Poultry production for livelihood improvement and poverty alleviation

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SUMMARY

Millennium Development Goal Number One is to halve the number of poor people in the world by 2015. The present paper contains a discussion, based on the livelihoods framework, of how and under what conditions small poultry units can contribute to the achievement of this and other Millennium Development Goals. The paper presents the livelihoods framework along with its micro- and macro-level features. Subsequently, it discusses the role of poultry in asset creation and as an entry point to improved livelihoods. A series of cases are presented: from Afghanistan, Bangladesh, Egypt, the Lao People’s Democratic Republic and Swaziland, which illustrate various arguments related to the use of poultry for livelihood improvement and poverty alleviation. Strategies that use poultry production for livelihood improvement and poverty alleviation will be most relevantly applied in the countries where it has been most difficult to get development moving. These countries are variously described by development agencies as low-income countries under stress (LICUS), highly indebted poor countries (HIPC), low-income food deficit countries (LIFDCs), or countries that are placed low on the UN Human Development Index. The smallholder poultry approach is biased towards poor women; one estimate is that it is relevant for 160 million women and their families. However, it will not be easy to reach these potential beneficiaries, as bad governance and weak institutions characterize many of the countries where they live. Against this background, it is concluded that international organizations and networks have a particularly important role to play as storehouses of knowledge and technical expertise. Awareness among planners and decision-makers of the potential of poultry as a tool in poverty alleviation seems to be low. Improving knowledge among these stakeholders and strengthening the human and institutional capacity needed to implement the concepts are priorities.

Key words: poultry, livelihoods, poverty, LICUS, HIPC, LIFDC.

1 CONTEXT AND BACKGROUND.

In 2000, world leaders agreed to the Millennium Development Goals (MDGs), with Goal One being to halve the number of poor people by 2015. According to the World Bank (2005) there were 1.1 billion people subsisting on an income of less than US$1 a day in 2005. The MDGs Report for 2006 notes that there is still much to do to combat poverty; 824 million people in developing countries were affected by chronic hunger in 2003, with
the problem being particularly acute in sub-Saharan Africa and South Asia (UN, 2007). This situation challenges all sectors – including the poultry sector and the livestock sector more broadly – to reflect on the contribution they can make to poverty reduction.

A comprehensive review of 800 livestock projects (Ashley et al., 1999) concluded that there were many problems with regard to the impact of such projects in terms of poverty reduction and livelihood development. It was argued that livestock development professionals and governments were biased towards large animals and their owners, who typically are not among the poorest.

The United Kingdom's Department for International Development (DFID), in an effort to speed up the achievement of poverty reduction targets, has adopted the livelihoods approach\(^1\) at a general level. Where livestock and livelihoods are concerned, there are experiences on record of attempts to use poultry as a tool in poverty alleviation work (Dolberg in FAO, 2003a). There have also been attempts to document the loss of livelihoods faced by poor people when a disease such as highly pathogenic avian influenza (HPAI) strikes (Geerlings, in FAO/UNDP/WFP, 2007).

HPAI is a cause of considerable global concern (Otte et al., 2007). By 29 June 2007 the disease had resulted in 191 human deaths, from 317 cases (WHO, 2007). However, contrary to the general assumption that smallholder backyard poultry flocks are at higher risk than confined flocks, the only analysis so far of empirical data from Thailand indicates that backyard flocks are at lower risk of HPAI infection than commercial-scale operations keeping broiler or layer chickens or quail. What has been overlooked in the discussion so far, according to Otte et al. (2007), is the capacity of microbes to enter and leave commercial operations despite the implementation of standard biosecurity measures. This observation, based on references to scientific work, is supported by the patterns of infection during the 2002 Newcastle disease epidemic in Denmark, which provided evidence that questioned whether smallholder backyard flocks are in fact at higher risk from epidemic diseases than commercial operations (Danish Veterinary and Food Administration, 2003).

Taking this background into consideration, the following sections present the basic livelihoods concepts and framework and illustrate how poultry can be used as a tool in poverty alleviation.

2 Poultry as an Entry Point to Improved Livelihoods

Many poor women in developing countries are involved (and skilled) in poultry keeping. Thus, the link between poultry interventions and improvement of women's status – along with the associated improvements in terms of nutrition and other benefits for the entire family (Quisumbing and McClafferty, 2006) – seems to be direct. The scavenging poultry production system is the most common animal production system among poor households in rural areas of developing countries. It is a system in which the birds collect most of their feed free of cost, but it is not a system that generates a huge income. Interventions to improve these modest levels of production may be justified, as they can help women and their families to generate social capital (see below) and enter a positive spiral of events that may move them out of poverty (Jensen and Dolberg, 2003). The explanation for this is that

\(^1\) http://www.livelihoods.org/info/info_linkseven.html
poverty is not only a question of money – the causes are frequently multidimensional. Figure 1 illustrates how several factors, including physical weakness, isolation, lack of power and vulnerability, may reinforce each other and deepen poverty.

Sen (1981) demonstrated a strong relationship between poverty, vulnerability and assets. Vulnerability may relate to risks such as bad weather (e.g. extended dry periods or floods) or to unexpected occurrences in the family such as sickness, loss of employment or death. In many countries, social networking entails meeting the high costs associated with events such as marriages and funerals; networks may be lost if these expenses cannot be met. There are also expenses associated with the education of children (Chua et al., 2000). The many factors that lead to vulnerability may interact and reinforce one another in a downward spiral; Chambers (1983) has termed this the deprivation trap (Figure 1) or integrated rural poverty.

Processes that may lead to escape from the trap require an entry point. This is where poultry development may prove to be a useful tool, as keeping poultry is an activity in which many poor women are involved (see Table 1).

The data in Table 1 are from an impact study (Riise et al., 2005) of twelve years of Danida experience with support to three smallholder poultry projects in Bangladesh: the Smallholder Livestock Development Project-1 (SLDP-1) 1993–1998 with donor support from the International Fund for Agricultural Development (IFAD) and Danida; the Participatory Livestock Development Project (PLDP) 1998–2003 with donor support from Asian Development Bank and Danida; and the second Smallholder Livestock Development Project 2000–2007 with Danida as sole donor. All projects focused on poultry, and it is therefore unsurprising that most households kept poultry. However, the widespread ownership of poultry, across many countries, is well known (De Lasson and Dolberg, 1985; see also Tables 3 and 4 and Box 3). Moreover, the impact study took place seven years and two years, respectively, after the closures of the SLDP-1 and PLDP projects (SLDP-2 was ongoing at the time of the study). All projects provided micro-credit. Studies, notably Seeberg (2003), have

![Figure 1: The deprivation trap](source: adapted from Chambers (1983).)
documented that loans were used for investment in many items other than poultry. It is clear from the table that poultry keeping was the most common livelihood activity among the poor women and their families, and hence frequently offered an entry point for efforts to improve their livelihoods.

As well as an entry point, improving the livelihoods of women and their families requires a process, and access to assets and to organizations and institutions at both micro and macro levels. It is in mapping the stakeholders to involve and the paths to follow that the concepts of the livelihoods framework can be helpful – as will be discussed in the following section.

3 DEFINITION OF A LIVELIHOOD.

The livelihoods concept gained prominence as a result of the report published in 1987 by the Brundtland Commission entitled Our common future (WCED, 1987). According to Chambers and Conway (1991) capabilities and equity are important components of the concept. In the view of the latter authors, a livelihood in its simplest form is a means of gaining a living; capabilities as well as equity are ends as well as being means that enable a better livelihood to be obtained. Accordingly, Chambers and Conway (1991) define a livelihood as comprising:

“The capabilities, assets and activities required for a means of living.”

There is nothing in this definition that points towards a particular set of economic activities or institutions. However, as most poor people live in rural areas (FAO, 2006) and keep poultry, there is a case for considering the ways in which poultry can serve as a tool in poverty alleviation and add to the menu of tools (such as the housing index) (Simanowitz et al., 2000) that are used in microfinance programmes to identify the poorest clients. The housing index is based on scores for the size of the house, its structure, roof and wall material, ownership of the house, cooking material, etc. To these criteria, it is suggested, could be added ownership/lack of ownership of animals or ownership only of scavenging poultry.

<table>
<thead>
<tr>
<th>Project</th>
<th>Number of households (the projects were for the women)</th>
<th>In total sample</th>
<th>With poultry</th>
<th>With livestock other than poultry</th>
<th>With income from non-livestock activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>SLDP-1</td>
<td></td>
<td>232</td>
<td>100</td>
<td>223</td>
<td>96</td>
</tr>
<tr>
<td>PLDP</td>
<td></td>
<td>224</td>
<td>100</td>
<td>196</td>
<td>88</td>
</tr>
<tr>
<td>SLDP-2</td>
<td></td>
<td>211</td>
<td>100</td>
<td>205</td>
<td>97</td>
</tr>
</tbody>
</table>

Source: Riise et al. (2005).
3.1 The livelihoods framework

The livelihoods framework (Figure 2) lists important factors that influence people’s lives, such as the vulnerability context in which they live, and the assets to which they have access. These are important indicators according to Sen (1981). The framework includes policies, institutions and processes; it indicates how such factors shape livelihood outcomes, and how these components influence one another. In the present context, it is important that links between the micro level and the macro level are also included, as there is a tendency to neglect institutional and organizational analysis in discussions of the potential of smallholder poultry production as a tool in poverty alleviation and in associated areas such as food security and gender equality.

3.2 The micro level

At the micro level, the livelihoods framework utilizes the concept of livelihood assets. It involves going beyond a narrow, conventional concept of capital that is limited to financial capital, to a more inclusive concept that also encompasses human, natural, physical and social capital, i.e. five types of capital (see the pentagon in Figure 2). Each type of capital has a set of indicators; examples are provided in Table 2.

The indicators can be used to identify entry points for development interventions at household level (where poultry production is one option). In the best-case scenario, the first intervention will stimulate other initiatives within a household and the production of other types of capital. Women involved in poultry programmes often mention the importance of the opportunities they acquire for gaining social capital in the form of networking. This stimulates self-confidence and may lead to an expanded set of activities and accumulation of other forms of capital. This accumulation of capitals may, in turn, create opportunities to access and influence the processes that affect policies and institutions at the macro level.
Certain minimum levels of political, health and economic stability are preconditions for positive outcomes of this type.

A case with a negative outcome is provided in Box 1, which is drawn from the work of Geerlings (in FAO/UNDP/WFP, 2007) on the impact of HPAI in Egypt. The case demonstrates well the negative spiral of events that a woman and her family faced as a result of HPAI.

### 3.3 The macro level

Policies are decided at the macro level; their presence or absence influences all administrative levels in a country. They have a strong effect on the access that people have to various types of capital (Table 2) and on the links between the micro and macro levels. Policies may prescribe the sizes and roles of the public and private sectors, and the role of civil society. Policies may be formulated to promote or discourage particular economic sectors – such as different types of agriculture and livestock production – some of which will offer greater opportunities for the poor, while others will be less accessible. Policies may affect opportunities for the establishment of people’s organizations or non-governmental organizations (NGOs) that work for the benefit of the poor. Sanitary standards may be set that poor producers cannot meet.

The following quotation, taken from a section on lessons learnt in hunger reduction in FAO’s report *The State of Food Insecurity in the World 2006*, is relevant to this discussion:

“Agricultural growth is critical for hunger reduction. Some 70 percent of the poor in developing countries live in rural areas and depend on agriculture for their livelihoods, either directly or indirectly. In the poorest of countries, agricultural growth is the driving force of the rural economy. Particularly in the most food-insecure countries, agriculture is crucial for income and employment generation... Combating hunger requires an expanded commitment to agriculture and rural development.” (FAO, 2006).

In the present context, agriculture is taken to include poultry production and promotion of the smallholder poultry sector, as well as the organizations that create an environment

<table>
<thead>
<tr>
<th>Type of capital</th>
<th>Examples of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural</td>
<td>Food security situation, ownership or rent of land, homestead and livestock</td>
</tr>
<tr>
<td>Physical</td>
<td>Living: house or no house, quality of house and clothes</td>
</tr>
<tr>
<td>Financial</td>
<td>Access to funds: money lender, relatives, microfinance or formal bank</td>
</tr>
<tr>
<td>Human</td>
<td>Confidence, motivation, education, nutritional status, health and fitness</td>
</tr>
<tr>
<td>Social</td>
<td>Family, social network outside family, membership of groups and organizations</td>
</tr>
</tbody>
</table>

Source: adapted from Dolberg (in FAO 2003a).
BOX 1

Impact of HPAI on a poultry producer in Egypt

Samira’s family is composed of three sons and three daughters, five of them attend primary and preparatory schools; the youngest son is still under school age. Her husband is unemployed for health reasons. Samira is the only breadwinner in the household. Samira trades poultry and rabbits for the people in her village. She collects the animals on her rounds through the village and sells them at different village markets six days a week. The villagers and Samira agree on the minimum amount that they would like to receive for their animals, and any extra money above the minimum set price is hers to keep. Because of HPAI Samira is heavily in debt. Last year she borrowed 350 Egyptian pounds (EGP) – US$63 – from an NGO and invested that amount in poultry. Her small backyard poultry flock was composed of 32 chickens, 90 Pekin ducks, 16 Balady ducks and 2 turkeys. All these birds died of avian flu. Samira still has to repay the debt, topped-up at a high interest rate. Because business was so bad last year with hardly any birds to trade, she had to get a second loan of EGP450 (US$82) from another NGO to cover part of the interest of the first loan and to restock. Her restocked flock comprised 11 Balady ducks, 9 Pekin ducks, 11 geese, 9 chickens, 3 turkeys and 24 pigeons. For the second time, her flock was infected and the birds died. Now she has three loans from different NGOs. The third loan amounted to EGP 400 (US$78) to cover part of the interest of the two loans and to buy a blanket for the winter season. Although the flock died, this woman has an outstanding debt to pay to the NGOs. In order to be able to pay this debt, she obtained a loan from a private moneylender with less interest and less paper work than the NGOs. Samira’s household can be considered extremely vulnerable; six children and one husband depend entirely on Samira’s income. Poultry is the main source of income and food, with no alternative sources. The family was not able to restock again. Samira is heavily in debt and cannot afford to take another risk. She stopped producing poultry at home, but kept trading in poultry. This is in spite of the restrictions imposed on the transportation of poultry between villages – not without risk because last year Samira almost got caught by the police for illegally transporting live birds. She was trying to get in a taxi with all her wooden cages containing birds. The police saw her and chased her. Samira dropped her cages and ran away, but in doing so she fell and seriously hurt her hip. She had to stay home for a couple of months. She couldn’t earn any income in those months and depended on charity. The food consumption of this family was relatively moderate and the HPAI adversely affected their consumption pattern. Poultry consumption was halved, with almost no eggs being eaten. She cannot afford to buy eggs for her six children. The family now depends more on frozen sources of animal protein (e.g. fish and meat) because of their reasonable price. Samira continues to trade poultry for the villagers and business slowly seems to pick up again. She says that this is the only thing she knows she can do well, and that the villagers know her and trust her to do a good job.

Sources: Geerlings (in FAO/UNDP/WFP, 2007).
that is conducive for the sector to flourish. The formation of marketing infrastructure and financial and veterinary services will, in the terminology of Figure 2, influence people’s livelihood strategies, which in turn might promote income opportunities for poor women and their families. Subsequently, this may promote the formation of other types of capital. For example, the physical capital embodied in the living house might be improved, as might human capital as better food is bought, children are sent to school and health services are accessed. This may, given time, influence the vulnerability context by diminishing unfavourable social trends or mitigating harmful seasonal factors such as lack of employment in the dry season. Combined, the enhanced resources and influences may lead to better livelihood strategies and livelihood outcomes for the household.

4 THE ROLE OF POULTRY IN ASSET CREATION IN COMPARISON TO OTHER ANIMALS

Utilizing the livelihoods concepts presented above, this section compares the role that rural scavenging poultry plays in asset creation to that played by other animals. The International Livestock Research Institute (ILRI) published in 2002 a report commissioned by DfID entitled *Investing in animal health research to alleviate poverty* (Perry et al., 2002). This study includes a summary of how animal species contribute to household asset creation in developing countries. It should be noted that the study is based on the livelihoods perspective, and accordingly assets are categorized according to the five-capital classification shown in Figure 2.

According to Perry et al. (2002) all animals contribute to financial asset formation through sales of produce such as milk, meat, eggs and live animals and services (mainly transport). Animals also contribute to human capital formation through the positive influence that consumption of food of animal origin has on poor people’s health (see Box 2).

According to the interpretation put forward in the above-mentioned report, only large animal species such as camels, buffaloes, cattle and yaks contribute to physical assets – in the form of working animals (ibid.). They are also associated with prestige. There is no prestige attached to keeping small animals like goats, sheep, pigs and poultry. Both small and

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**BOX 2**

**Nutrient content of food of animal origin**

Poverty normally leads to a diet that is predominantly vegetarian, which studies show may be low in vitamin A, vitamin B-12, riboflavin, calcium, iron and zinc, and which may lead to anaemia, poor growth, rickets, impaired cognitive performance, blindness, neuromuscular deficits, and in the worst cases death. Foods of animal origin are particularly rich sources of all six of these nutrients, and relatively small amounts of these foods, added to a vegetarian diet, can improve the quality of the total diet substantially (Murphy and Allen, 2003). Note that this positive effect at the low end of the income scale should not be confused with the negative impacts of excessive consumption of food of animal origin seen in many rich countries today.

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large animals, importantly, contribute to social capital by facilitating human networking. The role of small animals, such as poultry, as entry points into a process aimed at creating a positive spiral of asset creation is not discussed in the report (ibid.).

5 GENDER

Neither the ILRI study (Perry et al., 2002) nor the livelihoods framework (Figure 2) mention the role of small animals such as poultry as an entry point for poverty alleviation; moreover, both are silent on gender aspects. Accordingly, it is useful to note some points made by Quisumbing and McClafferty (2006) in an International Food Policy Research Institute (IFPRI) publication which summarizes the organization's considerable body of research on gender. Salient observations include:

### TABLE 3.
**Animal species and their contribution to household assets**

<table>
<thead>
<tr>
<th>Species</th>
<th>Type of assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Financial</td>
</tr>
<tr>
<td>Cattle, buffalo and</td>
<td>Sales of milk, meat, hides, animals, draught power services, transport and</td>
</tr>
<tr>
<td>yaks</td>
<td>savings instrument.</td>
</tr>
<tr>
<td>Donkeys and horses</td>
<td>Sales of animals, draught services, and transport (especially water).</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Pigs</td>
<td>Sales of meat and animals.</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Perry et al. (2002).*
• increasing resources controlled by women has beneficial effects on agriculture, health and nutrition; and
• increasing women’s resources helps achieve successful development outcomes.

Small animal production, and especially smallholder poultry production, is in many countries overwhelmingly controlled by women. Linking this fact to the IFPRI findings implies that the benefits that can be derived from small animals are much larger than their inherent economic value would suggest, as they contribute disproportionally to human capital formation.

Indirect support for this conclusion can be found in data from Namibia. Matsaert et al. (1998) clearly indicate that ownership of cattle is associated with relative wealth – cattle owning households had an annual cash income of more than US$1 000, while households without cattle earned around US$200. Hans Askov Jensen found a similar trend in Malawi (personal communication), as did Charlotte Vesterlund Pedersen in Zimbabwe (personal communication).

6 THE PLACE OF POULTRY AS AN ASSET: EXAMPLES FROM DEVELOPMENT PROJECTS

In visiting country after country (not least as a member of missions by IFAD3) the author of the present paper has observed that among the poorer sections of the rural population, poultry are among the few assets that households have. This is illustrated in the following with examples from Swaziland and the Lao People’s Democratic Republic. With regard to these two examples, it should be noted that many national statistical departments have problems collecting accurate data on rural poultry, and that therefore the results of the project surveys presented here may not always agree with national statistics; in some cases they represent the first careful collection of data on rural poultry undertaken in these particular areas. Following these two examples, the use of poultry as an entry point will be illustrated with a case from Afghanistan. Finally, the income-generating potential of indigenous birds will be illustrated with a case from Bangladesh.

6.1 Swaziland – poultry are widely owned

The data presented in Table 4 clearly show that poultry were the most widely owned animals among rural households – 92.5 percent kept poultry, as compared to 50 percent, 46 percent and 16 percent, who kept cattle, goats and pigs, respectively.

<table>
<thead>
<tr>
<th>Species</th>
<th>Cattle</th>
<th>Goats</th>
<th>Pigs</th>
<th>Poultry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of households</td>
<td>50.0</td>
<td>46.0</td>
<td>16.3</td>
<td>92.5</td>
</tr>
</tbody>
</table>


3 http://www.ifad.org/governance/index.htm
6.2 Lao People’s Democratic Republic – with increasing wealth the trend is towards larger animals

Surveys in Bangladesh (Dolberg in FAO, 2003a) and the author’s visits to rural areas in many countries have shown that poultry keeping is also widespread among the rural poor in Asia. The data in Box 3 illustrate that with increasing wealth, households move towards larger animals such as cattle and buffaloes. The data are from the IFAD-sponsored Xieng Khouang Agricultural Development Project in the Lao People’s Democratic Republic. The strength of this documentation is that it is based on data covering a 23 year period from 1975 to 1998.

6.3 Afghanistan – poultry as an entry point

FAO has had livestock projects in Afghanistan since 1995. These projects had a poultry component. The following discussion is based on an interview with Dr Olaf Thieme, who worked for FAO in Afghanistan during the period 1997 to 2005. In brief, experiences in Afghanistan offer a number of important lessons that connect to the above arguments related to the use of small poultry units as a tool in human development. Relevant conclusions include:

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**BOX 3**

Change in the animal species kept by farmers in a Province in the Lao People’s Democratic Republic from 1975 to 1998

According to the Xieng Khouang Provincial Livestock Section’s survey data, in 1975 there were 9,037 buffaloes, 8,575 cattle and 118,207 poultry in the province. In other words there were 13.1 head of poultry for each buffalo and 13.8 head of poultry for each head of cattle. In 1975 the economy was in poor shape as a result of the bombings that had taken place during the recent war. By 1998 the number of poultry had risen to 441,126, or by a factor of 3.7 as compared to 1975. However, over the same period, the cattle population had increased disproportionally, meaning that by 1998 there were only 5.5 times more poultry than cattle. The number of cattle increased to 79,260 in 1998, or by a factor of 9.2. The number of buffaloes went up to 38,897 in 1998, or by a factor of 4.3. This increase is less than that for cattle because buffaloes, used for work in lowland agriculture, were under competition from tractors, while cattle retained their role as a store of wealth for upland farmers. These relationships between poultry numbers and cattle and buffaloes numbers illustrate that vulnerable and poor households tend to keep poultry rather than large ruminants (assuming the households were more vulnerable during the war and poorer in 1975 than in 1998). This conclusion is supported by the findings of the IFAD Interim Evaluation’s socio-economic survey of the Xieng Khouang Agricultural Development Project, which showed that buffaloes and cattle tend to be kept by the more well-to-do; the richest 2 percent of households kept as many buffaloes and more cattle than the poorest 27 percent of households. By contrast the poorest households kept more pigs and much more poultry than the well-to-do households (based on Dolberg, 1998).

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4 Animal Production Officer (Avian Influenza), FAO, Rome.
When the focus is on technical matters like poultry keeping, it is possible, in very religiously conservative areas, to work with women and contribute to their empowerment. The women appreciate the opportunity to participate in a poultry programme as it provides opportunities to meet and network with other women. In other words, they do not only benefit in economic terms, but they earn social capital in livelihoods terms.

Understanding with the government is needed in order to reach out to the women. Once this precondition is met, there will remain a need for the programme to create institutional mechanisms that facilitate the organization of groups of women for training and ensure supply of inputs and sale of outputs. Outreach may be through NGOs or producer organizations or – something that did not happen in this experience and remains a challenge in Afghanistan and other countries – a federation of village women’s poultry groups.

Government veterinary and animal husbandry staff are more interested in big farms and big animals – this reflects the findings of the review by Ashley et al. (1999). Government staff need to be exposed to, and trained in, the poultry concepts; however, cannot be expected to lead the process as they lack training, experience and motivation. Process leadership may be an important role for FAO in similar programmes in Afghanistan or other countries in the future.

The successes were: (i) sale of eggs; (ii) vaccination and increased survival; (iii) the social capital formed through networking; (iv) four months of training for individual vaccinators and group leaders; and (v) it was realized that there was a need for a two-year follow-up for group leaders. New ideas included the women’s request that the programme develop savings schemes. In the terms of the livelihoods framework, the women wanted to expand their activities into other types of income generation and capital accumulation.

7 CONDITIONS FOR USING POULTRY FOR POVERTY ALLEVIATION AND LIVELIHOOD IMPROVEMENT

The great advantage of egg production is that, although output may not be large, the household is provided with frequent if not daily provision of nutrients of high biological value (see Box 2 above); ideally this is consumed by pregnant or lactating women and young children. In economic terms, eggs are highly divisible and less lumpy than meat, and when marketed they can provide important small earnings that can be used to cover daily needs such as food to improve and diversify the diet, or other household items such as soap.

7.1 Without interventions there is little surplus for human consumption

Without intervention there are few eggs to eat or sell. Several studies document that in the absence of interventions most eggs go into the reproduction of the flock, with some birds used for meat or used in a social context as a gift or for a ceremony. This point is made by Smith (2001) on the basis of a study by Matthewman in Nigeria that was published in 1977; the tendency is confirmed by studies published in recent years.

While more than 75 percent of the households in a study in Ghana reported sale of chickens for meat, only 8 percent of the men and 7 percent of the women reported any sale of eggs (Aboe et al., 2006). A majority of the households – more than 60 percent –
reported that they consumed only 25 percent of the eggs, as most were used for hatching. A study in Zimbabwe showed that 38 percent of eggs were eaten in the producing household, but less than 1 percent were sold (Muchadeyi et al., 2005). A study in Senegal showed that all eggs produced were used for hatching and none for human consumption in the producing household or for sale (Missohou et al., 2002).

Tadelle et al. (2003b) report more positive results from a study in Ethiopia – 50 percent of the eggs going for hatching, 23 percent for consumption and 27 percent for sale. Tadelle et al. (2003a) found that following improvements to the traditional system, the farmers in the area covered by the study were in the habit of using methods to shorten the broody period; thus increasing egg production by 80 percent. This may explain the higher proportion of eggs available for human consumption and sale. However, it is not known how widespread the practice is, as it is only reported by this one study. Earlier Hossain (1993) had shown, on station, that when chicks were removed at four weeks of age, egg production in local breeds in Bangladesh went up by 60 percent. There are real possibilities for increased egg production based on these practices, as will be shown below.

### 7.2 Can the scavenging system be improved?

The question that will be addressed in this section is that of what may be achieved on the basis of applying simple interventions to the traditional, scavenging system with indigenous chickens. Vaccination against Newcastle disease is the first step. A large survey of Danida projects in Bangladesh (Riise et al., 2005) indicated that this is generally accepted even if the vaccination has to be paid for. Other possible interventions include weaning of chicks at an early stage of life to reduce the brooding period of the mother hen, and creep feeding in low-cost baskets or houses to increase the survival rate of the chicks. Such interventions may often be talked about, but they have rarely been tried in practice. If they have been tried, they have been poorly documented. Nevertheless, the studies by Hossain (1993) and Tadelle (2003a) indicate that there is a potential for increased egg production through early weaning; such interventions were recently used in the Danida supported SLDP-2 project in Bangladesh (Sarkar and Bell, 2006).

The project’s approach was derived from the

“... common perception among poultry specialists that the production potential of indigenous chicken is very low due to its inherent genetic characteristics, and consequently their contribution to income generation and household nutrition security is obviously not efficient and satisfactory. But results from field studies reveal that indigenous or deshi chickens are able to contribute efficiently and economically, if small interventions are made in a few aspects of their traditional husbandry practices. In the traditional management system, hens are over-burdened with a wide range of activities and tasks. They lay a clutch of eggs, hatch chicks, brood and rear them for a considerable period of time and thus accomplish a production cycle within 125–130 days. Altogether only 3 production cycles can be achieved from a hen in a year. In a production cycle, a hen is able to contribute less time for productive purposes and spends much time undertaking tasks like brooding and rearing of chicks.” (Sarkar and Bell, 2006).

The rationale was that minimum balanced feed supplementation, along with weaning and creep feeding in a low-cost house, helps to reduce the length of production cycles and
to maximize the laying performances of scavenging hens. Higher chick survival rate and more eggs per hen per year increase income and provide more eggs for human consumption in the households that raise chickens. Table 5 shows the consumption levels of chicken eggs and meat for a sample of participant households in the SLDP-2 project and compares these figures to the national averages.

According to Table 5, the potential, relatively speaking, for increasing production is highest for eggs, where the average increase is from one to six eggs per capita per month, while meat output is almost doubled from 310 to 584 grams per capita per month. The study also showed that out of a total monthly average poultry production value of US$21, sales represented US$13, while the average value of the domestic consumption was US$8. In other words, 62 percent of the production was sold and 38 percent consumed in the producing household. The question remains: for what is the income from the sales used?

The answer may be found in other studies from the same series of poultry projects in Bangladesh, which show that sales may have an important effect in terms of human nutrition. Alam (1997) studied 1,000 households that had begun project activities one to two years previously. The study found the main nutrition effect to be indirect. Most of the eggs were sold and the income used to buy other food items such as fish, rice, milk, beef and goat meat. From a human capital perspective, the increased consumption of different types of food of animal origin is important for young children and for pregnant and lactating women in particular, as these foods are rich sources of essential amino acids like lysine and methionine which are found only at low levels in plant foods. The other point to make is that increased income in the hands of poor people increases the demand for animal products like milk, mutton, beef, fish, in addition to poultry eggs and meat.

Following the study by Alam (1997), a study covering another 1,082 households broadly confirmed the results (DARUDEC and DANIDA, 1997). The latter study found an increase in vegetable consumption as a result of the purchases enabled by the income from the poultry. The study also looked more closely at who within a household gets to consume the eggs. It found that children have more eggs than the adults; among children, boys have more eggs than girls; and children above five years have more eggs than children below five. However, these trends varied depending on which NGO was responsible for field implementation – indicating the importance of the nutrition education given by the NGOs. The data suggest that more can be done through education to stress the benefits that expectant mothers, and young children of both sexes, can derive from the regular consumption of eggs and meat.

<table>
<thead>
<tr>
<th>Items</th>
<th>National average</th>
<th>Results from 168 sample project households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Eggs (number)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Meat (grams)</td>
<td>310</td>
<td>374</td>
</tr>
</tbody>
</table>

Source: Sarkar and Bell (2006).
Both Alam (1997) and DARUDEC and DANIDA (1997) report that the women invested in their children’s education, including the girls’ education, and in assets like rickshaws for their husbands, bicycles, sewing machines and in some cases even land. They confirmed the trend for investments to go from chicken and ducks to goats and cattle, with cattle being the most prestigious livestock investment.

7.3 The need for external inputs and actors that can provide them
As mentioned above, Newcastle disease vaccine is a critical external input needed to improve small-scale poultry production. Australian scientists have developed vaccines, and manuals and procedures for field application (Alders and Spradbrow, 2001). So far this has relied mainly on government or donor funding, and on government veterinary services for implementation. Groups based in France have worked on the supply of Newcastle vaccine mainly to African countries, with a strong commercial emphasis (Fermet-Quinet, undated) for several years. However, although there are procedures established to achieve this, there remains a need for government funding in the early stages, not the least for communication and awareness raising. It can be concluded that, while there are these established procedures and techniques from which lessons can be learned, large-scale, routine application of Newcastle disease vaccination of poultry belonging to poor women and remains far below the level required. There is urgent need for regular vaccination programmes in many countries, with the main challenge being to identify a viable institutional form to ensure implementation. This could involve private, commercial supply chains and village vaccinators (Riise et al., 2005; Fermet-Quinet, undated) to enhance long-term viability.

There will also be a need for other inputs such as training and extension services. This will involve – to stay with the examples used in this paper – making people aware of the ways in which they can protect their young chicks and feed them when they are weaned early, and conveying the idea of improving egg production by cutting the brooding period. There may also be a need for some loans to finance activities, at least in their early phases. However, in most developing countries, the smallholder systems have a low priority among government professional livestock staff – there has been little change since the analysis published by Ashley et al. (1999). The priority is also low among NGOs and commercial companies (Dolberg, in FAO, 2007a).

However, there are actors that have worked with the concepts and approaches needed to use poultry as a tool for poverty alleviation. These include FAO and the International Network for Family Poultry Development (INFPD), Veterinarians without Borders, the LAPROVET laboratory which is involved in work on Newcastle disease vaccination, and increasingly private veterinarians from West African countries. There is also the Australia-based International Rural Poultry Centre (IRPC), which is now the repository of experience gained by Australian scientists and development workers with Newcastle disease vaccination research and development. During the past ten years the Danish Network for Smallholder Poultry Development has worked on the subject from a multidisciplinary perspective, which has generated important insights (Riise et al., 2005; Kryger et al. in FAO, 2007b). Manuals on village poultry keeping can be downloaded from the site of the Network (in English and some in French).5 The development NGO BRAC from Bangladesh has several years of

5 http://www.poultry.kvl.dk/Information_resources/Manuals.aspx
experience with poultry programmes for poor women in that country. It is now involved in programmes in other countries such as Afghanistan, India, Sri Lanka, Uganda, the United Republic of Tanzania and Sudan; the number of countries is likely to increase. The commercial company Kegg Farms, in India, has been inspired in its approach by BRAC's key component, the Chicken Rearer, who serves an important role in enhancing the survival rate of young chickens. Dolberg (in FAO, 2007a) presents a more detailed analysis of the roles of these actors.

Although there are actors at the international level, and a few at the national level, who can provide inputs and support to small producers, the situation is institutionally and technically fragile in most countries where implementation of a smallholder poultry programme would be relevant. It is hard to avoid the conclusion that the biggest challenge for the future in these countries is in the institutional sphere. The challenge is to create organizations with sufficient administrative and technical capacity and with the necessary political support to implement poultry programmes as tools in human development. A first step may be to raise awareness among decision-makers in national governments and donor agencies. This would seem to be logical in view of the close match that exists between several of the Millennium Development Goals and the gains that can be achieved through smallholder poultry production.

7.4 Constraints and opportunities for future smallholder poultry production

In the future, poultry production for livelihood improvement and poverty alleviation will be needed in countries and regions of the world where there are comparatively large numbers of poor people. Paul Collier, former director of Development Research at the World Bank and now leader of the Centre for Studies of African Economies at Oxford University, in his book *The bottom billion*, (Collier, 2007) analyses the situation in about fifty states with a total population of about a billion people, where it has proven very difficult to get development moving. He describes the states as “failing”, as most of them suffer or have suffered from extended periods of bad governance or civil war, with mismanagement of revenues from natural resources such as oil; or they may be landlocked with few natural resources. While the situation is bad, Collier argues that it is in these countries that the real development challenge lies. It is typical for these countries that most of the population is rural, and that many women and their families would benefit from interventions in support of smallholder poultry production. If it is assumed that out of the one billion people, 80 percent live in rural areas, that an average household consist of 5 people including an adult woman, and that adult women are the primary target group for this type of intervention, it can be estimated that 160 million women and their families would stand to benefit.

7.5 Opportunities, number of people and categories of countries

Development organizations are aware of the problem that Collier (2007) presents, although they may use other words to describe the situation. In World Bank terminology the difficult countries are called low income countries under stress (LICUS) or highly indebted poor

http://www.worldbank.org/licus
Poultry Production for livelihood improvement and poverty alleviation

BOX 4
Countries for smallholder poultry in human development

The following countries – the list is not exhaustive – are among those that for some time will have large proportions of poor people. In Asia: Afghanistan, Bangladesh, Cambodia, the Democratic People’s Republic of Korea, India, Indonesia, the Lao People’s Democratic Republic, Nepal, Pakistan, the Philippines, Viet Nam; in Africa: Benin, Burundi, Central Africa Republic, Chad, Cameroon, the Congo, Côte d’Ivoire, the Democratic Republic of the Congo, Eritrea, Ethiopia, Ghana, Guinea, Guinea-Bissau, Guyana, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Togo, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe. In Latin America there will not be many such countries, but Bolivia, Honduras and Nicaragua may need attention.

![Figure 3: Distribution of undernourished people in 2001–2003 (millions)](source: FAO (2006)).

countries (HIPC)\(^7\), while they are placed low on the UN’s Human Development Report’s Human Development Index\(^8\). FAO uses the expression low-income food-deficit countries (LIFDCs)\(^9\).

The number of undernourished people is estimated to be above 854 million by FAO (2006), while the World Bank (2005) estimates the number of people living in the LICUS countries to be more than 400 million. The majority of people in either of these categories live in South Asia and sub-Saharan Africa. These countries are listed more fully in Box 4.

In all regions, wars and other disasters will very likely add new countries to the list set

\(^7\) http://www.worldbank.org/hipc
\(^8\) http://hdr.undp.org/
out in Box 4, while stable and good governance combined with economic growth may remove countries from the list.

The distribution of the 854 million undernourished people in the world in 2001–2003 is shown in Figure 3.

7.6 Constraints
One important constraint is that – if Poverty Reduction Strategy Papers (PRSPs) are any guide – there appears to be limited awareness among planners and policy-makers about the possibility of using smallholder poultry production as a development tool. The HIPC countries are required to produce PRSPs to obtain concessional lending from the World Bank for their development. Yet, from the perspective of the present paper, there is much that needs to be improved. As poultry and other small livestock are kept particularly by poor people, it would be reasonable to expect that PRSPs allocated a role for livestock development; but this has not been the case in most instances. In the first working paper published by the FAO Pro-Poor-Livestock Initiative (FAO, 2003b), 61 countries were examined with regard to the degree to which livestock (not to mention poultry) had been included in PRSPs. The conclusions drawn in this paper include the following:

- that livestock is generally under-represented in PRSPs;
- that greater attention is given to commercial operations than to species and structures relevant to the poor;
- that recommendations are far too general, and therefore unlikely to lead to improved outcomes;
- that often the format of the PRSP process will not lead to accurate descriptions of the situation of livestock producers;
- that despite attempts at a participatory and consultative process, recommendations are mostly central and top-down; local opinion may therefore be sought but not incorporated; and
- that the joint staff assessment procedure does not lead to any increased representation of livestock.

In the introduction to this paper, a reference was made to Ashley et al. (1999), who in their review of 800 livestock development projects showed that there was a bias towards large animals in development work; on the basis of the evidence provided by the analysis of the PRSPs (FAO, 2003b) the situation has not improved. In view of the lack of consideration given to livestock in the PRSPs, the situation may in fact have become worse.

7.7 The market situation
The marketing situation with regard to smallholder poultry production has recently been reviewed by Kryger et al. (in FAO, 2007b). The market situation will be closely linked to developments in the economy, which in turn is linked to the political situation in a country or region (Collier, 2007); extreme forms of political unrest, war and mismanagement lead to economic stagnation and depletion. Conversely, economic growth will lead to an increase in the demand for poultry products, and that demand boost will be particularly strong in the lower income groups. Raha estimated this effect for Bangladesh (Table 6).

It is interesting to note that according to Table 6 the income elasticity of demand is
much higher for chicken meat than for eggs, but that for both eggs and meat the elasticity is particularly high at the lower income levels. The conclusion that increases in income lead to an increased demand for food of animal origin reflects the findings of the study on the “livestock revolution” produced by Delgado et al. (1999).

Meat from indigenous birds commands a premium price in many countries. In the case of Bangladesh, Riise et al. (2005) found this premium to be 60 percent. There was no price difference for eggs – although it may be argued that a 40 gram egg from an indigenous hen traded at the same price as a 60 gram egg from an exotic bird is 50 percent more expensive on a weight basis.

7.8 The political and economic situation decides whether there is a niche or a major market

At times price differences between the eggs and meat of indigenous and exotic birds lead to discussions about possible niche markets for some products. The question of the size of such a market then has to be considered. According to the comprehensive review by Kryger et al. (in FAO, 2007b), reliable data on the volume of this niche market is unavailable “and the relation to the broiler meat market in terms of price elasticities appear[s] not [to be] being researched”.

In countries where economic development has difficulty to take root – home to 1 billion people according to Collier (2007) – there is another dividing line. Poultry production based on the traditional scavenging system will be the dominant form until economic development begins to take off, at which point, commercial types of poultry production will begin to supply a predominantly urban market which will grow with time.

Factors that influence farm gate prices include distance to the market, population density, transaction costs and marketing structures. There will, for example, be differences in the share of the consumer price that an intermediary will expect (and hence the price that

<table>
<thead>
<tr>
<th>Income group (in Bangladesh Taka per household)</th>
<th>Percentage of households by income group (national figures)</th>
<th>Percentage of households by income group (figures for rural population)</th>
<th>Elasticity of demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;4 000</td>
<td>55.0</td>
<td>61.5</td>
<td>1.627</td>
</tr>
<tr>
<td>4 001–6 000</td>
<td>19.7</td>
<td>19.1</td>
<td>1.168</td>
</tr>
<tr>
<td>6 001–8 000</td>
<td>9.3</td>
<td>7.8</td>
<td>1.127</td>
</tr>
<tr>
<td>8 001–10 000</td>
<td>5.5</td>
<td>4.7</td>
<td>0.651</td>
</tr>
<tr>
<td>&gt;10 000</td>
<td>10.5</td>
<td>6.9</td>
<td>0.496</td>
</tr>
</tbody>
</table>


10 The income elasticity of demand measures the increase in the quantity demanded of a good that results when people increase their income.
the farmer will get) between a country such as the United Republic of Tanzania that has a low population density (41 people per square kilometre) and long distances to markets, and a country such as Bangladesh, where a very high population density (985 people per square kilometre) will provide a much more ready demand and access to the market.

While there have been studies of aspects of smallholder poultry marketing (Mlozi et al., 2003; Riise et al., 2005; Kryger et al. in FAO, 2007b), there seems not to have been any that have studied whether, under a range of marketing conditions, the prices charged by intermediaries are “fair” or whether there is any need for interventions in this area.

In conclusion, the question of marketing needs more detailed studies with regard to the influence that the political and economic situation in a country or region has on poultry production systems and the chain from the producer to the consumer. This will help to inform decisions about the most appropriate interventions.

8 THE MARKET RESPONSE TO HPAI

The HPAI problem is expected to last for some years. Poultry producers have to expect that consumer reaction to the problem will, from time to time, influence the marketing situation – although demand can be expected to recover after some time. This effect is illustrated in Figure 4. The figure is based on data from the first outbreaks in Indonesia in 2004, but the pattern of consumer reaction has been the same in other countries in later outbreaks (McLeod, personal communication).

Small poultry producers will also face problems when governments decide to restructure markets as a result of HPAI. This effect was being seen in Viet Nam at the time of writing.

![Figure 4: Jakarta broiler prices from news of outbreak in January till May 2004](source: Dr. Hartono, Indonesian Poultry Information Centre.)
9 CONCLUSIONS

As this paper has outlined, the particular purpose of using poultry production for livelihood improvement and poverty alleviation is to benefit poor women and their families. Increases in egg and meat production are significant, but this is not the most important measure of success. Important evaluation criteria (Figures 1 and 2) include whether the women and their families have enhanced their capabilities to cope with the difficulties that poor people typically meet (diseases, hidden hunger, pressure on their assets, etc.), whether they have stronger social networks, and whether they are better able to feed their children and keep them in school. Poultry production in the sense that it is discussed here is only one of the tools that can be used, but it adds to the menu of options available to livelihood improvement and poverty alleviation projects or programmes.

The rationale – based on the evidence provided in the paper – for a poverty alleviation strategy that embraces smallholder poultry production is that it will reach, more successfully than cattle-based projects, the people that pro-poor development is meant to benefit. The evidence is that this leads to a situation of greater food security, in which people consume more of their own produce, and exchange – via the market – the remaining high-value poultry meat and eggs for milk, other meat, fish, cereals or vegetables. This results in several benefits. Poor people take their first steps into the development mainstream, they and their children become better nourished and the demand for all animal products increases. In short, poultry production offers a means to distribute more equally the benefits of development as defined within the livelihoods approach (described in Section 3 above).

The primary constraint to up-scaling poultry production for livelihood improvement and poverty alleviation is institutional and organizational. It is poor women and their families who run the smallholder poultry production system, but they are not organized and most government veterinary and extension systems do not reach out to them. They are, therefore, left in an organizational vacuum with poor guidance from the national governments. Taking into account Collier’s (2007) analysis of the general economic and political conditions in many of the countries where the smallholder poultry approach would be relevant, this situation will not be easily remedied.

10 RECOMMENDATIONS

The need for smallholder poultry work in the future will be in the countries in the World Bank’s LICUS or HIPC categories, FAO’s LIFDC category, those placed low on the UN Human Development Index, or in the countries that are home to what Collier (2007) calls “the bottom billion”. In none of these countries can a strong organizational capacity to reach out to poor women and their families be expected. Accordingly, the most important challenge is to find the organizational means to reach these poor people. This may be through government extension programmes, producer organizations, community-based organizations, NGOs, private companies, or a combination of these actors. A decade ago, Ashley et al. (1999) documented the problems that livestock projects had in reaching poor people; such problems will persist for some time in the countries where the smallholder approach is relevant.
10.1 Identify the roles and responsibilities of the public and private actors
The poultry sector, whether commercial or based on a scavenging village system is a private sector. It would not make sense in countries with a weak public sector – including weak veterinary and livestock services – to allocate to the public sector responsibilities that can be handled equally well or better by private companies, producer organizations or NGOs. A relevant analysis of the roles of public and private sector actors in the provision of livestock services is provided by Ahuja (2004). Ahuja’s analysis draws a distinction between public and private goods, and uses this distinction to identify the appropriate delivery channels for various livestock services. According to this analysis, public goods include surveillance, prevention, control and eradication of highly contagious diseases with serious socio-economic, trade and public health consequences; emergency responses; wildlife disease monitoring; food-safety tasks; and compliance monitoring. Research, extension and training are classified as having both public and private good characteristics. Disease investigation and diagnosis, and production and distribution of drugs and vaccines are among the activities placed in the private good category.

10.2 Roles of international organizations and networks
International organizations such as FAO have a clear role to play as providers of technical expertise. The countries for which the smallholder approach is relevant will be short of technical expertise, so there is a role for an international technical organization like FAO to act as a storehouse of knowledge, as a provider of technical assistance, and through support to INFPD. An immediate task is to create awareness among decision-makers in the relevant countries about the potential of the smallholder poultry approach as a development tool. The same role is foreseen for the other organizations that focus on smallholder poultry as a tool in poverty alleviation such as the Veterinarians without Borders, the LAPROVET laboratory that is involved in the work on Newcastle vaccination, the Australia-based International Rural Poultry Centre and the Danish Network for Smallholder Poultry Development. The expansions of the development NGO BRAC from Bangladesh into other countries is likely to involve work with poultry and should be followed and supported as appropriate, not least to learn from the institutional modalities that may be applied. Knowledge about the use of small stock in development is stored in the Smallstock Toolbox, a Web site supported by several donors (http://smallstock.info).

10.3 Roles of NGOs, community-based organizations and membership organizations
The limited outreach of government veterinary and extension services in the countries where the smallholder poultry approach is relevant allocates an important role to NGOs and community-based or membership-based organizations, which should be supported as far as possible. However, this is easier said than done for the following reasons: (i) the number of NGOs with interest in using the approach is limited (Crafter in FAO, 2004); (ii) many of the countries for which the smallholder approach is relevant are not democracies and they may not allow the freedom to organize that is required to create NGOs, community-based or membership-based organizations. However, these constraints should
not prevent support to such organizations, where this is possible. One option may be collaboration between international organizations and networks and international NGOs, as international NGOs are sometimes permitted to work in countries that do not allow the existence of national NGOs or other types of civil society organization.

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