

# Poultry welfare in developing countries

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## WHY IS POULTRY WELFARE IN DEVELOPING COUNTRIES A CONCERN?

The poultry sector is one of the most rapidly growing livestock sectors worldwide: between 1961 and 2001 the number of poultry slaughtered annually increased by 621 percent. Although industrialized countries have much higher average per capita consumption of most poultry products, production in developing countries is increasing rapidly. In 2000, Compassion in World Farming reported that average annual egg production in developing countries had increased by 331 percent since 1980.

Although chickens are very different from people, it is thought that they are capable of suffering from states such as pain or frustration. Ethical consideration therefore needs to be applied to poultry farming, and ways of ensuring good welfare for such large numbers of animals need to be found.

## WHAT IS ANIMAL WELFARE?

The *Oxford English Dictionary* associates welfare with “well-being; happiness; and thriving or successful progress in life”. In relation to animals, different cultures emphasize different aspects. Thus, people from different backgrounds give different relative importance to animal welfare factors such as: i) health and normal biological functioning; ii) the subjective “feelings” of the animals; and iii) the animals’ ability to live a natural life (EFSA, 2005).

The World Organisation for Animal Health (OIE) definition of animal welfare refers to how well an animal is able to cope with the conditions in which it lives. This definition, derived from Broom (1986), has widespread, but not universal, acceptance. Other authors continue to emphasize the importance of animals’ feelings and experiences in their definitions of animal welfare (Phillips, 2009).

For the purposes of this review, the concept of animal welfare refers to an animal’s overall state of well-being. OIE considers that good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing. In general, many different components of an animal’s state must be considered to judge whether its welfare is good or bad. Some of the components that FAO considers important are that the animal should be healthy, comfortable, well nourished, and safe. It is also important that animals are able to express behaviours that are priorities in a captive environment (Weeks and Nicol, 2006) and that they should not suffer from unpleasant mental states such as pain, fear and distress (although these feelings cannot be measured directly). When considering animal welfare as a whole, it is important to take each of these components into consideration.

## MEASURING ANIMAL WELFARE

The state of an animal’s welfare can range from very good to very bad (Duncan and Fraser, 1997). Sometimes, however, one

component of welfare is good but others are not. For example, an animal might be in good health but its ability to move may be restricted by caging or tethering. It is therefore important to be able to measure each component of welfare, and to devise ways of integrating the different measures to reach an overall conclusion.

## The Five Freedoms, principles and criteria for good welfare

In the United Kingdom, the welfare of farm animals has been considered a formal discipline since 1965, when the Brambell Committee suggested that farmed animals should have five basic “freedoms” of movement, such as the freedom to stretch and the freedom to turn around. These can be considered the original components of animal welfare. However, they are rather narrow, so to take account of a broader range of animals’ physical and behavioural needs, these Five Freedoms were modified in 1979 by the United Kingdom’s Farm Animal Welfare Council (FAWC, 1979), which proposed that all farm animals should have:

1. freedom from hunger and thirst;
2. freedom from discomfort;
3. freedom from pain, injury and disease;
4. freedom to express normal behaviour;
5. freedom from fear and distress.

The Five Freedoms have been highly influential, and OIE accepts them as one of the guiding principles governing animal welfare. They are also referenced in most European welfare legislation, referred to by veterinary and animal welfare organizations worldwide, and form the basis for OIE Terrestrial Animal Health Code Article 7.1.1. However, they also have drawbacks. In particular, it is not easy to decide which normal or innate behaviours are important for animals in captive environments. Recently, the European Welfare Quality consortium has expanded and clarified the components of animal welfare, proposing a set of four principles and 12 criteria, as shown in Table 1.

## Resource-based and animal-based measures

Once the principles and criteria for good welfare have been agreed, ways of measuring each criterion need to be devised. These measures can be used on farms or other livestock enterprises to assess animal welfare. Early assessments of animals on farms were made by observing whether key resources (e.g., nests or clean drinkers) were present; such measures are called resource-based measures. However, the presence of a resource does not mean necessarily mean that it is being used effectively. Recently, there has therefore been a move to make direct observations and measurements of the animals themselves, using animal-based outcome measures. This is important to ensuring the good welfare of all individual animals within a flock or herd.

TABLE 1

Welfare principles and criteria as defined by Welfare Quality

| Welfare principles    | Welfare criteria                                                                                                                               |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Good feeding          | 1. Absence of prolonged hunger<br>2. Absence of prolonged thirst                                                                               |
| Good housing          | 3. Comfort around resting<br>4. Thermal comfort<br>5. Ease of movement                                                                         |
| Good health           | 6. Absence of injuries<br>7. Absence of disease<br>8. Absence of pain induced by management procedures                                         |
| Appropriate behaviour | 9. Expression of social behaviours<br>10. Expression of other behaviours<br>11. Good human-animal relationship<br>12. Positive emotional state |

Much progress has been made in developing valid, repeatable animal-based outcome measures for chickens. The Welfare Quality Project has suggested appropriate measures that could be used to assess each of the 12 welfare criteria for poultry, and the majority of these are animal-based outcome measures. Thus, the absence of hunger can be measured by assessing emaciation on an agreed scale, and thermal comfort can be measured by assessing whether birds are panting or huddling. In drawing an overall conclusion about the welfare of chickens at a specific site, the measures for each criterion can be given different weights, with higher weights given to criteria that are thought to be especially important.

### Scientific assessment of welfare

It is important that the measures used on farms to assess animal welfare are backed up by more fundamental scientific research, to ensure that they really do measure factors associated with quality of life. The scientific assessment of poultry welfare usually depends on measuring a range of physiological, behavioural or clinical indicators, and comparing these measurements among chickens that are housed or treated differently in some way. A broad range of indicators can be used to assess stress response and immune function in an attempt to measure whether the animal is coping with its environment or not. However, interpretation of these indicators is sometimes difficult. An alternative scientific approach has therefore been to examine the environmental conditions chosen by chickens. Early studies examined the environmental choices of chickens for food types, laying, foraging and exploratory materials, heat, lighting, and social conditions. The strength and importance of these preferences has recently been assessed by determining how hard chickens will work to obtain these resources or conditions when access becomes more difficult or demands more energy (Nicol, 2010). Important new scientific research is examining how welfare indicators and the environmental choices of chickens interrelate (Nicol *et al.*, 2009). The International Society for Applied Ethology is a scientific body with an interest in how animal behaviour can be used to assess animal welfare. Many other organizations are interested in the scientific assessment of welfare; their newsletters can be accessed via the FAO website: [www.fao.org/ag/againfo/programmes/animal-welfare/en/](http://www.fao.org/ag/againfo/programmes/animal-welfare/en/).

## INTERACTIONS BETWEEN WELFARE AND PRODUCTIVITY

It is often thought that good production will itself guarantee good welfare, but the relationship between production and welfare is more complex than this.

In the following two examples, welfare and production are positively associated:

(i) In some backyard, village environments, chickens may be able to express normal behaviour, but their overall welfare may be poor if they are affected by disease, parasitism or malnutrition. Addressing these welfare issues will also result in increased productivity.

(ii) In many cases, acute or chronically stressful events will reduce productivity. For example, moving hens from pens to cages produces a marked short-term decrease in egg production. Similarly, chronic stress can impair immune function and lead to increased disease and mortality, and reduced production.

However, in the next two examples, welfare and production are in conflict:

(i) Intense genetic selection for production traits can have adverse consequences on other aspects of bird health. For example, laying hens selected for high egg production have increased skeletal problems (see information note on “Welfare issues in commercial egg production”), and broiler chickens selected for very high growth rates have problems with leg health and lameness (see information note on “Welfare issues in commercial broiler production”).

(ii) Restricting the quantity of feed fed to broiler-breeding flocks/birds is a normal management method because egg production and hatchability are poor if female breeding birds are fed *ad libitum*. However, this means that the birds experience chronic hunger (see Information note “Broilers”).

## SAFE-GUARDING ANIMAL WELFARE

When production gains can be achieved by improving animal welfare, as in the first two examples above, there should be no need for any other mechanism to safe-guard animal welfare; addressing issues of health or malnutrition will benefit both farmers and chickens. This is why poultry welfare is being integrated into food safety policy, based on scientific evidence that well-treated animals are generally healthier and more productive than badly treated ones (European Commission, 2002). OIE also recognizes the links between welfare and animal health and is introducing guidelines for the transport and slaughter of farmed animals. However, when increased production conflicts with good welfare, other checks and balances are required to ensure that the animals are not suffering or unduly exploited. The mechanisms available to ensure good welfare in these circumstances include the law, codes of practice and voluntary assurance schemes.

## POULTRY WELFARE AND THE LAW

The extent to which poultry welfare is protected by the law varies greatly. In 2000, the European Scientific Committee on Animal Health and Animal Welfare investigated international welfare standards and found no generally recognized, specific standards worldwide. Although there appears to be little legislation in the developing world concerning the welfare of farmed animals, many other countries have laws relating to acts of cruelty to individual animals. Significant progress has been made in the last ten

years, particularly in non-European Union (EU) Europe (European Commission, 2002). Most legislation refers to the Five Freedoms (FAWC, 1979), but this may change if the expanded principles and criteria mentioned earlier become widely accepted. Increased legislation often follows increased public awareness of animal welfare issues.

There are two main approaches to introducing welfare legislation (European Commission, 2002). Binding codes are usually included within legislation, and it is a legal requirement to conform. An example of binding legislation in the EU is the Laying Hens Directive (1999). As part of an interim review of the scientific evidence required before adoption of the legislation, the European Food Safety Authority (EFSA, 2005) produced an opinion on the welfare aspects of all housing systems used for laying hens. Following this, the LayWel project, funded via the European Commission's Sixth Framework Programme and national funding from several EU countries, studied the welfare implications of different poultry farming systems. The scientific opinion derived from both these exercises provided the basis for banning conventional cages, summarizing evidence that conventional cages do not allow hens to fulfil behaviour priorities, and present a significant threat to the birds' skeletal health. The EU ban on conventional cages is scheduled to take effect from 1 January 2012. From that date, all cages must contain enrichment (furnishings to assist the birds in performing natural behaviours), such as an area for dust-bathing, and perches. The EU has also introduced a Broiler Directive (2007), which limits the stocking density at which poultry may be kept for meat production. Farmers will be able to keep broiler chickens at higher densities only when high welfare is exhibited and proved. This is likely to be assessed by looking at animal-based outcome measures such as mortality.

## CODES OF PRACTICE

Non-binding codes of practice can be used alongside the law. Codes of practice establish recommendations for good practice as followed by competent and conscientious practitioners. Codes of practice can be particularly useful if they set out clearly what farmers *must* do to ensure good welfare (minimum standards), and what they can do further to optimize welfare.

## SELF-IMPOSED CODES/ASSURANCE SCHEMES

In many countries, there are voluntary schemes for certifying that farm animals have been kept at specified welfare standards. Self-imposed codes are voluntary, but producers conform as they are likely to offer a marketing advantage. Examples include farm assurance schemes, which are common in Europe. They have been introduced in response to consumer demands that animal products satisfy certain safety, environmental and welfare standards.

## HOUSING AND MANAGEMENT OF POULTRY

In developing countries, the majority of poultry are indigenous breeds, kept in small flocks living in a backyard, village environment. Gueye (1998) reports that approximately 80 percent of poultry in Africa can be found in traditional production systems. In these systems, birds are generally free-ranging and often scavenge or are fed household scraps. In this type of poultry production system there is no real distinction between birds reared for meat and those kept as egg layers. Poultry meat is typically obtained from males killed at between 12 and 20 weeks of age, and

from egg laying birds that have ceased to be productive.

Many developing countries are now investing heavily in more intensive commercial systems of poultry production to provide meat and eggs for growing urban and peri-urban populations. In these systems, egg laying hens and broiler meat chickens are genetically very different from each other and from the indigenous breeds kept in small family flocks by villagers in rural areas, and are kept and managed differently.

Intensive broiler production systems obtain chicks from commercial hatcheries, and then house them in flocks in floor-based systems until they reach slaughter weight, when they are caught, transported and slaughtered at a specialized abattoir. Intensive egg production systems also obtain chicks from commercial hatcheries, but these chicks are usually kept in large rearing flocks until they reach sexual maturity and start to produce eggs. At point of lay, the pullets are transported to the adult housing system, which contains egg-handling facilities. A great range of adult housing systems exists, including conventional cage, furnished cage, single-tier aviary, multi-tier indoor, and free-range (described in [www.laywel.eu](http://www.laywel.eu)). At the end of the commercial laying period, generally at around 18 to 24 months of age, these birds are caught, transported and slaughtered in specialized facilities.

## MAJOR WELFARE ISSUES

Poultry welfare is affected by genetics, by the hatching, rearing and adult housing environments, by the methods of transport and slaughter employed, and to a great degree by the attitudes and standards of care of the stockpersons.

### Welfare issues in a village environment

In the village environment, birds are mainly indigenous breeds, which are generally better able to cope with the natural environment than those breeds that have undergone extensive genetic selection for production traits. However, disease transmission is high in backyard poultry systems, often resulting in low productivity and high mortality. Newcastle disease is one of the most problematic and widespread diseases in both village and intensive production systems. Vaccines have been developed, but not all farmers have access to them, and vaccinating free-ranging poultry can be a challenge (FAO, 2001).

Another challenge facing small-scale poultry producers in developing countries is the availability of appropriate nutrition. Many smallholder farmers and their families have limited food, and are thus unable to provide feed for their small scavenging chicken flocks. Poultry frequently also lack access to a source of clean and cool water. This is a welfare concern for the poultry and for the people rearing them, as productivity will be low. In hot climates, birds may have difficulty staying cool if natural or artificial shelter is not provided, as all chickens are derived from jungle-living birds and they actively seek shade.

Most of these welfare issues can be addressed by improved veterinary care and nutrition and the provision of simple facilities such as clean drinking-water and shade.

### Welfare issues of broilers in commercial production

The major welfare issues for commercially reared broilers are leg health problems and lameness, metabolic disorders, and hunger in restricted-fed broiler breeder flocks.

### Welfare issues of laying hens in commercial production

The major welfare issues for commercially reared laying hens are bone problems such as osteoporosis and the high incidence of resultant bone fracture, behavioural deprivation resulting from housing in cage systems, unequal access to facilities for birds housed in non-cage systems, and injurious pecking and plumage loss, which occurs in all types of housing system.

### Welfare issues during transport and slaughter

The major welfare issues arising during transport and slaughter are high levels of stress due to inappropriate handling, and pain and stress if birds are not properly stunned before slaughter.

### BENEFITS OF IMPROVING ANIMAL WELFARE

FAO recognizes the importance of animal welfare practices that lead to benefits for both people and their animals, and supports their implementation, recognizing that the welfare of humans and the welfare of animals are closely linked: [www.fao.org/ag/againfo/resources/en/pubs\\_awelf.html](http://www.fao.org/ag/againfo/resources/en/pubs_awelf.html).

### Consumer acceptance

Throughout the world, people are becoming increasingly aware of the importance of farmed animals' welfare (European Commission, 2002). Consumers are interested in the origin of their poultry products, and surveys such as Euro-barometer show that most people believe that the broiler and laying hen industries need to improve the current level of bird welfare.

Consumers' perception of animal welfare can affect the type of products purchased; 43 percent of consumers say that they consider the welfare and protection of meat animals before they make a purchase.

### Access to markets

At present, the World Trade Organization (WTO) operates a free-trade policy and will not allow countries to restrict trade because of differing standards of animal welfare. This is becoming a concern within the EU, however, where there are guidelines relating to animal welfare to which farmers must conform. The EU is pushing for welfare to be included in the WTO multi-lateral trade negotiations. If this happens, imported products will have to meet basic EU standards to enter this market.

### Employment

Improvements in animal welfare can create work in countries where employment is difficult to find. It is particularly important that intensification is coupled with increased labour, as one of the best ways of raising animal welfare standards is to improve inspection and handling practices. Intensification without increased labour may result in welfare problems being overlooked. In many developing countries, poultry are raised by women and children. Learning how to raise poultry to optimal welfare standards can help women to improve their productivity, and may help alleviate poverty. Organizations such as the International Network for Family Poultry Development and the Network for Small-holder Poultry Development are helping village women to make their poultry enterprises more productive, efficient and profitable. This has a positive impact on the empowerment of women and provides them with social contact both within and outside the village.

The model farm project set up by the World Society for the Protection of Animals and the Food Animal Initiative also aims to help farmers in developing countries to rear their animals in ways that will provide them with optimal economic outputs. A number of farms have been set up in China, where high-welfare animals are reared to organic standards and receive a premium when sold. The farms provide training for producers and exemplify a viable alternative to intensive farming.

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