to
activities such as those promoted by BRAC and Keggfarms.

**Need for a common platform:** There is a need to organize a series of meetings and
workshops to sensitize decision-makers, politicians, bureaucrats, technocrats, policy-mak-
ers and planners of pro-poor programmes. This sensitization must be based on hard data.
It is also necessary to involve people who write Poverty Reduction Strategy Papers, Human
Development Reports, policy documents, etc. International organizations such as FAO with
a mandate to promote global exchange of information, collection, analysis, interpretation
and dissemination of data, and national and international technological, social and eco-
nomic research, can play a significant role in this context.

**Capacity-building:** Organization of support services and input supply is a critical ele-
ment of any model that attempts to link smallholders with output markets. This requires support from people with strong organizational skills. Thus, appropriate capacity-building measures must become an integral part of interventions that design and implement livelihood-support options such as backyard poultry. Successful projects such as those implemented by BRAC and Keggfarms can be a resource for this training. Similarly, government and NGOs can provide technical training.

**Linking with microcredit:** Microfinance organizations and self-help groups may help with credit to finance important expenditures. Establishment of strong linkages with microcredit organizations must, therefore, be seen as an integral component of all livelihood-support interventions, including household poultry. Besides facilitating access to credit, credible microcredit organizations and self-help groups can also help rationalize interest rates.

**Data and analytics:** Finally, the database pertaining to poultry production is extremely weak and seriously hampers the analytical work necessary to support decision-making. There are significant discrepancies even in the basic production and price data put out by the government, private agencies, and international organizations. Generation of accurate data is critical for informed policy decisions, and concerned agencies should seriously deliberate the possibility of creating a common information system for livestock products, including poultry.

**REFERENCES**


DVAHEE. 2006. Pilot study on potentialities of Kuroiler birds among poultry farmers in Murshidabad district of West Bengal. Kolkata, India, Department of Veterinary and Animal Husbandry Extension Education, West Bengal University of Animal and Fishery Sciences.


