

## 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 units, specially in Asia. Opportunities have also expanded for small scale poultry enterprises due to improved market access infrastructure and a preference structure that might 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 in 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 multinational 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 HPAI. In the light of that background, this paper attempts to summarize the nature*

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*of small scale poultry production across nations and brings together some evidence on the viability of small scale poultry production in the wake of expanding large scale production systems with substantial economies of scale, well organized and integrated supply chains and the ability to respond to various types of risks.*

*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 to contribute towards 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, improving hatchability, etc. Unfortunately most government extension programs in the developing countries are not oriented towards addressing the needs of poor households. While some private sector organizations (such as Kegg Farm in India) have invested significantly towards developing fast growing and more productive birds without requiring significant additional inputs, and have also made sufficient investment for developing the distribution network for birds, extension and public health support systems continue to be the weak point, making them vulnerable to exogenous shocks. This requires a well orchestrated public policy response in support of small scale poultry production.*

## Scope and Space for small scale poultry production in developing countries

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Small scale poultry production systems—either in the form of small semi- or fully scavenging household flocks or a 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 in enhancing the food and nutrition security of the poorest households and in the promotion of gender equality (Dolberg, 2004; Ahuja, 2004, INFPD, <http://www.fao.org/ag/AGInfo/subjects/en/infpd/>).

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 units, specially in Asia. Opportunities have also expanded for small scale poultry enterprises due to improved market access infrastructure and a preference structure that might 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 in 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 multinational 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 HPAI. Governments are already beginning to emphasise the possible public health risks from small scale (especially household) poultry

and are discounting their contribution towards income and nutrition support in poor households

A number of informed observers and researchers on the other hand have argued that understanding of the epidemiological role of the different sectors is poor and the hence the identification of sources of risks may be either exaggerated or misplaced (Branckaert, 2006; Rushton *et al*, 2005; Otte, 2006, Otte, *et al*, 2007). This can have serious implications for supporting poor peoples' livelihoods as governments, in their search for politically feasible solutions, chose easier ways out. In the light of that background, this paper attempts to summarize the nature of small scale poultry production across nations and brings together some evidence on the viability of small scale poultry production in the wake of expanding large scale production systems with substantial economies of scale, well organized and integrated supply chains and the ability to respond to various types of risks.

The structure of this paper is as follows. The first section focuses on broad characterization of the stakeholders in small scale commercial poultry production including a brief analysis of the importance of small commercial poultry production in different countries. The second section then provides a characterization of a few models of household poultry production that may be considered good practices for small scale commercial poultry production. The third section turns towards emerging challenges for small scale poultry producers and the policy response and ends with some concluding remarks.

It is important to point however that the paper is based primarily on the documented literature in public domain. Although there is moderate amount of literature now available on small scale poultry production, unfortunately there is 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 the paper can raise some pertinent questions to further intensify the debate on viability of small scale poultry production systems.

### ***Characterization of small- scale poultry production systems.***

We begin with a broad overview of the small scale production systems. FAO has classified poultry production systems in four categories (sectors) based on level of integration of operations, marketing system and bio-security<sup>2</sup>. 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 national poultry population (Aning, 2006). In North-eastern Nigeria Kushi *et al* (1998) reported that more than 70 percent of rural households kept chickens<sup>3</sup>. 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 chicken running around in backyards of rural households are a common sight especially in areas with high incidence of poverty and account for a very large proportion of the national poultry population. Similarly, in Vietnam, approximately half the households keep chickens in the backyard with an average flock size being about 16 birds (Otte, 2006). Gueya (1998) and Ruston *et al* (2005) provide some figures on the approximate proportion of total poultry population made up by birds kept under small-scale family production systems in selected African and East Asian countries. These 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 favor with the poor (landless, marginal and small farmers) and tribals, scheduled castes and other backward caste communities (Shinde & 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 established the

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<sup>2</sup> Sector 1 refers to the large scale integrated commercial systems with high commercial orientation and high bio-security systems. Sector 4, on the other extreme refers to the village level production systems with households raising few birds for own consumption/local market and minimal level of bio-security. Sectors 2 and 3 fall in between these two extremes depending on the level of market linkage and level of bio-security.

<sup>3</sup> Cited in Sonaiya (2007).

relationship between years of borrowing and the type of livestock assets the households invested in and found that the households in early phases of borrowing, specially the landless households with extremely poor asset base before moving on to other livestock enterprises (Figure 1). Thus, the households used poultry enterprise as an entry point to take that first step towards capital accumulation and poverty alleviation.

Table 1: Proportion of National Poultry Flock Accounted by Family Poultry

Country	Percent of national poultry population in family poultry
Cameroon	70
Central African Republic	80
Cote d'Ivoire	73
Ethiopia	99
Gambia	90
Kenya	70
Malawi	90
Mali	90
Nigeria	93
Senegal	70
Sudan	75
Tanzania	70
Togo	70
Uganda	80
Zimbabwe	25-30
Cambodia	90
Indonesia	64
Lao PDR	90
Thailand	10*
Vietnam	70

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

Source: Gueye (1998); Rushton *et al*, 2005.

In general in this system the poultry are kept in low-input and low output system managed by women and children of the household (Shinde & Srivastava, 2006, Sethi, 2007). Typically, flock size ranges between 5 and 50 birds and the birds are raised under a traditional extensive scavenging system without special inputs in terms of feeding, housing or labor. Mainly non-descript birds are reared although in some specific

areas, local breeds and crossbreeds derived from them are reared. There is little or no linkage with input and output supply chain and the chicks are usually obtained by hatching home produced eggs for home consumption or for limited trade within 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. Housing in these systems is rudimentary and mostly built with locally available materials such as wood, mud bricks, sugarcane stems, bamboo and cereal stovers. Bio-security measures are more or less absent although some observers believe that the natural genetic diversity encompassed in this system provides adequate resistance to diseases and the ability to withstand disease outbreaks unlike intensive systems. Others however argue that absence of bio-security and disease prevention measures pose 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 due to predators and diseases are high in this system. Global estimates of such losses are not available but one estimate suggests that approximate 825 million chicks, guinea keats and ducklings in Africa die each year as a result of diseases and predators (Sonaiya, 1990b).

Survival and growth in extensive scavenging system is affected by competition for feed resource base in the villages (which includes household waste, material from environment, crop residue and fodder materials, by-products from local industries, etc). Thus, scavenging system works well where there is abundance of biomass base but in areas with scarcity of natural resources and poor rainfall (dry and arid regions, for example), high density of livestock, the competition for natural resources/surplus material with other species can be severe, making it difficult for poultry to grow and survive (both

**Figure 1: Illustration of sequence of investments**

Assets of Livestock							
				milch cow			
			bullock				
		cow					
poultry							
landless		house	share crop	land lease	land		
Years of borrowing							

Source: Todd, 1999



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 through creep feeders can significantly enhance the survival and growth of chickens. Similar arguments and results have been put forward by Sarkar and Bell (2006). Other reasons for low productivity include management system (leading to overburdening of chicken with a variety of tasks such as brooding and rearing chicks leaving little time for productive purposes) and variability in quantity and quality of feed (Sonaiya, 1995, Goromella, *et al*, 2006).

Estimates of contribution of family poultry to overall household income vary widely. Rauen *et al* (1990) reported that in 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. Survey undertaken by Riise *et al* estimated monthly income level from poultry among households to be around 200-250 taka in Bangladesh. They further note that this average nominal figure has been constant during 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 system 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 South India, generation of planned and regular income, was identified as the main criteria for poultry keeping whereas in Rajasthan in North-West India, poultry were almost wholly kept for household consumption<sup>4</sup> (Conroy *et al*, 2005). Studies from other parts of the world have also reported similar results. For example, Aning (2006) reported income supplementation and augmentation of domestic

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<sup>4</sup> This, at least in part, reflected larger aggregate market in South India due to larger proportion of non-vegetarian population and relatively higher incomes

meat supply as the primary reasons for keeping poultry in the backyard 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 the consumption of several food items (not just meat and eggs) among the beneficiaries. Nielsen (1998) found that the control group had lower initial consumption levels and significantly less consumption increases during the project period. Nielson (2003) further found that starvation during lean season reduced by almost 75 percent in the case of poultry rearing households. Similar results have been reported by a number of other studies.

Small scale commercial poultry production farms falling under Sector 3 are generally characterized by farmers raising 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 bio-security systems in place. Such systems are more prevalent in urban and peri-urban areas with output from these systems usually sold to nearby urban centres with varying degrees of marketing systems in place. 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 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 1000 to 20000 chicks.

Both, systems 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—meaning farmers spending their increased income on the goods produced in non-tradable, non-agricultural sector is what contributes even more in reducing poverty (Mellor, 2004)<sup>5</sup>.

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<sup>5</sup> Mellor (2004) notes that the rural non-farm sector which includes about half the rural population produces goods that for quality and transaction cost reasons are not salable in international markets. Thus, the expansion of rural non-farm sector critically on the growth in local demand. The growth in local demand on the other hand comes from the growth in farm sector (including livestock). Given that the demand for the goods and services from the rural non-farm sector is highly income elastic, the growth in farm sector creates a multiplier effect which contributes significantly towards

But, these units do face significantly higher transaction costs and as such require policy support in terms of physical infrastructure and technology transfer through extension.

### ***Commercial viability, supply chain and competition with large operators***

A large proportion of household poultry (sector 4) is still subsistence oriented and thrives on absence of alternative supply sources for animal protein and 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 and consume surplus, mostly male, birds within the household with very little market linkages. Given very low productivity and low scale 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 side, but the chains remain informal and coordination of various activities in the chain largely based on personal contacts.

Studies that have examined financial aspects of household poultry production generally report a favorable 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. In another study conducted in the 18 adopted villages in north India where the crosses of exotic with indigenous breed were distributed and chicken reared as scavenging type back yard units, Johri (2002) reported a benefit -cost ratio of 3:1. Several studies on 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 1-2 per broiler depending upon the market demand and the efforts made by the farmers for finding a market resource for direct sale of their produce. Back of the envelope calculations from Vietnam suggest annual rate of return to capital at more than 700 percent (Otte, 2006

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

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poverty reduction, not just that of farm households, but also other households on whose services these households depend.

large scale poultry production. For in the absence of sustained commercial viability, these could not be a source of providing viable mechanism of asset accumulation and poverty alleviation. We did not find any study addressing the question of commercial viability of small and large scale 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 hundred percent). Observers and practitioners also maintain that markets for the product of household and commercial system are highly segregated and it is unreasonable to expect that the two will come into overlapping competitive space in the foreseeable future. According to them, markets for village poultry are limited to neighborhood consumers to rural and small urban market clusters whereas commercial poultry has mostly focused on middle to large scale urban markets with sufficient scale and growth opportunities and this segregation is expected to continue to provide the necessary space for small-scale poultry to coexist with large scale operators.

While that may be true in some countries, there are also examples where large units have displaced small-scale production. In Thailand, for example, the proportion 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 but are beginning to be produced on a large commercial scale. Exportation of native chickens is also being contemplated by commercial native chicken producers (Change 2004). Thus, some native products that may 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 can have the potential of penetrating any market as long as there is sufficient demand and profits to be made. What appears -\_\_ that smallholder poultry can survive only as long as markets remain segmented.

The question of 'overlapping' versus 'segmented' markets for small and large producers is an interesting one for that will define the role of public policy in protecting, promoting and expanding the market space for small producers. In areas, with high poverty incidence with poor market linkages and where markets for small and large producers are highly segmented, developing market linkages can pay rich dividends towards 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 equipped adequately to the complex and dynamic demands of emerging markets. In regions where market linkages are already fairly well developed the public policy challenge would be to promote institutional innovations that can integrate small producers into the value chain (by helping them 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 small producer integration in the value chain. In addition, this will also require market reform policies that encourage smallholder investment and discourage differential subsidies to large-scale operations, provision of public goods such as research, extension, and infrastructure, etc

The debate of '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 poverty pyramid. Most these experiences have attempted to provide the institutional architecture and technological support to enhance productivity and provide necessary market linkage and service support. While there is some variation in the models across projects and organizations most these initiatives are geared towards ensuring 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 for leveraging the potential in other parts of the world. In this paper we discuss two such initiatives from South Asia—the DANIDA supported household poultry model in Bangladesh and the KeggFarms supported Kuroiler model in India.

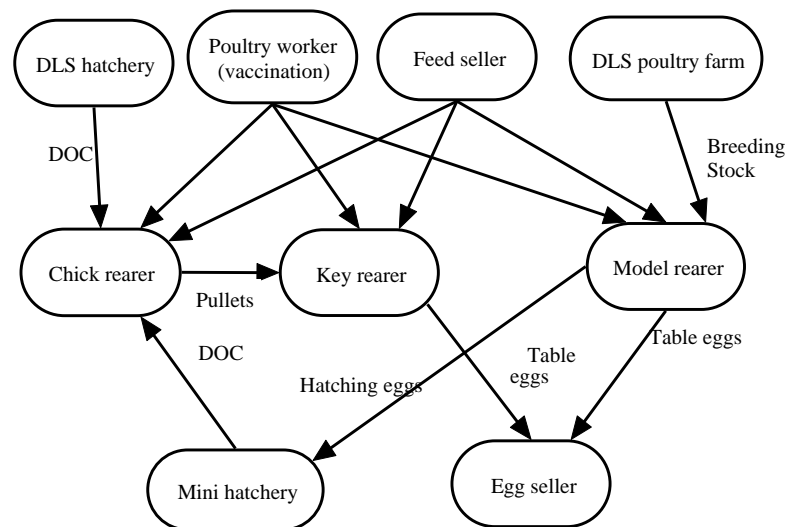
## Bangladesh Poultry Model: A Quick Overview

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 Program and the Department of Livestock Services (DLS). BRAC (Bangladesh Rural Advancement Committee) joined the initiative partly to provide credit support and they included the poultry model in their Rural

Development Program (RDP) during the years 1983-1986. The three smallholder livestock development projects SLDP1, PLDP and SLDP-2 have 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 combined packages of technical training, credit, and market linkages and emphasized promotion of backyard poultry to target the poorest female headed households. The project also emphasized promotion of individual entrepreneurs such as feed sellers, egg collectors, etc. The approach has been to identify target group households with less than half acre land, organize village groups, provide them training, credit and supply of inputs, and undertake necessary supervision and monitoring. The model consists of an integrated system of production, marketing, input supply and service support sub-systems. Each component of the system engages poor households and provides necessary organization support. Most of the activities are done by women themselves. The key players in the system include—(i) Poultry extension worker who provides vaccination, some basic treatment, and advice on poultry management. (ii) Poultry rearers—the target group for the project, those who rear layers and broilers in their backyard, (iii) Chick rearing units—those who rear day old chicks to

Figure 2: Elements of Bangladesh Poultry Model



Source: Dolberg, 2003

six weeks, (iv) Feed seller — for providing supplementary feed, (v) Egg collector who provides the link with market.

The model has been documented extensively in the literature. Therefore, this paper avoids repeating specific details of the model. Essential elements of the model are provided 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

#### The Beneficiaries in 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 1000 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 4 batches per year. The chickens were reared in low cost houses from day-old to 8 week of age. These chickens were fed with balanced feed and sold to Key Rearers at about 8 week age.

**Key Rearers**-Small farms with about 5 crossbreed layers for the production of table eggs. The hens were kept under semi-scavenging conditions with 30-70% supplementary feed. Additionally 4 local hens were kept to hatch eggs preferably from Model Breeders and rear chick from Mini Hatcheries.

**Poultry workers**-A numbers 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 to the poultry keepers. They prepared balanced chicken rations from locally available feed materials supplemented by purchased nutrients.

**Egg Collectors**-Table eggs were collected from the Key Rearers by Egg Collectors to be supplied to a community sale center or to the wholesaler at the nearby market.

This systems was backed by larger organizational support system comprising training in various aspects of poultry rearing, provision of credit, input, extension and health services. Several of these inputs and services required access to the DLS. A number of modifications were introduced as the project progressed through its various stages improving and fine tuning the functional relationships between various agents in the supply chain.

impact on the economic and nutritional status of the poor, specially women and girls, and has favorable benefit cost ratio. For example, Haque (1996) reported a cost benefit ration of 1.3:1 at the level of household and close to 4:1 for the key rearer (Table 2). Encouraged by these results, new pilots based on this model have been tested in a number of countries including Vietnam, Burkina Faso, Benin, Senegal, Eritrea, Malawi, Kenya, Tanzania, Zimbabwe and South Africa. 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.

Table 2: Cost-Benefit Ratios for Various Players in the Bangladesh Poultry Model

Activity	Benefit Cost ratio	Percent poverty alleviation
Chick rearer	1.29:1	31.67
Key rearer	3.86:1	28.59
Model rearer	1.52:1	32.50
Mini Hatchery	1.60:1	00.00
Feed seller	1.06:1	25.00

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

### **The Kuroiler: A bird of hope?**

Faced with increasing competition from large scale integrated transnational poultry production units, Kegg Farms—a small scale company in 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 will still produce many more eggs and grow significantly faster. In addition, it must retain the feather colors for camouflage, be sufficiently agile to run away from predators and must be as disease resistant.

Keggfarms launched the ‘Kuroiler’ – “Kegg + Broiler” in 1993 and sold more than a million day old chicks in the first year itself<sup>6</sup>. By 2005-06, the number had already reached the figure of 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

<sup>6</sup> 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.

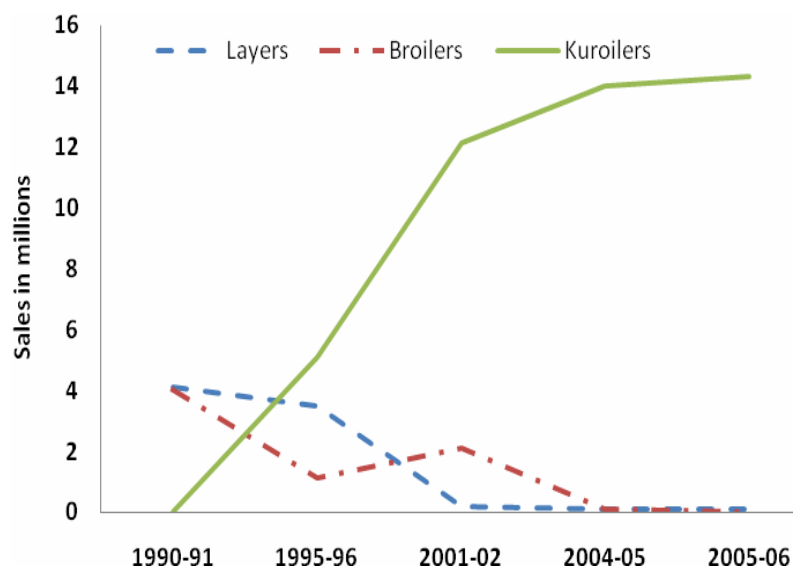


operations from agriculturally prosperous areas to areas with high incidence of poverty and vulnerable livelihoods. The company which had been in the commercial broiler business for more than three decades, completely phased out broilers and layers by 2005-06 (Figure 3). Most important of all, however, 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.

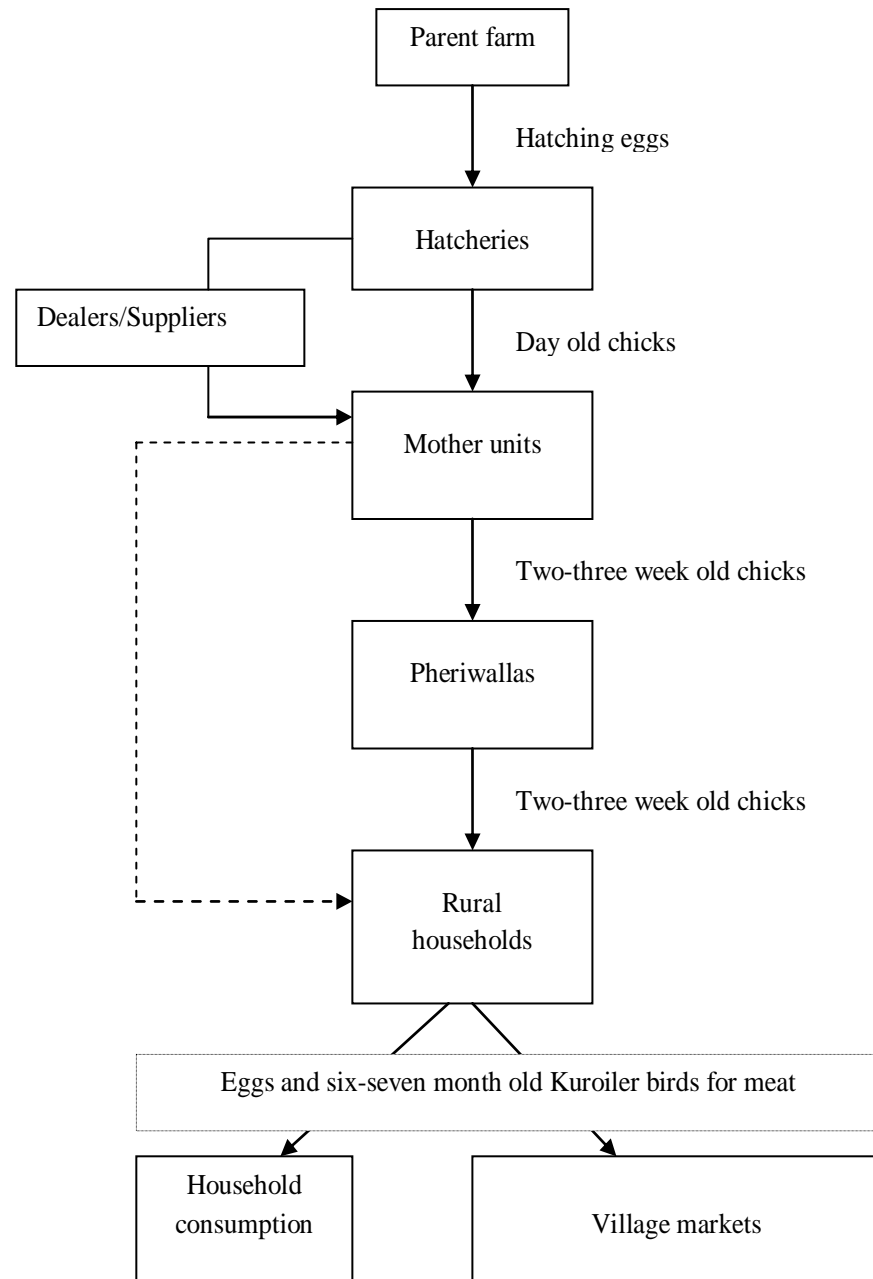
Estimates of how far has the Kuroiler traveled are imprecise at best. Recent reports suggest that the Kuroiler has already touched the lives of about a million households in some of India’s poorest regions. Kegg supplies its ‘day old chicks’ to 1,500 mother units across the

states where it operates directly or through its appointed dealers/suppliers. The mother units are operated by local entrepreneurs and keep anywhere between 300 to 2,000 birds at one time. They rear the day old chicks up to about 3 weeks age, vaccinate them if necessary, and then sell them to vendors (or *pheriwallas*). *Pheriwallas* then travel to villages and sell these chicks to households at the price of about Rs.20 (USD 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 (or USD 6.5-7.5) per month as supplementary income<sup>7</sup>. They trade in the eggs and also sell the birds for meat (see Figure 4 for a schematic representation of Kegg’s distribution channel)

**Figure 3: Sale of day old chicks in Kegg Farm: 1990-91 to 2005-6**



<sup>7</sup> Measured in purchasing power parity dollars, monthly income from Kuroiler raising will be approximately 32-35 dollars.

**Figure 4: Kuroiler Distribution Channel**

Since Kuroiler day old chicks are raised to 2-4 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 efficiencies 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 these either through its field staff, most of whom have prior husbandry exposure; or through structured courses in Mother Unit Management. When necessary Keggfarms sends its experienced husbandry personnel from its units to guide the field staff on any specific problem that

may have arisen. Additionally field staff also provides commercial guidance to Mother Units when required with regard to sourcing/ quality of feed, medicine, vaccine, 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 village households that rear poultry from 3 weeks onwards. This represents a critical gap and provides an important avenue for public-private partnership with regard to public health and poverty reduction implications of household poultry. Although this remains a critical gap, the fact that Kuroilers are performing efficiently in the village conditions is now well demonstrated by the repeated and increasing demand for them. As a policy, Kegg Farm does not supply day old chicks to villages as this will result in huge “infant” mortality. When birds are sent at 2-4 weeks age the livability 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 the sustainability at household level. Sustainability of mother units depends on pheriwallas and finally that of Kegg Farm depends on the sustainability 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 Kegg Farm model prompted the jury of “Business India Innovation Awards” jury to note that “(The Business is) sustainable because it has created rural entrepreneurs. A great deal of scalability happens when such entrepreneurship is created<sup>8</sup>” (<http://www.businessworld.in/content/view/729/784/>).

With regard to the threat of competition from larger players and other risks posed by public health and bio-security 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, the public health risks posed by large scale commercial systems are far more greater than household based village poultry production due to inherent resistance to diseases, biodiversity provided by mixed gene pool in local birds and scattered nature of production, thus minimizing, if not eliminating, the risks of large scale outbreaks .

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<sup>8</sup> Kegg Farms was recently conferred ‘Innovation for India’ award in Social (Business) category.

Effective control measures taken by the Government of India in rapidly containing the recent outbreaks (instead of blaming the backyard poultry production) demonstrates 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, [http://www.fao.org/ag/againfo/projects/en/pplpi/docarc/rep-hpai\\_biosecurity.pdf](http://www.fao.org/ag/againfo/projects/en/pplpi/docarc/rep-hpai_biosecurity.pdf), Otte *et al*, 2007, [http://www.fao.org/ag/againfo/projects/en/pplpi/docarc/rep-hpai\\_industrialisationrisks.pdf](http://www.fao.org/ag/againfo/projects/en/pplpi/docarc/rep-hpai_industrialisationrisks.pdf)).

No systematic study has yet analyzed the economics and livelihoods impact of Kuroiler<sup>9</sup>. But 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 laborer earning anywhere between Rs.1000 to 1500 per month, this additional cash income is an immense support. Similarly, the pheriwalla, with an initial capital outlay of a bicycle and a basket to hold the chicks, and a working capital of about Rs.2000 to purchase the chicks, could generate a net profit of about Rs.6000 per month—more than twice that of a family living below the poverty line.

### ***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 Asia, there is potential and opportunity for linking these small backyard producers to larger markets via more formal value chains. But, 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 that context, as noted earlier, 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 the pains during transition to large scale poultry production system. Recent studies have shown encouraging results regarding private

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<sup>9</sup> A detailed household survey of households, mother units, pheriwalls, and selected dealers and suppliers was underway at the time of writing this paper.

companies developing newer models to integrate small producers into the value chain instead of displacing them.

The main challenge for small-scale/rural poultry therefore is organizational, not technical. It is important to continue to promote village poultry to contribute towards 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, improving hatchability, etc. Unfortunately most government extension programs in the developing countries are not oriented towards addressing the needs of poor households. Further, although there are a large number of NGOs which are much closer to people, development of household poultry enterprise does not appear to be on the agenda of many NGOs. Similarly, while some private sector organizations (such as Kegg Farm in India) have invested significantly towards developing fast growing and more productive birds without requiring significant additional inputs, and have also made sufficient investment for developing the distribution network for birds, extension and public health support systems continue to be the weak point, making them vulnerable to exogenous shocks.

In this context, significant investment in capacity building and empowerment of the village communities can act as the harbinger of change and technology adoption and to establish the foundation for a village based farmer to farmer livestock extension mechanism. As many of the minor services like vaccination of day old chicks and timely protection against poultry diseases are inaccessible to the poorest groups (specially in marginal areas), several rounds of vaccinations during the year can be possible only if such skills are available among farmers themselves. It would therefore be essential to impart skill training to farmers to promote self help and 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 animal health support systems of governments.

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 good tradition of backyard poultry already, perhaps the approach needs to systematically identify the constraints and facilitate provision of

required support services. This requires complete study of entire production system, market chain, profitability and suitability of resources. It is also important to focus research on the aspects of market and institutional environment that are changing and how those changes are likely to affect the poor. Once some understanding is established in that respect, it will be necessary to initiate a dialogue with influential agencies to put in place necessary 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 the activity in areas where there is already some awareness of the activity. Organizational support of those organizations that have local credibility and are already engaged in livelihood support activities will also be critical. Once again, additional efforts may be required to add 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 and it is important that a menu of entry points is identified and appropriate entry points identified depending upon the area characteristics.

*Role of the government and other stakeholders:* There is poor awareness among the governments on the potential of smallholder poultry in supporting poor peoples' livelihoods. That is one reason why often there is poor government support towards promotion of this activity. 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 the activity. At the same time, it is necessary to nurture powerful alliances including academia who can talk about these activities and can influence opinion of the government and political establishment. International agencies such as FAO, DFID, can aid in this process by providing credibility to activities such as those promoted by BRAC and KeggFarm.

*Need for a common platform:* There is a need to organize a series of meetings and w/shops to sensitize decision makers, politicians, bureaucrats, technocrats, policy makers and planners of pro-poor programs. The sensitization must be based on hard data. It is

also necessary to involve people who write PRSPs, Human Development Reports, policy documents etc. Multilateral organizations such as FAO with a mandate to promote global exchange of information, collection, analysis, interpretation and dissemination of data and promotion of national and international action to undertake technological, social and economic research can play a significant role in this context.

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

Linking with micro-credit: Microfinance organizations and self-help groups serve a critical role in facilitating access to the cash credit for financing expenditures on day to day operations of livelihood support enterprises. Establishment of strong linkages with micro-credit organizations must therefore be seen as an integral component of all livelihood support interventions including household poultry. Besides facilitating access to credit, credible micro-credit organizations and self-help groups can also help rationalize the interest rates.

Data and analytics: Finally, the database pertaining to the 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 the international organizations. Generation of accurate data is critical for making informed policy decisions and concerned agencies should seriously deliberate on the possibility of creating a common information system for livestock products including poultry.

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