A Bird’s Eye View:
A Report on the Status of Poultry in India

This report is part of a Humane Society International sponsored project by the Federation of Indian Animal Protection Organisations and hosted by the Blue Cross of India.
FOREWORD

The initial idea for a status report of this nature arose when the concept of an umbrella body of organisations working with and for animals was being discussed in the immediate aftermath of the Asia for Animals meeting in Chennai in January 2007. It was realised that there is a dearth of succinct, formal information about animals that are exploited for food and for fibre in India. Such information is necessary for the animal community to effectively intervene on behalf of animals. The thematic area of animals used for food and fibre was considered particularly crucial since fast changing lifestyles have caused an explosion in the (ab)use of animals for human consumption as food and as fibre. If the animal protection community is to counter this effectively in order to ameliorate and prevent animal exploitation, it is necessary to understand dynamics of such exploitation, its complex linkages and drivers.

It is towards this end that we discussed with HSI the idea of undertaking secondary research towards establishing baseline information on the status of animals used for food and fibre. Along with Chetana Mirle of HSI, we planned to direct the research towards answering the following key questions:

1. Populations (across all states in India)
2. Percent of each species of concern raised for subsistence and percent raised in commercial production
3. The average and highest number of animals in commercial operations
4. Number of people (with gender break-down) dependent on this sector for income.
5. Breeding, including diversity of breeds within each species of concern and breeding issues within each species of concern (for example, growth rate, limb strength, and immunity strength)
6. Breeding, rearing (housing, physical alterations, feed), veterinary care, marketing, transport, and slaughter practices across India, noting regional variations
7. Policy and legislation impacting and regulating each species of concern, including impact of trade and bilateral and multilateral agreements
8. Rate of growth in production and consumption of the animal product
9. Contribution of a particular species of concern to the national or regional economy
10. Existing standards in other parts of the world, including India’s obligations as a result of being a signatory to treaties, pacts, and other agreements (OIE, WTO) or producers’ obligations under contracts that specify animal welfare standards
11. Ongoing efforts in India on part of the government (through the federal animal welfare division, the AWBI, or state level animal welfare boards or committees) and civil society (animal welfare organizations) to improve conditions of this species.

As we have proceeded with the research, we have modified some of these questions based on information available in the secondary domain and the relevance of particular questions to poultry. We have also added certain questions based on the same criteria.

This report is directed towards the Indian animal protection community and hence the information is presented in a manner to enable easy comprehension. In particular, an attempt has been made to enable the reader to understand the jargon used within the poultry sector, the structure of the sector and possible areas of intervention.

We have omitted detailed expositions upon welfare issues and problems as we felt that these are well researched, understood and documented in general. Only one organisation, Peta, has written a report on welfare conditions in Indian broiler and layer farms, and this is currently the only source of comparatively detailed information on these issues. We have therefore focused on other dimensions of the poultry sector as relevant to improving conditions for the birds.

For the purpose of this report, the term poultry includes only the species Gallus gallus, commonly known as “chicken”. Other birds that are used as food such as Turkeys, Ducks, Guinea Fowl and so on are treated of in other reports.

We would welcome suggestions for modifications to the report by our readers.

We gratefully acknowledge the assistance of Shiela Rao at CUPA who readily made available details of CUPA’s work, Deepashree Balaram of ACTAsia for Animals for help on the research, the Blue Cross of India for hosting this project and Chetana Mirle of HSI, for making all this possible. At the FIAPO, our trustees and Erika Abrams of Animal Aid, Udaipur have been crucial supporters of the concept of the Federation and have enabled the initiative to take off.

30 June 2008
Arpan Sharma
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I. SCALE OF THE SECTOR

Populations: The 2003 livestock census pegs the figure of the number of poultry in the country at 457,399,000. This includes both the organised as well as the unorganised sector. The organised sector can further be segregated into rural (419,793,000) and urban (37,606,000). Andhra Pradesh has the highest poultry population at 102,278,000 birds followed by Tamil Nadu at 86,591,000, West Bengal (60,656,000) and Maharashtra (37,986,000). These state wise figures include other birds used as food as well such as ducks and turkeys. However, since the number of these birds is marginal compared to poultry, the state wise figures are good indicators of the numbers of chicken involved. (DAHDF 2006). The graph and table below depict the populations of poultry across states in the country:

Local (desi) birds less than doubled in number between 1961 and 1987. ‘Improved’ varieties increased in numbers by a factor of twelve in the same period. (Kumtakar et al 1999) Of the total poultry population 10-15 percent are estimated to be indigenous birds. 25 years ago, 50 percent of the population consisted of these birds, and in 1970 they produced almost 50 percent of India’s eggs. Although this picture has changed considerably, in many states these birds still constitute 30-40 percent of the population and produce 30-40 percent of eggs. (Rangnekar et al 1999)

Contribution to the economy: The poultry sector contributes about 8 billion dollars to the GNP (Rattanani 2006). Export markets are also likely to open up as subsidies on agricultural products are phased out internationally under World Trade Organization (WTO) agreements. By making the quality and cost of eggs and poultry meat competitive, the
Indian poultry sector is expected to capture a significant share of the export market currently dominated by the United States, Brazil, Netherlands and Thailand. There are no restrictions on exports of poultry and poultry products. (Singh 2006)

Poultry exports were 3.26 billion rupees (56 million euro/ US$71.6 million) in the financial year ending March 2006, up from 1.54 billion rupees in 2004/05.

Employment: There are various estimates about the number of people that the sector employs – directly and indirectly. Kumar (2008) has made an estimate of about 3 million people, while Mehta et al (2003b) have presented an estimate of 1.6 million. Of these 80 percent of employment in the poultry sector is generated directly by farmers, while 20 percent are engaged in feed, pharmaceuticals, equipment and other services required by the poultry sector. Additionally, there may be a similar number of people, roughly 1.6 million, who are engaged in marketing and other channels servicing the poultry sector.
Rattanani (2006) states that the poultry sector employs more than 3 million farmers, with another 15 million agrarian farmers specialising in poultry feed.
Karunakaran (2005) has said that the commercial poultry sector provides employment over 3 million people.

I.A. Layers:
India is on the world map as one of the leading egg producing countries with about 45 billion eggs produced per annum.

I.A.1. Populations.

The distribution of laying hens across states:
I.A.2. Contribution of layers to the national economy.

The significance of the layer sector can be gauged from the fact that India is among the top three egg producers in the world. (DAHDF 2008) The Government of India estimates that the annual growth rate of egg production is 5% (DAHDF 2008). The annual layer market is about Rs. 100 billion.

Production Quantity: Hen eggs, in shell (tonnes)
India has already started exporting shell eggs to Gulf countries and egg powder to the European Union and Japan. India also exports large quantities of hatching eggs to Bangladesh, Singapore, Maldives, United Arab Emirates, Saudi Arabia and Oman and specific pathogen free eggs to the EU for pharmaceutical purposes (Balakrishnan 2002).

India’s poultry product exports are mainly confined to table eggs and egg powder, which are growing due to cost competitiveness, improving hygienic standards, and logistical advantages.

I.B. Broilers:
The broiler production has gone up at an annual growth rate of about 10% and stands at about 2.0 million metric tonnes of chicken meat (FAO 2006). (AR DAHDF 2007-08)


No. of chickens producing meat (1000 heads)

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<tbody>
<tr>
<td>715000</td>
<td>640000</td>
<td>765000</td>
<td>880000</td>
<td>1150000</td>
<td>1330000</td>
<td>1490000</td>
<td>1700000</td>
<td>1750000</td>
<td>2112000</td>
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I.B.2. Contribution of broilers to the national economy.
India is among the top five chicken meat producing countries in the world. (DAHDF 2008) The Government of India estimates that the annual growth rate of broiler production is 12% (DAHDF 2008). The annual poultry meat market has been estimated at Rs. 128 billion.

Production Quantity: Chicken meat (tonnes)

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<td>665000</td>
<td>596000</td>
<td>710000</td>
<td>820000</td>
<td>1080000</td>
<td>1250000</td>
<td>1400000</td>
<td>1600000</td>
<td>1650000</td>
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Poultry meat exports are negligible due to high costs, inadequate meat processing facilities, and infrastructure bottlenecks. Most of the poultry meat produced is consumed within the country with a very small proportion being exported to Gulf countries (Rattanani 2006).

I.C. Regional Characteristics

Industrial poultry is highly fragmented with several thousand independent poultry producers, little or no promotion of brands, and significant variations in poultry industry development across regions.

I.C.1. Regional Characteristics – layers

Most of the egg production comes from eight states – Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Punjab, Tamil Nadu and West Bengal. Andhra Pradesh accounts for almost 40 percent of production, followed by Tamil Nadu with 13.46 percent. (Mehta et al 2007)

I.C.2. Regional Characteristics – broilers
Andhra Pradesh, Karnataka, Kerala and Tamil Nadu account for about 60% of India’s egg production (GoI, 2005), with an annual per capita consumption of 0.5 kg of broiler meat. The eastern and central regions account for a per capita consumption of 0.13 kg of broiler meat, while northern and western regions record much higher figures. (Mehta 2003) Namakkal, a district in Tamil Nadu, accounts for more than 30 percent of broiler production in the country, possibly because of an egg powder plant and feed mills nearby. (Mehta et al 2007)

For the animal protection community the statistics in subsection I.4 demonstrate the considerable influence that the poultry sector has in the country. This stems from industry on the one hand and on the other from aggressive promotion of poultry by the Government as a means of strengthening livelihoods.

The next two sections expound the structure and the scale of the organised and the unorganized poultry sectors.

II. THE ORGANISED SECTOR : INDUSTRY

The significance of the organised sector can be gauged from the fact that currently 77% of the country's production comes from industrial poultry and 23% comes from backyard poultry. The industry can be divided along a basic typology based on husbandry practices.

Evolution of the Poultry Industry
The poultry sector in India has undergone a paradigm shift in structure and operation. A significant feature of India's poultry industry has been its transformation from a predominantly backyard activity into a major commercial activity in about four decades. This transformation has involved sizeable investments in breeding, hatching, rearing and processing. The industry has grown largely due to the initiative of private enterprise, minimal government intervention, indigenous poultry genetics capacity, and the presence of complementary veterinary health, poultry feed, poultry equipment, and poultry processing industries.

India is almost self-sufficient in all inputs required for producing eggs and chicken meat. The Indian poultry industry receives excellent backing from its supporting sectors, which are drawn from various input industries. They consist of a network of about 600 hatcheries, 10,000 veterinary pharmaceuticals, numerous equipment manufacturers, 130 feed mills and several education and research institutes. Hatcheries produce almost all commercial breeds of chicks that are available in America and Europe. The annual turnover of the veterinary pharmaceutical industry is estimated to be Rs.75,000,000, indicating the presence of a vital support service to ensure sound health of the birds in the country. The growing veterinary infrastructure supports livestock production with better health care for poultry.

India has a few integrators who have successfully managed to put in place production facilities for almost all the major inputs including feed, day-old chicks, hatcheries and parents. Some even own pure lines. The effort is now on to put in place a network of contract growers with a buy-back arrangement. The key players have also moved into vertical integration by setting up retail chains, processing, branding and aggressively marketing their produce. (CLFMA 2005a)

The poultry industry is also characterized by significant regional variations based on differences in climate and on the presence of poultry integrators, who impose a standard level of technology and operational efficiency on poultry enterprises. In general, southern and western India are characterized by larger and/or integrated operations that are economically very efficient and appear to have absorbed new techniques. Operators in these regions exhibit strong knowledge of prevailing breeding, feeding, veterinary, and rearing practices. (Landes et al 2004)

The cost of production is lowest in the southern region for both eggs and meat largely due to contract farming/integration in the sector. It is also seen that though the rural distribution of poultry production is much higher (92%) than urban areas (8%), the markets are predominantly in the periurban areas and metropolis. (GoI 2005)

1 The phrase poultry sector refers to both organised as well as the unorganized keepers of poultry and allied operations such as feed manufacturers, middlemen, pharmaceutical companies and so on.
II.A. Production Practices in the Layer Industry

Commercial eggs are produced using specialized layer breeds and distinct management practices. Farmers have moved from rearing traditional birds to rearing hybrids such as Hyline, Shaver and Babcock for egg laying.

In India layers are by and large raised in battery cages. The table below shows integration in the layer industry.

Major kind of partnership activity in the layer industry

<table>
<thead>
<tr>
<th>Input by the farmers</th>
<th>Input/facilities by the trader</th>
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<tbody>
<tr>
<td>Land and housing</td>
<td>Feed</td>
</tr>
<tr>
<td>Equipment – cages</td>
<td>Vaccines</td>
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<tr>
<td>Chicks</td>
<td>Marketing of eggs</td>
</tr>
<tr>
<td>Medicines</td>
<td>Transport</td>
</tr>
<tr>
<td>Labour</td>
<td>Consultancy</td>
</tr>
<tr>
<td>Electricity</td>
<td></td>
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<tr>
<td>Marketing of culled hens, manure, gunny (feed) bags</td>
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</table>

(Balakrishnan, 2002)

II.B. Production Practices in the Broiler Industry

Commercial broilers are produced using specialized broiler breeds, and farmers have moved from traditional breeds to hybrids such as Cobb, Ross, Hybro and Hubbard.

In India broilers are usually raised in deep litter systems. The table below shows integration in the broiler industry.

Type of vertical integration or contract farming common in the broiler industry

<table>
<thead>
<tr>
<th>Broiler farmer</th>
<th>Integrator</th>
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<tbody>
<tr>
<td>Owner of broiler shed and equipment</td>
<td>I. Supplies the following inputs</td>
</tr>
<tr>
<td>Buys litter material</td>
<td>Day-old broiler chicks – owns a breeder farm and</td>
</tr>
<tr>
<td></td>
<td>hatchery to do the same.</td>
</tr>
<tr>
<td>Attends to rearing activities (e.g.) brooding,</td>
<td>Broiler feed required by the birds – owns a feed</td>
</tr>
<tr>
<td>feeding, watering (self labour or hired labour)</td>
<td>mixing unit</td>
</tr>
<tr>
<td>Bears cost of electricity/fuel for brooding</td>
<td>Medicines and vaccines – buys quality medicines and</td>
</tr>
<tr>
<td></td>
<td>vaccines and supplies to farmers as per requirement</td>
</tr>
<tr>
<td>Takes the manure and empty gunny (feed) bags</td>
<td>Veterinary services required, emergency and routine</td>
</tr>
<tr>
<td></td>
<td>– engages qualified veterinarians for the purpose</td>
</tr>
<tr>
<td></td>
<td>II. Pays the rearing cost to the farmer towards cost</td>
</tr>
<tr>
<td></td>
<td>of litter, labour, electricity, rent for buildings</td>
</tr>
<tr>
<td></td>
<td>and equipment and also a part of the profit.</td>
</tr>
<tr>
<td></td>
<td>III. Takes back the finished broilers and arranges</td>
</tr>
<tr>
<td></td>
<td>for their marketing, mostly through traders.</td>
</tr>
</tbody>
</table>

(Balakrishnan, 2002)

There has been no proper regulation of contract farming in India, and there are a few problems with this model. There are no major poultry farmer associations, and according to one contract farmer, the terms of the contract are biased heavily in favour of the integrator. There is no method for solving disputes, and company decisions are final. If the integrator does not fulfil its side of the contract, there is nothing the farmer can do, and any major gap on the part of the integrator could mean ruin for the farmer. For example, vets are supposed to visit farms everyday, as diseases can cause high mortality. If this is not done, not only can the farmer lose most of the flock, but the company can also impose penalties on the farmer for lower productivity (as the company takes a security deposit when the chicks are given to the farmer, it can take the money out of that deposit). The farmer has no control over the quality of the input from the company, such as the chicks, vaccines and feed, but can still be penalised if there are any problems. If market prices drop, the farmer may have to bear part of the loss. Given these problems, and the growing discontent among farmers with this model, companies are starting to look at other models, such as a modified backyard poultry model, where day-old-chicks are put into a ‘mother unit’ until they are strong enough to face backyard scavenging conditions at 3-4 weeks of age. They are then distributed to farmers who rear the birds in the traditional way, with food obtained by scavenging. This model is being promoted by the Venkateshwara Hatcheries Group in collaboration with the Rajiv Gandhi Foundation and ICICI Bank, and will be used for layers as well as broilers. However, some other integrators plan to continue with the contract farming model.
III. THE UNORGANISED SECTOR: POULTRY AND LIVELIHOODS

‘Backyard’ poultry are raised by a large number of India’s population - this typically includes people who use poultry (as well as other livestock) to supplement their livelihood. It is likely that much of this is at subsistence levels and the sector is limited to the local market.

In recent times, the development sector has aggressively promoted poultry as a means of improving livelihoods of marginalized people. This is reflected both in the functioning of development NGOs as well as government schemes for poverty alleviation.

The Government of India as part of its XIth five-year plan is now directing focused resources towards improving backyard poultry (DAHDF 2008). The box below provides a snapshot of the Government of India’s set up for the promotion of poultry in the country.

The Government of India and Poultry

It would be useful to understand the structure of the Government of India’s Ministry of Agriculture and its role in the promotion of poultry in the country. The Department of Animal Husbandry, Dairying & Fisheries (DAHDF) is the wing of the Ministry of Agriculture that deals with all matters concerned with animal agriculture. The Department is responsible for matters relating to livestock production, preservation, protection from disease, improvement of stocks and dairy development. It also looks after all matters pertaining to fishing and fisheries, both inland and marine. The Department advises State Governments/Union Territories (UTs) on the formulation of policies and programmes in the field of Animal Husbandry, Dairy Development and Fisheries. This must be understood in the context of the Indian constitution, as part of which, agriculture - including animal husbandry, dairying and fisheries - is a state subject. The Government of India’s DAHDF is therefore geared towards supplementing the efforts of the State Governments in the development of these sectors. The DAHDF has been providing assistance to the State Governments for the control of animal diseases, scientific management and upgradation of genetic resources, increasing availability of nutritious feed and fodder, sustainable development of processing and marketing facilities and enhancement of production and profitability of livestock and fisheries enterprises.

The main thrust areas of the department are:

- Development of requisite infrastructure in States/UTs for improving productivity,
- Preservation and protection of livestock through provision of health care,
- Strengthening of Central livestock farms (Cattle, Sheep and Poultry) for development of superior germ plasm for distribution to states and,
- Expansion of Aquaculture in fresh and brackish water, and welfare of fisher-folk, etc.

The Department has 35 field offices/subordinate offices, including the following:

i) Central Cattle Development Organisations (12)
ii) Central Poultry Development Organisations (5)
iii) Central Sheep Breeding Farm (1)
iv) Central Fodder Development Organisations (8)
v) Animal Quarantine Certification Centres (4)
vii) Delhi Milk Scheme (1)
viii) Central Institute of Coastal Engineering for Fisheries, Bangalore (1)
ix) Central Institute of Fisheries Nautical and Engineering Training, Cochin (1)
ix) Integrated Fisheries Project, Cochin (1)
x) Fisheries Survey of India, Mumbai (1)

As far as the poultry sector is concerned, the DAHDF runs principally two schemes to provide financial support to State Governments - Assistance to State Poultry Farms and Central Poultry Development Organisations (CPDOs). The focus of the Central Government is the promotion of backyard poultry, which accounts for 23-30% of the poultry sector in India. Assistance is provided to states to strengthen poultry farms run by state animal husbandry departments in terms of hatching, brooding and rearing of the birds with provision for feed mills and their quality monitoring and in-house disease diagnostic facilities. Under the XIth five-year plan an allocation of Rs.150 crores has been provided for this scheme.

Four CPDOs are based in Bangalore, Bhubaneshwar, Chandigarh and Mumbai. They meet the following needs in their respective regions:
Making available quality chicks: Identified low-input technology poultry stock are multiplied and supplied to all states of the region for their rural poultry development programmes.

Diversification programme: So far, poultry development has been concentrated on only one species i.e. chicken. CDPOs have undertaken diversification of species as a thrust area under which other species such as duck, Japanese quail, turkey and Guinea fowl have been introduced to boost the poultry sector.

Strengthening of feed quality monitoring

Training programmes for farmers, women beneficiaries, public and private sector poultry organisations, NGOs, cooperatives.

An allocation of Rs. 50 crores has been made under the Xth five-year plan for CDPOs. (DAHDF 2008)

Apart from schemes of state and central governments for the promotion of backyard poultry, there is increasingly promotion of poultry as a micro enterprise (activities where land is not the main resource for earning income, production is primarily for sale and inputs are often procured from the market), specially in the development sector by NGOs.

III.A. The unorganised sector – broilers and livelihoods

The experience of a premier Indian rural development NGO, PRADAN, is illustrative of how broiler husbandry is promoted as a source of livelihood enhancement. Under PRADAN’s programme, Self-Help Group (SHG) members are taken to existing broiler units and are trained through a learning-by-doing programme. They are helped to obtain capital to set up a 300 to 400 bird unit. Each producer rears 5 to 7 batches in a year and can earn Rs 1,500 to Rs 2,000 per batch. It is promoted as a part-time activity. The producers form a cooperative to provide services at the doorstep – procure and supply all inputs, pick up ready birds, market the birds and provide veterinary services. A matured cooperative would have transactions of Rs 50 to Rs 60 million a year. Each cooperative employs a manager and a veterinarian. Cooperatives also produce their own feed and are now slated to set up two hatcheries in Jharkhand and M. P., respectively. Jharkhand cooperatives have formed a federation for marketing. (PRADAN 2006).

It has not been possible to estimate the number of people that constitute the unorganised sector. However, there are clear thrusts towards increasing the number of people raising poultry. There is no indication that any attention to welfare is paid in schemes run either by NGOs or by the government. This can potentially be corrected by developing linkages with development NGOs, that are likely to comprehend animal welfare concerns.

It is also likely that backyard poultry producers may be encouraged to intensify their practices (for both layers as well as broilers) particularly in regions where poultry integrators are looking for contract farming opportunities. This will have significant welfare implications and is something that the animal welfare community has to look out for. Interestingly poultry industry publications have expressed the view that regardless of the number of government schemes for backyard poultry, small units not connected to larger marketing organisations for broilers or layers would find it difficult to survive. (Rattanani 2006)

IV. INDUSTRY STRUCTURE AND REGIONAL VARIATIONS

(This section has been adapted from Landes et al 2004 except where otherwise stated)

IV.A. Layers
FIGURE 7
Flow chart for layers 2005-2006 – volume

Sources: GOI Basic Animal Husbandry Statistics, various issues; FAOSTAT.

FIGURE 8
Flow chart for layers 2005-2006 – value

Sources: GOI Basic Animal Husbandry Statistics, various issues; FAOSTAT.
Integration has brought two major changes to the poultry industry in southern India: the first is lower average costs of production through improved technology and management practices, and through a strong reduction in prices of production inputs. The second important change is smaller producer-retail margins and lower retail prices for poultry meat, which has been a key factor in the increase in demand in the southern and western regions.

Poultry integrators have expanded in most parts of India, although expansion differs because of various reasons:

Southern region: This region has seen the most rapid integration, and is now almost 90 percent integrated. Bangalore and Hyderabad are major areas of expansion. The temperatures here, although quite high, are much more moderate than the extreme heat and cold in northern India and severe heat of eastern and western India. The fixed costs here are also lower – land, for example, is not as expensive as in the western and northern regions, and this has led to integration by both small and large growers.

Eastern region: As in northern India, integration has been slow, with only 10 percent of the market captured by integrators. Calcutta is the main area of expansion. Poultry meat is not in high demand in this region, and incomes are lower, leading to slower growth. However, expansion is possible because of lower fixed costs than the northern and western regions, and this has attracted growers of different capacities.

Western region: Western India has had a major increase in integrators in the last 2-3 years, centred around the Mumbai market, mostly in the Pune and Nashik regions. There is now nearly 60 percent integration in the western India market (Rattanani, 2006), with around 35 percent of production and consumption attributed to them. These integrators include those expanding from the south, national/regional hatchery and feed businesses, and local...
poultry wholesaling firms. These are all in competition with each other. However, higher fixed costs could limit participation of smaller growers in integration.

Northern region: Integration has not been very rapid, and integrators only account for 10 percent of the market. In the north, there are no major contract growers, and integrators have found it difficult to source and manage such growers. This is surprising as the large and rich Delhi market is in this region. Some producers are also now involved in the feed mixing industry and direct retail marketing, but nobody is rearing parent or grandparent flocks. Also, there are very few producers who have contracted out production. The problem may be that it is difficult to enforce contract-farming agreements, and India has no laws to deal with this area. This doesn’t seem to be an issue in other regions, even though the same problem exists. Another potential problem is that the north, particularly areas near Delhi such as Punjab, Haryana and Uttar Pradesh, are rich agricultural areas which are heavily irrigated and extremely productive, leading to a disinterest in moving to broiler contract farming for fixed margins. A third problem in the north could be that capital and management costs are higher in this region because of the extremes in temperature. As in the western region, the high costs could keep entry limited to large growers.

Southern and eastern producers have not been able to use their production advantages fully across the country. One reason is the high cost of moving live birds across long distances (above 200km), with the associated high mortality rate. Distribution is difficult because of the weather, road conditions and lack of a good distribution network in rural areas means that the rural population (over 70 percent of India’s people) cannot be reached by organised sector producers. (CLFMA 2005b)

Also, there are very limited cold storage and transport facilities for moving chilled or frozen meat. This has led to the presence of regional markets, as opposed to national markets.

Also, consumers prefer meat from live birds, and poultry meat is mostly marketed as live birds to consumers, with the birds killed in the retail shops - this limits the chilled/frozen market as well. The main, small demand for chilled/frozen poultry products is from hotels, restaurants and a small number of rich urbanites, and this demand is easily met by the domestic sector.

This live bird preference, coupled with the consumers’ sensitivity to poultry prices and difficulties in long-distance transport, result in very limited movement from the cheaper producing areas such as southern and western India to more expensive areas like northern India. This is a big constraint on both production and consumption of poultry.

These factors also have a negative impact on imports, as these would need to be frozen or chilled. Imports are also constrained by high tariffs, restrictive sanitary import regulations and lack of cold storage and transport facilities. Although there are no quantitative restrictions on imports, external agencies cannot meet other requirements, for example, India’s health protocol for poultry meat has conditions which cannot be met by the US export certification agencies. (Singh 2006)

The six leading broiler integrators are the Suguna Poultry Farm Limited, the Pioneer Poultry Group, Venkateshwara Hatcheries Private Limited, Godrej Agrovet Limited, the Skylark Group, and a joint venture of Japfa Comfeed International Pte Ltd of Singapore. (Rattanani 2006)

Key players in integration include:
1. Venkateshwara Hatcheries
2. Suguna
3. Godrej
4. Shanti
5. Taffa
6. Arumbagh
7. Skylark
(Mehta et al 2007)

According to Suguna, it leads in broiler production with a market share of over 20 percent and its major competitor is Venkateshwara Hatcheries. (http://www.fnbnews.com/article/detnews.asp?articleid=24426&sectionid=11)

According to the Venkateshwara Hatcheries website, its Vencobb has a 60 percent share in the broiler market (http://www.venkys.com/archive/vencobb/index.html) and nine out of every ten eggs consumed in India are laid by the BV 300 bird from VH, and it has an 86% share in the layer market. (http://www.venkys.com/archive/bv300/index.html)
Processing:
The modern poultry processing sector consists of 10-12 firms of poultry integrators. Combined, they process around 12,000 tons of poultry annually (1-2 percent of consumption). The semi-automatic or fully automatic plants use imported equipment, and are located near urban areas including Mumbai, Calcutta, Hyderabad, Bangalore, and Coimbatore.

Their main customers are restaurant chains such as McDonalds, and they also export products to the Middle East. They are currently trying to get certified to export to the US. They do not operate anywhere near full capacity and report problems with covering costs. As mentioned above, this is because of consumer preference for live birds and lack of facilities to market chilled/frozen products.

98 percent of India’s poultry processing is traditional, which consists of manual dressing of birds, either in bulk by wholesalers or individually in retail shops. It is estimated that wholesalers account for processing of 25-35 percent of total poultry consumed, while the rest is done in retail shops or by the consumers.

There appear to be no sanitary measures for this process, and despite local health regulations for licensing and inspection, there is no evidence of effective enforcement of these regulations.

Summary of growth constraints:

a. Low Production Potential: Local birds are seen as the biggest constraint in the backyard poultry system as they do not grow as much or as fast as commercial breeds, and lay at a later age with fewer eggs. There is concern, however, that trying to increase productivity could make these birds lose their robustness for dealing with backyard conditions.

b. Feed availability and feed price: The poultry industry is highly dependent on the feed industry - feed alone constitutes 65 percent of the cost of broiler and egg production. (Mehta et al, 2003b) About 50 percent of India’s maize goes into poultry feed, and it is believed by the industry that the current growth rate of the poultry industry cannot be sustained without increasing production of maize. The industry would also like maize exports to be banned.

c. Poultry Health: Intensive poultry systems in particular have to be incredibly careful about disease control because the conditions involved predispose chickens to diseases. These conditions include poor hygiene and ventilation, overcrowding and high levels of ammonia. The stress of overcrowding can reduce immunity, not only increasing the chance of disease but also reducing the efficacy of vaccines. According to the WHO, avian influenza can be blamed on intensive poultry production. (Greger, 2007) Therefore intensive systems focus on vaccines and drugs to help with this. The sector also needs to consider the levels of these products in the chickens and eggs, with respect to safety for human consumption.

d. Infrastructure and marketing: The lack of cold chain facilities for transport and storage is a problem when it comes to increasing the scale of production and distribution, particularly in rural areas. Storage of feed and housing for birds also need to be considered, and financing can be an issue.

e. Extension and training: There is a lack of training during the promotion of poultry rearing among rural farmers, and this can lead to the failure of the enterprise. The government and various NGOs have been promoting different initiatives in this respect.

f. Quality control: Quality control of all parts of the process has assumed major importance particularly as the sector would like to increase exports and will need to improve standards in order to meet requirements of the importing countries. Major investment will be needed for this, particularly with small farmers who are scattered across rural areas.

g. Institutional credit: Apart from banks that finance small farmers, self-help groups and various government schemes also have funding mechanisms.

h. Exports: Standards will need to be implemented according to Codex and WTO norms, and this will be difficult for smaller producers, who will also need processing and marketing support to tackle the export markets.

i. Animal welfare and environmental pollution: The poultry sector is now beginning to think about these issues as potential importers such as the US and EU now have regulations to address these concerns, and they are becoming of greater importance in international trade. Intensive production needs to address bio-waste management and air/water pollution issues.

(GoI 2005)

The Agreement on Technical Barriers to Trade (TBT) allows WTO members to apply standards (both mandatory and voluntary) for protection of human health or safety, animal or plant or life of health, or the environment. (Mehta et al 2003a)

Comparative picture of traditional and modern poultry production in relation to development issues.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Traditional System</th>
<th>Modern systems</th>
</tr>
</thead>
</table>

15
1. Equity – No. of families from lower socio-economic strata benefited. | Several | Very few
2. Gender – No. of women involved and directly benefited | Several | Very few
3. Sustainability and risk | Low risk, good sustainability | Risks high, sustainable for large farms only
4. Environmental impact | Positive | Most likely negative
5. Biodiversity | Promoted | Suppressed
6. Dependance on external inputs | Very little | Very high
7. Use of indigenous knowledge | Full use is made | Very little

(Rangnekar et al 1999)

V. CONSUMERS

V.A. Layers

The amount of eggs consumed in India:

<table>
<thead>
<tr>
<th>Product</th>
<th>Year</th>
<th>Annual growth rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eggs</td>
<td>509</td>
<td>1,010</td>
</tr>
</tbody>
</table>

Factors that influence consumer demand:

1. Price and income/Urban-rural differences: There is evidence of sensitivity of egg demand to income and price. A relatively strong growth for eggs is predicted both in the urban and rural areas in the next two decades, according to a study by Mohanty et al, 2003. In this study, egg consumption was found to grow at a much faster pace than poultry meat with the rise in income and nearly triples by 2020. A shift in diet from carbohydrate to protein is likely to drive up the per capita egg consumption throughout the projection period. An examination of egg consumption among different income classes both in urban and rural areas shows that per capita egg consumption in rural area is projected to increase from 30.4 in 2000 to 69 in 2020 whereas the consumption growth for the urban is projected to rise from 48 to 106 during the same time. (Landes et al, 2004)

2. Religious significance: Demand for eggs goes down during religious festival seasons. However, industry is divided on this, as some festivals increase demand.

4. Age: A 1994 study entitled “People of India,” conducted by the Anthropological Survey of India, stated that older people were more likely to be vegetarian. The age structure of the Indian population indicates a large potential market for poultry in the years to come, as 30 percent of the 2000 population were between age 10 and 24. (Landes et al, 2004)

5. Regional variations: As the north and east are less urbanised and have lower average per capita incomes than the south and west, their consumption is lower despite having larger populations than the south and west.

The egg industry has also started to advertise heavily to change consumer perceptions. According to the CLFMA, egg grading, branding and packing have already started in a big way in food chain stores, mega outlets and malls. Companies such as Suguna are marketing ‘healthy’ branded eggs. Organisations like the National Egg Co-ordination Committee conduct intensive promotion campaigns to increase egg consumption.
V.B. Broilers

The amount of poultry meat consumed in India has increased rapidly over the last decade.

(1,000 metric tonnes)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry</td>
<td></td>
<td>132</td>
<td>371</td>
<td>1,081</td>
<td>1,400</td>
<td>10.9</td>
<td>11.3</td>
</tr>
</tbody>
</table>

Levels of consumption are expected to grow higher in the years to come, as they are well below developing and developed country averages. (FAO 2005)

USDA figures show a consumption of 1.8 kg of poultry meat per person for 2006, up from 146 gm in 1970, with a predicted consumption of 1.9 kg in 2007 and a forecast for 2.1 kg in 2008. [http://www.wattpoultry.com/Pmeattrade1.aspx](http://www.wattpoultry.com/Pmeattrade1.aspx) (accessed June 2008)

Factors that influence consumer demand:

1. Price and income/Urban-rural differences: There is evidence of sensitivity of meat demand to income and price. Poultry consumption is higher in urban areas, where both average incomes and the number of high-income consumers are highest. Per capita poultry consumption is also much higher in South India where retail poultry prices are significantly lower than in other regions. A relatively strong growth for poultry meat is predicted both in the urban and rural areas in the next two decades, according to a study by Mohanty et al, 2003. Average per capita poultry meat consumption was found to increase from 0.69 to 1.28 kilograms during the same period. A shift in diet from carbohydrate to protein is likely to drive up the per capita poultry meat consumption throughout the projection period. With the strong gains in poultry production over the years, poultry prices are now lower than mutton prices and consumption among middle-class consumers is expanding rapidly. (Landes et al, 2004)

2. Fresh or processed meat: The Indian consumer prefers to buy freshly cut meat from the wet market, rather than processed or frozen meats. Only 6% of production (about 100,000 MT) of poultry meat is sold in processed form. Of this only about 1% undergoes processing into value added products. (RRTD 2008) Chilled meat is more acceptable to consumers than frozen meat, and growth in consumption of chilled meat may help facilitate the transition toward a frozen bird market. Currently consumers believe that fresh meat tastes better, and also that frozen meat may be spoiled, particularly given the irregular electricity supply across the country, and the lack of confidence regarding the date of freezing. Most of the poultry integrators in southern, western, and eastern India are already marketing dressed and chilled products and have plans to expand sales to both institutional and retail customers.

3. Although poor sanitary conditions are common in India’s retail poultry shops, in general consumers and merchants share a belief that there is minimal health risk because the Indian style of cooking kills bacteria. (Landes et al, 2004)

4. Religious significance: Demand for meat goes down during religious festival seasons. However, industry is divided on this, as some festivals increase demand. Some sources claim that only 10-20% of the population do not eat meat because of religious reasons. Poultry meat is also the most acceptable meat to different religious communities. There is also some evidence that low prices counteract religious factors. Tamil Nadu, a religiously conservative state, now has one of the highest per capita chicken consumption figures in the country, because of stable prices. (CLFMA, 2005b)

5. Age: A 1994 study entitled “People of India,” conducted by the Anthropological Survey of India, stated that older people were more likely to be vegetarian. The age structure of the Indian population indicates a large potential market for poultry in the years to come, as 30 percent of the 2000 population were between age 10 and 24. (Landes et al, 2004)

6. Regional variations: As the north and east are less urbanised and have lower average per capita incomes than the south and west, their consumption is lower despite having larger populations than the south and west.

7. Meat preference: Traditionally, India has displayed a strong preference for ovine and caprine meat and fish in different geographical segments of the country. The high consumer retail price and low availability of chicken meat in the early 1990s contributed largely to this trend. However, with increased production efficiency and greater market penetration, this trend has shown a radical change. (CLFMA, 2005b)
Institutional consumers such as hotels, restaurants and fast food establishments, will continue to expand the chilled and frozen sector. Also, integrators are now establishing a retail presence, in existing shops and supermarkets as well as through their own shops. This is likely to increase growth in this sector. The poultry industry has also started to advertise heavily to change consumer perceptions. According to Rattanani, 2006, companies are laying stress on hygiene and convenience to change the view that chicken slaughtered at the retail end is the freshest and best after cooking. Godrej claims to have created a category called ‘fresh, chilled chicken’.

International organizations such as the US Grains Council (USGC) are also assisting India’s growing commercial poultry processing industry with their strategic consumer marketing efforts. (http://www.worldpoultry.net/news/id2205-38735/us_profits_from_indias_poultry_processing_industry.html accessed 29 June 2008)

VI. ANIMAL WELFARE EFFORTS

Even though the poultry egg and meat sectors are responsible for a huge amount of animal suffering, for millions of animals, there has been comparatively very little sustained effort on the part of the government and the animal welfare organisations to improve conditions for these animals.

VI.1. Government:
The Animal Welfare Division (AWD) under the Ministry of Environment and Forests has been set up to prevent the infliction of unnecessary pain or suffering on animals. The main task of the Division is to implement effectively the various provisions of prevention of Cruelty to Animals Act, 1960.

The Animal Welfare Board of India, a statutory body under the AWD, is meant to advise the Government on animal welfare issues, and create awareness regarding animal welfare. AWBI also gives financial assistance to eligible Animal Welfare Organisations.

Its policy states that it will inspect slaughter houses, regulate and oversee transport of animals to slaughterhouses, advise animal husbandry departments, and check on factory farms and those animal husbandry institutions and commercial ventures that are involved in the raising, housing and selling of animals/birds for the purpose of meat. Any violations of the BSI and Prevention of Food Adulteration Act specifications will result in action taken.

Under The Prevention Of Cruelty To Animals Act, 1960, as amended by Central Act 26 of 1982, the Board may, subject to the previous approval of the Central Government, make such regulations as it may think fit for the administration of its affairs and for carrying out its functions.

Its policies and functions imply that it should take an active role in promoting poultry welfare – however, we have found no evidence that it has done so. http://www.awbi.org

There is also a National Institute of Animal Welfare (NIAW), established to impart training and education in animal welfare and veterinary science. The institute aims at creating an enabling environment for the fulfilment of statutory requirements under the Prevention of Cruelty to Animals Act, 1960. They do not appear to have advertised courses beyond the year 2006.

VI.2 Animal protection organisations (APOs):

Many APOs state that their activities involve farm animal welfare. However, in most cases this appears to be limited to providing veterinary treatment and/or shelter to farm animals.

It is of concern to note that deworming, vaccinations, and other routine treatments appear to be the extent of most welfare efforts, particularly in rural areas. It could of course be argued that this is a route to gain the confidence of owners, following which concepts and methods of improved welfare could be introduced.

Organisations with a known programme on poultry issues:

i. Humane Society International: is focusing on layers, working with producers to ask them to move away from battery cages to cage-free birds. It recently took Indian egg producers on a cage-free facility tour in the US. It is currently publicising Kegg Farms’ cage-free eggs which are being sold in supermarkets in Delhi and Gurgaon. It is also asking restaurants, hotels, supermarkets, and other egg retailers to sign a pledge promising to never to buy, sell, offer, or serve eggs from hens in battery cages or any products containing eggs from hens in battery cages. Consumers can sign a pledge promising not to eat or serve such eggs. It is also focusing on the academic sector by bringing experts from the US to talk about welfare issues. http://www.hsus.org/about_us/humane_society_international_hsi/hsi_asia/
ii. Peta India, Mumbai: did a report in 2007 on the chicken meat and egg industries, following a 5-year undercover investigation. This report is being used in its campaign to improve conditions on chicken farms. They also have an ongoing campaign against KFC, calling for a boycott (they did an undercover investigation at a supplier) www.petaindia.org

iii. The India Project for Animals and Nature, Mavanhallla, Tamil Nadu: has conducted training programmes for men from surrounding villages to become animal field workers. They focused on the economic value of laying hens, vaccinations and other disease prevention measures, poultry diseases, disinfection, general poultry rearing and the benefits of hybrid breeds in backyard poultry. They potential to learn more about better poultry husbandry was also introduced to women belonging to self-help groups and those women who were interested in hybrid breeds and improved backyard poultry keeping were invited to join a poultry workshop in 2008. http://www.indiapan.org/communityeducation.htm

iv. Compassion Unlimited Plus Action, Bangalore: conducts camps for large animals, poultry and cattle in the villages outside Bangalore city limits every month. Awards are given to farmers who take good care of their live stock. About four years ago they conducted a campaign against poultry transport, but are currently not focusing on poultry issues. http://www.cupabangalore.org/largeap.htm

It is possible that other APOs have some version of the programmes conducted by the groups mentioned in items 3 and 4 above. However, there do not appear to be any large scale efforts to tackle the poultry industry by the APO sector apart from HSI and Peta.

(All links in this section were accessed in June 2008).

VII. AREAS FOR ACTION

The motivation for compiling this report stems from an unequivocal position that recognises all animals as sentient beings that deserve appropriate rights and that believes that ensuring a good quality of life for them is a moral obligation of humans. We therefore attempt to interpret the statistics and trends presented above in this light and attempt to identify areas of action that create improved conditions for chickens used for eggs and meat. This section should be read with the rider that it is based primarily on secondary research and the author’s familiarity with conditions prevalent in the country.

VIII.1. Animal Protection Organisations

Given the state of existing legislation and its implementation by constitutionally mandated bodies (the government), civil society led action on behalf of animals appears to be the only plausible medium for bringing about improvements in conditions of poultry birds. If we proceed with this assumption and examine the currently ongoing civil society efforts (section VII), the capacity of organisations working for animals becomes an immediate area of work. Though India has an active animal welfare community, much of this action is directed towards rescue of companion animals. There is no group in the country dedicated towards addressing issues of animals used as food and fibre. Groups do undertake sporadic actions particularly to ameliorate the suffering of cattle during transport and slaughter. However, there is no systematic action to address issues of animals used as food and fibre. Poultry are a particularly neglected group of animals in this context. All the actions listed below depend upon the existence of an aware, capacitated and alert network of animal welfare NGOs that would act on behalf of birds used in the poultry sector and animals used as food and fibre in general. In order to bring this about significant capacity building of animal welfare groups is necessary.

VIII.2. Consumers and Demand

The trends presented above suggest that demand for eggs and chicken meat is set to soar driven by:

- A rapidly urbanising population that has a large proportion of disposable income and food habits that are not impacted by traditional taboos on eggs/meat;
- A potentially large export market.

From the point of view of the birds, the single most significant ameliorative intervention can be positive consumer choices leading either to a reduction in demand or at least impetus towards husbandry practices that are in keeping with international humane standards such as the RSPCA’s Freedom Foods standards or Humane Farm Animal Care standards. In addition to consumer outreach this will also require legislative advocacy to ensure that husbandry practices as specified in Indian law conform to international humane standards and practices.

The export market is a relatively more complex case. While potential export markets including the US and Europe will presumably have domestic legislation governing imports that would make it contingent upon Indian exporters to follow prescribed standards, the onslaught of free trade agreements (FTAs) queers the pitch. Close monitoring of FTAs being negotiated by India will be necessary to ensure that animal welfare provisions are followed.
Considerable lobbying with the Government of India will also be necessary to ensure that India’s position during free trade negotiations is cognizant of animal welfare provisions. Such work on FTAs will necessarily entail collaborative work with organizations like Focus on the Global South and the Bank Information Centre, which specialize in international trade related work and have a presence in India.

VIII.3. Government

Broadly, the role of the government (national, state as well as local) becomes germane vis-à-vis the welfare of poultry following from its involvement in the following four spheres:

i. Enforcing existing legislation and enacting fresh legislation to meet minimum standards all through the food chain;

ii. The government also makes significant investments through its schemes and programmes in the promotion of poultry, particularly backyard, rural poultry.

iii. The government creates the fiscal framework within which the poultry industry operates. This includes various taxes and tariffs, exemptions and so on.

iv. The Government sponsored research institution, the Indian Council for Agricultural Research (ICAR) is the source of poultry (and other livestock) husbandry practices. Government policy on poultry is shaped by ICAR scientists and so are guidelines for the upkeep of animals used as food and fibre.

As far as legislation is concerned, a sharper analysis than has been possible within the scope of this secondary research will be necessary to identify areas where legislation needs to be improved for animals used as food in general and poultry in particular. Possibly draft rules can be formulated for several issues that impact animals used as food and fibre based on standards prevalent in other parts of the world. Lobbying can then be collectively undertaken in order to bring about a paradigm shift in the legal provisions for the protection of animals used as food and fibre. Given the level of lobbying effort required to bring about legislative change, it would be prudent to make such an attempt collectively for all issues connected with animals used as food and fibre, rather than piecemeal for poultry, dairy animals and so on. A favourable legal environment would greatly aid the effort to introduce welfare guidelines for government schemes that promote the use of animals. This issue is discussed in the following paragraph.

Lobbying for appropriate guidelines for the implementation of poultry promotion programmes emerges as another obvious area of work. This is particularly important as the entire focus of the central government for the XIth five-year plan is on the promotion of backyard poultry. The absence of welfare oriented guidelines implies suffering for a large number of birds that are likely to be bred following the injection of funds from the central government. Further, the XIth five-year plan has proposals for diversification from chicken to other types of poultry – turkeys, ducks and guinea fowl. In the absence of prior experience in dealing with such birds on part of animal husbandry personnel of state governments, there are likely to be significant welfare problems with these birds.

Litigation emerges as a third area of intervention for making government agencies take requisite actions (including the promulgation of fresh legislation) for the protection of animals used as food and fibre. Such litigation will be necessary to bring about adequate enforcement of existing laws as well as promulgate new ones based upon standards prevalent the world over. In addition to litigation, enforcement of existing laws will depend upon vigilant civil society groups. The capacity of animal welfare organisations to undertake such action has been discussed in section VIII.1.

The Animal Science Division of ICAR coordinates and monitors research activities in its 19 Research Institutes and their Regional Centres. Of these, the research institutions relevant to poultry are the Central Avian Research Institute and Project Directorate on Poultry. The government’s poultry development programmes are mainly focused on disease surveillance and control, as well as development and supply of improved breeding stocks, feed and production practices. The Indian Council of Agricultural Research conducts research and development activities in these areas at the national level. The state agricultural universities, regional research institutions, and various state agricultural extension agencies further support these efforts. Of late welfare has begun to enter the discourse within the government sponsored poultry research community (Sasidhar 2006). Animal welfare groups will need to engage with this group to ensure that animal welfare is progressively mainstreamed in their work and recommendations emerging from it.

VIII.4. Partnerships with Other Sectors (NGOs)

Alliances between animal welfare groups and NGOs working on related issues will greatly multiply the ability of animal groups to bring about change. Partnerships will need to be developed with NGOs working in other sectors that can be natural allies of the animal welfare movement. Some possible areas of engagement and convergence are listed below:

i. Poultry and other forms of animal husbandry are increasingly being promoted by development groups as a means of livelihood improvement for rural communities. A positive engagement with development NGOs, particularly those working in rural areas, can ensure that welfare of poultry is made a part of programmes run by NGOs that involve the promotion of poultry.
ii. The spread of industrial agriculture is as harmful to people’s livelihoods as it is to animal welfare. There are a number of NGOs that are opposing policies that promote such agriculture. Alliances with such groups would ensure greater probability of countering the rising tide of industrial agriculture.

iii. Similarly environment groups are another natural ally that can be cultivated and environmental laws used to counter intensive agriculture such as battery cages.

VIII.5. Industry

Industrial agriculture, particularly vis-à-vis poultry, has well documented and obvious negative implications for animal welfare. A multiplicity of approaches will have to be adopted to counter industry, ranging from positive engagement to encourage voluntary change, right up to confrontation. The constituencies for positive engagement are obvious – supermarkets, especially the fast emerging retail chains, restaurants, hotels and egg producers. Ultimately of course the adoption of products and practices that adhere to animal welfare standards will be dictated to a large extent by consumer demand and economics. While the economics are beyond the scope of an intervention, strategic exposure using the media would possibly encourage industry to take welfare considerations on board. However, this will require the formulation of a clear, well thought out strategy. There is at least one precedent in India to base such a strategy on – PETA’s campaign against the Indian leather industry in the early part of the current decade.

REFERENCES


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Rattanani, Jagdish 2006. India to see tremendous changes. World Poultry Vol 22 No.6 2006


GLOSSARY

Battery cages: In the battery system hens are confined to cages just large enough to permit very limited movement. The usual floor space is 14 x 16 inches with a height of 17 inches. The floor is of standard strong galvanised wire set at a slope from back to the front, so that the eggs as they are laid, roll out of the cage to a receiving gutter. Underneath is a tray for droppings. Both food and water receptacles are outside the cage. Many small cages can be assembled together, if necessary it may be multi-storied.

Broilers: Birds raised primarily for meat. These birds have been selectively bred over time for maximising their yield of meat.

Deep litter systems: In this system the poultry birds are kept in large pens with up to 250 birds each, on floor covered with litter like straw, sawdust or leaves up to a depth of 8-12 inches. Deep litter resembles dry compost. Deep litter is the build up of the material used for litter with poultry manure until it reaches a depth of 8 to 12 inches.
Industrial animal agriculture: is a system of raising animals, using intensive ‘production line’ methods that maximise the amount of meat produced, while minimising costs. Industrial animal agriculture is characterised by high stocking densities and/or close confinement, forced growth rates, high mechanisation, and low labour requirements (Cox 2007).

Layers: Birds raised primarily for the purpose of eggs. These birds have been selectively bred over time for maximising their yield of eggs.

Organised sector: Within the organised sector in India, nearly all broiler production takes place through a system of rearing called “deep litter” while nearly all egg production is through “battery cages”.

Poultry: For the purpose of this report we have used the term poultry to refer to the most widely used poultry bird, commonly known as “chicken” and technically called Gallus gallus.

Unorganised sector: consists of a large number of people, especially in rural areas, who raise poultry under a non-industrial system to augment their sources of livelihood. Birds used are mostly traditional breeds. Products are usually sold locally and do not enter the organised urban market. Sale is through small scale selling in local markets (DTE 2006). Most birds are raised through what is known as the “free range” system. This is however, progressively changing.

(The Government of India, in its 2005 Draft National Poultry Policy, has provided a different classification of the poultry sector, other than the organised/unorganised:
Family Poultry system for food security: Extensive backyard rearing system, with women as the main caretakers, and an average of 20 birds for family. Eggs and chickens are consumed by the family, used as gifts, and sometimes exchanged for other goods.
Small holders: Extensive to semi-intensive rearing, with surplus marketed. Flocks may consist of a few hundred to a few thousand birds.
Commercial operations: Highly organised, with intensive farming systems and highly productive birds. Contract farming and integration are common.

The FAO has classified poultry production systems as follows:
<table>
<thead>
<tr>
<th>Sectors (FAO/définition)</th>
<th>Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Industrial and integrated</td>
</tr>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Biosecurity</td>
<td>High</td>
</tr>
<tr>
<td>Market outputs</td>
<td>Export and urban</td>
</tr>
<tr>
<td>Dependence on market for inputs</td>
<td>High</td>
</tr>
<tr>
<td>Dependence on goods roads</td>
<td>High</td>
</tr>
<tr>
<td>Location</td>
<td>Near capital and major cities</td>
</tr>
<tr>
<td>Birds kept</td>
<td>Indoores</td>
</tr>
<tr>
<td>Shed</td>
<td>Closed</td>
</tr>
<tr>
<td>Contact with other chicken</td>
<td>None</td>
</tr>
<tr>
<td>Contact with ducks</td>
<td>None</td>
</tr>
<tr>
<td>Contact with other domestic birds</td>
<td>None</td>
</tr>
<tr>
<td>Contact with wildlife</td>
<td>None</td>
</tr>
<tr>
<td>Veterinary service</td>
<td>Own Veterinarian</td>
</tr>
<tr>
<td>Source of medicine and vaccine</td>
<td>Market</td>
</tr>
<tr>
<td>Source of technical information</td>
<td>Company and associates</td>
</tr>
<tr>
<td>Source of finance</td>
<td>Commercial</td>
</tr>
<tr>
<td>Breed of poultry</td>
<td>Commercial</td>
</tr>
<tr>
<td>Food security of owner</td>
<td>Ok</td>
</tr>
</tbody>
</table>

**Sector 1:** Industrial integrated system with high level biosecurity and birds/products marketed commercially (e.g. farms that are part of an integrated broiler production enterprise with clearly defined and implemented standard operating procedures for biosecurity).

**Sector 2:** Commercial poultry production system with moderate to high biosecurity and birds/products usually marketed commercially (e.g. farms with birds kept indoors continuously; strictly preventing contact with other poultry or wildlife).

**Sector 3:** Commercial poultry production system with low to minimal biosecurity and birds/products entering live bird markets (e.g. a caged layer farm with birds in open sheds; a farm with poultry spending time outside the shed; a farm producing chickens and waterfowl).

**Sector 4:** Village or backyard production with minimal biosecurity and birds/products consumed locally.

Free range: This system allows great but not unlimited, space to the birds on land where they can find an appreciable amount of food in the form of herbage, seeds and insects. Birds are protected from predatory animals and infectious diseases including parasitic infestation.

NOTES

Unless specified, the figures in all sections refer to the organised industrial poultry sector.