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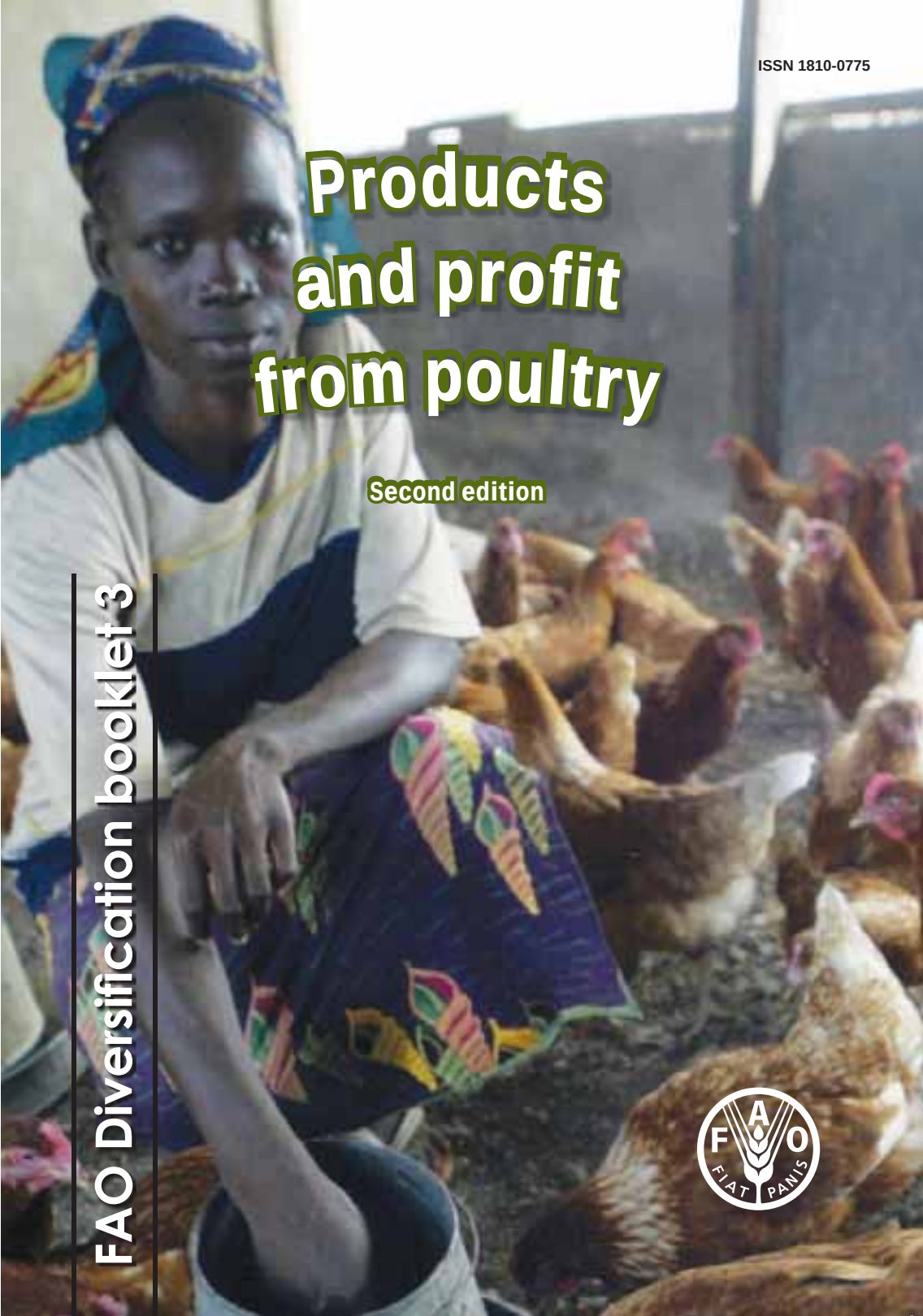
Products and profit from poultry

Second edition

FAO Diversification booklet 3



Diversification booklet number 3
Second edition

Products and profit from poultry

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Preface

The purpose of the FAO Diversification booklets is to raise awareness and provide decision support information about opportunities at farm and local community level to increase the incomes of small-scale farmers.

Each booklet focuses on a farm or non-farm enterprise that can be integrated into small farms to increase incomes and enhance livelihoods. The enterprises profiled in the FAO Diversification booklets are suitable for smallholder farmers in terms of resource requirements, additional costs, exposure to risk and complexity. The products or services generated by the enterprises are suitable for meeting demand on a growing, or already strong, local market and are not dependent on an export market.

The main target audience for these booklets are people and organizations that provide advisory, business and technical support services to resource-poor small-scale farmers and local communities in low- and middle-income countries. It is hoped that enough information is given to help these support service providers to consider new income-generating opportunities and how these might enable small-scale farmers to take action. What are the potential benefits? What are farmer requirements and constraints? What are critical 'success factors'?

The FAO Diversification booklets are also targeted to policy-makers and programme managers in government and non-governmental organizations. What actions might policy-makers take to create enabling environments for small-scale farmers to diversify into new income-generating activities?

The FAO Diversification booklets are not intended to be technical 'how to do it' guidelines. Readers will need to seek more information or technical support, so as to provide farmer advisory and support activities relating to the introduction of new income-generating activities. To assist in this respect, each booklet identifies additional sources of information, technical support and website addresses.

A CD has been prepared with a full series of FAO Diversification booklets and FAO technical guides, together with complementary guides on market research, financing, business planning, etc. Copies of the CD are available on request from FAO. FAO Diversification booklets can also be downloaded from the FAO Internet site.

If you find this booklet of value, we would like to hear from you. Tell your colleagues and friends about it. FAO would welcome suggestions about possible changes for enhancing our next edition or regarding relevant topics for other booklets. By sharing your views and ideas with us we can provide better services to you.

Acknowledgements

This booklet considerably updates the first edition of the FAO Diversification booklet No. 3. *Poultry for profit and pleasure* written by Brian Clarke in 2004, but has used parts of the original text within this second edition.

Gratitude is owed to David Hitchcock, Senior Enterprise Development Officer, Rural Infrastructure and Agro-Industries Division, (AGS), FAO, for reviewing and providing detailed advice on the booklet. Special thanks go to Doyle Baker, Senior Technical Officer, Rural Infrastructure and Agro-Industries Division, (AGS), FAO, who provided a technical review on a previous draft version of this booklet.

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Introduction

With the increase of world population and consequently in food demand, more and more land is being intensively cultivated and used for food production. Small-scale farmers in rural, peri- urban and urban areas are finding profitable opportunities for 'backyard productions systems' in terms of crops (see FAO Diversification booklet No.2 *Livelihoods grow in gardens*) as well as for small livestock (see FAO Diversification booklet No.14 *Small animals for small farms*). Home gardens that provide small-scale farm families with food and important surpluses to sell in local markets are now an integral element of many food systems. Many such gardens and backyards popularly raise poultry for family food requirements and for market.

Poultry refers to domestic birds that produce eggs and meat that can be consumed and traded by small-scale farmers. Poultry down and feathers

FIGURE 1 Chickens for sale in a market in Naivasha, Kenya
(Photo: M. Hilmi)

have also found multiple household uses and importantly numerous trade opportunities, while poultry manure is used as soil and farm pond fertilizer, hence contributing to increased crop and fish yields, and commercialization. Poultry manure is especially important to small-scale farmers who have difficulty in accessing and affording fertilizers, as well as those small-scale farmers who wish to make the best possible use of all the natural resources found and available on their farms.

Domestic chickens, turkeys, ducks, geese, guinea fowl, dove, pigeons, pheasants, quail and ostriches are raised throughout the world, with the popularity of farm production falling on chickens. Pheasant, quail and ostriches are more commonly found on large-scale commercial farms, while other poultry (chickens, ducks, geese) is found more commonly on small-scale farms and scavenging around rural, peri- urban and urban households.

Poultry and livelihoods

Poultry are socially accepted small livestock in many countries. Meat is a good source of protein, improving farm family nutrition and contributing to overall health of family members. Eggs provide a constant source of nutritious food throughout the year and are especially beneficial for young children, pregnant women and the elderly. Other parts of the poultry carcass, for example chicken bones, can be boiled and provide an excellent source of nutrition to those who are sick.

Poultry are commonly found in and around the homestead and hence provide a good opportunity for women to actively participate in a business opportunity that is also easily accessible and does not command excessive labour requirements. Poultry can also provide a form of 'savings account' for women who can have ready access to easily tradable products, such as eggs and meat that are popular among village dwellers and not only.

Poultry raising skills are not overly complicated and such an enterprise can be easily integrated with other farm activities and in many instances complement other farm enterprises. For example, chicken manure to fertilize soil; ducks that eat insects and parasites that can be harmful both to crops and livestock.

Domesticated poultry also contributes to environmental protection and conservation as people no longer have a need to hunt for protein sources in the wild.

CASE STUDY 1 **Poultry and livelihoods in Bangladesh**

Poultry farms in Bangladesh have witnessed a rapid growth in recent times. With an increasing population, growth in urbanization and increased incomes the demand for poultry products is expected to increase appreciably.

Poultry in Bangladesh is crucial to agricultural growth. This sub-sector is particularly important as it is a significant source of protein supply for the population's nutritional intake. It is an attractive economic activity as well, especially for women and the poorer sections of society and creates employment opportunities. Many people are directly dependent on this industry for their livelihoods.

Source: Adapted from Raihan, S. & Mahmud, N. 2008. Trade and poverty linkages. A case study of the poultry industry in Bangladesh, CUTS-CITEE Working Paper No. 6

Poultry as a business enterprise

Poultry does not require excessive space and labour for production. Meat, especially chicken meat, and eggs are commonly always in high demand. This means that small-scale farmers have opportunities to earn extra income, mostly on their doorsteps.

Initial start-up costs for a poultry enterprise, pending on type of poultry raised and size of enterprise, are commonly low and are fairly accessible to most small-scale farmers. Labour requirements are not excessive and housing and other structures required can normally be built using locally available materials. Feed is mainly based on crop by-products and on scavenging as well as on providing supplementary feeds. With appropriate management, care and vaccinations poultry can be kept healthy and productive.

The complementary nature of such an enterprise contributes to overall farm efficiency: poultry enterprises contribute to their own raising by scavenging harvested fields, for example wheat and maize fields, eating residues; with their manure they contribute to increased crop yields and in turn to by-product supplements that can be used in their feed.

Commonly opportunities exist for marketing poultry products to neighbours and in the local village market. However, serving more distant markets requires finding out what consumers need and want in terms of poultry products.

BOX 1 **Starting a poultry business**

Small-scale farmers prior to starting a poultry enterprise need to ascertain what market demand there is for various poultry products. This has to consider such aspects as price, quantities and acceptable quality levels. Costs need to be understood such as initial investment costs, production and marketing costs as well as expected revenues and the profit margin that can be made.

However small-scale farmers also need to ascertain support services that may be required for a small-scale commercial enterprise, for example the cost, access and availability of vaccinations. Moreover small-scale farmers need to also consider what other small-scale farmers are doing and if they are also producing poultry, as a new market entrant may only create a glut in the local market and depress prices.

FIGURE 2 A duck farm
(Photo: FAO/14219/P.Johnson)

Purpose of the booklet

Poultry, as an enterprise, can contribute to improving livelihoods in numerous ways. The booklet is aimed at increasing awareness, among all those involved in development programmes, at local, national and regional level, about the plethora of opportunities that poultry can provide to smallholder farmers.

CASE STUDY 2 **Poultry production in Mozambique**

Small-scale Poultry production in Mozambique is dominated by the village poultry sector accounting for 95 percent of the chickens produced and consumed in the villages (Fewsnet, 2006). Management is minimal and simply involves keeping the birds under free-range and scavenging conditions around the homestead. The farm family owns the birds and daily care is provided by women and children with little or no inputs for housing, feeding or veterinary care.

The little care bestowed upon the birds includes provision of table food scraps and/or limited amounts of grain or bran each morning. Villagers perceive these scavenging chickens as a natural low-grade crop that offers very desirable meat on occasions. However production is too unreliable to warrant committing investments in terms of time, money and other resources. There is no incentive to improve husbandry because frequent outbreaks of Newcastle Diseases cause total or partial exterminations of the village flocks. The husbandry practiced is unimproved and traditional and there is no deliberate effort to improve the chickens genetically.

Source: Adapted from Kaumbata, W. 2009. Comparison of small-scale livestock production systems in selected SADC counties

Benefits of the livelihood activity

Poultry at household level

Poultry are commonly raised in and around the farm homestead or in its immediate vicinity. This provides for easy, convenient and daily accessibility to food, such as eggs for example. Poultry thus not only provides more food security, but also increases the diversity of food consumed by the farm family.

FIGURE 3 A traditional henhouse in Ghana
(Photo:FAO/20879)

CASE STUDY 3 **The case of the Kuroiler breed and feeding children in West Bengal, India**

Krishna Kayal sees Kuroilers as a good source of eggs for her two growing sons Vivek (7 years) and Bikram (2 ½ years). She keeps a small flock of four hens to provide her with eggs and meat that come from a known source, her own birds!

Her Kuroilers have not let her down. She gets three eggs every day and her children consume them as omelettes daily. Krishna and her husband too get to eat them once or twice a week. This is very important for the family since they don't have access to any fish pond and the eggs are a major source of protein in their diets.

Source: Adapted from Ahuja, V., Dhawan, M., Punjabi, M. & Maarse, L. 2008. Poultry based livelihoods of rural poor: Case of Kuroiler in West Bengal, South Asia Pro-Poor Livestock Policy Programme, NDDB & FAO

Poultry products, such as down and feathers, can be of household use, for example in pillow making; by – products such as egg shells can be feed to other farm animals, for example pigs, and contribute to their nutrition; manure can be used to fertilize the home garden around the homestead and increase yields.

Women have easy access to such an enterprise and are commonly left in charge of raising poultry and managing the poultry enterprise. Women not only derive easy access to food from such an enterprise, but can also earn cash from selling poultry products and become more involved in family economic matters, increasing there say and status within.

A poultry enterprise provides immediate access to saleable products and its easy commercialization also can mean easy access to cash for the farming family. It can contribute to increasing production diversity of the farm's enterprises, lowering risk, reducing fluctuations in cash flow and enabling a more regular income.

Benefits to the farming system

Poultry can easily be integrated into local farming systems. Commonly poultry relies on feedstuffs that can be locally procured, and more then often

FIGURE 4 Keeping ducks in the rice field, after harrowing the soil, is a natural method of biological control and better land preparation. This is because ducks feed on the snails that thrive in the field during the planting season
(Photo: FAO/18236/J.Villamora)

crop by-products not fit for human consumption, are fed to poultry. Poultry also with their scavenging, especially after harvest time, provide to be effective and efficient in 'combing' areas where grains have been threshed or rice cleaned. Poultry also recycle nutrients from crop waste and return them to the soil. Poultry manure is also used as a fertilizer and is commonly used to grow crops, which later poultry will themselves feed on. Overall crop and livestock interaction are positive as per the complementary nature of poultry.

Importantly the cost of poultry is a lot less then goats, sheep (see FAO Diversification booklet No. 9 *Sheep and goats for diverse products and profits*) and cattle, and can hence be introduced more easily into a farming system, not burdening excessively other choices that the farmer may want to take for the farm business. Poultry in many cases does not require specialised housing and other complex farm structures and have good reproductive rates, so long as they are managed appropriately and kept in good health. Poultry interact with other livestock, as well as with farm ponds (see FAO Diversification booklet No. 13 *Farm ponds for water, fish and livelihoods*) and in many cases can provide to be good parasite reapers on larger livestock.

FIGURE 5 A model of an integrated fish farm: combination of fish ponds with ducks. The pen is built above the pond so that the water is fertilized directly with spilt feed and manure. The manure fertilizes pond plants which fish commonly feed on
(Photo: FAO/20906/K. Pratt)

Health and nutrition

Poultry meat and eggs increases the farm family's nutritional intake and provides for greater family health and overall contributes to more food security. Consumption of poultry meat and eggs is important for pregnant women, children and the elderly. Poultry can make a significant contribution in areas where child malnutrition is common. Enhanced nutrition improves growth, mental development, school performance and labour productivity and reduces the likelihood of illness.

Food security

Increased numbers of poultry, as a result of augmented poultry production and marketing, reduces prices and hence enables a great distribution of benefits in terms of food availability and access to larger segments of the population. This not only provides improved nutrition for many, but contributes significantly to food security. Urban communities and not only rural communities also benefit from such an expansion in the poultry trade as poultry farmers and traders look for new

FIGURE 6 An elderly woman raising poultry. The FAO project in El Salvador promoted the participation of women in decision-making and in income-generating activities and recognized the active and productive role of women in the community
(Photo: FAO/21530/G. BIzzarri)

untapped markets in where to sell their produce. Moreover the small size of most poultry and the ease in which they can be transported further enhances the opportunities for small-scale farmers and traders selling in distant markets.

Gender development

In many countries poultry raising is considered a women's business, but in many cases women have little or no access to the economic benefits of such an activity. Importantly sensitization needs to take place in communities not only to create awareness about economic advantages of poultry, but importantly the equitable distribution of benefits among the community's members, especially within farm households. Training focussed on gender that covers not only improved management practices, for example Poultry Farmer Field Schools (PFFSs), but also training in business management and marketing for women enterprises, can be of support to many development initiatives.

A woman who has access to such a business enterprise and importantly its benefits has the ability not only to look after herself, but also improves here stance within the family, community and provides a safety net in case of abandonment. It also enables women to be active outside their communities and create social networks with other women and can provide opportunities for further

CASE STUDY 4 **Women, poultry enterprises and the Kuroiler breed in West Bengal, India**

Kuroiler raising is primarily a women's enterprise and the external effects of women entrepreneurship in terms of intra-household expenditure allocation, nutritional intake and better education of girls are substantial. In this context, an argument is often made that the decision-making role of women in economic enterprises diminishes with the growth of the enterprise. As such enterprises grow and become more market oriented, men tend to take over and women again get relegated to tending household activities.

In terms of Kuroiler raising, though, there is no systematic decline in women's involvement with the size of enterprise. Indeed, women's involvement continues to be sizeable in all activities including disposal and utilization of poultry income, decisions about further investments and so forth.

Source: Adapted from Ahuja, V., Dhawan, M., Punjabi, M. & Maarse, L. 2008. Poultry based livelihoods of rural poor: Case of Kuroiler in West Bengal, South Asia Pro-Poor Livestock Policy Programme, NDDB & FAO

business transactions to take place. Moreover with poultry products such as eggs, which can be sold on a more regular basis then meat, allows women to ensure a far more regular income for the family household.

FIGURE 7 Woman, with a basket of birds on her head, counts her money after making a sale at a street market
(Photo: FAO/21816/R. Grisolia)

Opportunities for the sick and disabled

Poultry offers opportunities for the sick and the disabled. Commonly poultry raising is not labour intensive and operations are fairly repetitive and can be easily assimilated by those with learning difficulties. In communities that have been hard hit by the HIV/AIDs pandemic, poultry are livestock that can provide an easy enterprise to manage for elderly people and young children.

Improved income

Poultry offer numerous opportunities for improving small-scale farmers' income. The multiple products that poultry can provide not only increases the number of markets in which farmers can sell in, but provides a portfolio of products that enables more constant inflows of cash to the family farm. For example, eggs can be sold on a regular basis year round, and meat sales, that have been properly scheduled can also provide for revenue generation. Offal from poultry, along with down and feathers also offer other income generating opportunities as well as culls in the laying flock.

Poultry as a form of saving

Poultry, like other livestock, can be used as a 'savings account'. However poultry is more easily convertible to cash as prices paid

BOX 2 **Poultry and HIV/AIDS pandemic**

Households hit by HIV/AIDS suffer from loss of adults, capital and labor. However, village chickens require the lowest capital investment of any livestock species and they have a short production cycle. There are other advantages in comparison to goats and cattle, which require herders to stay with them during the day, which is impossible for households without working adults.

In households headed by widows, children or grandparents, chickens represent the easiest species to raise for sale and home consumption, providing a source of high-quality proteins, energy and vitamins, all of which play an important role in the nutrition of HIV/AIDS patients. Poultry production is an efficient and cost-effective way to increase the availability of high-protein food. Eggs are also a good source of other essential nutrients and can be stored under village conditions more easily than most foods of animal origin. For livestock departments, NGOs or any other organization seeking to work with poultry to the benefit of people with HIV/AIDS there may be benefits in collaboration with education and health ministries. Improved chicken production and use of chicken meat and eggs can be incorporated into an overall strategy for supporting households affected by HIV/AIDS.

are not as high as those paid for goats, sheep and cattle and can hence provide a safety net in times of need.

Livestock farming: Poultry the first step

Poultry more then often represents an important first step for many small-scale farmers in diversification from crops and a first important step in livestock rearing. Poultry is affordable to most small-scale farmers and can be used as a scaling-up enterprise to larger livestock, such as sheep and goats (see FAO Diversification booklet No.9 *Sheep and goats for diverse products and profits*).

Social, cultural and religious importance of poultry

In many countries, social good will is created by offering guests a meal containing meat. Guests may be given a live bird to take home as a mark of respect. Poultry and poultry products can be sold to obtain items that enable families to participate fully in community activities. In south Bhutan, for example, poultry play and important role in the worship of deities. The deities require animals be offered in pairs; a chicken, duck or pigeon can be paired with a large animal, or can be offered in the place of a goat or pig. Farmers in the region believe that the offerings will ensure that there will be no sickness in their household.

The feasibility of the livelihood activity

At village level, as commonly found in many countries, poultry enterprises are started with local birds and feeds to service local demand. If this type of operation is successful and there is a stable and growing demand, then the enterprise can be scaled-up to more sophisticated production systems that involve improved breeds and feeds as well as more sophisticated housing and equipment.

The type of poultry raised often reflects traditional interests and cultural values. These have evolved slowly and hence introducing poultry as a business as well as, for example, new types of poultry breeds, calls for care and sensitivity. In order to ensure that poultry as a business is viable in a defined area it is good to conduct a feasibility study. This needs to cover not only production aspects, for example the increase in poultry production in a local area (or can poultry be successfully introduced into the local area), but also and importantly marketing aspects.

Starting the business

In a feasibility study the primary factor to consider is local market demand for poultry products. If there is demand the next consideration is to find out the availability of local feed sources, access to them and the possibility of buying poultry feed. Estimates will have to be made if by-products can be used, if feed needs to be grown and/or bought and which option is the most feasible in terms of costs, labour time, etc. Feed mix costs and its results in bird yield will also have to be estimated. Water is yet another important element to consider, not only in terms of availability, but access and quality. An appropriate production system (improved free range system, small-scale confined system, etc.) needs to be planned and local or improved breeds considered in comparison to market demand and appropriate cost and profit calculations. Housing and equipment will also need to be taken into account, in terms of housing materials to use, fencing, and so forth. Lastly credit and its availability will also need to be considered.

BOX 3 **The effects of increased poultry enterprises in a local community**

As part of the feasibility study, attention needs to be paid to over influx a local area with too may poultry enterprises that market products all at the same time. Selling large quantities of birds and eggs in a small community will inevitably depress prices and all involved in the poultry supply chain will loose out.

BOX 4 **Main areas for consideration in a poultry enterprise feasibility study**

- Market demand
- Feed: sources, quality and access
- Water: sources, quality and access
- Production system to adopt
- Housing
- Health care and veterinary assistance
- Poultry breeds
- Credit and access to credit
- Costs and potential profits

Market research

The first step in a feasibility study is to ascertain market demand as well as finding out as much as possible about markets and importantly competition. This involves finding out what prices can be obtained, what poultry products are on sale, how many birds and eggs, for example, are sold, how can markets be accessed, what transport is available, and so forth.

Market research will be fairly simple if its objective is to find out the potential opportunities in selling poultry products to neighbours and/or in the local village market. However if the intended target markets are retailers (butchers), large town markets and urban cities, for example, the market research will be more time consuming and more complex. For example, in the case of butchers, it will be necessary to find out if others are supplying the butcher, what prices are paid, what quantities are being supplied, how often do products need to be supplied, when payments are made, etc.

Market information is very helpful in supporting production decisions, for example timing schedules for

when to introduce new birds to the laying flock, optimal flock numbers, type of feed, etc. Importantly market research cannot guarantee success and cannot eliminate commercial risk. Market research can only reduce risk by supporting decision-making with pertinent information.

Considerations for poultry production in the local area

Importantly every small-scale farmer's situation and context is different. Making estimations on the viability of poultry in a local area requires considerations on such factors as: social and cultural acceptance of poultry and/or commercial poultry production and poultry products; the local agro-ecological environment; and so forth.

Type of production system

Estimates will also have to be made on what type of production system to adopt or expand into as well as materials, equipment, labour requirements and risks of each system. Commonly villages have free range scavenging birds, which may be provided with occasional leftovers. This is not a very viable type of system for commercial poultry production, clearly pending on local demand. More commercial systems involve improved free range production systems, where poultry have a shelter provided, are given supplementary feed to scavenging and there is some health care provided. Moreover small-scale confined systems allow for some scavenging to take place, within a confined area and housing is provided along with feed and water and with more regular health care.

Whatever the production system intended to be adopted, it must be in line with market demand and local resource availability and accessibility.

Feed and water

Small-scale farmers need to make estimates of feed and water sources in their local area, quantities available, quality and importantly access to them. In terms of feed, estimates need to be made about supplementary feed, where it can be sourced from (home grown or bought), what ingredients can be used in the feed mix and of course its overall cost as related to market prices for poultry products. This is not commonly easy for small-scale farmers and support and assistance will be needed by advisors.

Water, its availability, access and quality will also need to be estimated as increasing poultry flocks require

greater supplies of water. In some instances, water equipment may be needed (drop drinking systems) and hence suppliers of such equipment, cost and maintenance services will need to be considered.

Housing

Building housing for the poultry flock will also need to be considered. Materials that can be used, their local availability, other equipment that may be needed, such as nests and so forth need to be all estimated.

Health care and veterinary assistance

Estimates will need to be made on such aspects as required vaccinations, regular check-ups and importantly the possibility of epidemics within the flock. Veterinary assistance in the area will also need to be ascertained as well as possible access to training in primary veterinary care.

Credit

Commonly setting up a small-scale poultry enterprise is not very costly at all. However the more the enterprise is commercially–oriented, the more inputs will be required. This type of operation may well need funds that the farmer does not have. This implies making a detailed estimate of the money required, the period of the year when money is required, the various options of where the money can be sourced from and understanding interest rates involved as well as the period of loan repayments.

Costs and profits

Feasibility of a poultry enterprise mainly rests in the calculation of estimated costs and expected profits. Calculations need to be made for all production and marketing costs. Investment costs in the case of a new poultry enterprise involve such aspects as housing, equipment, fencing, buying chicks, etc. Production costs relate to labour, feed, water and veterinary costs and medicines. Marketing costs typically involve transport, market fees, etc.

Once costs have been estimated they will need to be compared against market prices and this will provide an estimate of the profit potential for the poultry enterprise.

Evaluation of the livelihood activity

Profit is clearly an optimal indicator for evaluating if a poultry enterprise is feasible or not. However other factors will need to be considered,

for example, the willingness and motivation of a small-scale farmer to start the enterprise or expand current poultry operations; required changes to the current farming system; increased work load on the farm family; women and social factors constraining business operation; social status of poultry herding, etc. Overall the final evaluation needs to consider all pertinent factors discussed so far. The final decision though needs to rest in the realm of small-scale farmers.

CASE STUDY 5 **The potential for chicken enterprises in Afghanistan**

Background

A supply chain study of the poultry subsector conducted in 2004 found that 99 percent of Afghanistan's chickens were raised using a "backyard scavenger system," and operations were almost exclusively owned by women. High mortality as a result of disease and low egg production because of poor feeding rendered the productivity of these chickens insufficient to meet domestic demand for both eggs and meat. As a result eggs and live birds were being imported from Pakistan and Iran, and frozen chicken meat from Brazil and the United States of America, to supply about 90 percent of what was sold in urban markets. Village producers sold what surplus eggs and live birds they had locally or to traders who transported them to urban markets. There were also some peri-urban producers using a more sophisticated, semi-commercial approach to rearing chickens. They marketed products from their home or through local market channels.

At the next level of the supply chain, the study found urban wholesalers of imported table eggs and of frozen chicken meat for distribution in urban markets. Urban retailers of table eggs and frozen meat sold in small stores throughout urban areas. Urban semi-wholesalers of imported live birds from Pakistan and Iran distributed them in large central urban markets. Urban live bird retailers were small vendors of imported or village live birds obtained from semi-wholesalers or village live bird traders.

Potential

There is good market potential for eggs, live chicken, chicken cuts and butchered chickens produced in Afghanistan for the local market. But careful production planning, execution and marketing are essential for the success of operations. Several semi-commercial and commercial ventures have failed in the past few years because of a lack of technical skills in poultry production; the cost and difficulty of securing timely inputs such as chicks, proper feed mixes and fuel; and inattention to marketing.

Source: Adapted from USAID.2008. Case study of the poultry and grape/raisin subsectors in Afghanistan, Microreport No. 106

The livelihood activity

In most rural areas suitable for poultry production, farmers are already raising their own birds. Output of village poultry in terms of weight gain and number of eggs per hen per year is often low, but there is minimal input in terms of housing, disease control, management and supplementary feeding.

Rural poultry flocks consist mainly of chicken, whether in Africa, Asia or Latin America. With regard to other types of poultry, there are many more ducks in Asia than in Africa and Latin America, while the number of turkeys, comparatively, among the regions is highest in Latin America, followed by Africa and Asia. Africa leads on Guinea Fowls. The most common rural household poultry flock in all regions is small and frequently consists of only 3 to 5 adult birds, but flocks can of course be larger and consist of many more birds. The largest flocks will typically be seasonal duck flocks in Asia that scavenge the fields after the rice harvest. A scavenging hen lays only 30 to 50 eggs per year distributed over 3 to 4 clutches, but can lay more, up to 100 with some management interventions. By comparison a hen raised commercially under optimal conditions will lay between 280 to 300 eggs.

Poultry: Major types and breeds

Domestic chickens

The domestic chicken descended from the Asian jungle fowl. Two types of domestic chicken have been developed in recent decades, one for eggs and one for meat. Breeds such as the New Hampshire and the Light Sussex were previously used for both purposes. Dual-purpose breeds are inefficient in competitive commercial markets, but they are ideal as household chickens; cocks are used for meat, hens for both eggs and meat.

Many local breeds are recognized. They are well adapted to their environments: they can avoid predators by flying, and the colour and patterns of their feathers provide camouflage. Hens' strong instinct for brooding enables them to hatch their own eggs and mother the vulnerable chicks. They scavenge for food, so they require little attention. Their meat has a strong flavour that is generally liked by consumers; it is

well suited for boiling, a common way of cooking meat. Their eggs often have a light brown shell and a dark yellow yolk which consumers like.

Domestic turkeys

The turkey was probably domesticated in Mexico. It was used as a domestic fowl of Native American communities in what is now the South-western United States of America. Turkey meat is high in protein and low in fat; it therefore has high nutritional value. Turkeys were introduced into Europe in the 1500s as a result of European colonization of Central America. They are now raised worldwide; over 50 percent of production is in developed countries. The main breeds are the Norfolk Black, Mammoth Bronze and the Broad-breasted Bronze. The lighter breeds do well in the dry tropics if they are allowed to range and there is adequate shade and feed.

Domestic ducks

The Mallard is generally regarded as the ancestor of the domestic duck except for the Muscovy from South America, which actually belongs to the goose family. Of the 800 million ducks kept worldwide, 550

FIGURE 8 A chicken and chicks in Nicaragua
(Photo: FAO/PO_NIC_0091/S. Palma)

FIGURE 9 A woman farmer feeding a flock of turkeys
(Photo: FAO/ 24710_8313/ V. Maximov)

FIGURE 10 A woman farmer feeding her ducks in Bangladesh
(Photo: FAO/ 24706_1752/ M.U. Zaman)

million are in Asia. Commercially raised ducks such as the Aylesbury and Peking are primarily for meat: those such as the Khaki Campbell are for eggs. Local breeds of ducks are recognized in many countries. The Muscovy is an extremely good forager that does well under free-range conditions, because it does not need much water. The meat of the Muscovy contains less fat than other breeds.

Domestic geese

Geese are raised primarily for meat, and they also produce excellent feathers. Domesticated geese descend from the Wild Grey Goose of Europe and the Swan Goose of Asia. Domestic geese are much larger than their wild ancestors and can no longer fly. Geese are exceptionally good grazers and will eat large quantities of grass and herbage, which makes them useful in many countries where they can graze in the place of animals such as goats that damage crops. For example in Egypt they are used as scavengers around villages and are also used to weed cotton before insecticides are introduced.

FIGURE 11 A flock of geese at Red Star People's Commune near Beijing. This farm produces 10 000 geese a month for the Beijing market
(Photo: FAO/8859/F.Botts)

The main meat-producing breeds are the Toulouse, Oie des Landes, Embden, Roman, American Buff and Pilgrim, which descend from the European Greylag Goose. The Chinese breed probably descended from the Swan Goose; it is well adapted to hot climates and capable of laying 100 eggs per year.

Guinea fowl

Guinea fowl originated in West Africa, but are now raised in many parts of the world although the numbers raised outside Africa are small. In France and Italy, they are raised commercially under intensive conditions for eggs and meat. Under village conditions, guinea fowl usually do not brood; their eggs are hatched under domestic chickens. There are well-known varieties: the Pearl, the White and the Lavender.

Doves and pigeons

In countries were doves and pigeons are raised, owners provide overnight housing and the birds scavenge for their food. They are often raised in villages in conjunction with domestic chickens and ducks.

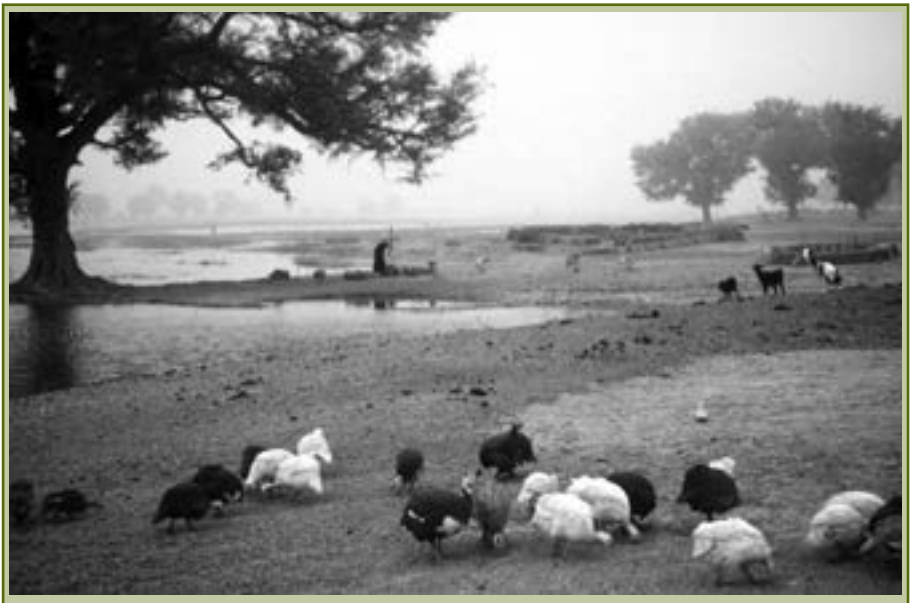

FIGURE 12 A flock of Guinea fowl in Yemen
(Photo:FAO/12194/J. Van Acker)

FIGURE 13 Pigeons while feeding
(Photo: FAO/ 24634_4400 /T. Tinazay)

Essentials of poultry production: Housing, breeding and feeding

At village level poultry production systems can be divided into three different categories: traditional free-range; improved free range; and small-scale confined rearing system. Table 1 shows the three production systems. There are also other production systems, associated with far more commercialized poultry production: confined in deep litter; contained with raised floor; and cage or battery.

TABLE 1 **Poultry production systems at village level**

Village-based poultry production systems		
Traditional free-range	Improved free-range	Small-scale confined
1 -10 birds	5 - 50 birds	50 - 200 birds
Low input	Low input	High input
Low output	Low output	High output
Home consumption	Home consumption and sale on local market	

TABLE 1 **Poultry production systems at village level** *(Cont.)*

Village-based poultry production systems		
Traditional free-range	Improved free-range	Small-scale confined
Small cash income	Family income	Business income
Social & cultural importance (gifts, religious)	Social importance	Little social importance
Indigenous breeds	Indigenous / imporved breeds	Hybrids (broilers or layers)
High mortality	Moderate mortality	Low mortality
No feeding (scavenge)	Local feeding/semi-scavenge	Balanced feeds
No vaccination	Newcastle disease vacc.	Several vaccination schemes
No medication	Little med/local remedy	Full medication
No housing	Simple housing	Houses with cages or deep liter
30 - 50 eggs/year/hen	50 - 150 eggs/year/hen	250 - 300 eggs/year/hen
Long broody periods	Short broody periods	No broodiness
Growth rate: 5 - 10 g/day	10 - 20 g/day	50 - 55 g/day

Source: SCC. 2006a. Poultry keeping for small-scale farmers: Book one, management, animal selection, breeds and feeding, Swedish Cooperative Centre

Traditional free-range

In this type of production system the poultry flock (between 1 and 10 birds) is provided with no shelter, feed or water, even though they may receive occasional scarps from the farmer. The poultry flock finds its own shelter, avoids predators via its instinct and breeding is uncontrolled. In this system local breeds are used. Vaccinations that may be administered only occur in the case of widespread epidemics.

In such a production system the flock produces few eggs, which are commonly hidden, and meat yields per bird are small. There is also a high rate of chick loss as per disease and predators as well as theft.

FIGURE 14 Free-range chickens
(Photo: M. Hilmi)

Improved free range

Housing is provided for the poultry flock, which is comprised of 5 to 50 birds on average, but commonly only as an overnight shelter and some supplementary feed is provided along side the flock's scavenging. Breeding is not controlled, but nesting is provided by the farmer. In this system, local breads are used. In such a system some vaccinations may be provided. Here egg production is higher then the traditional free range and meat yield per bird is more or less the same, even though supplementary feed, pending the amounts, can contribute to slightly higher yields per bird.

Small-scale confined

Small-scale confined systems can come in many types and flock size is commonly between 50 to 200 birds. The main aspect is that the poultry flock is sheltered during nights and unfavourable weather. Some systems allow for fencing where poultry are free to scavenge in the permitted area. In this type of system local breeds are used as well as improved breeds. In such a system the farmer provides water, feed and care when needed. Here eggs yields and meat carcass yields are higher then the improved free range production system.

FIGURE 15 Improved free-range chickens provided with traditional housing and some supplementary feed
(Photo: FAO/ 24706_0581/M.U. Zaman)

FIGURE 16 An example of a small-scale confined poultry production system in Guinea
(Photo: FAO/21776)

Confined in deep litter

In this system poultry are confined permanently. The floor has a deep litter commonly composed of either wood shaving or hulls from rice and wheat, which are good at absorbing moisture. The litter can be up to about 15 cm deep. The birds are commonly improved breed and feed, water, nesting, medications and perches are all provided by the farmer indoors. Such a system requires a considerable investment per bird; yields in eggs and meat increasing accordingly.

FIGURE 17 Intensive production of confined chickens in deep litter
(Photo: FAO/3308/G. Tortoli)

FIGURE 18 Chickens in a coop with a raised wooden floor
(Photo: FAO/ 24716_0143/W. Astrada)

FIGURE 19 Gathering eggs from battery egg-laying hens
(Photo: FAO/ 24634_4742/T. Tinazay)

Contained with raised floor

This production system is similar to that of the confined deep litter, the only difference being that the flock lives on a raised floor that is semi-open to allow for manure to drop to the floor below.

Cage or battery

This type of production system is only used for egg production. Birds live in cages and can be placed in various types of buildings, pending on investments made by the farmer. Commonly birds used in such systems are improved breeds.

CASE STUDY 6 **Poultry production systems in some countries of the South African Development Community**

Small-scale poultry production in the region is characterized by traditional poultry keeping which involves free ranging where the birds are left to fend their own feed and are hardly fed concentrates except kitchen wastes. It is characterized by low (or zero) input and low output, except in urban and peri-urban centres where commercial backyard chicken production is practiced. The majority of poultry keepers in this sector are poor small-scale farmers who usually reside in rural areas. For example in Mozambique 95 percent of the chickens consumed in rural and peri-urban centres come from the village poultry sector, and in Zambia and Tanzania it is almost 100 percent. In many countries the major drawback is high mortality as a result of Newcastle Disease.

Source: Adapted from Kaumbata, W. 2009. Comparison of small-scale livestock production systems in selected SADC counties

FIGURE 20 In Bangladesh a vaccinator and poultry expert shows the difference between the egg from the improved breed of hen and the deshi hen (local breed). The new breed of hen can lay many more eggs than the deshi hen
(Photo: FAO/12654/F. McDougall)

Breed

Breed determines the characteristics of the bird, for example in terms of shank length. Raising the right kind of bird is crucial to the success of a poultry flock. The birds must be adapted to local conditions and not associated with local taboos. Local birds, in many cases, out perform their commercial cousins, commonly in village conditions. Local varieties are well adapted, can find their own feed, take care of the young and are good at escaping from predators. Local breeds can be improved by replacing local cocks with more productive cocks, so as to avert in-breeding, mating only the more productive layers, culling unproductive animals and not selling too many eggs that are fertile i.e. chick is in development inside the shell.

Choosing the right breed is important pending on the type of production required. Birds can be duel-purpose (meat and eggs) or can be only meat and only egg producing. In general terms for chickens, hens for egg production are 'boat-like' shaped, while meat producers have long legs.

Feed

The feed available for scavenging birds depends on location, season and the resources of the

FIGURE 21 Poultry feeding from new troughs
(Photo: FAO/21775)

BOX 5 **Feed management good practices**

- Local feed ingredients for local breeds
- Knowledge is required of quality, feed value and price and possible changes to prices of each feed ingredient
- Feed mix should be changed based on availability of ingredients, quality and prices
- Flock size to be reduced in lean seasons and if feed becomes too costly
- Feed changes should be done slowly and gradually
- Feed ingredients need to be mixed uniformly
- Mixed feed and feed ingredients should be stored separately
- Allow for ventilation in storage to avoid humidity
- Ensure safe storage so as to avert rat and other pests from contaminating feed

Source: Adapted from SCC. 2006a. Poultry keeping for small-scale farmers: Book one, management, animal selection, breeds and feeding, Swedish Cooperative Centre

household (Mekonnen *et al*., 2010). Supplementary feeding can greatly improve the birds' performance and the great challenge is to ensure that the feed provided is affordable, locally available and provides a balanced diet. When supplementary feed is scarce, farmers should be encouraged to ensure that chicks up to the age of two months have access to additional feed; young chicks are the first to suffer from feed shortage and their survival rate will fall. Creep feeders made from local materials dispense small quantities of feed without greatly increasing the amount given to household poultry.

Housing

Housing of poultry is important for production efficiency and for better management of the flock. Housing protects birds from the hot sun, rain, spells of cold, predators, thieves and importantly also provides shelter for eggs.

The type of housing facility built for the poultry flock will depend on local tradition, available building materials and their cost, and importantly if the housing provided will increase commercial returns. Houses can be built from wood, stone, brick, bamboo, etc. However several factors need to be considered for housing poultry:

- *Location:* House needs to be oriented in a way that it is protected from wind, but allows for ventilation; prevents too much heat from penetrating; and allows for sufficient drainage of wet floors.

- *Temperature control:* Temperature needs to be considered within the house. Extremes in temperature inside the house, either too hot or cold are stressful on poultry; feed and water that is placed in the house also should not be exposed to temperature extremes. Water left for drinking always needs to be clean and cool.
- *Insulation:* Poultry health is commonly promoted by insulation that protects from temperature extremes.
- *Ventilation:* To avoid smothering in birds ventilation is essential.
- *Moisture control:* Controlling moisture inside the house is important. Humidity that results in wet droppings can cause disease.
- *Space:* Adequate space needs to be left per bird as over crowding can provide for nervousness, pecking and cannibalism.
- *Roof:* Roof needs to be rain proof and protect against the sun.
- *Floors:* Floors built will depend on type of production system chosen, but overall should be built so they are easy to clean and convenient in removing manure.
- *Protection:* House needs to protect against predators.

BOX 6 Ten simple rules for good housing

1. Build houses out of local materials to reduce costs;
2. In wooden houses, use slatted, raised floors to remove droppings and avoid predators;
3. In clay houses, use wire mesh for the windows to keep out predators;
4. Place the perches and nests inside the house, and make them removable to facilitate cleaning;
5. Make sure winds will ventilate the house without making chickens or hens cold;
6. Place the house so that heavy rains will not damage or enter the house, and the sun will not overheat it;
7. Provide nests with clean straw, and make sure that you can easily control, clean, and move them;
8. Make sure that houses are easy to enter and clean;
9. Always house young chicks with their mother away from other adults;
10. To reduce chick mortality and reduce costs, use baskets for night and day shelter.

Source: Permin, A., Riise, J.C., McAinsh, C. V. & Frederiksen, L. 2007. Keeping village poultry, a technical manual on small-scale village poultry production, Danida

Disease control

Vaccines and medicines exist, but are not always available for poor households keeping poultry in rural areas. Accordingly the biggest challenge is organizational, i.e. how to deliver medicines and vaccines to rural households in a timely and sustainable manner. The answer lies in keeping an open mind to the ways in which the delivery of vaccines and medicines can be organized by involving representatives from the private sector or NGOs to complement the government's efforts, often by using lay vaccinators. Important diseases to organize for are Newcastle disease (ND) in chicken, where commercial ND vaccines can prevent the disease in areas with an adequate cold chain and in areas where that is impossible a thermo-stable vaccine should be used. However, there may be other diseases to account for like fowl cholera and fowl pox. Duck plague is a common problem in ducks. Parasites are a problem in both chickens and ducks.

Poultry health programmes need to be set up as prevention is better then cure and can avert costly bird losses. A programme needs to be devised that considers: vaccinations; blood testing; providing nutritionally

FIGURE 22 Extension training: an extension worker using didactic material to teach farmers how to vaccinate poultry against cholera
(Photo: FAO/21491/G. Bizzarri)

balanced diets; introducing sanitary rules for the flock, for example new birds are never directly introduced into the flock; and keeping poultry house and premises clean.

Poultry health

Health management is not only about looking after diseases and vaccinations, but it is about an overall management strategy of birds in a poultry flock. Poultry as a business requires birds to be productive and profitable. Birds that are poorly fed, have little access to water, are not allowed to behave naturally, are badly handled and live in unhygienic surroundings, and have not been vaccinated and/or treated with some medicines when required, are affected by worms and parasites, will be inefficient and unproductive. Table 2 below shows the difference in appearance of healthy and unhealthy birds.

TABLE 2 **Appearance of healthy and unhealthy birds**

Healthy	Unhealthy
Smooth and net feathers	Ruffled and loose feathers
Breath quietly	Cough, sneeze and breath noisily
Soft and compact droppings	Wet droppings or diarrhoea
Eat and drink normally	Eat and drink less
Alert	Dull eyes and comb
On guard	Tired and lifeless
Walk, run, stand and scratch continuously	Sit or lie down
Lay eggs normally	Lay less or stop laying altogether

BOX 7 **Overall good management practices for a chicken enterprise and healthy bird characteristics**

Overall management practices:

- Poultry houses that are simply built and easy to clean
- Perches inside house
- Provide day and night nests that are clean
- Check nests two times a day
- Clean poultry house on a daily basis

BOX 7 **Overall good management practices for a chicken enterprise and healthy bird characteristics** *(Cont.)*

Overall management practices:
- Provide quality feed
- Unlimited access to clean water
- While feeding separate adult birds from chicks
- Check birds health regularly (see below)
- Check for worms and external parasites
- Check for feather pecking and cannibalism
- Follow vaccination and treatment programmes
- Isolate sick birds immediately from the rest of the flock
- Cull unproductive birds

Characteristics of a healthy chick:
- Well developed body length and depth
- Shiny, dry, thick coloured feathers
- Soft belly
- Clean, dry navel hollow
- Thick shank with spaced out toes
- Big clear eyes
- Lively behaviour

Characteristics of a healthy growing bird:
- Appears healthy and lively
- Feathers are shiny and not roughed
- Feathers are clean around vent
- Eyes clear and shiny
- Clean and dry beak and nostrils
- Straight legs and toes
- Large size for age

Characteristics of a healthy egg-layer:
- Appear healthy and lively
- Feathering normal for breed
- A red comb (more coloured when in lay)
- Eyes clear and shiny
- Clean and dry beak and nostrils
- Clean feathers around the vent
- Straight legs and toes
- Less coloured in lay
- Breast bone not too sharp

Source: Adapted from SCC. 2006a. Poultry keeping for small-scale farmers: Book one, management, animal selection, breeds and feeding, Swedish Cooperative

Intensification in poultry production and improved management

It may seem that having more poultry may make an enterprise more profitable, but this is not always the case. Care needs to be taken to ensure that inputs and expertise are available as well as affordable. As the density of a poultry flock increases more sophisticated disease-control measures are required. Improved breeds need good quality housing and feed to produce well. Improved hens, for example, do not brood instinctively, so replacement stock needs to be considered. This in itself requires a reliable source of day-old chickens or older birds in the case of layers.

Overall improvement in poultry production, in a cost effective manner, requires the introduction of appropriate management skills, and husbandry inputs such as supplementary feed, disease control, shelter, community collaboration, farmer group formation and the development of effective marketing strategies.

BOX 8 Keeping track of the poultry business: Record keeping

Every business should keep records on their activities and what they own. In poultry enterprises this is even more important as tracks need to be kept on births, numbers in the flock, eggs laid per day, vaccine administered and when, treatments received and which bird received which treatment and so forth. This will help better manage the poultry enterprise, reduce costs and improve required interventions. Records need to be kept on the following:

- Where possible keep a record for each bird;
- Vaccine and medicine: Price, date of purchase, when administered, for what reasons and the effects it had on the bird;
- Feed and intake: Feed expenditures, quantities, price and date of purchase; amount of feed intake; weight of bird; rate of egg laying;
- Egg production: Date of hatching of layer; laying percentage and length of laying period; number of eggs laid per day; egg weight; changes in egg production;
- Meat production; Size of bird; weight;
- Losses: Bird and egg losses;
- Family consumption and gifts: meat and eggs consumed; gifts;
- Income: Sales of meat and eggs; value of meat and eggs consumed and given as gifts; production and marketing costs (materials for house, laying nests, vaccines, labour, transport, market fees, etc.).

Source: Adapted from SCC. 2006a. Poultry keeping for small-scale farmers: Book two, management, animal selection, breeds and feeding, Swedish Cooperative Centre

Sustainable strategies for the livelihood activity

Simply expanding poultry production and/or introducing poultry enterprises into new localities is no guarantee of success. A poultry enterprise to be successful and earn profits requires market outlets where to sell quality produce. This requires planning as estimates need to be made on egg and meat production in a year and how much can be provided to markets. It is also necessary to ascertain who the customers will be, the costs involved and the risks involved in the intended production and marketing system that will be employed for the enterprise.

Marketing channels

Small-scale farmers have a number of options to choose from in organizing for marketing. They can sell their products direct to consumers and/or may chose from a variety of marketing organizations that comprise a marketing channel and/or may choose to join a producer organization and market poultry produce collectively with other farmers.

Small-scale farmers which are not at an excessive distance from consumers can carry out direct marketing. However they need to consider the time involved in direct

BOX 9 **Poultry products**

Poultry meat

Poultry offal

Eggs

Down

Feathers

Manure

Slaughter waste

marketing, the costs, skills and techniques required for marketing as well as transport. Small-scale farmers selling directly to consumers can sell their poultry products from the farm gate, set up a stall in the local village market, street hawk and also provide door-to-door sales.

In terms of direct sales of eggs to final consumers, small-scale farmers need to be advised about quality and health factors and avert breakages and excessive exposure to heat, water and other factors that can reduce the quality and safety level of eggs. However when it comes to live birds and the necessity to carry out slaughter operations, farmers must be knowledgeable not only of how to slaughter birds appropriately, but be aware of safety risks in terms of meat contamination. This may well require training support and demonstrations on how to slaughter birds on-farm.

Transporting live birds to market is a common practice, but more then often transport conditions of birds are not ideal and arrival at markets sometimes reduces the quality of the bird as it has broken feathers, bruises or has fought with other birds while in transit. Appropriate transport methods are fundamental to up hold quality of birds for sale in local markets. Eggs also need to have careful transport methods devised as they may not only break, but with excessive exposure to heat, for example, while in transit, can compromise their quality.

Indirect marketing is when small-scale farmers sell their poultry products to marketing organizations found within the poultry supply chain. Commonly this is because markets that are being served are at a distance from the location of the producing farm. Marketing intermediaries are commonly rural traders, assembly merchants, wholesalers and retailers (butchers and street food vendors, for example).

Poultry products

Meat is mostly sold as a live bird, so as to enable consumers to verify the healthiness of the bird at time of sale. Meat carcasses are also sold, commonly in markets, where butchers and/or street vendors slaughter the animal at moment of sale and prepare it for consumers. Birds that are reared specifically for meat are marketed between 8 to 20 weeks of age. Less than 12 weeks of age meat is very tender, while from 16 to 20 weeks meat is less tender. After 20 weeks meat tends to be tougher and is usually consumed in stews or boiled.

Commonly in markets for live birds prices are highly variable as

FIGURE 23 Women on-farm who have slaughtered and plucked chickens on demand for immediate sale
(Photo: FAO/18592/G. Bizzarri)

CASE STUDY 7 **Transporting live birds in Kampala, Uganda**

The transport of live chickens to urban markets was largely by buses, taxis, lorry trucks (92.2 percent) and motorcycles (Bodaboda) (7.8 percent). Traders of Nakawa, Nakasero and St.Balikuddembe had their chickens transported on taxi racks and in bus boots. For Kalerwe market, most of the chickens were transported using motorcycles. This was because the source of local chickens was within Kampala and Badaboda motorcyclists could agree to offer transport services.

Source: Adapted from Emuron, N., Magala, H., Kyazze, F.B., Kugonza, D.R. & Kyarisiima, C.C. 2010. Factors influencing the trade of local chickens in Kampala city markets, Livestock Research for Rural Development 22 (4)

they depend on: demand, which for example can be very high during festivities; size of bird; appearance; colour; and weight of birds. For example, in the case of chickens, cocks normally command a higher price then hens. Local breeds normally command a higher price then improved breeds and the demand for local birds is increasing as consumers view them as haven been reared on feed that is free from antibiotics and 'promoters of growth'.

FIGURE 24 Poultry being sold in a market in Togo
(Photo: FAO/ 24722_0392/ G. Napolitano)

CASE STUDY 8 **The influence of price on market participation of small-scale poultry farmers in Kenya**

Over 70 percent of the domesticated birds in Kenya are indigenous chicken providing meat and table eggs. They are frequently raised through the free range, backyard production system. Small flock sizes are a characteristic of this production system and often, sales are mainly at the farm gate. Although indigenous chicken production possesses enormous potential marketing systems are undefined and variable. The influence of prices on market engagement has frequently been assumed. A study of 68 farmers conducted in Machakos, Kibwezi, Nzaui and Mwala District in 2008 revealed that 70 percent of all indigenous chicken sales were conducted at the farm gate while only 19 percent of the sales were at the local market. Farmers complained of poor farm gate prices for indigenous chicken offered by middlemen.

Source: Adapted from Mailu, S. & Wachira, A. 2009. The influence of prices on market participation decisions of indigenous poultry farmers in four districts of Eastern Province, Kenya, Munich Personal RePEc Archive

In more developed settings where a refrigerated supply chain is available, poultry meat can be marketed in slaughtered form. Under these conditions meat can be sold: dressed (slaughtered, bled and plucked); eviscerated and ready to cook; poultry parts (legs, wings, etc.); and boned (muscle, fat and skin only). Meat can also be cooked and sold; as for example, by street food vendors (see FAO Diversification booklet No. 18 *Selling street and snack foods*).

Poultry eggs are sold far more frequently then live birds and hence provide a more regular source of income for small-scale farmers. Eggs need to be marketed as soon as possible, while still fresh, if refrigeration is not available. Eggs need to be kept out of direct sunlight and away from sources of heat. To minimise breakages eggs need to be packaged appropriately in egg trays preferably, but if these are not available in other suitable packaging materials, for example banana leaves, in boxes with saw dust or wood shaving or chopped dry grass. Eggs sold are either fertile or non-fertile eggs. However non-fertile eggs are usually found more in peri-urban and urban areas, more than in rural and remote areas.

FIGURE 25 Fried chicken for sale in Thailand
(Photo: FAO/24511/D. White)

FIGURE 26 Selling eggs using egg trays
(Photo: FAO/ 24632_0761/S. Nelson)

Eggs from local breeds are more expensive even though they are smaller then eggs from improved breeds. This is because consumers see local eggs as being more wholesome and thus demand is high.

Quality and safety

Live birds for sale in markets, and along the poultry supply chain, are not sold based on formal quality standards. Grading is commonly carried out visually with buyers identifying age, weight, condition of feathers and breed. Formal grades exist for poultry meat carcasses as quality features can be more easily characterised and codified. Such quality features are appraised in relation to species, sex and age. Aspects related to such standards are: conformation (the shape of the carcass); fleshing (muscles are full and well developed, assuring a good proportion of meat to bone); fat (fat under skin is important because it gives the carcass a light appearance by covering up the pink or red muscles underneath); skin dislocations, tears and cuts; and bruises.

Consumer acceptance of poultry meat varies depending on its tenderness, flavour and juiciness. Live birds need to appear healthy,

clean, have no missing or displaced feathers, bare skin and cuts, and broken bones. Birds with these quality characteristics commonly need to be managed properly while rearing: appropriate feed, water, housing, vaccinations, medications and allowed to behave in a manner that does not go against their natural behavioural patterns. Moreover, and as mentioned previously, while in transport to market, birds need to be placed in crates and/or baskets that are not overcrowded, allow for air circulation and overall are handled appropriately.

Eggs are more easy to grade formally, even though in many markets traditional grades are used as parameters to define quality. Commonly found quality characteristics consider shell, yolk and albumen. For example shell quality considers such factors as cleanliness, soundness (unbroken), smoothness and shape. Internal quality is usually carried out by 'candling' i.e. placing the egg in front of a source of light and inspecting the yolk. Quality yolk is round and firm.

Upholding egg quality depends on numerous factors. These factors are good overall management of the flock, breed, age, the quality and safety of feed and water provided, disease control, housing and of course appropriate collection and handling of eggs. Temperature control is a critical factor while marketing eggs, as if exposed to excessive heat and humidity, egg deterioration will accelerate rapidly. Appropriate packing is also important in temperature control and for handling and other marketing operations.

CASE STUDY 9 **Quality attributes as perceived by chicken traders in Uganda**

Traders gave different reasons as to the qualities considered by consumers when purchasing local chickens. More than half of the traders (56.7 percent) perceived taste as the main attribute that attracts consumers to local chickens. According to the traders, local chickens were also thought to be drug free when compared with their exotic counterparts. Traders also asserted that some of their customers considered local chickens as having a vital role in socio-cultural functions, for which exotic chickens were not acceptable. Consumers were reportedly willing to pay more money for the purchase of local chickens.

Source: Adapted from Emuron, N., Magala, H., Kyazze, F.B., Kugonza, D.R. & Kyarisiima, C.C. 2010. Factors influencing the trade of local chickens in Kampala city markets, Livestock Research for Rural Development 22 (4)

Eggs that are dirty usually obtain lower prices then clean eggs. Eggs have a natural coating that protects it from bacteria and moisture penetration. Eggs that are washed remove this coating and cleaning eggs via rubbing with a cloth or fine sandpaper lightly is more appropriate.

Small-scale farmers that market safe and quality poultry products tend to gain a reputation in local markets and thus have consumer preference.

Producer organization

Small-scale farmers involved in poultry production and marketing can benefit from joining together into associations. Commonly this will reduce costs and increase income for small-scale farmers, but appropriate organizational management of its activities is required. Costs can be reduced via bulk buying of inputs such as feed, equipment, chicks and so forth. An association, for example may have the opportunity of buying a feed mixer that prepares feed and hence can then be distributed to all members. Associations may also have better access to finance and hence provide loans to its members and in some cases at more favourable rates.

FIGURE 27 Nine hundred and eight-three hens in this chicken cooperative farm produce an average of 600 eggs a day, which are sold in the market in El Progresso, Honduras. Profits are shared among the cooperative's members
(Photo: FAO/12385/F. Mattioli)

In terms of marketing, associations have more bargaining power with buyers as they are organized, can provide more quality poultry products, have greater quantities and offer more reliable and constant supplies. Associations may also carry out inspection and grading operations thus increasing the possibility of obtaining higher prices for products. In some instances associations may also be able to buy equipment for slaughtering and refrigeration, which will allow serving new and more distant markets.

Support services to promote poultry

Institutional role

Fostering an enabling business environment is a central role that needs to be played by the public sector. An enabling business environment supports and facilitates, for example, trade and fosters new trade opportunities. Providing institutional support to businesses is also another public role. For example reducing paper work and taxes for business registration encourages formalization of enterprises. The passing of legislation and provision of a regulatory environment that favours and supports small-scale poultry enterprises is another role that the public sector needs to be involved in.

The public sector is commonly the provider of infrastructure such as roads and water services. Telecommunications in many countries is mostly now privatized. However the public sector still provides rules and regulations for this sector. Such infrastructure and its services are important for business development in general and for small-scale poultry enterprises in particular. For example, a reliable and well-kept road system can encourage travel between rural and urban areas and help small-scale farmers to sell their poultry products in more distant markets.

The public sector can also foster more private sector involvement in terms of providing support services, for example in business training.

Access to support services

Support services to be of value in developing small-scale farmers and their poultry enterprises need to be importantly accessible. This means, for example, that small-scale farmers not only can afford them, but also that support services are in proximity of production areas. Moreover services provided require sustainability: services are provided for the long-term and resources and planning are devoted to this goal. There is little or any use in having services up front that only operate efficiently and effectively for a short period of time and then cannot continue as a result of lack of resources. Services need to be seen from a long term perspective and importantly consider the need for constant improvements and updating of services.

Information dissemination through training and extension is one of the fundamental aspects of support services. This is fundamental as, for example, research and development may have improved some local breed and extension is a viable manner in which to distribute such knowledge. Communication technologies, especially wireless communications, should also be considered as a viable option, especially for rural and remote regions, in distributing knowledge. Media can also be very effective in making services sustainable and accessible, radio is a prime example of this.

Access to markets

Formal supply chains within countries use commercial breeds that are not usually accessible to small-scale farmers. Local bird breeds do not meet the required criteria and thus cannot be part of a formal developed poultry supply chain. Promoting market linkages is an important element for small-scale poultry as very often small-scale farmers have difficulty in entering formal supply chains and need to be supported. Supporting farmers' organizations, commodity associations and the like can be one effective way of enabling market access by providing small-scale farmers not only with improved breeds, but also in terms of better negotiation with buyers in formal supply chains and so forth.

Contract farming is another option that can support farmers in their access to markets. Contracting has been implemented in many countries, but has to be treated with care since the types of contract might fail to have a clear benefit for small-scale farmers. Market information services that provide information on prices and quality requirements, transport information, etc., are also another way of enabling access to markets. Importantly infrastructure, in terms of communications, roads, water, markets and so forth, is yet another way to allow small-scale farmers to access markets.

Promoting the benefits of poultry meat and egg consumption at national level can also be an effective way of supporting small-scale farmers and increase chances of market access.

Technical training

For poultry production and management many countries have considerable traditional knowledge and skills. Technical training needs to recognize these skills and build on them in order to increase the likelihood of improving skills and capacity of small-scale poultry producers.

One constraint in technical training is not only the lack of appropriately trained extension staff, but time devoted by extension workers to farmers. Typically extension workers need to cover large rural areas and have a full schedule. One way to avert the constraints in contact time between extension worker and farmers is to provide for farmer group technical training and encourage farmer-to-farmer training from the cadre of initial farmers trained. In this particular case Poultry Farmer Field Schools (PFFSs) have been very successful in the past and have given some promising results. The PFFS approach is based on a 'learning-by–doing' approach where farmers learn directly in the 'field' working with poultry and each activity that they carry out involves action, observations, analysis and then taking a decision. The aspects considered do not only focus on the 'how' but importantly on the 'why'. Further information on PFFSs can be found in the *Selected further reading* section of this booklet.

CASE STUDY 10 **Disseminating information to poultry farmers**

In most developing countries, the poultry subsector does not receive due attention from agricultural policy-makers (including livestock specialists). Small-scale poultry farming is not yet regarded by many researchers, development or extension workers as an area of importance in terms of political significance or scientific prestige (Guèye, 2000). Yet, there is a strong need for governments, non-governmental organizations, international agencies and donors to provide all people interested or involved in the subsector with institutional support by promoting easy access to relevant information.

Training, education and extension in poultry are channels for spreading information on new technologies among poultry-keeping farmers (Kassal, 1998; Branckaert *et al*., 2000; Guèye, 2003a). Unfortunately, extension services in many developing countries are not effective, when they exist. Training and education are difficult and time-consuming tasks (Guèye, 2002b), although they are essential if farmers' skills are to be improved (Huque, 1996; Branckaert and Guèye, 2000).

Small-scale poultry farmers, especially women producers, tend to be fluent only in local languages (i.e. their mother tongues and, in some cases, other local languages) and generally cannot write. In addition to being illiterate, many of them are also innumerate (Guèye, 2003c). Women's needs for information are to be structured according to their gender roles and responsibilities (Aitkin, 1998). All these factors should be taken into account in deciding which information dissemination methods to use.

CASE STUDY 10 **Disseminating information to poultry farmers** *(Cont.)*

Unconventional methods for information dissemination need to be used. For example word-of-mouth, theatres, songs, traditional communicators/singers/troubadours and 'learning by doing' are to be preferred, and simple extension messages must be used. Some interesting results from this approach have been obtained in Mozambique (Alders and Bagnol, 2000). Other historically alternative methods must continue to be explored and promoted in order to achieve broad dissemination of information and the effective uptake of the most suitable innovations/interventions.

Since farmers, especially women producers, undertake many other activities, meetings to share information must be brief and frequent. They must be scheduled in those periods of the year when target groups are not involved in other duties, although this is a challenging exercise. Furthermore, campaigns for the elimination of illiteracy are to be recommended whenever possible.

Source: Adapted from Guéye,E.F. 2009. The role of networks in information dissemination to family poultry farmers, World's Poultry Science Journal, Vol. 65

Business skills training

Improved technical training will hopefully increase poultry production yields in the intent of having more products to sell in markets. In this realm small-scale farmers will also need appropriate training in marketing as well as in business management. Such competencies are commonly acquired with a 'learning-by-doing approach. Very much like PFFSs where small-scale farmers learn via action, observations, analysis and then taking a decision, training in business and marketing needs to be carried out in very much the same manner for it to build business management and marketing capacity in small-scale farmers.

Veterinary services

Poultry flocks are vulnerable to diseases and especially in the last years to global pandemics. Improved breeds tend to be more susceptible to disease then local breeds and have less resistance to weather and climatic vagaries. To avert reduced productivity and loss of birds as a result of disease, vaccination and medicines are required. However the lack of public veterinary staff and the high costs of private services have provided to be a major constraint for poultry enterprise commercialization. Preventative treatments, such as keeping housing facilities clean, providing a well balanced feed mix and potable water can help in

supporting health within poultry flocks. Vaccinations though are also required and need to be administered. Here is commonly where veterinarians are required to support small-scale poultry production, but also small-scale farmers trained in poultry health (para- veterinarians) can provide services not only to their flocks, but also to those of other farmers.

The public sector is involved in regulation, preventive veterinary services, feed safety standards, research, laboratory work and some aspects of training. The private sector is mainly responsible for clinical veterinary services and also for some aspects of training. Clinical services can be supplied by fully qualified veterinarians, by veterinary assistants or by community animal health workers or para-veterinarians as discussed previously. This three tier system can be very effective in reducing costs of health care, making them more affordable to all and bringing health care closer to the community.

Financial services

Small-scale farming at subsistence level rarely needs to be financed as input costs are minimal to start an enterprise and well in reach of small-scale farmers financial resources. If, though, the enterprise needs to become more commercial some investments will be required, for example in fencing for confinement, improved housing and so forth. This may be out of reach for small-scale farmers' financial resources and hence will require credit.

For many small-scale farmers formal credit and credit products are not available. Often financial institutions see poultry farming as a highly risky enterprise and hence may not loan at all or if they do will provide loans at high interest rates. The public sector needs to promote and create an enabling environment that allows private financial institutions to provide credit profitably even to small-scale farmers. It also needs to promote tailored loan packages that can support poultry farmers and in general the small-scale agricultural sector. In parallel to this though, saving programmes need to be promoted. This will 'relieve' birds from being seen as 'small savings accounts' and producers will develop a clearer focus on productivity of their business and the respective marketing options.

Market information

Market information is important for all those involved in the poultry supply chain. However in many

countries market information is not widely distributed and this can impede trade development and appropriate allocation of margins along the poultry supply chain. Regular collection of market information on such aspects as prices and quantities traded, for example, and its dissemination on a timely and regular basis, can support the development of a more effective and efficient poultry trade. It enables small-scale farmers to decide on whether to expand, contract or keep poultry production constant. It also enables a more equitable distribution of returns as players in the supply chain are more informed and hence have a better bargaining position as well as facilitating contractual agreements. Market information can also support and help in terms of reducing trade risk and improve identification of target markets for small-scale farmers.

Organizational options

As is well documented producer organizations provide many benefits to small-scale farmers. Support is required in not only enabling small-scale farms to join existing organizations, but also facilitate the creation of such organizations in areas where they do not exist. Support is also required in terms of business management of producer organizations and can be provided via training and mentoring services.

Promoting and facilitating commodity associations, including all interested players in a supply chain (farmers, traders, assemblers, butchers, etc.), will enable more 'voice' for the sector and its development as well as contribute to market development. On a national basis these associations can be turned into a national poultry association that assures the different stakeholders are heard within decision-making processes influencing the sector.

Supporting women poultry producers

A particular focus needs to be given to women when considering the development of the poultry sector and its small-scale enterprises within. Women are commonly responsible for poultry raising, but may face barriers, such as cultural and social barriers, for example that do not allow them to participate actively in the commercialization of their produce. Sensitization programmes, along with women-based training in improved production practices, business management and marketing can support the development of women

in the poultry sector. Promoting and facilitating the formation of women's groups can provide a wide range of benefits that can help them not only improve production know-how, but importantly give them more 'voice' within the sector.

Role of the advisor

The role of the advisor to support small-scale poultry enterprises is indispensable as they can be catalysts in operationalising all other efforts to support the sector as well as provide important information on such aspects as market opportunities, sourcing of input supplies such as feed and so forth. The main aspects that an advisor can cover to support small-scale farmers in their poultry enterprises are:

- Provide an overview of the poultry sector in a country;
- Advise small-scale farmers on the potential opportunities that can derive from poultry production and marketing;
- Advise on where inputs can be found, the prices, quality, etc.;
- Where credit can be obtained, the interest rates, payback periods, etc.;
- Aspects related to technical matters in poultry production;
- Provide marketing advice as well as information on pricing, marketing channels, sources of market information, etc.;
- Advise on opportunities, challenges and risks;
- Advise on marketing improvement programmes and plans;
- Facilitate and promote the formation of producer organizations;
- Provide information on legislation

Challenges

- ***Poultry health***

Providing animal health services for small poultry flocks in rural and remote areas is a challenge as the government veterinary service in many countries is of limited outreach.

- ***Access to veterinary services***

Vaccines and medicines do exist, but are commonly not available in rural and remote areas. The challenge is twofold: distribution of vaccines and medicines with affordable prices in rural and remote areas that is sufficient to enable access to them by small-scale poultry farmers; the costs of such a distribution system do not make it unprofitable for private companies marketing such products.

- ***Access to financial services***

In most countries, governments have handed over provision of financial services to the private sector. However as a result of costs in serving widely dispersed rural customers in remote areas means that many small-scale farmers have difficulty in accessing financial services and their financial products.

- ***Sustainable support services for all***

The increasing costs of services over time and the lack of investments in many services by the public sector often does not allow them to survive in the long run. This often calls for a retrenchment in services and hence services have a limited reach in remote and rural areas. This in turn impedes access to such services by many rural small-scale poultry farmers, while small-scale farmers in peri-urban and urban centres have better access. Over time this makes rural small-scale farmers less competitive then their peri-urban and urban counterparts.

- ***Local skilled trainers***

As a result of budgetary cut backs in many public support services, including extension and training services, in many rural areas it is difficult to find staff that has been provided with training in the latest technical skills in poultry production. This challenge of disseminating improved technical information and knowledge results in local poultry production being less efficient and competitive.

Training materials dissemination

Conducting trainings and distributing training materials in remote and rural areas is a challenge as its costs are high as a result of dispersed small-scale farmers. This has become even more of a challenge as governments have cut back on public services in recent years, even in terms of public radio broadcasting.

Infrastructure

Efficient marketing is frequently a problem, especially for poor, women headed households. In many situations there is a need to improve infrastructure like roads and market stalls as well as communications where mobile phones as well as broadcasting of market information can help farmers to obtain fair prices.

Gender

In some countries there are cultural and social barriers to sensitization programmes and training sessions organized for women who raise poultry. This is one of the biggest challenges as commonly women are in the majority of countries poultry producers. This hampers all attempts to increase production skills and competencies as well as those involved in marketing poultry products.

Enterprise sustainability

Poultry enterprises like any other business enterprise needs to generate profits over time to be able to remain in business. Some of the profits earned also need to be reinvested in the enterprise so as to keep it efficient. Commonly prices vary considerably in local poultry markets and hence this variability requires careful cost control and management in terms of poultry production and marketing. Access to reliable and accurate market information is often another challenge that does not allow poultry producers to identify and target markets that offer more opportunities and better profits. Further, as a result of public spending cut backs, poultry producers cannot be trained in business management and marketing matters. All these factors sum up to make business sustainability a major challenge for small-scale poultry producers.

Organizing producers

Organizing widely dispersed small-scale poultry producers in rural and remote areas is not an easy task. It requires some initial funding, meetings to take place among producers, travel time and costs, and good communications among small-scale farmers. It also requires motivation and consistency to be

able to keep the organization going once it has been set-up. This requires funding as well as good management practices, especially in terms of financial management.

Public policy

Legislation passed to support an agricultural sub-sector such as poultry and in particular to support small-scale farmers can be a challenge. This may be seen by others involved in the poultry supply chain as an attempt to favour only one player in the supply chain. However small-scale poultry producer policies should strengthen and develop local markets with adequate product quality assurance, without undermining the development of large-scale poultry production facilities and related destination markets. Further many small-scale farmers have typically numerous problems in coping with legislation related to health and food safety standards.

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Sources of further information and support

Networks

International Network for Family Poultry Development:
http://www.fao.org/ag/AGAinfo/themes/en/infpd/home.html

Danish Network for Smallholder Poultry Development:
http://www.ivs.life.ku.dk/Om-instituttet/IVS%20Development/Network_for_Smallholder_Poultry_Development.aspx

Household Poultry Enterprise – Asia
http://www.aphca.org

Kyeema Foundation – International Rural Poultry Centre:
http://www.kyeemafoundation.org/index.php

Other sources of information

FAO – Pro-Poor Livestock Initiative:
http://www.fao.org/ag/againfo/programmes/en/pplpi/home.html

Fowls for Africa:
http://www.arc.agric.za/home.asp?pid=2611

Livestock Research for Rural Development:
http://www.lrrd.org/

Pro-Poor Highly Pathogenic Avian Influenza Risk Reduction:
http://www.hpai-research.net/index.html

Smallstock in Development:
http://www.smallstock.info/index.htm

South Asia Pro-Poor Livestock Policy Programme:
http://www.sapplpp.org/

Tropical Animal Health and Production:
http://www.springerlink.com/content/0049-4747

VETAID:
http://www.vetaid.org.uk

Vétérinaires sans Frontières:
http://www.vsf-france.org

World's Poultry Science Journal:
http://journals.cambridge.org/action/displayJournal?jid=WPS

Donor agencies supportive of rural poultry programmes

Asian Development Bank:
http://www.adb.org

African Development Bank:
http://www.afdb.org

Australian Centre for International Agricultural Research (ACIAR):
http://www.aciar.gov.au

Australian Agency for International Development (ausAID):
http://www.ausaid.gov.au

Danish International Development Agency (DANIDA):
http://www.danida.dk

Department for International Cooperation – UKAid (DFID)
http://www.dfid.gov.uk/

Food and Agricultural Organization of the United Nations (FAO)
http://www.fao.org

International Fund for Agricultural Development (IFAD)
http://www.ifad.org

The World Bank
http://www.worldbank.org

Notes

Traditionally poultry is found in many communities the world over and can be, with adequate support, training and investment, a viable commercial enterprise for many small-scale farmers. As a start-up, poultry does not require large capital investments and labour needs are not excessive. Poultry can provide for a good source of nutrition for the farm family and an income source, which does not depend on the harvest cycle common to crops. Moreover poultry provides a number of important products, such as meat and eggs as well as important and complementary services for farm crops and other livestock. All in all poultry is an easy enterprise for small-scale farmers to diversify into.

The booklet is aimed at raising awareness and promoting poultry as a business to all those who are involved in supporting small-scale farming and rural development in general.

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