

Good Practice Note

Sustainable Livelihoods for the Rural Poor through Small Scale Poultry Rearing



REGION : South Asia
COUNTRY : Bangladesh
DISTRICTS: 52

SOUTH ASIA
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Sustainable Livelihoods for the Rural Poor through Small Scale Poultry Rearing

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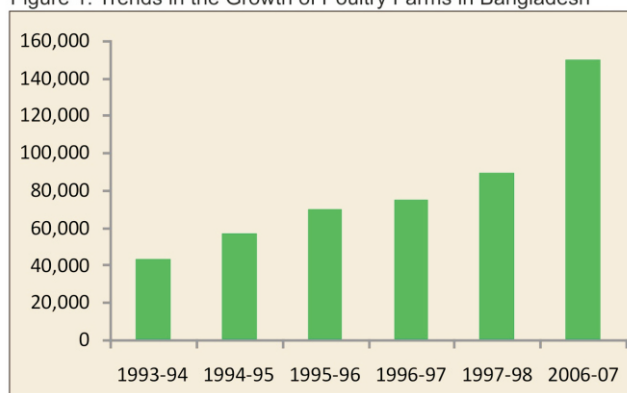
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1. Introduction

With a population of over 144 million, Bangladesh is the seventh most populous country in the world. Almost 80% of the country's population lives in rural areas and primarily depends on subsistence agriculture, particularly livestock, for their livelihoods. While the average annual GDP has grown at a rate of 5% since 1990, the GDP growth rate for livestock at 7.2% is the highest for any agricultural sub-sector (0.2 % for crops and 3.7 % for the fisheries sub-sector) (GOB 2007).

The poultry sector is a major livestock sub-sector. In recent years the poultry sector has grown substantially: in period 1993 to 2005, the number of chicken has doubled in the country from 97.04 million to 194.82 million. While there were only 43,589 poultry farms in 1994, by 2007, this had risen to 150,000 (Figure 1). Currently the poultry sub-sector contributes 14% to the country's livestock sector and constitutes 1.6% of Bangladesh GDP (The Poultry Site.com).

Figure 1: Trends in the Growth of Poultry Farms in Bangladesh



Source: Fattah (2000) and IFC (2007)

In recent years, opportunities have expanded for small-scale poultry enterprises due to improved market access and infrastructure, and consumer behaviour that still favour meat and eggs from free range birds. As a result, there has been increased market orientation even among small-scale poultry enterprises. These changes have led to an overlapping competitive space between large and small production systems, which have created both challenges and opportunities.

The poultry sector creates both direct and indirect employment through the provision of support services to poultry farmers. Currently over six million people are working in this sector which provides employment opportunities for rural farmers, retailers, traders, support servicemen, businessmen, etc (Rahman, 2007).

This Good Practice note describes how small holder poultry production can be a source of employment and facilitate improved livelihoods for more than 80% of the rural population of Bangladesh. It reviews the Bangladesh Poultry Model and illustrates how small holder poultry production can help in income generation and empowerment of women and at the same time mitigates malnutrition, unemployment and poverty.

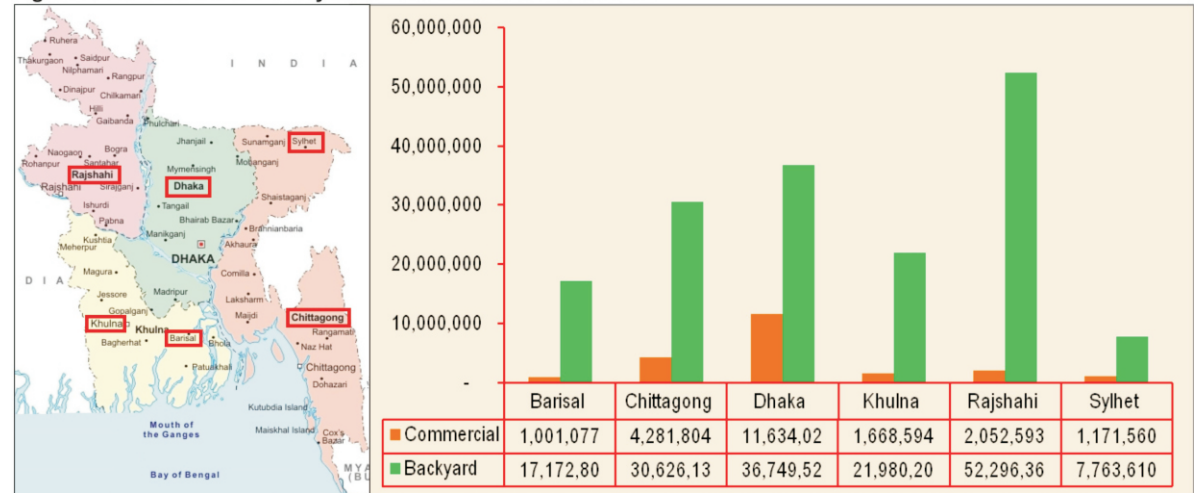
Small-scale poultry-raising has been acknowledged as being of fundamental importance to poor people, particularly rural women (IFAD, 2004). In Bangladesh, women in rural areas, significantly depend on small poultry units raised within the homestead. Poultry has been raised traditionally by women wherein a small flock of *Desi* birds is left to scavenge on the fields around the homestead and they feed on seeds, kitchen waste, insects etc. These birds produce 40-60 eggs annually and weigh around 1-1.5 kg. In recent years there has been growing recognition of the role of small scale poultry rearing in accelerating the pace of poverty reduction and improving food security. Although these units are too small to generate enough income

to escape poverty, they represent the first step in a positive spiral of events that may move a large number of people out of poverty (Jensen and Dolberg, 2003). Poultry, in addition represents assets that can be liquidated when the need arises - for example some birds are frequently sold before harvest when the stock of food grains is depleted, during times of unemployment, when illness or an accident strikes, or simply used to entertain guests.

Geographical Distribution and Poultry Population

According to the Agricultural Sample Survey of Bangladesh (2006) the total chicken and duck population was around 188 million (Figure 2). In the 2007-2008 estimates, the number had risen to 212.47 million (BER, 2008). Two out of six administrative divisions, namely

Figure 2: Distribution of Poultry in the 6 Administrative Divisions



Source: BBS 2006

Dhaka and Rajshahi, account for more than 50% of the total flock (25.7% in the Dhaka division and 28.8% in the Rajshahi division). The two divisions, however, present very different production systems. While in Rajshahi only 9.4% of the birds are commercially raised, in the Dhaka division 53.3% of the birds are raised commercially on account of the high demand for poultry meat and eggs in the capital. The presence of resource rich urban consumers is a precondition for the development of commercial poultry production – 72.9% of the total commercial chicken farms in Bangladesh are located around Chittagong and Dhaka, the two largest cities in the country (FAO 2008).

In Bangladesh, over 80% of the rural households' rear poultry through traditional production systems, local non-descript breeds called *Desi* dominate poultry production. Most birds are kept in small flocks with an average of 6.8 birds per holding under scavenging systems and 10-20 layers under semi-scavenging systems (Saleque 2007). The productivity of local hens is 40-60 eggs per year, and losses due to diseases and predators are high. The constraints to productivity are, however, not only on account of diseases, but also management systems, lack of supplementary feeding and inappropriate¹ breeds. (Raihan, S and Mahmud, N, 2008)

¹Introduction of hybrid/synthetic birds in a traditional system. Although indigenous birds are normally less productive, over a period of time, people have bred birds most suitable for their environment, needs and interests.

2. The Bangladesh Poultry Model

Poultry production systems in Bangladesh show a clear distinction between traditional, low input systems on the one hand and modern production systems using relatively advanced technology on the other. BRAC considered small scale poultry rearing as a potential activity for income generation among the landless, particularly destitute women, since it requires less technology and can emerge as an economically viable livelihood occupation for rural women.

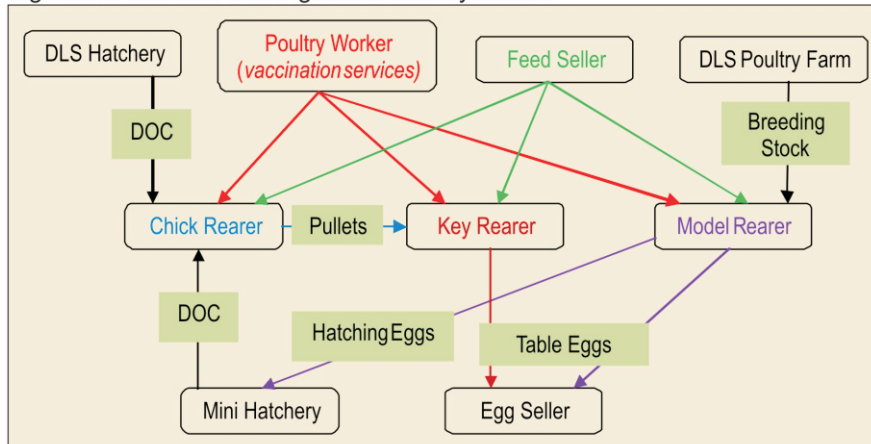
Although women head 20% -30% of households in rural Bangladesh, women have limited access to financial and other services as compared to men. Although women can own property and legally heirs to ancestral property, due to societal norms very rarely does a woman get her share of land or property. Key factors that limit women's access to services and inputs include a lack of information about credit availability, lack of collateral for loans, restrictions on credit for women.

In 1983 the Bangladesh Rural Advancement Committee (BRAC) and the Department of Livestock Services (DLS) of the Government of Bangladesh **initiated homestead based poultry rearing and related activities with the objective of facilitating a regular and sustainable income for rural women, and empower them within the family and society. It was hoped that these activities would also help in meeting the present deficiency of egg and meat in the country (Saleque 2000).**

Over the years the model has been further replicated with modifications by a range of NGOs (often in cooperation with DLS) and supported by DANIDA, IFAD, ADB and other donors. A number of rapid and extensive assessments of different poultry projects in Bangladesh indicate that programme participants have benefited positively in terms of income, consumption, nutrition and empowerment (Refer Annexure 1a, and 1b). Presently, BRAC's poultry program benefits about three million rural women (BRAC Annual Report, 2008) and the model is now known as the BRAC-DLS Model. This model has been evaluated² at regular intervals over a period of time and the impact clearly indicates that the model has the potential to generate income for the poorest women.

The BRAC-DLS model (Figure 3) consists of a supply chain of 7 enterprises – Model Breeders, Mini Hatcheries, Chick Rearers, Key Rearers, Poultry Workers, Feed Sellers and Egg Collectors – which support farmers in both producing and selling poultry birds /

Figure 3: Elements of Bangladesh Poultry Model



Source: Dolberg 2003

eggs. It was used subsequently in three large national smallholder poultry development projects³ in partnership with the DLS and a number of NGOs. The smallholder project in Bangladesh has, in this respect, been in a rather unique position because the implementing institutions have been the same, i.e. DLS and BRAC.

²Impact of Smallholder Poultry Production in Bangladesh –12 years Experience with DANIDA supported livestock projects in Bangladesh. J.C. Riise, K.N. Kryger, D.S. Seeberg And P.F.Chistensen
³The projects were the smallholder Livestock Development Project I (SLDP I 1992-98), Participatory Livestock Development Project (PLDP 1998-2002) and SLDP II (1999-2003) supported by DANIDA, IFAD, ADB, the Government of Bangladesh and several NGOs and the large World Bank sponsored human nutrition projects and program also draw on these experiences.

Therefore, experiences from one project have been taken into consideration while preparing and implementing successive projects (Jensen H A, 2000).

From their earlier experience, BRAC had found that no single intervention was able to improve the productivity and profitability of the poultry sector. **Therefore, a package of practices and interventions were developed, keeping in mind the constraints in poultry development.** BRAC subsequently established a commercial wing for supplying inputs to its members.

The fundamentals of the BRAC model are:

- ✧ The beneficiaries must be the poorest segment of the village population and in particular the intervention targets women,
- ✧ The intervention attempts to facilitate that beneficiaries are able to step out of poverty through an income generating activity, and at the same time improve access to nutrition,
- ✧ The comparative advantages of small scale poultry rearing must be sufficient to reduce the per egg production cost.

The three main components of the Model are explained below:

A. Production Line

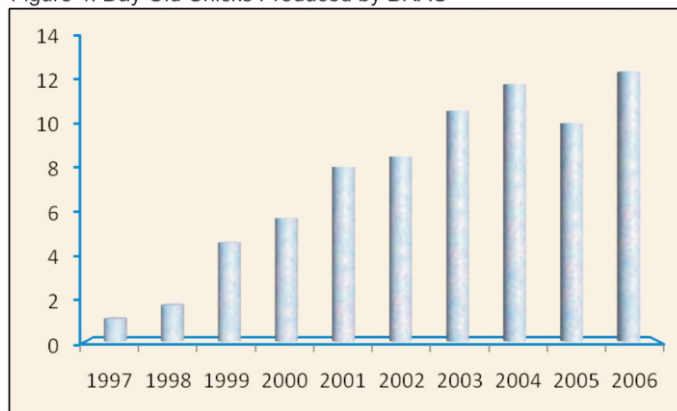
✧ **Chick Rearers** – These units rear batches of 200-300 day-old-chicks (DOCs) to 8-week-old chickens in sheds made of local material. They are fed with balanced⁴ feed supplied by the local feed seller. The chick-rearers supply birds to the Key Rearers.

✧ **Key Rearers** – Key rearers are smallholders who rear 5-10 birds each and comprise 90% of the poultry farmers involved. The hens are provided with shelter made from locally available material. They are provided with some feed and allowed to scavenge for the rest of their feed requirement. The mature birds are kept by key rearers and the targeted ultra-poor beneficiaries to produce eggs that find their way to the market directly and are also available for household consumption. After an average period of 2 years, the egg laying birds are slaughtered and sold for meat purpose. The next step for some key-rearers is to increase their flock size to 35-100 hens primarily for egg production. These flocks are then reared as in confined conditions and provided with commercial feed, basic vaccines and medication.

B. Supply Line

✧ **Day-old-chicks (DOCs)** – The day old chicks are sourced from BRAC, Government and Private Hatcheries. BRAC transports the chicks to its regional offices in the district and sells them to chick rearers at market price. Earlier, government hatcheries used to supply chicks to the key rearers through dealers, but on account of inadequate supply and poor quality, BRAC established its own

Figure 4: Day Old Chicks Produced by BRAC



Source: BRAC-BDP, 2008

⁴Feed containing essential nutrients in proper proportions.

hatcheries in 1996 and presently it has six hatcheries. Chick rearers' are now getting an ample supply of quality chicks which they rear for 8 weeks and key rearers are getting healthier pullets from chick rearers that they keep up to the end of the laying period.

- **Feed** – The feed is supplied by a number of small feed-sellers located in the villages. A feed seller sells about 1 ton of feed per month. Most of the commercial feed is supplied from BRAC's feed mills through these feed sellers. In case of *Desi* birds, the birds scavenge and owner mainly supplements the feed with grains available at home.
- **Vaccine/Medicine** – At every BRAC Regional Office, there are around 100 Poultry Workers⁵ trained to vaccinate the birds. The government supplies the vaccine at cost price and the Poultry Workers while administering the vaccine, charge the vaccine cost as also a service fee.
- **Marketing** – Marketing of eggs is done by egg collectors and the eggs are sold in the local village markets and nearby towns to traders to be taken to Dhaka. Sometimes poultry vaccinators also serve as intermediaries in the egg and meat marketing chain.

C. Provision of Services

- **Group Formation** – BRAC organises landless women into groups called village organisations and within each group, women are selected to train as Chick rearer, Key rearer, poultry vaccinator etc as per their interest and ability. The groups hold weekly meetings to discuss progress and emerging issues.
- **Training** – All participants receive relevant training on poultry keeping followed by regular refresher courses. For Chick rearers and Key rearers a day's refresher training is conducted biannually in batches of 25 participants at BRAC area office.
- **Credit** – Depending upon the activity undertaken, each member is provided with a small loan by the NGO to be repaid in a years' time. For Chick rearers, maximum loan of BDT 6000 is made available while for Key rearers maximum loan limit is BDT 2000.
- **Extension** – Extension services are provided by PLEW, who are trained by both the government and the NGO involved. Moreover, since women poultry farmers are members of village organization (VO), they are able to raise their concerns in the monthly meetings of the VO.

The development of BRAC's poultry activities over the last decade are shown in Table 1:

Table 1: Poultry Programme Participants (<i>cumulative numbers</i>)								
Component	1990	1991	1992	1993	1994	1995	1996	1997
Poultry Workers	3,841	5,000	7,504	22,788	25,033	31,135	33,572	41,228
Chick Rearers	650	1,106	1,952	5,836	8,244	8,435	10,986	14,723
Pullet Rearers	-	-	-	-	-	-	1,308	2,260
Broiler Rearers	-	-	-	-	-	-	25	1,000
Source: Saleque (2000)								

⁵SA PPLPP (2009) Code: BDGP01, "Mitigating Disease and Saving Valuable Assets: Poultry Vaccinators Delivering Services at the doorstep of the Poorest in Bangladesh". Good Practice Note, Delhi, India (<http://sapplpp.org/goodpractices/small-holder-poultry/BDGP01-mitigating-diseases-and-saving-valuable-assets/>)

3. Key Elements of the Bangladesh Poultry Model

3.1 Programme Framework

In the poultry sector, small owner based poultry production systems can be as or sometimes more efficient than larger commercial poultry production farms, provided the smaller units are organised / operate as collectives to mitigate risks, ensure backward (inputs) and forward (access to market) integration, have in-built incentive systems for efficient production and service delivery and provide access to credit, information, skills and technologies on a regular basis. Small scale poultry rearing can therefore be an approach to alleviate poverty through sustainable livelihoods.

Box 1: Reasons for the Intervention

- ☞ Integration of poor village women into poultry rearing and creation of new employment opportunities;
- ☞ Introduction of cross breeds and high yielding varieties to increase the production of eggs and meat;
- ☞ Reduction of mortality of birds by creating awareness amongst poultry farmers regarding diseases and preventive measures;
- ☞ Women empowerment and improved social status through generation of income in a short time period;
- ☞ Improvement of the protein intake level of within the household.

It aims to provide rural women an entry point to diversify income earning and employment opportunities through training in poultry activities (Annexure 2). The approach taken by BRAC for their poultry programme consists of an integrated package that includes the following:

* Selection

BRAC organises landless women into groups. There are 45-55 members in each group of which 30 are selected for poultry related activities and are provided different types of training on poultry rearing and management.

* Training

☞ *Key Rearers*: They are given three days training on appropriate methods of poultry rearing and are provided specific knowledge on good housing and management system.

☞ *Chick Rearers*: Chick rearers are given 7 days of training. They rear 200-250 chicks until they are two months old and sell them to key rearers. The chick rearers are supplied with day-old-chicks from government, BRAC or other private hatcheries.

☞ *Targeted Ultra-Poor Beneficiaries*: Under the CFPR-TUP⁶ programme, the women are given 4 days of training, of which three days are devoted to small and large ruminants and one day of training for poultry rearing and management. During the training, beneficiaries are provided meals and paid BDT 10 per day for transportation costs. The beneficiaries are also provided Confidence Building Training where they receive information on available services and how to run and maintain loan from microfinance programme. They are motivated to rear Desi birds as these local birds are hardy and acclimatised. Moreover, Desi birds can be purchased locally, and beneficiaries are not dependent on supply of DOC from hatcheries.

⁶BRAC has been implementing a program called 'Challenging the Frontiers of Poverty Reduction: Targeting the Ultra Poor (CFPR TUP)' in order to pay due attention to the heterogeneity among the poor in Bangladesh. The program follows a differentiated approach based on the differences in the level of poverty of the participating households. The interventions range from physical asset transfer and provision of subsistence allowance to micro-finance with differential repayment terms. The Ultra Poor are those who spend almost 80% of their income on food and yet are unable to meet their daily calorie requirement, and their livelihood consists of highly seasonal and unreliable, low paying activities.
http://www.bracresearch.org/working_papers.php?scat=28

* Backward and Forward Linkages

To ensure proper utilisation of the skills imparted during training, BRAC provides credit as initial investment capital to start poultry or chick rearing. A Project Officer (Livestock) has been appointed for every ten area offices, and at each area office, a project assistant has been employed to facilitate government liaison and programme implementation. Government staff is included in the process of training and input supplies in form of medicines.

3.2 Delivery Mechanism and Stakeholders Involved

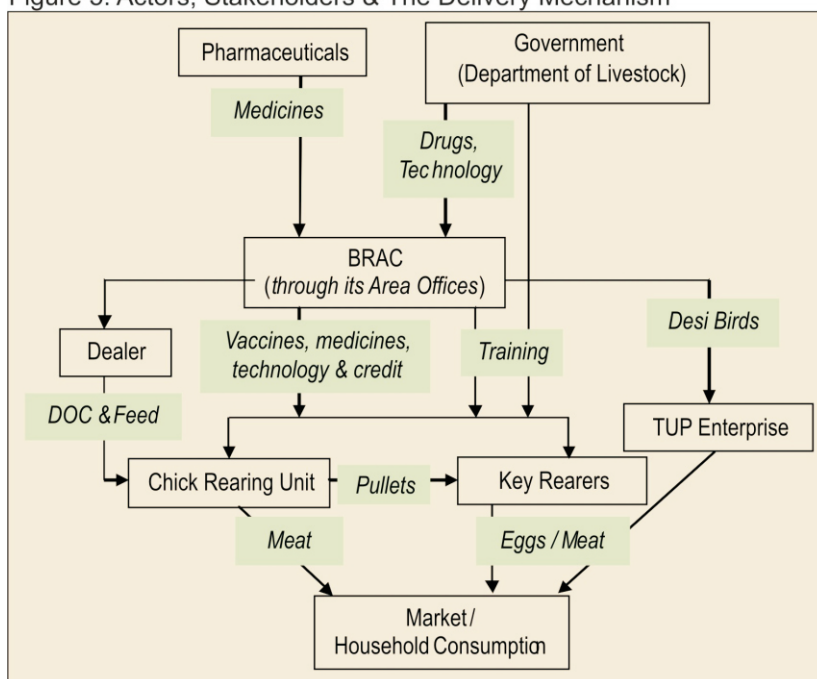
Stakeholders include fe/male poultry farmers, traders, suppliers of feed, staff of the department of livestock services and BRAC staff.

Role of Government: The government has been instrumental in introducing the improved bird called *Sonali*, resulting from crossing of exotic breeds - *Fayoumi* female and Rhode Island Red male. Presently *Sonali* is the bird of choice in poverty alleviation projects in Bangladesh. Moreover The Govt makes available vaccines, medicines and technology to BRAC through the Department of Livestock. The Government produced vaccines go through

stringent quality control and are cheaper than the ones produced/imported by private players. Since DLS does not have enough trained staff on its rolls to reach out to all livestock keepers, it provides services up to the *Upazilla* (sub-district) level and thereafter, it plays an advisory role, provides referral services and supplies quality inputs to the implementing NGO who have ground level workers and a wider outreach. Sometimes Government staff also participate in programmes providing training to fe/male poultry farmers, vaccinators etc.

Role of BRAC: BRAC has established sound working relationships with both the government and with donor agencies through their work in the past three decades. While the Government through its state department of livestock services has the capacity and mandate to develop and supply vaccines and day old chicks that BRAC can use to meet the ever increasing demand, BRAC's strength lies in its extensive and effective capacity to deliver services at the village level throughout the country, and its ability to bring in considerable resources (particularly from external donors) in a sector where government funding is constrained (Saleque 2000). It collaborates with the government to extend the delivery of services by developing and using local manpower to fill niches for instance animal health workers called Poultry and Livestock Extension Worker⁷ (PLEW), feed

Figure 5: Actors, Stakeholders & The Delivery Mechanism



⁷Also see
BDGP01-
Mitigating
Diseases and
saving Valuable
Assets
Available at
[http://sapppp.org/
goodpractices/sma](http://sapppp.org/goodpractices/sma)
II-holder-
poultry/BDGP01-
mitigating-
diseases-and-
saving-valuable-
assets/

sellers etc in the poultry production business. Presently over 1.7 million people participate in the model as breeders, feed suppliers, vaccinators, egg collectors etc.

The BRAC Area Office plays a critical role as it is responsible for the initial survey to identify women to be included in the programme, organising them into different roles such as extension worker, chick rearer, key rearer etc. and providing motivation and technical training. One area office oversees around 6,000 women in a given region. It is through this office that credit, feed and DOCs are supplied to the rearers. It is funded by premiums on the micro-credit loans extended to individual entrepreneurs within the model.

entrepreneurs within the model.

Role of Independent Entrepreneurs: These are the petty traders who sell feed and medicines to farmers and the small suppliers who supply day old chicks from BRAC and other hatcheries to the farmers.

Box2: Innovations

In the Chick and Key Rearing Unit

- ✕ Information and technical support on poultry rearing through active participation and training,
- ✕ Disseminating information on emerging issues related to poultry rearing,
- ✕ Adopting High Yielding Variety poultry at the village level,
- ✕ Rearing of hybrid poultry in a semi-scavenging way,
- ✕ Logistic support through professional poultry vaccinators.

In the Targeted Ultra Poor Programme

- ✕ Special training on rearing poultry in addition with cow/sheep/goat,
- ✕ Preservation of Desi birds,
- ✕ Motivate and monitor to check sale of assets by beneficiaries,
- ✕ Improved management of birds through specially designed 'Wooden Shelter',
- ✕ Round the clock access to professionals.

3.3 Programme Participants and Communities Reached

The programme has been successful and has covered almost all the districts in the country except the hilly and perennially flood-prone districts. The **present coverage of the programme is across 52 districts, 215 upazillas (sub-districts) and over 40,000 villages**. Through the Poultry Extension Programme, approximately 3 million households have benefited (BRAC Report, 2008) and 19,900 women developed as PLEW for vaccination and treatment of poultry and small ruminants.

BRAC realised that despite best efforts the very poor were still being left out of the various projects and programmes and needed concerted programme that could target the ultra poor. The Targeted Ultra Poor⁸ programme was initiated following the World Bank Estimation Study (2001) on the poverty situation in Bangladesh. BRAC started this programme in 2005 and provides both financial and technical support to the women selected as rearers. In this programme, around 100 poultry rearers who raise indigenous birds under a scavenging production system are monitored by a Programme Organiser. The programme has benefitted 100,000 especially Targeted Ultra Poor households from 15 of the poorest districts in Bangladesh up to December, 2006. A total of 860,300 households are expected to participate in the programme over the next five year period (2007-2011).

3.4 Management Practices followed by the Small Scale Poultry Keepers

Small scale poultry fe/male farmers have increased their household income significantly from a very small investment. However, the fact that the price of feed and chicks is highly unstable makes this practice challenging. For successful running, the following steps are essential:

⁸SA PPLPP (2009) Code: BDGP09, "Making Livestock-Based Enterprises Work for the Ultra Poor – Goat Rearing in BRAC's CFPR – TUP Programme". Good Practice Note, Delhi, India. Available at <http://sapplpp.org/goodpractices/small-ruminants/>

✱ Chick Rearing Unit

◆ **Housing:** The women usually brood 300 DOC. The floor space required per chick is 0.5 sq. ft. The length and width of the house are generally 16 ft and 10 ft, respectively. The height of the floor is kept at an elevation of 2 ft from the ground to prevent moisture seepage and keep away rodents and snakes. The floor of the house is made of bamboo (locally called *Macha*) and the roof is made of corrugated tin sheets. The wall has a height of 6-8 ft and base (2-3 feet) is made of concrete and bricks and the rest of the wall is made of wire mesh. The bamboo *Macha* helps save litter costs and since the poultry waste falls through the *Macha* onto the ground below, it makes the shed more hygienic and paves the way for keeping disease at bay. Moreover, the droppings from poultry are collected from under the *Macha* floor by the farmers for further use in agricultural fields as organic fertiliser. The bird houses are generally built on east-west basis as this ensures better ventilation for proper growth of the birds. A polyethylene covering or any other protective material is used to prevent the birds from extreme weather conditions. Before bringing in a new batch of birds, the farmers clean the floor with calcium oxide and bleaching powder and spray antiseptic solution. Usually all in-all out approach is followed to prevent mixing of different batches.

◆ **Brooding:** Proper brooding is very important for day old chicks. The rearers pre-heat the shed for 24 hours before receiving the DOC. For 300 chicks they use four 200-watt bulbs. On the 1st and 2nd day they provide continuous light for 24 hours and after that decrease the intensity of light day by day. Temperature is maintained at 95°F in the first week and then decreased by 5°F each day until it reaches 75°F over the next four weeks. A Chick guard is used to guard the birds beneath the heating source and to ensure that they don't go far away from the heat source.

◆ **Feeding and Watering:** Initially the women spread commercial mash feed on a sheet of newspaper to help the chick find the feed easily. After 3-4 days they put feed in linear feeders and provide clean drinking water from a tube well to the birds. (water is provided four times and feed thrice daily – As the birds grow up, one round feeder for 10 birds and one waterer for 25 birds is used. Detergent powder is used to clean the feeder and waterer.

✱ Key Rearing Unit

Key rearers collect the pullets from chick rearers through the PO of BRAC. They usually keep the hen up to 2 years until the end of the laying cycle. The farmers use one feeder and one waterer for 14-15 hens. They leave the birds free to scavenge and also provide supplementary feed which could either be broken rice or commercial feed. The quantity

Box 3: Renu Begum – Story of a Successful poultry farmer

Renu Begum lived with her husband and 3 children in Milonpara village of Rangpur Sadar Upazilla. Her husband being the only earning member in their family was struggling to make ends meet. Renu Begum wanted to get out of this dismal situation and decided to meet with PO (Enterprise), Md. Lokman Ali of BRAC. He advised her to rear layers and she agreed as it was something she could undertake along with her house work. She started with 2 month old ten pullets and these laid eggs after 5 months. She earned 25 BDT daily from her flock. Thereafter she increased her flock to 20 layers. This ensured a steady source of income for Renu Begum and contributed to her household's income. Moreover, her husband and children also supported and helped her in taking care of the poultry birds. Today, the family is happy with their flock and would like to further increase their poultry enterprise. Meanwhile Renu likes to think of herself as a successful woman who has managed to improve her living conditions through her initiative and hard work.

of supplementary feed depends on the feed available resource base.

For housing of layers, BRAC has developed a prototype of a wooden shelter. It is usually built of locally available wood or bamboo by the carpenters. The measurement of the shelter varies as per the flock size. Usually a shelter that is 3 ft in length, 2.25 ft in width and has a height of 2 ft can accommodate 8-10 birds. This mobile shelter can be placed anywhere inside or outside the house (Box 4).

Box 4: Benefits of Wooden Shelter

- * Can be moved from one place to another
- * Constructed locally and inexpensive (300 BDT)
- * Birds are protected from sun, cold and predators
- * Can be cleaned properly
- * Reduces risk of contracting diseases
- * Well ventilated

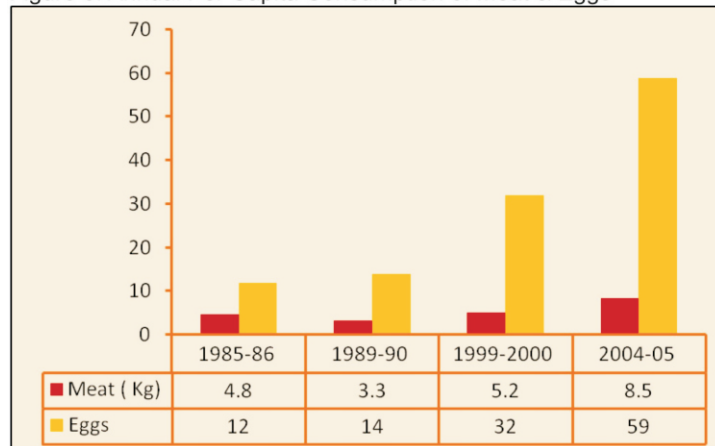
***Vaccination & Treatment**

BRAC has trained 19,900 PLEW who provide services throughout the country. These PLEW are assured of regular supply of vaccines and equipment by BRAC. Since vaccinating birds is a simple procedure, they learn the skill easily and are able to handle birds with ease. Thus, proper vaccination and treatment is assured to poultry rearers on service payment basis.

4. Outcomes & Sustainability

It is reported that per capita consumption of meat has doubled over the past two decades, while per capita egg consumption has increased by five times over the same time period in Bangladesh (Raihan and Mahmud, 2008). The annual per capita consumption of meat was 4.8 kg in 1985-86, which increased to 8.5 kg in 2004-05. On the other hand, in 1985-86, the per capita consumption was 12 eggs annually, while this increased to 59 eggs annually in 2004-05 (Figure 6). This enormous increase in the meat and egg consumption was possible only due to growth of poultry sector both in commercial and small scale production in Bangladesh.

Figure 6: Annual Per Capita Consumption of Meat & Eggs



Source: Raihan and Mahmud, 2008

4.1 Under circumstances of widespread malnutrition, eggs and meat provide an important source of protein. The average household consumed only 2.6 eggs and 72.4 gm of meat/week, with a combined market value of Taka 10.8 (Alam, 1997) before joining the BRAC poultry programme, whilst the consumption of participating households has increased to average 5.3 eggs and 122.1 gm of meat/week, respectively after the intervention (Annexure 3). The amount consumed at household level and the percentage sold increases with overall output. The growing evidence of the role of small scale poultry in enhancing the food and nutrition security of the poorest households is elicited in Table 2.

Table 2: Changes in Food Consumption Patterns of Poultry Rearing Units

Particulars	Change in Consumption ¹							
	Meals	Eggs	Chicken	Red Meat	Fish	Milk	Vegetables	Fruit
Chick Rearers	0.2	1.3	1.2	1.1	0.2	1.2	0.2	0.4
Key Rearers	0.4	1.5	1.1	0.9	0.4	0.8	0.2	0.6
Poultry Worker	0.4	1.5	0.8	0.8	0.5	1.0	0.1	0.5
(10=No change to 25% increase; 0.1 to 1.1=increase from 25% to 75%; 1.0 to 2.0=increase of 75% and upwards)								
Source: Alam 1997								

Riise et al., 2005 reviewed experiences stretching over twelve years of estimated income sources of more than 600 women who had been involved in project activities, which enabled a comparative assessment of the income from poultry and income from other sources (Table 3). The study showed that, for poor women, poultry can be an important source of income as women keep more poultry than other types of livestock and it concluded:

“Smallholder poultry keeping does contribute to poverty reduction and tends in itself to target poor women, due to the social and production characteristics of the poultry sub-sector. While

absolute income increases are fairly marginal, poultry nevertheless facilitates improvements in social status and can – together with other factors – have a catalysing effect, assisting farmers to graduate out of poverty.” Riise et al. (2005)

Table 3: Monthly Income from Poultry & Other Sources

Project	Number of Sample Households	Monthly Income From					
		Poultry		Other Livestock		Non-Livestock Sources	
		Number of Households	Taka	Number of Households	Taka	Number of Households	Taka
SLDP-1	232	223	246	98	332	58	162
PLDP	224	196	157	74	155	68	272
SLDP-2	211	205	226	39	227	74	234
Total	667	624		211		200	

Source: Riise et al., 2005

Cost benefit analysis of the rearing chicks and layers in Table 4 and 5 shows the income generated by rearing chicks is substantial – more than BDT 21,000 annually while that from rearing a small flock of birds is also considerable – more than BDT 6,000.

Table 4: Cost Benefit Analysis of a Key Rearing Unit

Expenditure	Amount	Income	Amount
Recurrent (per batch)		Eggs	
Birds (10 @ Taka 100)	1,000	No. of Live Birds (10% Mortality)	9
Feed (10 x 24 kg @ Taka 25)	6,000	Eggs per day	5
Vaccine (10 @ Taka 1)	10	For Total Period (x 365)	1,825
Vitamin (10 @ Taka 1)	10	Price @ Taka 7	12,775
Interest on Bird Loan (@ 15%)	150		
64 Weeks Total	7,170		
Capital (All costs are depreciated within one year)		Meat	
Housing	400	Bird (9 @ Taka 120)	1,080
Feeder (x 1 @ Taka 75)	75	Total	13,855
Drinker (x 1 @ Taka 75)	75	Net Return (year 1)	6,135
<i>Sub-Total</i>	550		
Grand Total (year 1)	7,720		

Table 5: Cost Benefit Analysis of a Chick Rearing Unit

Expenditure	Taka	Income	Taka
Recurrent (per batch)			
Chicks (300 @ Taka 22)	6,600		
Feed (300 x 1.5 kg @ Taka 25)	11,250	Batch Income (considering 5% mortality): (285 @ Taka 100)	28,500
Vaccine (300 @ Taka 3.6)	1,080		
Vitamin (300 @ Taka 1)	300		
Electricity	300		
Litter	0	Annual Total (x 4 batches)	114,000
Light Bulbs	60	Net Return (x 4 batches)	21,117.50
<i>Batch Sub-Total</i>	<i>19,590</i>	Net Return (per batch)	<i>5,279.38</i>
Annual Total (x 4 batches)	78,360		
Bird Loan 9@ 15%)	990		
Total Recurrent Costs	79,350		
Capital (all costs are depreciated within one year)			
Housing (300 x 0.5 sq ft @ Taka 65)	9,750		
Electric Brooder (x 1 @ Taka 300)	300		
Brooder Thermometer (x 1 @ Taka 20)	20		
Feeder (x 13 @ Taka 75)	975		
Drinker (x 13 @ Taka 75)	975		
Chick Guard (x 1 @ Taka 50)	50		
<i>Sub-Total</i>	<i>12,070</i>		
Annual Interest on Loan (@15%)	1,463		
Total Capital Costs	13,533		
Grand Total	92,883		

Apart from quantitative indicators showcasing the positive impact of small scale poultry rearing, it has also brought about dramatic qualitative improvements in poor and destitute women's lives. They can meet their own nutritional requirements by consuming meat fortnightly or monthly whereas earlier most of them could eat meat only on some special occasions (Fattah, 2000).

Moreover, since small scale poultry farming includes mainly women, it contributes significantly to women's empowerment with increased participation in household decision-making by them (Annexure 1a). Enhanced incomes and a say in household matters has also resulted in more children getting admitted into school (Annexure 1b). Thus, there is significant sense of well being amongst women and they are immensely satisfied with this practice (Annexure 4).

Box 5: Razia- Architect of her New Life

Razia Begum was a penniless married woman who lived in Baitora village of Manikganj Sadar. Her husband was a daily wage labourer. He was struggling to make ends meet. In spite of having some arable land, they were not able to produce enough to sustain the family and had to borrow from neighbours and relatives. This made Razia realise that she also needed to contribute to the household income. Razia discussed this with her husband and told him about the BRAC Micro Finance Programme which she had heard about from one of her neighbours. Consequently she joined BRACs programme as a member of the Village Organisation. She was introduced to the Program Organiser who advised her to rear DOC in her home. She had never thought that DOC could be reared at home. She underwent five days training and received a loan from BRAC to start poultry rearing. With the guidance of BRAC personnel, she constructed a poultry shed and started rearing DOC. Later she also took three days training to run a key rearing unit and began rearing 14 layers in a house fenced by bamboo.

Razia reared chicks on the *Macha* which saved the cost for litter and maintained cleanliness in the shed. The poultry excreta collected under the shed is being used as manure on her land reducing fertiliser cost as well as providing them with safe food. Furthermore, the leftover feed of crop residue used for the layers minimises feed cost. In the first lot she reared 250 chicks and made a profit of Taka 3,000. Thereafter she reared 4-5 batches annually and made an annual profit ranging from Taka 4,500 to Taka 7,000.

The practice of chick rearing has converted poor, destitute Razia to a self sufficient housewife and a responsible mother who contributes to the well being of her family and the education of her children. Now Razia makes a major contribution to family income. Moreover her opinions are now honoured both within her family and the community. Razia claims that changes in her life through poultry keeping is nothing short of a dream come true.

4.2 Poultry for landless farmers,

destitute women and jobless youth. The GOB strategy to make village poultry rearing more profitable includes provision of improved breeds in an integrated package for landless and particularly the distressed and underprivileged groups of the society. The efforts to establish poultry rearing as a source of income generation and a means of poverty eradication were implemented over the years through different poultry programmes. An income analysis (Table 6) of the actors in the poultry value chain shows that all participants are getting positive net income from their poultry activities.

Table 6: Annual Income Earned through Participation in Different Programmes of Commercial Poultry Production

Technologies	Annual Income (Taka)
Key rearers: Rearing 10-13 hens of improved breed in a semi-scavenging system with little additional feed supply	14,000
Pullet rearers: Growing 100 pullets for a period of 12-15 weeks	10,000
Chick rearers: Rear 250-300 day old chicks period of 8-10 weeks and sell to the key poultry rearers or pullet rearers.	10,000

Source: Fattah, 2000 and DARUDEC, 2002

It is estimated that at present the number of unemployed are 16.16 million in Bangladesh (BER, 2008; SPB, 2008 and consolidated). Of these a large number of young people are showing interest in taking up poultry farming as a livelihood option. This is reflected in Table 7 which shows an increase in the average number of households and workers permanently involved in the poultry sector over the years.

Table 7: Average Number of Households / Workers in the Poultry Farms over time (in millions)			
Type of Worker	Present	Five Years Ago	Ten Years Ago
Households	1.62	1.18	1.60
Permanent Staff	2.52	2.40	1.86
<i>Source: Raihan and Mahmud, 2008</i>			

Impact on Community

This intervention (sound training, effective technology and input supply) has enabled rural people to become agents of their own development and has increased their sense of self worth. *They are getting empowered economically, socially, politically and legally to understand the dynamics of their own communities so that they can bring about the desired change within their households as well as community.*

Critical Issues and constraints faced:

- * Lack of comprehensive poultry policy guideline especially for import of vaccines, medicines, feed additives etc,
- * The unstable market and fluctuating prices of feed and chicks has a direct bearing on small scale poultry producers,
- * Limited availability of DOC and quality feed at village level,
- * Irregular supply of electricity adversely affects brooding,
- * Inclination to rear broilers rather than layers (chick rearer) due to bird flu would impact the egg production and availability of eggs for consumption at the household level,
- * Lack of an organised marketing system and frequent price fluctuation of eggs and meat increases the vulnerability,
- * Inadequate provision of livestock services by the government,
- * Weak association of the poultry farmers across the entire value chain,
- * Difficulty in maintenance of bio-security at farm level especially since diseases like bird flu pose an immense threat,
- * Lack of proper management information system,
- * Lack of adequate laboratory testing facility to evaluate feed, medicine, chicks and disease control.

5. Lessons Learnt & Conclusion

1) Public investment in small scale poultry rearing could be an effective means of poverty alleviation: there is no need of significant investments, as small scale poultry farming involves low cost, requires little skill; and returns are almost immediate for farmers, both in terms of eggs and broiler.

2) Small improvements in traditional systems suffice to significantly increase the contribution of poultry to household well being, in terms of income and nutrition. Simple interventions, such as targeted extension services and preventive vaccination, prove highly effective at increasing the productivity of poultry birds in backyard production systems.

3) Targeting, through group formation and a focus on women, is a critical component for supporting the development of small-scale poultry production systems as targeting helps focusing on the very poor women, who have entrepreneurial skills which are often untapped, and can ensure an equitable intra-household allocation of resources, thereby better contribution to enhanced nutrition and reduced vulnerability.

4) The development of an integrated supply chain is critical to promote smallholder-based poultry production systems, including the provision of DOCS, feed, vaccines as well as assistance in marketing. However, it takes time to get a model that works and that is sustainable. In other words, governments (and other stakeholders) must be willing to experiment with different models and accept some failures to arrive at a model that works. We could also add that models and approaches need to be tailor-made to suit the resources and skill base at specific locations, and a blanket-approach cannot really succeed. Replication should allow for flexibility and adaptation.

5) The role of the public sector or NGOs, particularly in rural areas where private actors are unwilling to operate, is critical at least in the early stage of a smallholder development programme. The provision of quality DOCS vaccines, advisory services and training was crucial to establish a successful 'poultry model'. A question is whether in the medium to long-term private operators are willing to replace the government in the provision of private goods (e.g. DOCS), so that the public sector may allocate its scarce resources only to supply public goods (e.g. vaccination).

Small-scale commercial poultry farming is a successful income-generating activity for the rural poor especially the women of Bangladesh. It has made a significant contribution in raising the income level of rural disadvantaged wo/men that would otherwise be left out of the active work force. Even though the income is small, it helps to supplement household income that ensures a better quality of life. Poultry keeping has not only enabled poor rural women to actively participate in the rural economy both as buyers and sellers of the goods and services, but also given them the dignity of self-employment. Moreover, they can develop strong linkages with the government and can access the services of both the government and the private sector

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Abbreviations

ADB	Asian Development Bank
BBS	Bangladesh Bureau of Statistics
BDP	BRAC Development Programme
BER	Bangladesh Economic Review
BRAC	Building Resources Across Communities
CFPR-TUP	Challenging the Frontiers of Poverty Reduction - Targeting the Ultra Poor
CRU	Chick Rearing Unit
DANIDA	Danish International Development Assistance
DCI	Direct Calorie Intake
DLS	Department of Livestock
FAO	Food and Agriculture Organisation of the United Nations
GoB	Government of Bangladesh
HYV	High Yielding Variety
IFAD	International Fund for Agriculture Development
IFC	International Finance Corporation
IGVGD	Income Generation for Vulnerable Group Development
KRU	Key Rearing Unit
NGO	Non Government Organisation
PLDP	Participatory Livestock Development Programme
PLEW	Poultry and Livestock Extension Worker
PO	Programme Organiser
RDP	Rural Development Programme
SLDP	Small Scale Livestock Development Programme
SPB	Statistical Pocket Book
STUP	Specially Targeted Ultra Poor
TUP	Targeted Ultra Poor

Annexure 1a: Percentage of Fe/Male Members Deciding the use of Household Income

Beneficiary Type	Who Decides on Use of Income (% Before)			Who Decides on Use of Income (% After)		
	Male	Female	Both	Male	Female	Both
BRAC	35.60	8.80	55.60	7.90	21.90	70.20
Proshika	33.30	8.10	58.60	10.10	24.20	65.70
Swarnirvar	63.10	15.40	21.50	9.10	35.20	55.70
Average	44.00	10.80	45.20	9.00	27.10	63.90

Annexure 1b: Socio-Economic Status of Beneficiaries after Membership in VDA's

Beneficiary Type	Socio-Economic Condition (%)		
	Worsen	Same	Improved
BRAC	0.30	0.70	99.00
Proshika	0.30	0.70	99.00
Swarnirvar	0.30	5.40	94.30
Average	0.30	2.20	97.50
Source: SLDP, 1997			

Annexure 2: Programme Framework - The Steps

Subject & Objective	Methods
1. Check the bird mortality in order to create a favourable environment, so that the people are interested in rearing poultry.	1. Selection & Training of beneficiaries 2. Develop poultry worker 3. Motivate people for vaccination of their birds
2. Upgrading of local breed in order to increase production and income.	1. Training and development of key rearers 2. Supply of HYV birds through establishment of chick rearing unit 3. Supplementary feed supply
3. Marketing facilities in order to ensure reasonable price of egg produced by key rearers.	1. Develop egg collector
4. Permanent net work development in order to develop self supported programme.	1. Improve management system components as housing, feeding, rearing etc. 2. Start Service charge
5. Credit facilities in order to start poultry enterprises after completion of training.	1. Small scale credit to the rearers
6. Government Involvement in order to increase access to Government resources & services for poor women.	1. Delivery of input and support service 2. Coordination meeting with Government staff
<i>Source: BRAC's Poultry Development Programme, 2005</i>	

Annexure 3: Changes in Weekly Food Intake by Village Organisation (VO) Member Households Before & After Joining the Poultry Programme

Particulars	Egg Consumption (Nos)				Meat Consumption (gms)			
	Before	After	Change	% Growth	Before	After	Change	% Growth
Poultry Workers	2.6	5.6	3.0	115	66.3	113.1	46.8	71
Chick Rearers	2.7	5.9	3.2	119	95.3	145.2	49.9	52
Key Rearers	2.5	4.8	2.3	92	73.5	120.9	55.70	65

Annexure 4: Average Monthly Income and the Effect on Income Utilisation

Particulars	Monthly Income (Taka)			Change in Pattern of Income Utilisation ¹						
	Before	After	% Change	Food	Clothing	School	Health	Housing	Saving	Others
Chick Rearer	2,955	4,455	50.8	1.0	0.7	0.6	0.5	0.4	1.4	0.1
Key Rearer	2,122	3,315	56.2	0.8	0.7	0.8	0.7	0.4	1.0	0.3
Poultry Worker	1,770	2,795	57.9	1.1	0.9	0.8	0.9	0.7	1.7	0.2
¹ 0=No Change to 25% increase; 0.1 to 1.0=Increase from 25% to 75%; 1.0 to 2.0=Increase of 75% and above Source: Saleque and Hossain, 2007										

The NDDB-FAO **South Asia Pro-Poor Livestock Policy Programme** (SA-PPLPP) is a unique livestock development program that aims to 'to ensure that the interests of poor livestock keepers are reflected in national as well as international policies and programs affecting their livelihoods'. It endeavors to do so by a) creating spaces for and facilitating dialogue among the actors playing a direct and indirect role in the livestock sector of South Asia, and b) drawing from and using lessons from field experiences to influence livestock-related policies, programmatic and institutional changes towards the benefit of poor female/male livestock keepers in the region.

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BRAC Bangladesh is one of the largest southern development organisations employing 120,337 people, with 61% women, and working with the twin objectives of poverty alleviation and empowerment of the poor. It has emerged as an independent, virtually self-financed paradigm in sustainable human development. BRAC works with people whose lives are dominated by extreme poverty, illiteracy, disease and other handicaps. With multifaceted development interventions, it strives to bring about positive changes in the quality of life of the poor people of Bangladesh as well as bring about change at the level of national and global policy on poverty reduction and social progress. Women and girls have been the central analytical lens of BRAC's anti-poverty approach, recognizing both their vulnerabilities but also their thirst for change.

For more information on BRAC, kindly visit their website at <http://www.brac.net>

About this Good Practice

In Bangladesh, where almost 80% of the population lives in rural areas and primarily depends upon subsistence agriculture and livestock for their livelihoods, poultry makes a significant contribution in both poverty reduction and improving food security. Small scale poultry has a special role to play as it is the women in rural areas who rear small poultry units within the homestead.

BRAC and the Department of Livestock Services (DLS) of the Government of Bangladesh initiated homestead based poultry rearing and related activities with the objective of facilitating a regular and sustainable income for rural women by overcoming constraints such as poor management, inappropriate breeds, lack of supplementary feed and access to health services.

This Good Practice note describes how small holder poultry production was mainstreamed to be a source of employment and facilitate improved livelihoods for the rural population. It reviews the Bangladesh Poultry Model and illustrates how small holder poultry production can help in income generation and empowerment of women while mitigating malnutrition, unemployment and poverty.

SOUTH ASIA Pro Poor Livestock Policy Programme

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