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Wageningen UR Livestock Research
P.O. BOX 65, NL-8200 AB Lelystad
Telephone +31 (0)320 - 238238
Fax +31 (0)320 - 238050
E-mail Info.livestockresearch@wur.nl
Internet <http://www.livestockresearch.wur.nl>

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Abstract

Global survey of animal-welfare regulations, practices and perceptions, with case studies on poultry meat from Brazil and Thailand, eggs from India and the USA, welfare regulations of farmed fish and welfare aspects related to (perceived) overpopulation of wildlife.

Keywords – Animal welfare; trade; farm animals; wildlife; aquaculture; poultry

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Title: Animal Welfare in a Global Perspective - A Survey of Foreign Agricultural Services and case studies on poultry, aquaculture and wildlife

Samenvatting

Wereldwijd overzicht van dierenwelzijnswetgeving, praktijken en percepties, met voorbeeldstudies over kippenvlees uit Brazilië en Thailand, eieren uit India en de Verenigde Staten, welzijnswetgeving voor kweekvis en welzijnsaspecten van (vermeende) overpopulatie van wilde dieren.

Trefwoorden: Dierenwelzijn, handel, landbouwhuisdieren, wilde dieren, aquacultuur, pluimvee.



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Animal Welfare in a Global Perspective

May 2009

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Report prepared by: Marc Bracke (Editor, ASG), marc.bracke@wur.nl
The project team consisted of the following people:

WUR: Marc Bracke (ASG, WUR project leader; general overview)
 Bram Wouters (ASG, WI)
 Eddie Bokkers (DPS, general overview)
 Nanda Ursinus (A&F; general overview)
 Femke Schepers (A&F, general overview)
 Peter van Horne (LEI, project leader of poultry cases; broiler case, trade)
 Thea Fiks (ASG, case on laying hens)
 Geert Groot Bruinderink (Alterra, wildlife case)
 Hans van de Vis (IMARES, aquaculture case)

LNV Kim Tran (problem owner; project leader, overall research coordination)
 Liefke Huizinga (problem owner; project leader, overall coordination)
 Bart Crijns (coordination of general overview and poultry and pig cases)
 Joanne Maaskant (coordination of general overview)
 Gieta Mahabir (coordination of aquaculture case)
 Sander Smolders (coordination of wildlife case)



Preface

This paper is the final report of the project “Animal Welfare in a Global Perspective”. The paper provides a global overview of the current welfare legislation, farming practices, perceptions concerning animal welfare, and contains chapters regarding management of overabundant wildlife, welfare regulation concerning farmed fish and welfare of poultry in selected countries.

The work was carried out by an interdisciplinary team of researchers at Wageningen University and Research Centre. Many thanks to all contributors and contacted experts, to LNV for funding the work and to the Dutch Foreign Agricultural Services for kindly providing feedback to our questions.

Samenvatting

Dit rapport geeft een overzicht van dierenwelzijn in de wereld. Daarbij wordt aandacht gegeven aan regelgeving, praktijken en percepties van dierenwelzijn in de verschillende werelddelen. Een belangrijk deel van de informatie is afkomstig van de landbouwraden uit de regio's. Daarnaast bevat het rapport hoofdstukken over welzijn van vleeskippen in Brazilië en Thailand; leghennen in India en de Verenigde Staten, welzijnsregelgeving voor vissen in aquacultuur en welzijnsaspecten van wilde dieren in geval van (vermeende) over populatie.

Over de hele wereld bezien heeft Europa verreweg de meest vergaande wetgeving op het gebied van landbouwhuisdieren. Het is echter lastig vast te stellen of het dierenwelzijn dan ook daadwerkelijk beter is, omdat de algehele welzijnsstatus (nog) niet objectief gemeten kan worden. Opkomende landen maken gebruik van moderne inzichten om hun veehouderij 'praktijken' te ontwikkelen tot potentieel belangrijke concurrenten van het Westen.

De belangrijkste conclusie is dat dierenwelzijn in toenemende mate wereldwijd aandacht begint te krijgen, en dat er belangrijke kansen liggen om economische motieven (handel) te verbinden met de ambitie om dierenwelzijn te verbeteren.

Executive summary

There is considerable interest in animal welfare in the European Union and this attention not only applies to farmed animals, but also to wild animals and fish. EU citizens also express their opinion about the treatment of animals in other countries, even beyond the borders of the EU. This report reviews animal welfare across the world with a specific focus on poultry meat from Brazil and Thailand, eggs and egg products from India and the USA, welfare regulations of farmed fish and the management of (perceived overpopulations of) wildlife. To this end a literature survey was conducted, Dutch Foreign Agricultural Services were interviewed and speakers on relevant topics were consulted at recent international conferences.

General overview of animal welfare in third countries

Of the 49 countries that were surveyed via the agricultural services, 25 provided information about legislation, and out of these, 19 had some kind of legislation concerning animal welfare and/or animal protection (concerning pets, farm animals and/or wildlife). When legislation was present, enforcement was often considered to be a concern.

Farming practices vary widely. It is not obvious whether the more modern farms achieve better welfare compared to the smaller traditional farms, as is sometimes presumed.

Perceptions of animal welfare vary between and within countries (e.g. rich vs. poor people, urban vs. rural areas). Citizens and governments are not always aware of animal welfare issues. Religious and cultural views (e.g. Hinduism and Islam) play a major role in animal-welfare perceptions, especially in how animals are treated and slaughtered. Global perceptions seem to follow the way animal welfare has evolved in Europe: starting with attention to (stray) dogs and cat, and issues related to transport and slaughter tend to 'precede' concern about how farm animals are housed. Accordingly, the main issues identified were possibly transportation (e.g. loading and unloading, long travel distances, unsuitable trucks) and the (unprofessional) slaughter of animals.

Driving forces for change differ per country and region: they can be based on export concerns, societal pressure or pressure from consumers. There is a need to create internationally accepted standards to streamline this. The OIE has already developed standards on transport and slaughter, and is being encouraged to develop more. The main trading countries in the world have suggested that these standards will eventually make their way into multilateral trade agreements, e.g. via WTO.

Wildlife

Natural ecosystems have their own methods (feedback mechanisms) to deal with overabundance. But man may experience wild animals, whatever their number, as overabundant because personal interests are at stake. These interests may be financial, ethical or related to human safety.

Examples of practices of management of species that are considered overabundant include elephants in Kruger National Park in South Africa, seal hunting in Namibia, Greenland and Canada and culling of Eastern Grey Kangaroo around Canberra, Australia. Perhaps the degree to which a country incorporates animal welfare aspects and ethics in wildlife management can be measured by its tolerance towards larger species and large predators in particular.

Parallels in wildlife regulations and legislation can be found between the Netherlands, South Africa, Australia, Namibia, USA and Canada. Perceptions as reflected in public debate appear to be comparable when managing the population of wild ungulates in the Netherlands, the elephants in Kruger National Park in South Africa, and the elk and bison in Elk National Park in Canada. In the case of overabundant wild ungulates animal products such as skin, antlers and meat would usually be sold to benefit the local people. In this respect the management practice of leaving ungulate carcasses in the field to be part of the natural cycle (which is practised in the Oostvaardersplassen and the Veluwezoom National Park in the Netherlands) is a unique type of wildlife management.

Aquaculture

There is particular attention to fish welfare in Europe, but no extensive fish welfare regulations have as yet been formulated at European level. Developments in the EU have probably already influenced the attitudes of exporters

from third countries and, as a result, health and welfare are (becoming) issues in countries that (want to) export to the EU, one of the major exporters being Brazil.

Within the EU, NGOs and large supermarkets have started to promote fish welfare (e.g. large supermarkets in the UK demand that fish is stunned before slaughter and the Royal Society for the Prevention of Cruelty to Animals (RSPCA) has partnerships with fish farms). We have not come across initiatives like this in other countries, but on a European scale the European Food Safety Authority (EFSA) is working on a recommendation concerning the welfare of cultured salmon, rainbow trout, bass, sea bream, carp and eel.

Information about codes of practice does not seem to be available in a number of countries. Furthermore, there is little legislation in place to ensure fish welfare. Norway, however, has developed new legislation, "Regulations concerning slaughterhouses and processing plants for aquaculture animals", which will be implemented in 2010. In addition, health aspects deserve more attention, because medicine residues in fish meat, originating from fish hatcheries, are unwanted by consumers.

It can be concluded that developments in the EU encourage exporting countries to meet European demands (e.g. fish farms in Turkey want to stun bass before slaughter).

Poultry

Layers in India and the USA

Laying hens throughout the world are mainly kept in cage systems. The traditional cage system will be banned by the EU in 2012 for reasons of animal welfare. In recent years the welfare of layers has also become an issue outside Europe (USA, Australia), although the number of countries involved is still limited. The USA and India are large egg producers with some export of eggs and egg products to other countries.

In the USA 95% of the eggs are produced by layers kept in cages. The largest egg producing states are Iowa and Ohio. There is almost no legislation with regard to poultry welfare but the issue of animal welfare has become a topic of public debate in recent years. This discussion has forced the industry to set guidelines to improve the welfare of laying hens and more than 80% of the sector have agreed to participate. These guidelines include more space for hens in cages, conditions for moulting and standards for beak trimming. Nevertheless, these standards are still clearly below the EU standards to be implemented in 2012. The perception of scientists and animal welfare organisations in the USA on animal welfare is not very different from that in Europe and in fact is following in the direction Europe seems to be going. The attention that animal welfare and rights organisations have been drawing to the issue of caged layers has motivated producers and retailers also to change their attitudes. The outcome of a recent referendum in California will probably drastically transform the egg industry in the USA when a ban on cages for layers (Proposition 2) comes into effect.

India is the third largest egg producer in the world; commercially kept laying hens are mainly kept in cages. On commercial farms the space allowance per hen is much lower than European (or American) standards. There are no welfare standards for layers in India; in fact, animal welfare is not an issue for the government and improving animal welfare in real life is difficult to achieve due to poverty and the prevailing philosophy of life.

Broilers in Brazil and Thailand

Broilers are generally kept in loose housing on litter in large groups and most countries use commercial breeds which are selected for rapid growth. The EU intends to introduce regulations which will maximise the density of broilers per square meter poultry house by 2010.

Brazil and Thailand are the main exporters of frozen and non-frozen poultry meat to the EU. Brazil has no legislation on welfare for poultry at farm level or during transport, but it is in the process of trying to adopt OIE standards for transport and slaughter. Brazil is the fifth largest country in the world and farming practices vary widely due to differences in climate (several climate zones), background of the population (locals, immigrants) and average income in a region. Animal welfare is not an issue for the local market, but large exporting companies take animal welfare into account as part of their marketing strategy. They have already demonstrated their willingness and capacity to respond to EU regulations or retailer demands. Thailand exports large volumes of poultry meat to the EU and Japan and its government has issued a notification of standards on food safety and animal welfare. In practice these standards are voluntary but compliance is required of companies exporting products, since both government and sector recognise that animal welfare is an important criterion for exports to Europe.

In Brazil and Thailand the maximum stocking density is actually equal or lower than the new EU standards to be implemented in 2011, mainly as a consequence of the warm climate in these countries and the low costs of housing.

General conclusion

Europe has by far the most elaborate farm-animal welfare legislation in the world. This does not imply that the level of animal welfare is better than in third countries. The EU has legislation, but also has considerable intensive production. In addition, enforcement is an issue in relation to welfare legislation across the globe. Within third countries practices are sometimes good and sometimes less good; this also applies within animal categories (e.g. broilers and layers in South-America compared to Europe). Animal welfare is difficult to measure and that complicates the making of comparisons. Developing countries are using modern techniques to develop their farming practices so that they can become potentially important competitors on Western markets. The main conclusion is that animal welfare is attracting increasing attention at a global level and important opportunities exist to connect economic motives (trade) to ambitions to improve animal welfare.

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1 Introduction

1.1 Project background

In the coalition agreement during the formation of the present Dutch government, animal welfare was identified as a topic of concern. At European level concern for animal welfare is also considerable, as reflected in recent regulation initiatives (e.g. Action Plan, EC 2006, see also Annex XV) and research programmes (Welfare Quality®, e.g. Blokhuis et al., 2003; Veissier et al., 2007). This concern not only relates to the common farm animals (cattle, pigs and poultry), but also to farmed fish, and to the harvest and treatment of wild animals as part of nature conservation (Oostvaardersplassen). However, animal welfare is not only a national or European issue. The Dutch and the European ambition to improve animal welfare in an open market will inevitably also affect the relationship with third countries (EC 2002; Geffen et al., 2004), for instance, due to the demand for animal products such as poultry products from Brazil and Thailand, seal skins from Canada and ivory from Africa (information about trade is presented in Annex V). The general perception in the Netherlands and Europe is that animal welfare seems to be less important in those countries (e.g. Eaton et al., 2006; WTO 200a; Grethe 2007; Jongeneel et al., 2007), but evidence-based information is limited and in some cases reports indicated that animals in some third countries may well have an equivalent or even better welfare status (e.g. Van Horne and Bondt 2007, Zonderland and Enting, 2006). The policy question which the Dutch Ministry of Agriculture, Nature and Food Quality (LNV) would like to elaborate as part of the integral policy regarding animal welfare (LNV 2007) is to identify multilateral and bilateral options to improve understanding and to discuss the European motives and framework regarding animal welfare.

In this report, however, we will not define the term 'animal welfare'. We recognise that different people may use (somewhat) different concepts of welfare and for mutual understanding it is important to respect these differences. As a general guideline and starting point for describing worldwide issues of animal welfare, however, our starting point will be that animal welfare primarily concerns the quality of life as perceived by the animals themselves (Bracke et al., 1999).

Information about animal welfare is useful when the Dutch Ministry of Agriculture, Nature and Food Quality (LNV) or the European Commission wishes to identify multilateral and bilateral options to improve understanding and to obtain support for animal welfare. In order to start a dialogue, information is needed on practices, regulations and underlying perceptions of animal welfare in third countries (i.e. countries outside the EU) and how these relate to the Dutch and European situation.

In this project available information was screened in 2007 (Bracke, 2008). The next step was a worldwide survey of Dutch Foreign Agricultural Services outside the European Union to compile an overview of current welfare legislation, farming practices and perceptions concerning animal welfare in third countries. For this it may be relevant to realise that perceptions, regulations and practices are related domains. Practices are regarded as acceptable or unacceptable depending on prevailing welfare perceptions, which in turn are underlying or driving regulations, which are translated into practices mainly through law enforcement (Figure 1.1). In the EU, for example, an analysis of FVO reports has shown that the EU has been using different standards for compliance inspections in Northern and Southern European countries (Enting et al., 2006). Hence, possible mismatches between regulations, practices and perceptions need to be considered in a global survey (Jongeneel et al., 2007).

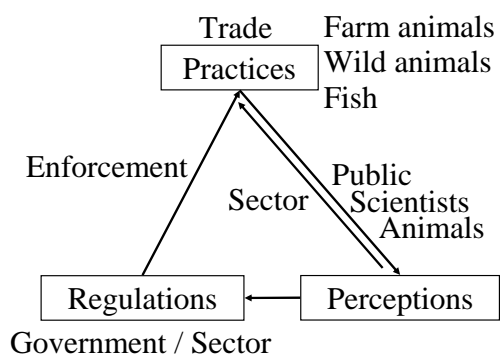


Figure 1.1. Relationships between regulations, practices and perceptions.

The objectives were to provide systematically-collected evidence-based information on a) practices, b) regulations and c) perceptions of animal welfare in third countries in order to facilitate a national and international dialogue on animal welfare.

Several specific cases were selected in order to complement the general overview. These cases were:

- the welfare of broilers in Brazil and Thailand;
- the welfare of laying hens in the USA and India;
- a global survey of wildlife welfare issues particularly related to overpopulation;
- a global survey of regulations for the welfare of farmed fish.

1.2 Reading guide

Chapter 2 describes the methods of consulting the Dutch Foreign Agricultural Services which were the main source of information collected in 2008. The other chapters (3-6) can be read independently of each other.

Chapter 3 contains general information on various species (farm animals, wildlife, pets and laboratory animals) and countries. Animal welfare regulations (all species), main farming practices (farm animals only) and perceptions of welfare issues are described.

Chapter 4 discusses animal welfare and ethics in population control of locally (over)abundant wildlife. Several cases are discussed: African elephants in South Africa, cape fur seal in Namibia and Canada, bison and wolf in the USA, elk and bison in Canada, and the Eastern Grey Kangaroo in Australia.

Chapter 5 gives an overview of welfare regulations of farmed food finfish, describes the different rearing systems used and provides an overview of the tilapia industry.

Chapter 6 concerns welfare regulations, practices and perceptions of layers in the USA and India, and of broilers in Brazil and Thailand.

Chapter 7 contains the overall discussion and conclusions.

2 Methods

Each Dutch Foreign Agricultural Service outside the European Union (19 Services) received a letter and a policy brief from the Department of International Affairs (IZ) of the Ministry of Agriculture, Nature and Food Quality (LNV) to introduce the subject (Annex I), followed by an e-mail message asking for their input (Annex II). Figure 2.1 shows the countries involved.

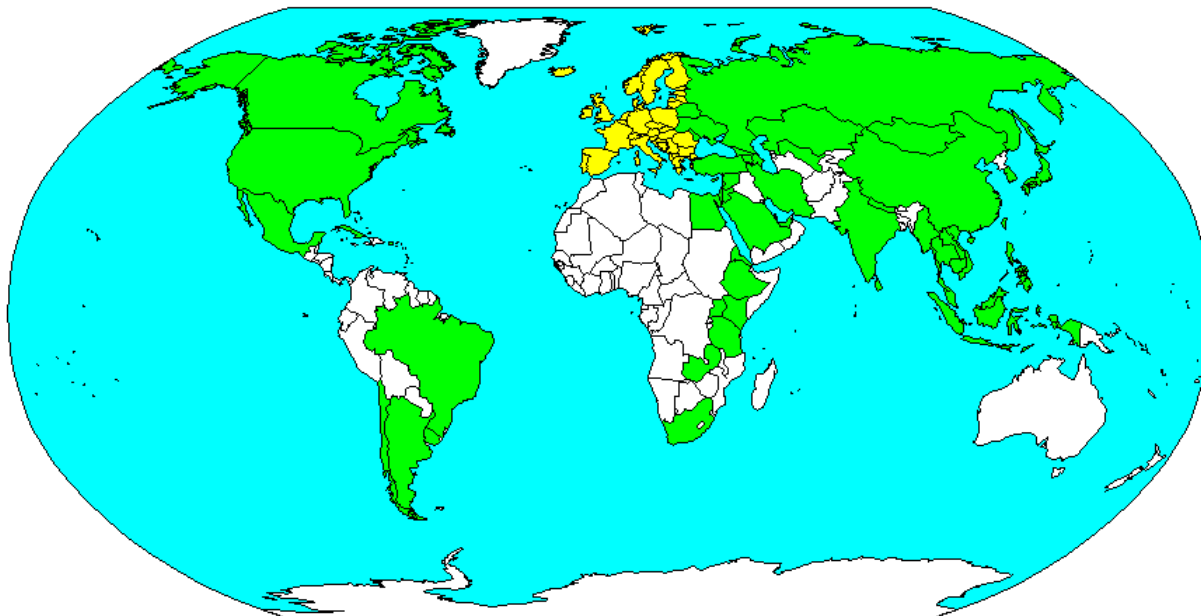


Figure 2.1 World map showing countries covered by Dutch Foreign Agricultural Services that were contacted to generate an overview of animal welfare worldwide (in green); Europe (in yellow) was not screened in this project.

The e-mail message contained questionnaires about animal welfare in general and about specific cases, where applicable (Annex III; IV).

The general questionnaire contained several questions about farming practices, regulations for kept and wild animals, animal welfare issues, Non-Governmental Organisations (NGOs), local perceptions about animal welfare and the existence of mismatches between practices, regulations and perceptions.

- As to 'regulations' (especially laws) the main question was: which norms are set for farm animals, farmed fish and wild mammals?
- On 'practices' the questions were: what is the factual situation? This represents the state of how animals are treated, in part in relation to how regulations (if any) are implemented and enforced?
- On 'perceptions' questions were: how are these animal welfare issues perceived in the country itself. How is animal welfare regarded socio-culturally?

The questions for wildlife were specifically focused on overabundance of wildlife and how these overabundant populations are controlled. The questions regarding aquaculture and poultry (broilers and layers) were about trade, farming systems, legal requirements, perceptions and mismatches.

Besides data from the questionnaire, a literature study was done to obtain additional information, and conferences were attended where animal welfare was discussed in a global context.

Although every attempt was made to make the data presented in this report as factual as a possible, not all considerations and observations presented by the interviewees were checked and verified. It was the project team's aim to provide a general overview of the main issues. As a result of this slightly less stringent scientific approach, we believe we are able to present the data in a wider picture and with more illustrative examples, compared to what would have been achieved using more rigid scientific measures. However, it is important that the reader is aware of the downside of this approach.

3 General overview of animal welfare in a global perspective

Authors: Nanda Ursinus, Femke Schepers, Eddie Bokkers, Marc Bracke and Hans Spoolder

Animal welfare is a broad subject to examine in one study. During this project general animal welfare information was obtained on 23 countries outside the EU (initially 49 countries and/or regions were involved).

All Dutch Foreign Agricultural Services that were contacted have responded, but they differed considerably in the extent to which they could provide answers to the questions. Information reported by the Dutch Foreign Agricultural Services was, to a variable extent, drawn from personal expertise and information sources (local information, for example, was obtained from contacting local policy makers, NGOs and experts).

Animal welfare regulations (all animals), main farming practices (farm animals only) and perceptions of welfare issues (all animals) are described for each region (per continent).

3.1 Africa

For Africa information was obtained from Egypt, Ethiopia, Kenya and South Africa. Some background information about these countries can be found in the tables below. For further background information on animal welfare in Africa see Masiga and Munyua (2005).

Table 3.1 General information on African countries discussed in this chapter.

Country	Population (million)	GDP per capita (\$)	Climate	Arable land (%)	Main religion
Egypt	81.7	5,000	Desert	2.92	Muslim 90%
Ethiopia	82.5	700	Tropical monsoon	10.0	Christian 61%
Kenya	38.0	1,700	Tropical to arid	8.0	Protestant 45%
South Africa	48.8	9,700	Semiarid	12.0	Zion Christian 11.1%

Source: CIA World Factbook

Table 3.2 Information on 2005 livestock production and export of meat for African countries discussed in this chapter

Country	Species	Numbers present (head)	Meat export (tonnes)	Meat export to the EU (tonnes)
Egypt	Poultry	95,000,000	448	0
	Cattle	4,500,000	653	7
	Pigs	30,000	1	0
Ethiopia	Poultry	32,222,000	0	0
	Cattle	40,390,098	91	0
	Pigs	29,000	0	0
Kenya	Poultry	28,657,000	17	0
	Cattle	13,019,000	116	0
	Pigs	320,000	1,099	0
South Africa	Poultry	121,000,000	4,910	0
	Cattle	13,790,000	7,186	360
	Pigs	1,656,000	1,531	0

Source: FAOSTAT (2009)

3.1.1 Animal Welfare Regulations

The OIE investigated the legislative situation regarding animal welfare in 2008. Kahn (2008) sent out questionnaires to 51 African OIE member states, eleven of which responded. Of these eleven respondents, 36% (four countries) indicated that they had legislation on animal transportation in place, 64% had legislation on the slaughtering of animals, and 73% on killing animals as part of disease control measures. Furthermore, 73% had regulations on stray dog population control. Global averages for these parameters, according to the

questionnaire results, are 80%, 76%, 82% and 68%. This means that Africa, except for legislation on the control of stray dogs, has low scores in terms of welfare legislation compared to global averages.

As for voluntary schemes, two out of the eleven respondents had schemes concerning transport (18%), three concerning slaughter (27%) and two concerning killing for disease control (18%). This means that Africa has in general low scores on these measures, compared to global averages of 37%, 42% and 37% respectively (Kahn, 2008).

Egypt

There is legislation for farmed animals and wildlife in Egypt: the Penal Code, the Environmental Law and the Agricultural Law.

The penal code protects animals from harmful human actions. The killing or poisoning of an animal, for example, is prohibited (Article 355) and is punished by a jail sentence or a fine (Article 357).

The Environmental Law pays little attention to animals except in Article 28, but even this Article is not in conformity with the Penal Code. The Penal Code heavily penalises the killing or harming of animals with a somewhat severe penalty, while the Environmental Law focuses on specific kinds of wild birds and animals threatened with extinction, and also regulates the issue of hunting and the issuance of hunting licences, as hunting is not totally criminalised by law in regions where it is permitted. Article 28 of this law stipulates that it is totally forbidden to hunt, kill or capture wild birds and animals defined in the Law Executive Regulations. It is also forbidden to own such birds and animals, to walk about with them, sell them or display them for sale dead or alive. Moreover, damaging the nests of these birds or destroying their eggs is also prohibited. The Law Executive Regulations define the regions where this law applies and list the conditions needed to secure a hunting licence in those regions, as well as the administrative authorities responsible for the implementation of this Article. Article 84 of the same law stipulates under Penalties: "All who violate Article 28 of this Law will pay a fine, and will have the impounded birds and animals confiscated from them as well as the tools and utensils used to commit the violations".

The Agricultural Law states that it is forbidden to shoot, kill or capture wild animals, or birds in any manner useful to agriculture. It is also forbidden to own, transport, walk with, sell and display them dead or alive. Destroying the nests of certain birds or killing them is also prohibited. The Minister of Agriculture intends to issue a decree defining the type of birds and wild animals as well as the regions to which the rules of this Article apply; the decree will also define the conditions needed to obtain a licence to hunt those birds and wild animals for scientific reasons or for tourism in exceptional cases. Other articles in the law regulate the slaughter of male livestock to preserve animal assets, which is in no way related to compassion and mercy. Therefore, the law contains no articles for the protection of animals *per se*.

Ethiopia

Current legislation is based on regulations developed by Haile Selassie (Emperor of Ethiopia from 1928-1974). Ethiopia is now developing new legislation in various societal areas, and it is not yet known if any regulations specific to animal welfare will be developed.

Kenya

Government policies do not deal with animal welfare. However, there is a Prevention of Cruelty to Animals Act (criminal act of 1963, revised 1983, also known as Cap 360), based on British law. The Cap 360 is basic, imposes low fines, and contains no stipulations as to what is considered to be cruelty towards animals. The government is currently revising its livestock policy. A draft livestock policy was released in 2007, but makes no reference to animal welfare. Government and veterinary policies are programmed to livestock rearing. Their animal welfare emphasis has been on feeding and vaccination without any emphasis on the wider aspects of welfare such as handling, transport and slaughter. Pet animals received little attention, and were not even included in the veterinary students' curriculum. However, this situation is now changing, as animal welfare is much more in the public eye and "the powers that be" realise that animal welfare is an important subject. It has now been incorporated into the veterinary students' syllabus. The AWAKE (Animal Welfare Kenya) committee has been in existence for almost two years and has a mandate to change the law, but it does not seem to be acting very quickly. The KSPCA (Kenya Society for the Protection and Care of Animals, which works under Cap 360), is part of the committee and hopes that it will be able to give constructive input to the draft. It should be considered, however, that it is not quite known where the financial input for setting up the law(s) will be coming from. There is a move to update Cap 360, though this may take some time. The Act gives the KSPCA the possibility of entering property, confiscating suffering animals and working with the police to bring court cases against offenders. The main focus in Kenyan National Parks, Reserves and other areas is on environmental conservation. There are anti-poaching laws (that are enforced rather strictly by the Kenya Wildlife Service) but these stem from environmental concerns rather than animal welfare concerns.

South Africa

There are several acts that regulate animal welfare in South Africa, the main ones being as follows (both fall under the responsibilities of the National Department of Agriculture):

- Animal Protection Act, 1962 (Annex VI);
- Performing Animals Protection Act, 1935 (Annex VII).

Other important regulations are:

- Elephant Management Regulation;
- Marine Aquaculture policy;
- National Environmental Management: Biodiversity Act, 2004 (Annex VIII);
- Draft Policy for the Development of a Sustainable Wildlife Ranching Sector in South Africa;
- Animal Improvement Act, 1998;
- Societies for the Prevention of Cruelty to Animals Act (which governs the organisation and management of animal welfare associations).

The Animal Protection Act (No. 71 of 1962) is the general law about animal welfare (S.A.T.I.S. LTD, 2008) and aims to consolidate and amend the laws relating to the prevention of cruelty to animals.

The NSPCA (National Council of Societies for the Prevention of Cruelty to Animals) is the most active organisation with regard to animal welfare; it was founded in 1955 as the Federation of SPCAs to provide a forum to bring uniformity to welfare legislation and standards. Its members, the 92 SPCAs in South Africa, are governed by the SPCA Act 169 of 1993 which is administered by the NSPCA, which is therefore a statutory body. Their Inspectors are authorised in terms of the Animals Protection Act 71 of 1962 and the Performing Animal Protection Act No. 24 of 1935 with the SPCA movement collectively undertaking over 90% of all animal welfare investigations and prosecutions in South Africa. In cooperation with industry and government they have developed different codes of practice which can be regarded as soft law. These Codes of Practice have been negotiated by the NSPCA and animal-related industries and reflect minimum welfare standards. The Codes are also used in conjunction with the Animal Protection Act when prosecution is necessary. They do, however, encourage industry to implement the highest standards of care. According to Christine Kuch (NSPCA), South Africa has excellent animal welfare legislation.

3.1.2 *Farming practices in Africa*

Egypt

In Egypt, large numbers of dairy cows are used for commercial dairy production. These cows are kept outside, generally with a lot of space and shade. The main concern is the fact that most animal diseases are endemic and treated on the spot. Hygiene is also an issue of concern. Milk quality is an example of this and processing plants may have difficulties finding milk without medication residues (e.g. penicillin).

The smaller farms usually have from one to five cows which are used for multiple purposes. These small farms have primitive production conditions, and the cattle are part of the family. There are no management procedures and biosafety is at risk. The products are of poor quality and, due to limited treatment of the raw milk, serious health risks for humans can occur (Tuberculosis, brucellosis etc.).

There are no large beef cattle farms. Many beef cattle are imported from Eastern European countries, Latin America and Australia; often beef cattle are shipped over large distances. Recently, large feedlots have been established in Ain Sokhna for imported cattle. The import of beef cattle from such countries as Sudan, India and Ethiopia in recent years has meant the introduction of various serious diseases (Lumpy Skin disease, Triple D disease and foot-and-mouth disease) and the quality of the beef of imported cattle is not always high.

Apart from the recently established pilot slaughterhouse in Ain Sokhna, there are few professional, well-equipped slaughterhouses in Egypt. Animals are slaughtered according to Halal procedures.

Small numbers of pigs are kept by Coptic producers (a Copt is a native Egyptian Christian; Islam prohibits pig production). Pigs are housed in the open air or in sheds. Feed resources of pigs consist of uncontrolled waste products, and this generates considerable health risks.

In large farms laying hens and broilers appear to be kept in conditions similar to European practices.

Consequently, similar advantages and disadvantages regarding welfare can be expected. On small farms, laying hens are kept on roof tops or backyards. Until recently the biosafety of laying hen and broiler products was low. Avian Influenza is endemic at the moment and causes serious health risks. Laying hens are not usually slaughtered on the farm itself. Egyptian companies are receiving government support for investment in modern slaughterhouses for broilers.

In Egypt there are only small and medium-sized fish farms, with levels of management which are not very high. The use of fish feed is increasing, replacing the use of no fish feed at all. The water quality of the ponds is poor and this causes health risks. Due to the limited investment and knowledge, harvested fish may be relatively small and of limited quality. Fish are usually slaughtered after onset of death, caused by a lack of oxygen.

Donkeys and horses are used for transport. They may have to work hard and may lack any type of housing or management, and have rationed feed supplies. Slaughtering is normally not performed. Sheep and goats also often lack any form of housing, and management may be of limited quality. The feed resources consist of household waste and grass near irrigation canals.

Ethiopia

Most farm animals are raised by smallholders, who are often living as pastoralists in the Lowlands and use communal and harvested land where animals roam freely. Usually, young children have the task of minding the animals (shepherds). During the day the animals live in the open field or bush, but at night they are often placed in a corral. For dairy cows small stables are sometimes available.

Most animals are slaughtered by their owners (not in a slaughterhouse). Abattoirs that do exist are often old and dirty (birds of prey are usually nearby).

There are 42 million cows, in total, in Ethiopia and they are used for dairy, haulage and meat. Animal diseases are a considerable problem in Ethiopia, including foot-and-mouth disease, Lumpy Skin disease, rabies, Contagious Bovine Pleuropneumonia (CBPP), Bovine Tuberculosis and Brucellosis. Cows serve more or less like a 'bank'. They are used as working animals for ploughing the fields, and for milk and meat. On special occasions some animals are sold, e.g. if people have a slight surplus of animals.

Relatively few pigs are kept (several thousands).

Ethiopia has several local chicken breeds, for both eggs and meat. The animals roam around the house.

Newcastle disease is a problem for poultry farmers at present.

Ethiopia has 20 million sheep and 20 million goats (for milk and meat), and many horses and donkeys (serving as working animals). Animal diseases include foot-and-mouth disease, sheep and goat pox, Peste de petit ruminant (PPR), Lumpy Skin Disease, rabies, Contagious Caprine Pleuropneumonia (CCPP) and brucellosis.

Kenya

The majority of animals roam freely, though many people in semi-urban areas or villages keep one or two cows and practise zero grazing, even on some housing estates. This is not always satisfactory as the stalls are not always kept up to standard and some animals are not given enough food or shelter. Pig breeders have sties with various degrees of hygiene and care. In the villages and slums pigs roam freely and from time to time the veterinary department and the local services round them up and kill them because they are a health hazard. Farmers Choice is the biggest pig breeder and processor and their operation is up to European standards. Sheep and goats mostly roam freely even in urban areas, though some people keep goats in sheds, usually not in the best conditions. Poultry farmers who keep the birds commercially, either for eggs or meat usually use barn housing systems. The KSPCA has not encountered battery cages so far. Many people keep a few free-roaming chickens at home for eggs and meat.

Fish farming is mostly found in Western Kenya and is undertaken by approximately 4,500 fish farmers. The output estimates range between 1,000 - 4,000 metric tonnes per annum (according to the Fisheries Department) most of which goes unrecorded and is used for own consumption or sold locally. Fish farming is not considered to be a major welfare concern as the fish are commercially farmed and there is no by-catch or wastage.

South Africa

The number of dairy cattle kept in South Africa is 1,800,000. Processing of the milk is conducted on site or via regional or local collectors. Many dairy farmers also grow their own feed. Beef cattle are kept outside and in larger numbers than dairy cattle: 11,000,000. Management of farms with beef cattle varies from highly sophisticated to rural and in development.

Pigs are found almost everywhere in South Africa. They are housed both outside and in large pig farms.

The poultry industry provides about 58% of all animal-product protein consumed in South Africa.

The poultry industry is divided as follows:

- The Day Old Chick Supply Industry
- The Egg Industry
- The Broiler Industry

The main method of production is intensive, although extensive and semi-extensive poultry production exists as well. Broilers are grown to slaughter weight in 38 days. Poultry producers face similar welfare problems as broiler producers in the EU.

Despite the above, however, farm managers and other stakeholders in the poultry industry understand the negative relationship between stress and production. Limiting stress, therefore, is in the interest of farmers and workers (who often have production incentives).

In South Africa, abalone, catfish, trout, and koi are farmed in ponds. Approximately 7,000 tonnes of fish are produced annually.

Ostriches are also farmed in South Africa, both for large-scale farming as well as for tourism. They are kept outside and produce eggs, feathers and meat.

3.1.3 *Perceptions of animal welfare in Africa*

Egypt

Animal welfare is not perceived as an issue by the general public. Nevertheless, there are a large number of NGOs active in this field, e.g. Brooke Hospital for Animals, Society of Protecting Animal Rights in Egypt (S.P.A.R.E.), The Egyptian Society of Animal Friends, Egyptian Federation for Animal Welfare, Animal Haven, Egyptian Mau Rescue Organization (EMRO), the Egyptian Society of Animal Management, Cairo SPCA, Port Said SPCA, Rise Veterinary Hospital, and the Society for the Protection and Welfare of Donkeys and Mules in Egypt (SPWDME).

In general, animal transport (e.g. large travel distances by ship for beef cattle) and slaughter pose animal welfare risks. Housing and management conditions are also associated with welfare problems, especially the poor hygienic conditions, (endemic) animal diseases, and the way in which donkeys and horses are treated (see Text box 3.1). Bad welfare conditions for these animals are mostly due to the lack of awareness and low income level of the owners. They need their donkeys daily in order to support their family, and this may result in overworked animals. Educating the owners about simple things like using better harnesses, regular resting periods, providing water and medical care when necessary, can immediately improve the welfare of these animals.

Text box 3.1 Welfare of horses and donkeys in Luxor, Egypt

The problem with horses and donkeys is subscribed by veterinarian Kelly Bowlit, who worked with ACE (Animal Care in Egypt) for a month in 2004.

“ACE provides free veterinary treatment for over 150 animals per day. The shelter has eight large stables, there is a large area for rolling, all animals are showered and offered water. I consider this facility to be the keystone of ACE because it allows people to bring their animals in daily for washing and if a problem is noticed it is dealt with swiftly and discreetly. In this way, the owners are not harassed about the condition of their animals and more readily seek us for help. The showering facility educates the people as to how to care for their animals and I noticed a huge improvement in the condition of the animals since my last visit in 1999 and compared to those areas of Egypt where this facility is not available.

I noticed that the animals were routinely presented with the same problems: wounds, lameness or dental problems. Wounds were usually due to a poorly fitted harness, especially in donkeys. Many owners accepted that the animal must rest until the wound heals, but some animals required hospitalisation. Lameness is a daily burden, with appalling farriery and lack of understanding about foot and leg care.

Education and encouragement is still the way forward and I handed out four rosettes to the best animals (no wounds, good feet, well conditioned, sensible tack). Word travels fast and competition for rosettes encourages good husbandry. I consider it especially important to praise children and prizes of chocolate makes animal health improve dramatically!”

Source: British Veterinary Association, 2008

people generally do not seem to value their animals very highly. This may be due to limited education and poverty within the country.

Until recently the Australian government prohibited the export of live beef cattle to Egypt due to concern about animal welfare conditions in Egypt and slaughtering procedures, but since the pilot slaughterhouse started in Ain Sokhna, Australia has lifted the ban.

Lack of knowledge may also negatively affect the animal welfare situation. Animal Care Egypt, for instance, states that health problems are not always due to purposely abusing animals, but may be based on the use of traditional medicine which is often cheaper than modern medicine (Text box 3.2).

Text box 3.2 The common practice of 'firing'

This animal is a prized possession and firing was not done out of intended cruelty. In Egypt, firing is commonplace - because the uneducated believe in it. It is neither legal nor illegal because it has never been covered by the law.

In essence, firing means the burning with red hot metal of various parts of a horse's or donkey's body and it is a common belief that this will make the animals "strong". Firing is perpetrated by unqualified country people who, misguidedly, believe they are practicing equine medicine. The patients are over-ridden, over-worked, under-fed and under-valued horses and donkeys. These animals are essential for farm workers, but because they are desperately poor with little or no education they turn to what their great-grandfathers believed in, firing, the traditional cure-all. Scientific veterinary practice is largely outside both their understanding and their economic reach. Good diet, humane treatment and regular worming are what is needed. But firing is cheaper.

Source: Animal Care Egypt, 2008

Ethiopia

Animal welfare is not a public or political issue in Ethiopia due to poverty. Ethiopia is ranked at 169 (out of 177) on the Human Development Index (HDI). People seem to lack respect for animals, and may treat animals in a non-friendly way. Hitting animals is a common practice, and animals are often malnourished. There are two well-known NGOs that try to improve animal welfare:

- The Brooke Hospital for Animals (originally an English organisation that stands for a better welfare of working animals such as horses and donkeys)
- International Donkey Protection Trust (IDPT)

Ethiopia has a problem with the prevalence of animal diseases. The country is considering how it can meet the veterinary (health) demands from importing nations.

Kenya

The increased interest at government level has led to some developments concerning animal welfare. The KSPCA pointed out that WSPA (World Society for Protection of Animals) is currently working on a universal declaration on animal welfare that they hope will be ratified by UN member states. In order to be part of this process Kenya has set up a committee, AWAKE (Animal Welfare Kenya), chaired by a representative from the Veterinary Department. Several meetings have been hosted in the eighteen months that the committee has been in existence.

The KSPCA is the only organisation currently lobbying and responding to the issues of cruelty and abuse of animals. It has introduced humane slaughter in abattoirs and many of the busier slaughterhouses are now using captive bolt pistols. These pistols have bullets which explode inside and push a bolt into the animal's skull, thereby rendering it unconscious. In the past, these pistols were rather expensive and therefore hardly used. The KSPCA imports blank ammunition for humane slaughter with captive bolt pistols.

Many new slaughterhouses are being set up, for which the Veterinary Department is issuing licenses without always ensuring, it seems, that there is a stunning box or a humane killing method. Hygiene seems to be its main interest. Although the meat inspectors come to KSPCA to learn about humane slaughter, they do not always seem to ensure that animals are killed humanely. The KSPCA hopes that the new welfare act will address these problems.

The district veterinary officers are now helping the KSPCA teams to realise donkey clinics and take interest in their welfare. Donkey welfare used to have very low priority. There is also the issue of poisoning dogs (even though they have owners) with strychnine. Dogs are only supposed to be poisoned when there is a rabies outbreak, and not to reduce the dog population. It is against the Veterinary Surgeons Act to use strychnine to kill animals under normal circumstances. The KSPCA is lobbying on this subject, and it has plans to start a neutering and vaccinating campaign through AWAKE.

A number of new organisations have been founded recently, dealing with animal welfare. One of them is the African Network for Animal Welfare (ANAW) that is also a member of the AWAKE committee (also see Text box 3.2). Representatives of welfare organisations feel that issues related to animal diseases and sanitary concerns hampering export opportunities seem to receive more attention and interest than animal welfare. ANAW managed to treat, vaccinate and de-worm a total of 3,470 animals (dogs, cattle, pigs, donkeys, cats, sheep and goats) and also separately vaccinated 5,000 sheep and goats against Peste des petit ruminant (PPR) disease in a marginalised East Pokot district. Figures 3.1 and 3.2 show the practice of how animals are vaccinated and how treatment is performed by ANAW.

Several organisations in Kenya are involved in wildlife issues. The most commonly known and active organisation is the African Wildlife Foundation.



Figure 3.1 Dogs (left) and cats (right) are vaccinated against Rabies (ANAW).



Figure 3.2 Vaccinating cattle (ANAW).

According to a number of livestock and fishery stakeholders and government officials there seems to be a trend towards increased awareness and interest in animal welfare issues. Obviously, the issue of safari tourism is also an important economic activity, and plays a major role in Kenya. The Kenya Wildlife Service undertakes strict enforcement of existing anti-poaching laws.

Text box 3.3 ANAW initiatives to improve animal welfare in Kenya

“ANAW (African Network for Animal Welfare) is currently working on a project with Kenyan universities and Animal Health Training Institutes (AHITI). The aim of the project is to introduce animal welfare into the higher education curriculum so as to impact on animal health practitioners, health officers, veterinaries and animal handlers that are trained. Already, a pilot programme on humane treatment of pigs covering the Five Animal Freedoms has gone through its first year.

ANAW together with other animal welfare stakeholders under the ambit of Animal Welfare Kenya have now negotiated a programme with the government that will put the dog baiting and poisoning with strychnine at bay as we implement a three year pilot population control through spay and neuter and anti-rabies vaccination campaigns. Once successful, this programme can then be replicated in other cities and towns in the country. ANAW is now fundraising for the same and hopes to launch a pilot program in September 2008.”

Source: Africa Network for Animal Welfare, 2008

South Africa

Animal welfare is not really an issue for most people in South Africa or the broader Southern African region. South Africa has to deal with many other problems such as poverty in rural and urban areas (hunger), and crime and social development issues.

The welfare of farm animals (cattle, pigs) and laboratory animals receives little media attention but there is some interest in pet animals. Wildlife research is conducted by the World Wide Fund For Nature (WWF) and the International Union for Conservation of Nature (IUCN). The organisations involved in animal welfare are the NSPCA (mentioned earlier under ‘Welfare regulations’) and the International Fund for Animal Welfare (IFAW). Their policy is to cooperate with governments but processes regarding animal welfare regulations are difficult and time consuming. South Africans have a special relationship with nature and wildlife. Elephants, lions and rhino’s, in particular, receive media attention.

Various organisations are gaining more importance and credibility. The NSPCA is developing industry standards to improve animal welfare standards. Moreover, the NSPCA is trying to convince the government to set national standards and regulations to ensure uniformity in the application of legislation nationwide, which can then be enforced by the provincial conservation authorities. According to Christine Kuch (NSPCA), South Africa has excellent animal welfare legislation, but people do not always obey the law and lack of enforcement is considered a problem. “The problem is that South Africa has a few prosecutors, a situation that is worsened by the fact that there is a high rate of staff turnover. You brief one prosecutor on a specific case, and before you know it, he/she has been replaced by another. Also, we have a few courts that could not possibly cope if we prosecuted everyone. Our approach is therefore to educate people to discourage them from ill-treating animals”.

3.2 South America

Information on South America was obtained from contacts in Argentina, Brazil and Mexico. Some background information about these countries can be found in the table below.

Table 3.3 General information on South American countries discussed in this chapter.

Country	Population (million)	GDP per capita (\$)	Climate	Arable land (%)	Main religion
Argentina	40.5	13,100	Mostly temperate	10.0	Roman Catholic 92%
Brazil	196.3	9,500	Mostly tropical	6.93	Roman Catholic 73.6%
Mexico	110.0	12,400	Tropical to desert	12.7	Roman Catholic 76.5%

Source: CIA World Factbook

Table 3.4 Information on 2005 livestock production and export of meat for Latin American countries discussed in this chapter.

Country	Species	Numbers present	Meat export (tonnes)	Meat export to the EU (tonnes)
Argentina	Poultry	95,000,000	117,638	20,434
	Cattle	50,167,000	669,199	92,557
	Pigs	1,830,000	546	0
Brazil	Poultry	999,041,000	3,067,962	67,830
	Cattle	207,156,696	1,650,732	245,484
	Pigs	34,063,934	751,812	9,463
Mexico	Poultry	487,612,000	2,252	0
	Cattle	28,762,626	26,522	2
	Pigs	15,341,917	64,419	0

Source: FAOSTAT (2009)

3.2.1 Regulations

In a 2008 investigation by the OIE, Kahn (2008) sent out questionnaires to 29 North and South American OIE countries, six of which responded. Of these six respondents, 83% (five countries) indicated that they had legislation on animal transportation in place, 100% had legislation on the slaughtering of animals, and 67% on the killing of animals as part of disease control measures. Furthermore, 66% had regulations on stray dog population control. Global averages for these parameters, according to the questionnaire results, are 80%, 76%, 82% and 68%. This means that the scores of the Americas are generally high compared to other OIE member states, except for legislation regarding killing for disease purposes.

As for voluntary schemes, out of the six respondents four had schemes on transport (66%), four on slaughter (66%) and also four on killing for disease control (66%). The Americas have a high score, compared to global averages of 37%, 42% and 37% respectively (Kahn, 2008).

Argentina

Argentina has had general legislation on animal welfare (Bienestar Animal) since 1951. New legislation is being developed by SENASA (the competent authority on food safety and animal health) which will set minimum requirements for animal welfare and offer possibilities of voluntary certification but it was not possible to retrieve further details on this new legislation.

Brazil

Law 9.605/98 is the Brazilian legislation that deals with animal protection and wellbeing (wild and domestic), and provides legal requirements in the Federal Constitution (Baracat et al., 2008). The Constitution recognises that animals have fundamental interests. Clayton (2003) suggests that on the basis of this recognition, Brazil banned popular traditions that involve animal suffering. These include cock fighting, as well as a tradition practised in southern Brazil, known as the Ox Feast (in which crowds of villagers brandishing weapons chase oxen through the streets and inflict blows on them). To monitor compliance with the legislation Brazilian municipalities and states have passed a set of provisions for animal protection against cruelty and neglect. However, animal exploitation is a very profitable industry in Brazil just like in the rest of the world. Clayton (2003) provides a typical example: "Rodeo in Brazil is a million-dollar industry and a very controversial issue. The dispute evolves around whether rodeos are considered a cruel treatment to animals. The federal law requires a veterinarian at rodeo, prohibits electric prods, or similar devices that can cause injury or wound animals. The penalties include fine and suspension of rights. However, this law is not effective in preventing injuries, the penalties are not severe enough to deter abusive treatment, and it is less likely to be strictly enforced. Indeed, the controversy about rodeos is far from being ended [Ed] because some Brazilian legal scholars suggest that this law might be unconstitutional."

Mexico

Currently, Mexico has the following laws and norms dealing with animal welfare:

- Federal Animal Health Law (Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca Y Alimentación, 2008);
- General Law of Ecologic Equilibrium and Protection of the Environment (Secretaría de Medio Ambiente Y Recursos Naturales, 2008);
- Each Mexican State has a local law of animal protection; there is also an "Animal Surveillance Brigade";
- Norm NOM-033-ZOO-1995: "Humane Sacrifice for Domestic and Wild Animals";
- Federal Inspection Slaughterhouses (including procedures and government support);

- Norm NOM-008-ZOO-1994: "Zoo Sanitary Specifications for the Construction and Equipment in Animal Sacrifice Facilities, and those Dedicated to the Industrialisation of Meat Products";
 - Animal Protection Law in Mexico City: which defines welfare as "the state in which an animal has satisfied its health, behavioural and physiological needs in its environment, mainly imposed by the human being".
- There are also national and local laws that relate to laboratory animals.

3.2.2 *Farming practices in South America*

Argentina

Although dairy cattle are kept in Argentina, beef cattle are more abundant. The total number of cattle is estimated at 50 to 55 million heads. Argentina exported about 480,000 tons of beef in 2007. In addition, some 28,000 tons of beef were exported to the EU under the lucrative 'Hilton-Quota'. This quota (currently around 28,000 tonnes of beef) was set by the European Union, and Argentina receives about four times as much money as from regular exports for providing this quality standard. Hilton quota income enables slaughterhouses to invest in first-class facilities. It is government policy to distribute the Hilton quota to as many different meat packers as possible, giving them all a share.

Beef is by far the most important kind of meat and probably the most important food in Argentina. Annual consumption in Argentina stands at almost 70 kg/pp, compared to 28 kg/pp for poultry and less than 8 kg/pp for pork. In 2007, around 14.9 million cows were slaughtered.

Cattle (dairy and beef) live and graze in large areas outdoors. Indoor enclosures are very rarely used in Argentina. Abnormal behaviour is not seen in cattle, and animals seem to be healthy in general. A study by the Instituto de Promocion de la Carina Vacuna showed that animals are usually transported in open trucks, with boards at shoulder height at the side of the truck, and with iron clamps to be able to cover or close the truck. Few trucks used for animal transportation had a double floor (two floors). Multi purpose trucks can also be used occasionally. Broilers are housed in large barns with open sides (if necessary screens can be placed). Laying hens are housed in battery cages.

Argentina has the world's second largest area for organic production (see also Bowles et al., 2005). A large part concerns very remote areas, in Patagonia, for example, where organic production is the only real option. Lamb production is popular there, albeit less than in the past. Lambs are kept outdoors in 'natural' areas. Annually, 1.5 million animals are slaughtered.

Brazil

The country of Brazil is larger than Europe (including Norway, Turkey and the Ukraine). It has several different climatic zones, soil types, populations with different origins, cultures and agricultural systems, and a very unequally divided wealth pattern. Consequently, the variety in farming is also considerable.

Brazil has a herd of over 200 million cows; 180 million for beef production and 20 million for milk production. Beef production is in general rather extensive with herds grazing on wide pastures.

There are three different types of pig farming (with several sub forms in between). In the poorer Northeast subsistence farming is seen, where one or more animals are kept around the house or farm for personal use. The small and medium-sized companies, which offer their products to the regional and local markets, function independently or as cooperatives. Thirdly, there are multinationals such as Sadia and Perdigão which have completely integrated systems for feed, meat production and slaughter. These multinationals serve the largest part of the internal market (186 million persons) and export on a worldwide basis. Moreover, a distinction can be made between husbandry systems with simple open housing and housing systems with climate regulation. In other words, production systems are very diverse in Brazil. Zonderland and Enting (2006) reported on the pig industry in Brazil (see Annex XVIII).

A similar situation applies to poultry. Poultry products are mostly (three-quarter) produced for the local market in Brazil. One quarter is produced for export to the EU, as well as other countries. An article concerning animal welfare in commercial egg production systems describes various aspects of production: the animal, the producer, the consumer, etc. (Da Cunha, 2007; see Annex IX). Dr Helenice Mazzuco, a researcher in Brazil, gives her perspective on this issue (Da Cunha, 2007; see Annex IX). For more information, see the section on poultry meat from Brazil in Chapter 6.

Mexico

Mexico is a country with 544 known mammal species, of which 72 are threatened and 1,026 bird species, of which 57 are threatened with extinction. It also has a wide number of farm animals and around 16 million dogs, of which an estimated 10 million are stray dogs.

Mexico has many backyard producers who keep only a few cattle and only a handful of large high-tech and industrialised producers (\pm 25%). Most backyard producers keep the animals outside in small pens. Cattle in high-tech farms may have more space per animal.

Specialised feed and climate control is only available at high-tech farms. The other farms depend on the availability of soil, water and feed (grass, for instance). High-tech farms usually have a full-time veterinarian in their employment, and most have good production levels, according to expected planning and controls. This is not the case in backyard farms.

Mid- and low-tech farms usually transport animals on foot (short distances) and in trucks with little space per animal. High-tech farms have specialised transportation with more space. Backyard and some mid-tech producers take their animals to regular or even non-registered slaughterhouses. Other mid- and high-tech producers (and exporters) take their animals to specialised slaughterhouses called "Federal Inspection" (TIF) which are highly regulated and where the conditions are good, in accordance with local and many international rules and regulations.

Similar arrangements apply with regard to pig and poultry farming as described for cattle farming. The pigs in backyard farming presumably have more space than those in intensive systems.

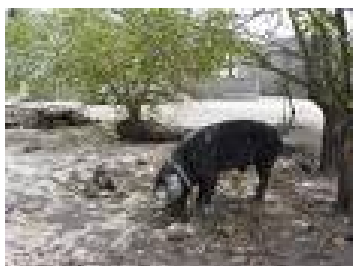


Figure 3.3 Pig in backyard farming in Mexico.

Mexico has many traditional producers with small numbers of fish, and a few specialised fish farmers. Usually traditional producers utilise the area's natural resources. Specialised or high-tech producers have built specialised housing. Only mid- or high-tech producers have professional management, the remaining (many) are small traditional farmers. Again, specialised feed, climate and substrate are only seen in high-tech farms. High-tech farms usually employ a full-time fish specialist or veterinarian.

Most high-tech farms have good production levels. Only high-tech farms transport their animals in adequate tanks or specialised transportation. In most cases, there is no rule or regulation follow-up on slaughtering fish.

For more information about aquaculture in Mexico see chapter 5.

3.2.3 Perceptions of animal welfare in South America

Argentina

Argentina's extensive territory makes it eminently suitable for keeping animals; an area of some 100 million ha of grasslands is used for cattle-raising. Argentineans say that their cattle have the best life in the world. This may be hard to dispute, but the situation may be different in the final stages of the animals' life. Transport is one of the areas of concern, as transport facilities are not always adequate and animals often have to travel long distances, but the situation is better for animals slaughtered for export to Europe. Although citizens of Argentina often seem to be unaware of the animal welfare situation regarding transport and slaughter, the National Service for Health and Quality of Agricultural Products (SENASA) has taken the initiative in many ways. It also cooperates with the Argentine Foundation for Animal Welfare (Fundacion Argentina para el Bienestar Animal) (FABA). The head of the section dealing with animal welfare acknowledges that Argentina follows the developments in the EU closely, but stresses that "It would be unfair to say that the EU is the only driving force in this respect". SENASA itself defines five components ('basic liberties') that are based on the Five Freedoms of the Farm Animal Welfare Council (1992), which should guarantee an acceptable animal welfare level.

The Argentinean Institute for the Promotion of Beef has published very detailed technical reports containing Good Livestock Practices. The institute refers to world-wide consumer demands and laws, and makes it clear that there are many economic incentives to improving animal welfare. A number of local and provincial governments have published detailed manuals on how to handle animals, in particular cattle. These manuals are very informative and practical as they refer to common and mostly avoidable malpractices at farm level. In addition, technical colleges pay attention to animal welfare. The average loss per animal due to animal welfare problems was estimated at US \$0.89 in 2005. This inflicted losses of almost \$13 million on the industry in 2004. Other studies, however, mention much higher figures. Some of the findings, based on extensive research in two slaughterhouses, were:

- 36% of all animals had travelled more than 300 km to the slaughterhouse;
- 36% of all animals had waited more than 24 hours before being slaughtered;
- The situation of animals falling or slipping between unloading and slaughter was considered grave;

- In one slaughterhouse, the use of sticks was common;
- The percentage of wounded animals was high in both slaughterhouses: 38% and 58%. It was attributed to falling during transport, careless loading practices and inefficient design of walking ways. Animals that made a stop-over in the central cattle market or other auctions were in worse condition than those that were transported to the slaughterhouse directly;
- Per head, on average more than 400 gram of meat was lost due to unskilful injections (e.g. for foot and mouth disease). Similar losses occurred because of pH levels above 5.9, pointing to stress.

While only few on-farm losses seem to occur, transport may be a problem, and loading and unloading seem to be more critical factors than the distance covered.

During the OIE Animal Welfare Conference in Egypt in October 2008, the results of research were presented in which it was claimed that better handling of animals results in an extra production of 14,200 tons of beef, valued at US \$28 million

Regulations are not always enforced effectively in Argentina. The current law originates from 1954 and is very general in nature. The new law (with more quantitative figures) should come into effect at the end of 2008 or the beginning of 2009.

At present, citizens of Argentina are not aware of the fact that the transport and slaughter of animals regularly take place under harsh conditions. Economic losses are the main focus with regard to animal welfare. Economic benefits are perceived as a major factor that could lead to an improvement in animal welfare; treating animals better will increase income. SENASA organises courses on animal welfare, which focus on and explain the economic damage of not abiding by simple rules, but it is not authorised to issue reprimands. It is only able to try and guide the farmers in the right direction, but it is authorised to monitor animal transport.

An even bigger window of opportunity arises when there is a possibility of export to Europe. Argentine beef has a positive image in the world. European consumers have no difficulty in conjuring up attractive images of the pampas (the fertile South American lowlands) and gauchos (residents of the South American pampas, Chaco, Patagonian grasslands). The trade sector is particularly willing to capitalise on this image, including the promotion of animal welfare aspects. It is the economic incentive that will drive the industry; moral considerations play a lesser role.

Brazil

Animal welfare is not perceived as an issue in Brazil. Little if anything is heard or read about it. Many Brazilians are more concerned about their own survival. The agri-business in Brazil mainly produces in large quantities and Brazil is one of the largest producers and exporters of beef and poultry meat in the world. Animal welfare is a topic to a greater or lesser extent only when export to the EU is concerned. The president of the Brazilian Chicken Exporters Association (ABEF) said last year: "We (can) supply whatever the EU asks us to supply". Recently a decision was taken in the EU to lower the total number of broilers per m² to 21 (resulting in a maximum of 42 kg/m²). In Brazil there are no regulations on the density of broilers. Due to the warm climate, Brazilian farmers keep broilers at a relatively low density of approximately 35 kg/m² (Horne and Achterbosch, 2008). Brazil has a most competitive animal production system economically (abundance of land, feed and water, and well-trained staff).

About a year ago, the BRAZ Government Gazette (Diario Oficial) reported that the Minister of Agriculture, Stephanes, had established a technical committee concerning animal welfare. The commission will conduct studies about animal welfare in different types of farming industries. It is the first attempt in Brazil for the government to focus on animal welfare, but it is not clear what will be done with the outcomes of the studies. At national level and in public, animal welfare does not seem to be a subject that is attracting much attention. Brazil is a major exporter of beef and poultry meat and probably also of pig meat in the future. In particular, the (well-paying) European market is considered to be more and more important as an export market, although this does not imply that animal production is performed mainly for export. The largest part (about three-quarters) of the Brazilian animal production is still intended for the local market.

Despite the fact that exports to the European market are increasing awareness of animal welfare, it remains on the whole a relatively unimportant issue at this time since most production (three-quarters) is for the local market.

Mexico

Animal welfare in Mexico is hardly considered to be an issue, probably due to a number of reasons.

As far as culture and education are concerned, there is a lack of concern for animals, little education on animal handling and traditional events based on abuse of animals are widely accepted. Examples include practices involving pulling animals and bullfights (see Figure 3.4), cockfights, zoos and circuses where animals appear to be mistreated or are living in unhealthy conditions.

From an economic point of view, animal welfare involves extra costs for many companies, such as adequate facilities, adequate feed and veterinary services, transportation and, whenever necessary, certification. For farm

animals, it also involves the selection of certified slaughterhouses. Although these practices can be positive both for the farmer and the animal in the long term, in most small (backyard) and middle production areas, these practices are often put to one side to "save" expenditure. This may result in animal abuse, suffering and stress (in mixed animal pens, overloaded transportation (see Figure 3.5) and municipal non-registered slaughterhouses). In a country with such a high poverty level (13.8% according to The World Factbook) many people (including the government) do not give enough priority to these issues (protection of the environment and animal welfare). Political parties, local NGOs, international pressure and bilateral agreements (internationally) have helped to establish more regulations on environmentally-related issues. These laws have improved animal conditions both at state and national level and introduced enhanced sanitary conditions (Federal Animal Health Law).



Figure 3.4 Left: "Charrería" is considered a traditional sport and an art in Mexico. It demonstrates many horse stunts, some of them involving roping and pulling of calves. Right: Mexico adopted the Spanish tradition of bullfights or "toros", which is a man-to-bull battle.



Figure 3.5 Transportation of farm animals represents a welfare risk, related to such conditions as crowding and cage structures

There is no direct media attention for farmed animals. In contrast, there is certification or labelling to ensure human health (also concerning meat trade and export for economic reasons). The government (Ministry of Agriculture) is the only organisation involved). There is a Federal Animal Health Law, and there are derived norms, and sanitary requirements for the import of cattle products.

Laboratory animals receive media attention mainly through NGOs (locally and internationally) and there are both national and local laws with regard to their use. Certain products are certified to be free of the use of laboratory animals in research and production.

Pet animals also receive some media attention, mainly through NGOs. Certain pet shops have international or national certification for the quality and legal handling of the pets they sell. Organisations involved are NGOs, the government, and local associations, and there are national and local laws in place for pet animals. In addition, the national budget considers a share for the ministries that handle animal issues.

Wild animals (e.g. lizards, snakes, small mammals, deer, whales, dolphins, birds, wild cats and wolves) attract media attention on television, radio, printed matter and the internet. There are discussions in the media, and involvement of political parties in Congress. Mexico complies with international organisations to promote wild animal protection, in its laws and regulations. Local and international NGOs apply to the government and the

Green Party ('Partido Verde') for wild animal protection, and local associations deal with the subject of wild animals.

The perception of consumers is usually limited to obtaining the final product at a fair or inexpensive price and at their expected level of quality, with little regard for welfare problems during slaughter or research practices. Pets are sometimes regarded as a "second class" family member, and in some cases a burden on the family's time, resources and even physical area. Some pets (and stray dogs) live in the backyard, others on roof tops sometimes receiving little attention. Citizens also visit entertainments such as "charrería" (see above) frequently. In many cases, families do not criticise these practices, and continue paying for them. Abuse of farm animals or wild animals in zoos is rather common, and the legal consequences few. On the other hand, there are also very sensitive citizens and consumers involved in animal welfare issues. Some are helpful to NGOs by giving aid to animal shelters, for example. In Mexico there is very little criticism in the media concerning animal welfare. Major driving forces of current farming practices in Mexico affecting animal welfare include hunger, economy, the need to export, lack of knowledge of alternative measures, education, perception of animals as inferior and climatic conditions. International agreements (including free trade agreements) and political pressure (political parties, NGOs, private sector) may also affect the existence of regulations regarding animal welfare in Mexico. Reasons for the fact that there are no regulations (in certain cases) include a lack of resources for elaborate laws and regulations, a lack of budget to implement these regulations and penalise those who violate these laws, and insufficient funds available to maintain animal facilities and keep an ongoing surveillance team. There are several mismatches between practices, regulations and perceptions regarding animal welfare in Mexico. The reasons for these are:

- Lack of enforcement of laws and regulations;
- Need for more comprehensive and coherent laws (not all laws are the responsibility of the same ministries or apply to the same physical areas, different authorities are involved, each acting with a limited remit);
- Need for education to make laws and practices known and respected;
- Most of the population, including authorities, unfamiliar with prosecution procedures ;
- Prosecution procedures sometimes too complex ;
- Bureaucracy;
- Local and regional authorities insufficiently empowered to regulate these issues.

There are changes and trends visible or predictable concerning animal welfare and a growing concern about animal welfare among authorities, organisations, veterinarians and other animal-related entities. This will lead to an improvement of animal welfare legislation and an effort to succeed in implementing and reinforcing the rules. This is a long process, however, including efforts based on improved animal health, compliance with international rules and regulations, reduced export limitations and sustainable farm management.

3.3 North America

For North America information was obtained from Canada and the USA. Some background information about these countries can be found in the table below.

Table 3.5 General information on North American countries discussed in this chapter.

Country	Population (million)	GDP per capita (\$)	Climate	Arable land (%)	Main religion
Canada	33.2	38,600	Temperate to arctic	4.6	Roman Catholic 42.6%
USA	303.8	45,800	Mostly temperate	18%	Protestant 51.3%

Source: CIA World Factbook

Table 3.6 Information on 2005 livestock production and export of meat for Latin American countries discussed in this chapter

Country	Species	Numbers present	Meat export (tonnes)	Meat export to the EU (tonnes)
Canada	Poultry	160,000,000	135,430	852
	Cattle	14,925,000	547,834	3,268
	Pigs	14,810,000	982,596	1,538
USA	Poultry	2,035,000,000	2,881,160	200
	Cattle	95,438,000	295,025	31,253
	Pigs	60,975,000	1,016,271	6,807

Source: FAOSTAT (2009)

3.3.1 Regulations

The Americas in general have a higher score to other OIE member states regarding the existence of animal welfare legislation, except for legislation regarding killing for disease purposes. The same applies to voluntary schemes (Kahn, 2008). Please refer to the previous paragraph on South America for details.

Canada

At federal level, legislation on animal welfare is limited in Canada, and the intensity of welfare legislation in Canada is less than in the EU (Jongeneel et al., 2007). The website of the Canadian Food Inspection Agency, which is responsible for enforcement, gives an overview of animal welfare legislation in Canada (Canadian Food Inspection Agency, 2008).

The federally regulated topics in Canada concern animal welfare during transport (Health of Animals Act), slaughtering (Meat Inspection Act) and the Criminal Code of Canada (section 446), which is directed against cruelty towards animals.

Every province in Canada has legislation about different aspects of animal welfare regarding farm animals and pet animals. These rules are commonly very general, but sometimes more specific regulations have been set. From a local perspective, animal welfare aspects of (keeping) pet animals receive a great deal of attention. An overview of legislation per province can be found on the internet (Canadian Food Inspection Agency, 2008).

USA

The United States of America have little legislation on animal welfare at federal level (Jongeneel et al., 2007). An overview of the legislation is given below:

- The Twenty Eight Hour Law from 1873 about animal welfare during transport (Animal Legal & Historical Web Center, 2008). The statute provides that animals cannot be transported by "rail carrier, express carrier or common carrier" (except by air or water) for more than 28 consecutive hours without being unloaded for five hours for rest, water and food. As of 2006 trucks are also included in this law.
- The Farm Bill from 1996 (Federal Agricultural Improvement and Reform Act 1996) contains standards for the transport of slaughter horses (the slaughtering of horses for human consumption is very controversial in the US).
- The Humane Methods of Slaughter Act originates from 1901, but was amended in 1958 (Animal Legal and Historical Web Center, 2008) and consolidated in 2007 (Office of the Law Revision Counsel, 2008).
- There is also an implementation law USDA/FSIS (Food Safety and Inspection Service, 2008). This law is not applicable to poultry. It has been under discussion recently, because of weak or poor animals, possible BSE cows, ending up in the slaughter line and therefore in the human food chain. As a consequence, this implementation law will probably be adopted.
- The Animal Welfare Act from 1966 (National Association for Biomedical Research, 2008) oversees the welfare of laboratory animals.

At state level the USA has legislation to prevent cruelty to animals. Since autumn 2007, dog- and cockfights have been illegal in all States (except in the territories of Puerto Rico). Also issues like dangerous dogs are regulated at state level. In several states the punishment for cruelty to animals has been tightened or is currently under revision. In 25 (of the 50) states, farm animals are excluded from these law, and in 30 states the "normal" farm practices are excluded from these laws. However, many voluntary codes exist (see Annex XVII)

During elections referenda are also held that cover certain animal welfare matters for the state. Due to these referenda it is now prohibited to tether sows and keep calves in crates in several states. In California the production of pâté de foie gras has been prohibited since 2004 and in Chicago the sale was illegal, but has recently been allowed again.

At the 2008 presidential elections (Nov. 4) more than 60 % of Californians voted for 'Proposition 2' of the referendum on animal welfare. The proposition, which will not become law until 2015, requires that all farm animals, "for all or the majority of any day", not be confined or tethered in a manner that prevents an animal from lying down, standing up, turning around or extending its limbs without touching another animal or an enclosure such as a cage or stall. It specifically addresses modern cage housing for hens and stalls for sows and veal calves. It carries criminal penalties for violations, including fines and jail terms.

Moreover, at state level and even more at local level there is a lot of attention for pet animals, both at policy and regulatory levels. The state New Jersey is, according to present knowledge, the only state with animal welfare legislation that concerns all animals. This includes minimum requirements regarding "humane raising, keeping, care, treatment, marketing, and sale of domestic livestock" (Michie's Legal Resources, 2008). This state is also the most advanced with regard to policy and rules concerning the animal welfare of pet animals, placed under the New Jersey Ministry of Public Health (Department of Health and Senior Services, 2008).

3.3.2 Farming practices in North America

Canada

The Canadian egg industry produces table eggs, enzymes, breaker eggs and processed foods.

Canada is one of the major exporters of fish in the world, from the Atlantic fishery, Pacific fishery and aquaculture sector.

USA

During the last 100 days of their life, beef cattle are fattened in feedlots. A new way of fattening is the grass fed cattle, which are fattened in the pasture. Farming practices in the US have been described in HSUS (2006, see Annex XVII). Farrowing sows are often tethered. Last year Smithfield Foods decided to ban gestation crates for pregnant sows (Smithfield, 2007).

Laying hens are often kept in battery cages. In Sections 6.1.2 and 6.2.4 the welfare of poultry in the USA is discussed in more detail.

3.3.3 Perceptions of animal welfare in North America

Canada

In Canada the government and other organisations are active in animal welfare and mostly in setting voluntary guidelines and 'best practices', in which the National Farm Animal Care Council plays a central role (see The National Farm Animal Care Council, 2008). Consumer awareness about animal welfare is increasing in Canada (see also Canadian Food Inspection Agency, 2008).

USA

Beef cattle in feedlots are kept under crowded conditions and this is not the best situation for animal welfare (Bracke et al., 2008). A new system is the grass-fed system providing meat labelled as 'grass fed' in the supermarket and the main reason for its introduction concerns profits in the market. Consumers buy this meat because of differences in taste and health reasons, and not primarily for animal welfare benefits.

Where pigs are concerned, confinement housing is an issue. Recently, the largest USA pork producer Smithfield decided to phase out all stall housing for pregnant sows, and convert to group housing (Smithfield, 2007).

Moreover, the welfare debate in the pig industry seems to concentrate on the animals' health status.

Laying hens in battery cages are a particular focus of discussion, not only about the amount of space per animal, but about the system as a whole. In each state referenda are encouraged, and the states must act according to the results. There are few legal requirements, but the market, in particular, is responding to pressure from animal protection organisations. For instance, the United Egg Producers have adopted several regulations regarding laying hen husbandry. In economic terms, the cheaper supermarkets do not sell eggs from free range hens, but the more expensive supermarkets do. The welfare of broilers is not considered to be a public issue and some supermarkets even sell 'vegetarian eggs' (see Figure 3.6). This refers to that fact that the hens have been fed a vegetarian diet. It is not advertised as an animal-welfare product.



Figure 3.6 Vegetarian eggs sold in a major supermarket in Florida. Welfare appears not to be as much an issue as food safety. These eggs are advertised primarily for being produced on all-natural vegetarian feed, i.e. without hormones, antibiotics and animal products, and not from an animal-welfare perspective.

Laboratory animals used for cosmetic testing receive a great deal of attention. Consumer awareness about animal welfare is increasing in the US. Companies which have direct contact with the consumer increasingly use animal welfare as a topic to position themselves in the market. It has to be stressed, however, that North American companies are far behind the developments seen in Europe, especially in the UK. The 'high-end' supermarket-chain Whole Foods Market (with a wide range of organic products) appears to be the most developed company in the US. Its total turnover was recently six billion US dollar. The establishment of Whole Foods Market in the UK (High Street Kensington in London) sells meat that is graded much higher in the UK by their own system and concerning animal welfare (grade 4 on a scale of 5) compared to Whole Foods Market in the United States (grade 2). All meat from Whole Foods Market is produced without any use of (natural growth) hormones and antibiotics (unless it is therapeutic). This type of meat is increasingly being seen in other stores as well. The biggest supermarket chain Wal-Mart is also setting minimum requirements for its suppliers. The fast food chain McDonald's has started to take an active interest in the way animals are slaughtered before they are processed into burgers, and in the welfare of chickens that are later processed into chicken nuggets. It has an external advisory committee on animal welfare, and has set up strict rules for its suppliers (Blanco-Traba, 2009). Other fast food chains are following suit.

Several horizontal organisations have joined in, for instance the Food Marketing Institute (FMI) and the National Council of Chain Restaurants (NCCR). Each of them has a set of (minimum) guidelines for animal welfare. Other organisations have followed, for instance:

- **The American Meat Institute** (interest groups for the meat processing industry) with guidelines and voluntary check ups for slaughterhouses;
- **The American Sheep Industry Association** with guidelines;
- **The American Welfare Institute**, an organisation that has set voluntary guidelines for "animal friendly standards" for keeping farm animals on family businesses (which are usually smaller farms);
- **The Humane Farm Animal Care**, a NGO that works with "certified humane raised and handled"-norms for an important number of farm animal species, they are ISO certified and products are labelled as such;
- **The American Humane Certified** (NGO) programme, which works with detailed norms certified by a third party for the most important farm animals and whose the products are labelled as such;
- **The Milk and Dairy Beef Quality Assurance Program**, destined for the dairy industry, with guidelines for "caring for dairy animals", self-evaluation and voluntary labelling;
- **The National Cattlemen's Beef Association** (the most important interest group for the beef sector) with voluntary guidelines for keeping beef cattle in an animal friendly way;
- **The National Chicken Council** (the most important interest group for broilers) with voluntary guidelines and a voluntary inspection for keeping broilers in a welfare-friendly way;
- **The National Organic Standards** for all husbandry with a labelling programme, controlled by the American Ministry of Agriculture. It includes some norms about animal welfare (besides mostly organic agricultural norms);
- **The National Pork Board** (the most important interest group for the pig meat industry), which has a self-study and education programme for pig welfare (an inspection programme is being developed);
- **The United Egg Producers** (the interest group for the laying hen industry) with animal welfare guidelines for hens in batteries, certification (by third parties) and a labelling programme.

The term “animal welfare” is being used more and more in the United States. This is not achieved by political attention specifically, but more by several animal protection organisations who have raised this subject. An important role is played by the Humane Society of the US. They have a budget of approximately 30 million dollar per annum, mostly received from memberships and grants. The Humane Society organises referenda and uses pressure via legal options, forcing local governments to act. Recently, they revealed a video of badly treated weak (downer) cattle at a Californian slaughterhouse (The Humane Society of the United States, 2008), which created concern for food safety (BSE) and a large meat recall. New Jersey has set an example in environmental issues and is also taking the lead in animal welfare issues. The other states have minor legislative differences, but in general they are not very different from each other.

A recent report with potential impact on the US's farm industry explicitly condemned intensive confinement systems:

“The Commission believes that the most intensive confinement systems, such as restrictive veal crates, hog gestation pens, restrictive farrowing crates, and battery cages for poultry, all prevent the animal from a normal range of movement and constitute inhumane treatment (...) Growing public awareness and concern for the treatment of food animals has brought increased demands for standards to ensure at least minimal protection of animal welfare. These demands have been expressed through pressure on retail and restaurant operators for standards that can be audited and certified. The Commissioners believe that the demand for such standards will increase in the next several years and that it will be incumbent upon meat, poultry, egg, and dairy producers to meet that demand and demonstrate that food animals are treated humanely throughout their lifetimes, up to and including the method of slaughter.” (p. 38, PEW commission, 2008).

3.4 Asia

For Asia information was obtained from China, India, Japan, Malaysia and Singapore, Philippines, South Korea, Russia, Thailand and Vietnam. Some background information about these countries can be found in the table below. For further background information on animal welfare in Asia see Rahman et al (2005).

Table 3.7 General information on the Asian countries discussed in this chapter.

Country	Population (million)	GDP per capita (\$)	Climate	Arable land (%)	Main religion
China	1,330	5,400	Extremely diverse	14.9	Daoist, Buddhist
India	1,148	2,600	Varies from tropical monsoon in south to temperate in north	48.8	Hindu 80.5%, Muslim 13.4%
Japan	127.3	33,500	Varies from tropical in south to cool temperate in north	11.6	Both Shinto and Buddhist 84%
Malaysia	25.3	14,500	Tropical; monsoons	5.5	Muslim 60.4%, Buddhist 19.2%
Singapore	4.6	49,900	Tropical	1.5	Buddhist 43%, Muslim 15%
Philippines	96.1	3,200	Tropical marine; monsoons	19	Roman Catholic 81%, Muslim 5%
South Korea	48.4	25,000	Temperate	16.6	Christian 26%, Buddhist 23%
Russia	140.1	14,800	Variable (steppes to sub arctic)	7.2	Russian Orthodox 15-20%, Muslim 10-15%
Thailand	65.5	8,000	Tropical	27.5	Buddhist 95%
Vietnam	86.1	2,600	Tropical south, monsoonal north	20.1	No religion 80%, Buddhist 9.3%

Source: CIA World Factbook

Table 3.8 Information on 2005 livestock production and export of meat for Asian countries discussed in this chapter

Country	Species	Numbers present	Meat export (tonnes)	Meat export to the EU (tonnes)
China	Poultry	4,297,343,000	476,659	1,424
	Cattle	115,603,523	78,263	4
	Pigs	488,811,978	484,367	610
India	Poultry	475,000,000	889	15
	Cattle	180,837,000	460,559	6,544
	Pigs	14,000,000	429	27
Japan	Poultry	265,200,000	2,104	0
	Cattle	4,402,000	583	2
	Pigs	9,600,000	426	1
Malaysia	Poultry	185,000,000	5,998	6
	Cattle	801,000	3629	0
	Pigs	2,168,000	1306	15
Singapore	Poultry	2,600,000	11,890	0
	Cattle	200	2,857	0
	Pigs	250,000	2,231	26
Philippines	Poultry	136,001,000	0	0
	Cattle	2,489,100	0	3
	Pigs	12,139,690	214	5
South Korea	Poultry	109,628,000	0	0
	Cattle	2,298,000	1,686	0
	Pigs	8,962,000	0	234
Russia	Poultry	328,707,000	10,464	6
	Cattle	22,987,700	10,878	20
	Pigs	13,412,770	16,151	19
Thailand	Poultry	187,371,000	410,820	119,653
	Cattle	5,609,790	2,583	10
	Pigs	7,533,690	10,503	0
Vietnam	Poultry	153,937,000	5	0
	Cattle	5,540,700	673	0
	Pigs	27,434,895	14,080	0

Source: FAOSTAT (2009)

3.4.1 Animal welfare regulations

Kahn (2008) sent out questionnaires to 28 Asian, Far Eastern and Oceanic countries. A total of 13 responded. Of these 13 respondents, 77% (ten countries) indicated that they had legislation on animal transportation in place, 77% had legislation on the slaughtering of animals, and 69% for killing animals as part of disease control measures. Kahn (2008) also reports 62% had regulations on stray dog population control. Global averages for these parameters, according to the questionnaire results, are 80%, 76%, 82% and 68%. This means that generally the group of countries interviewed had a slightly lower than average score compared to other OIE member states. However, please note that the questionnaire included more countries than just the group discussed in this chapter.

As for voluntary schemes, out of the 13 respondents five had schemes on transport (38%), seven on slaughter (54%) and five on killing for disease control (38%). The Asian countries studied scored an average rating compared to global figures of 37%, 42% and 37% respectively (Kahn, 2008).

China

There is no legislation concerning animal welfare or how to transport animals. Regulations for hygiene, however, are being developed. People in China want fresh meat, and fresh often means that the animal is still alive when sold to the consumer. The keeping and selling of live animals for meat in urban areas will be prohibited, as well as promoting their slaughter. There are some regulations on catching, overfishing and protecting the ocean floor for aquaculture, and sea fishery in particular (see Annex X). There is also legislation to protect wildlife and national parks.

India

India has several independent states. Companies have to comply with some requirements regarding public health, but animal welfare is not regulated. It is 'not done' to hunt wild animals in India. In earlier times, tiger hunting was a national sport of the elite. Nowadays, hunting is almost completely prohibited by legislation. The Wildlife Protection Act of 1972 contains a broad set of rules to protect wild animals and plants, and legislation has also been adopted to protect a large number of national parks. The law forbids the killing of animals in India (except Jammu and Kashmir).

Japan

Japan has very little legislation on animal welfare. The Protection and Control of Animals (1974) law contains provisions and standards for the general protection of animals.

Malaysia and Singapore

Legislation is in place against the illegal wildlife trade. There are no regulations about animal welfare.

Philippines

Animal welfare in the Philippines has been dealt with at various levels and in various ways. As early as the sixteenth century, government control on animal diseases was established and institutionalised, in particular, on the system of slaughter and meat inspection. Such a system continued during the American rule from 1898 and eventually led to the passage of an act creating the Philippine Society for the Prevention of Cruelty to Animals in 1914. In 1930, the Bureau of Animal Industry was established to address the concern of the animal industry in general. By 1991 under the Local Government Code (RA no. 7160, section 489 Article 19 Title IV), the appointment of a veterinarian officer was deemed mandatory, whose specific function was to enforce all laws and regulations for the prevention of cruelty to animals. Nowadays, there is also the Philippine Animal Welfare Act of 1998 (RA no. 8485) with implementing rules and regulations (IRR).

Wildlife is regulated by the Republic Act 9147 otherwise known as the "Wildlife Resources Conservation and Protection Act" or simply known as "Wildlife Act" (signed into law on July 30th 2001). The Wildlife Act aims to conserve and protect wildlife species and their habitats, to promote ecological balance, and enhance biological diversity; regulate the collection and trade of wildlife; pursue, with regard to the national interest, the Philippine commitment to international conventions; and initiate or support scientific studies on the conservation of biological diversity. This Act applies to all wildlife species found in the Philippines, including exotic species which are subject to trade, are cultured, maintained and/or bred in captivity or propagated in the country. The implementing agencies are:

- Department of Environment and Natural Resources (DENR): for terrestrial plant and animal species, all turtles, tortoises, wetland species, including water birds, crocodiles and all amphibians;
- Department of Agriculture (DA): for marine and aquatic resources;
- Palawan Council for Sustainable Development (PCSD): for all wildlife species (terrestrial and marine/aquatic resources) found in the Province of Palawan.

South Korea

The Animal Protection Act was passed in 1991, and revised in 2006 and 2008. The Act focuses on pet animal management, e.g.:

- Dog owners should attach a dog tag, register the animals, and not abandon them;
- Sellers of animals should be registered;
- Prohibition of cruelty to animals;
- Animal preservation and observation;
- Establishment of animal experiment and ethics committee.

Another law concerning animal welfare is the 'Eco-friendly agriculture upbringing law' (eco-friendly livestock products certification standard) made in 1997. This law contains some provisions on animal welfare for organic animal products:

- Livestock densities;
- Outdoor access;
- Feeding requirements.

Russia

Russia has no legislation on animal welfare or on wildlife management. However, attention is given to endangered species, mainly concerning popular animals like Siberian tigers, jaguars and bears and legislation is also in place to protect human health and food safety. There is no specific legislation on transport distances and/or resting

places for animals being transported within the country. For imported animals legislation prescribes a 'resting period' at the borders before being transferred into the country. This is primarily a quarantine measure, but may also have some welfare benefit.

Thailand

The livestock industry is regulated through the Department of Livestock Development (DLD). This body is responsible for quality control and has issued a number of standards for animal health, farm management and the environment. The tenet behind these standards is to guarantee standards of hygiene, animal welfare and other aspects, and to offer added-value for domestic and international markets (as required by importing countries, especially in Asia and the EU).

Thailand has a two-standard market where high-quality products are destined mainly for export while the domestic market has products with a wide range of qualities. For export, Thai swine, poultry and cattle producers must follow the regulation for the farm standard issued by the Ministry of Agriculture and Cooperatives (MOAC) of 3 November 1999, which established the Farm Standard in compliance with the EU's White Paper on Food Safety and Directives on Animal Welfare. For the domestic market farm standards are voluntary.

The MOAC standards contain two aspects relevant for animal welfare:

- The criteria of the standard of livestock farming;
- The manual/handbook to achieve the farming standard.

Since then (1999), animal welfare has made its way onto the national agenda, which has resulted in more legalisation. In practice animal welfare has been implemented by the relevant agencies for years but mostly on a voluntary basis. Although more attention is given to the welfare of poultry, swine and dairy cattle by legal enforcement, the law is only imposed on all stages of the chain for poultry (broiler and duck) producers. All procedures fall under three Notifications:

- Welfare of rearing on farm;
- Welfare of transporting from farm to the slaughterhouse;
- Welfare at the slaughterhouse.

The Farm Standard is based on the "Good Agricultural Practice (GAP)". It covers the appropriate withdrawal times of pharmaceuticals, environment-friendly waste management and follows national and regional disease monitoring (biosafety management) and traceability. Certification by the DLD is in place to ensure product safety and animal welfare standards.

Thailand is also under a two-standard regime for slaughterhouses. For broilers, a modern slaughterhouse designated for the export sector was built about two decades ago and modern slaughterhouses have also been serving a substantial part of the domestic market for about a decade. Slaughterhouses for swine are not always certified for export by the DLD.

Animal diseases have caused problems for livestock farmers, the industry and consumers. The government collaborates with international organisations such as the International Epizootic Office (OIE), neighbouring countries and the region to control animal diseases. As part of this collaboration, import and export inspections and quarantine procedures are carried out. The government tries to improve the monitoring and enforcement of legislation, its objective being to ensure that local consumers and consumers in export markets get a guaranteed quality according to set standards.

Vietnam

Vietnam has no legislation on animal welfare.

3.4.2 Farming practices in Asia

China

China has a large variety of farming and management methods. There are large and small farming enterprises, about 30% of which comprise large (professional) companies. Large pig and poultry companies appear to be comparable to Dutch enterprises: large barns are used and poultry are often housed in groups instead of batteries. Breeding and rearing is performed by the same company. Small farms often have a small number of several farm-animal species (e.g. cows, poultry, and pigs) around the house.

Aquaculture is widely practised in China. There is a large variety in farmed species (e.g. whitefish, shrimp, and crab). Most fish is farmed for local use as seafood, which is consumed in large quantities. The scale and method of aquaculture varies substantially (see also Annex XIX for a CIWF-report on animal welfare practices in China).

India

Animal farming systems are not very intensive, and animal diseases are common. In the Hindu culture a taboo exists on causing the flowing of blood. Cows are regarded as sacred in the Hindu culture, and slaughtering cows is forbidden. In contrast, the domestic water buffaloes are slaughtered for consumption by Muslims.

Higher castes and Muslims do not eat pig meat, but pigs are occasionally consumed by lower castes. India lacks an organised pig-husbandry. Pigs roam around on garbage fields, flooded lands and in villages and seem to be partly wild.

Laying hens frequently roam freely. Poultry may be housed under free-range conditions (in warmer regions) and in battery cages (in colder regions). Beak trimming is practised. Broiler meat is mainly (95%) sold at so called “wet markets” where they are sold alive and slaughtered on local markets. Production mainly focuses on local markets and only 5% is processed in abattoirs. More information about laying hens in India is provided in Section 6.1.3. India has a variety of aquaculture practices including sea fishing (mainly shrimp) and fresh water production (especially tilapia).

Philippines

Dairy cows are sometimes kept in large numbers on cooperative farms but usually they are kept in smallholder operations. All animals are branded, but no other mutilations are practised during farming. Normally wet feed (sun or air dried grass and legume) is provided to the cows by “cut and carry” and also (dry) concentrates are given. Care for the animals is provided on an individual basis. Several health problems do exist such as hemorrhagic septicaemia, mastitis and parasites. Officials from the Department of Agriculture (DA) or Local Government Units (LGU) visit the farms for health inspections. The cows have offspring every eighteen months, which is mainly achieved by artificial insemination. Cows are mostly transported by walking them to their next housing, except for slaughter where they are taken to the city or to a municipal slaughterhouse.

Beef cattle are often kept extensively in large numbers. Intensive farms have barns, corrals and chutes.

Mutilations including castration and dehorning are practised. Development of farming practices focuses on large quantities and feedlot systems, not on backyard systems. Hemorrhagic septicaemia and parasites are common, and the Department of Agriculture (DA) or Local Government Units (LGU) may visit the farms. Beef cattle are brought to a slaughterhouse in the city or to a municipal slaughterhouse.

Pigs are mostly kept in backyards, but some farmers use a more intensive system. On-farm interventions, like castration and teeth clipping, are practised. The animals are fed a dry feed or they are fed with cooked swill in backyards. At least ten piglets per litter are born, and sows farrow three times every two years with the aid of artificial insemination. Some health problems exist in the pig husbandry such as iron deficiency, Hog Cholera and parasites but the animals are usually vaccinated for diseases. The farms are visited by personnel from the Department of Agriculture, Local Government Units or by a private veterinarian.

Poultry is kept in intensive systems on a medium scale (contract). The housing of the hens and broilers is owned or leased or rented by the farmers. Often dry feed is used and obtained from a supply company. Poultry may suffer from Newcastle disease and parasites and is also vaccinated for diseases. For slaughter, the layers and broilers are brought to a processing plant.

Fish are farmed inland or in bay operations. Farming inland occurs in aerated pools, and nets are used when fish is farmed in bays. Often dry feed or algae are used as feed. Some preventive measures are taken with regard to health aspects. More information about aquaculture in the Philippines is provided in Section 5.4.3.

Ostriches, goat, and sheep are also kept for farming purposes, and are usually housed in small-scale structures. Feed resources are originally wet (air/sun dried grass and legume) with a dry feed supplement. Newcastle disease is also a common problem in ostriches, while sheep and goats can suffer from hemorrhagic septicaemia, just like cattle. Parasites can be a problem as well. Animals are usually transported by animal handlers (walked), and slaughtered in the slaughterhouse of the city or municipality. There is also duck and turkey farming.

Malaysia and Singapore

Dairy cows are difficult to manage in the humid tropics and facilities are somewhat outdated, although some attempts are being made to upgrade husbandry systems. Practices in slaughterhouses are basic and traditional and Halal slaughtering is also a regular practice. In rural areas a lot of hand slaughtering still takes place. .

There is no pig farming in Singapore, where it has been banned since 1989. Presently, no transportation of live pigs along public roads is allowed. In Malaysia there is some pig farming ($\pm 40\%$ of the population is not Muslim). Male piglets are castrated. Most pig farms are small, but there is a new trend to set up pig farming areas (PFA) in secluded settings; five have been designated. PFAs are highly regulated with high biosafety and environmental standards.

Commercially farmed poultry is generally housed under basic conditions (in battery cages). Beak-trimming is not practised. A regulatory framework was set in place by the Veterinary Services of Malaysia and Singapore for poultry farming in closed housing practices.

The tropical aquarium fish industry is gaining in importance. Malaysia is in the forefront as an exporter of captive-bred, high-value exotic fish (e.g. Arowana). Animal welfare and general care for tropical fish are higher in comparison with that of food fish. For more information about aquaculture in Malaysia and Singapore see Section 5.4.2.

Horses are generally well taken care of as prized animals for races.

South Korea

Cattle are housed in stanchions or chain housings on small farms, but large farms use free stalls or loose barn housing systems, which systems are increasing. Group size differs: 55% of dairy cows are raised on farms with 50-99 cows. The majority (86%) of beef cows are raised on small farms (1-19 cows). Some of the bulls born in the cattle industry are castrated. In Korea the level of stockmanship is high for dairy cattle, but lower in the beef-cattle industry. Mixed grass and concentrated feeding (grain) is a common practice; grazing is rarely seen. In addition, modernised heating or cooling systems are rarely seen. During summer, fans are used. Mortality before slaughter is about 9% in dairy cattle and about 1% in beef cattle. Transport of cattle is mainly conducted by truck. The slaughter of the animals is done by giving an electric shock or hitting them on the glabella (between the eyes), after which the animal is bled.

Small pig farms have housing without automated systems, while large farms have automated systems. Production is very intensive. Castration, tail docking, and tooth cutting are common practice. The level of stockmanship is high. Pigs are given adequate feed and water. In the smaller farms natural ventilation is used; larger farms use automated ventilation (climate control). Foot-and-mouth disease and cholera are diseases which affect pigs in Korea. Mortality in pigs is about 10%.

Approximately 10% of poultry are kept in cage systems with automated ventilation; the other 90% are also kept in cages, but without automated ventilation. The light intensity in cage systems is low. Usually six layers are placed in each cage. Forced moulting and beak trimming are common practices. The level of stockmanship is medium in the layer industry and high in the broiler industry. To control Avian Influenza poultry has been buried alive in an attempt to eradicate the disease. Mortality of both laying hens and broilers is about 18%. There is adequate feed and water provisioning; small farms have natural ventilation and large farms have automated ventilation systems (climate control).

Russia

Russian farming practices are comparable to Western practices, in particular because there are many farms currently being developed and modernised with the help of European or American companies. The meat sector in Russia is controlled by a great number of substantial locally-oriented producers. A large part of this sector and the processing of the products are undertaken in the Volga and Siberia regions and in the south and central districts of Russia. The export-oriented production takes place in the central and northern region. The latter regions are also more urbanised compared to the other regions and therefore they also have a more interesting local market. The vertical organisation within the meat chain is limited: slaughter plants and processors buy their animals from local farmers or they import animals. Only a small number of companies have their own chain with farms, slaughter plants, processors and distribution net. Threats include a moderate feed quality (to feed their stock) and a lack of continuity in supplying feeds, animal health problems, lack of modern machinery for meat processing and poor distribution. Opportunities include the production and import of feed products and additives, the import of machinery for farms, slaughter plants and processing (Holwerda, 2008).

The focus for animal health is on zoonoses. Disease monitoring is claimed to be intensive in Russia. Housing varies according to location. Russia has very different landscapes, with very different needs and demands, e.g. in mountainous regions (Caucasus), herds are left 'semi-free', and allowed to mix with other herds. Close veterinary control is necessary for these animals. All cattle, sheep and pigs from six months onwards are checked for TBC on a yearly basis, and other animals are checked when there is an indication of the disease.

Slaughtering methods are standardised and primarily geared to preserve food safety and quality. There is no means of speeding up improvements in product quality. Animals are given an electric shock before being slaughtered and processed.

Dairy cattle are usually housed in tie stalls (75-80%), but there is a trend towards loose housing (20-25% at present; this may be 30-40% in 2009-2010). Housing is suitable for approximately 250 cows, and a company often has more than one unit. Farms can comprise 10,000 animals, sometimes situated at different locations. The fertility rate for cattle is 85-90 calves per 100 cows in modern farms. This number is lower in older farms. The loose housing system is modern with good climate control. Tie stalls are old fashioned, often with non-optimal climate and feeding. In loose housing, dairy cattle are often kept in groups of 100-200 cows.

Management is a problem, due to a low level of herd-management skills. There is often specialised staff on the farm (AI specialist, vet, etc.). Similar practices can be seen in tie stalls. Feed is often of poor quality, and the level of concentrates is too high. The most common health problems in dairy cattle are related to fertility and hoof problems. Poor quality roughage and poor disease prevention programmes contribute to these problems.

Transport from EU suppliers occurs in specially-equipped trucks. Domestic transportation also takes place by truck. Animal slaughter is conducted according to Russian rules.

Beef cattle are kept in a similar way as dairy cattle.

A number of 10,000 fattening pigs on one location is common practice. Breeding sows are often kept in units of 2400. There may be several of these units at one location or within a company, resulting in very large companies (according to European standards) that include a feed mill and a slaughterhouse. Carcasses are transported to urban areas for processing.

Laying hens are kept in battery cages, and broilers live in large barns. Both are comparable to the systems used in Europe.

Aquaculture is growing. Fish has always been important, and farming fish is developing (trout, in particular, is popular). There is a large variety of fish farming in rivers and lakes. For more information about aquaculture see Section 5.4.9.

Thailand

Pork is the major source of protein for Thai consumers. Sanitary procedures for slaughtering and processing, especially for swine, have been a key issue for food safety and animal welfare. There are still a substantial number of illegal and uncertified slaughterhouses and butchers operating on bare soil with a high risk of contamination. As large agro-industry firms have been trying to export pork, about a dozen modern pig slaughterhouses are at present designated for the exporting sector.

Broilers seem to be kept in a manner comparable to EU standards. Commercial broiler production started in the 1970s and has increased considerably since, particularly over the past 10 years. The broiler industry is one of Thailand's most dominant exporting sectors to the EU. Integrated poultry-industry operators have switched to modern slaughterhouses for both export and the domestic market. All modern slaughterhouses use electric shocks to stun broilers before killing and slaughtering them. The broiler industry recognises the competition on the world market (Brazil and China being its major competitors) and is moving into free range and organic poultry meat and premium cooked products (Bowles et al., 2005). More information about broilers in Thailand is provided in Section 6.2.3.

The shrimp fishery is, like the broiler industry, one of the dominant exporting sectors from Thailand to the EU.

Vietnam

In Vietnam there are a substantial number of farm animals, but most of these are kept on small-scale farms. International media attention regarding animal welfare in Vietnam has focussed on the production of bile from bears. Bears have long been milked for their bile, hailed by some traditional medicine practitioners as a health tonic or a cure for a wide range of ailments. The bile is extracted through metal pipes in the crude "free-dripping technique" or, in more sophisticated operations, with sterile syringes and using ultrasound equipment to locate the gall bladder. Approximately 4,000 to 5,000 bears are caged in battery farms with hundreds of bears present on each farm. The animals are kept in very small cages where they can barely move. This causes stress which results in bears performing head banging, bar chewing and paw chewing (see Figure 3.7). Keeping bears has been banned for nearly two years according to an article in the Bangkok Post of January 2007 (Sumernnet, 2008). Wild bears in Vietnam are close to extinction and the main reason for this is that people catch wild bears to be kept on bear farms. The non-profit group Wildlife at Risk (WAR) is fighting this illegal practice.



Figure 3.7 A bear chewing the bars of its cage. The bear is kept for milking its bile.

3.4.3 Perceptions of animal welfare in Asia

China

Animal welfare has not been an important topic for the citizens and government of China; production receives more attention. Some research has been conducted on environmental enrichment for pigs (use of chains or balls to play with; see Figure 3.8), the main reason being the production of pork tails, which are considered a delicacy. Without proper enrichment, there is an increased chance of tail biting and thus loss of production (Pers. Comm. Zhang Weili). Contrasts within China can be great: some Chinese eat dogs, whilst others pamper them with expensive dog food and clothing.



Figure 3.8 Enrichment in a loose-housing pig production system (Li, 2008)

NGOs are active in China. Greenpeace focuses on environmental protection, e.g. pollution and climate change. Circus animals and bears used for their bile receive some attention, but animal welfare is not frequently discussed. The national symbol, the Giant Panda, is well protected and is the object of breeding programmes, but at the same time products of the endangered Siberian tiger (that also has a breeding programme) are still sold on the market.

In the next ten years, production of human food will probably be the main goal for China, not animal welfare. There may be a difference in production for export and for the local market. China has enough means to produce according to rules set by an importing country (as long as that country pays enough money). Organic agriculture is not common in China. However, there appears to be the development of a hype for organic products (although this does not seem to be based on consumer concerns about production practices). There is little enforcement of the regulations regarding wildlife and national parks, resulting in a mismatch between legislation and practice.

Dr Boaming Li of the China Agricultural University has provided information about production trends in the farm animal sectors. Figure 3.9 shows trends between 1979 and 2005 for the meat production of pork, beef, mutton and sheep. Similar trends are visible for egg and milk production, both increasing from 2,500,000 to 30,000,000 tonnes.

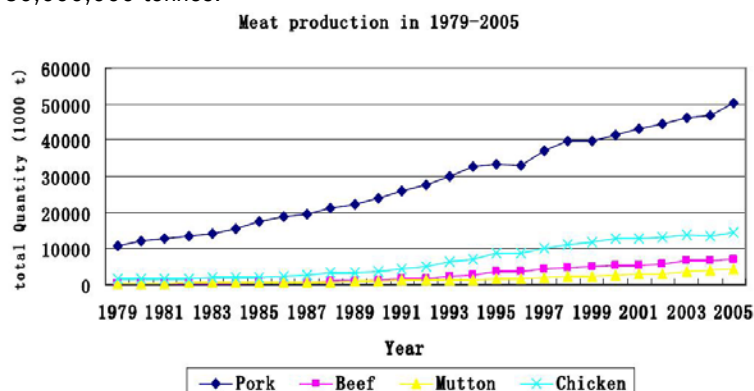


Figure 3.9 Trends in meat production in China. Similar (increasing) trends are visible for egg and milk production (Li 2008)

Japan

Animal welfare as such is not an issue in Japan, neither politically nor publicly. However, recently the Ministry of Agriculture, Forestry and Fishery (MAFF) appointed an official to deal with animal welfare issues. In 2007 on the initiative of MAFF, a study group was established for animal-friendly husbandry and management of farm animals. Its members consist of representatives of the veterinary world, the sector (farmers, producers, and retailers), scientists, NGOs and consumer organisations and its aim is to develop voluntary guidelines.

In 2006, a survey was conducted to study consumer perceptions regarding animal welfare. One of the questions focused on the type of animals people associated with animal protection. Of the respondents 46% answered pet animals, 21% animals used in exhibitions, 19% laboratory animals, and 6% of the consumers mentioned farm animals. Food safety is the main issue for Japanese consumers with regard to farm animals, perhaps because consumers generally live far away from production areas. The average Japanese person has never seen an animal production system. Another explanation could be that in Japan traditionally everything that was related to meat and the production of meat was regarded as unclean (though farmers were not outcasts; most farmers mainly produced rice and some vegetables). Butchers were considered to be the 'outcasts' of society. Several years ago, the culling of poultry was shown on television, and this did not, in fact, lead to commotion among citizens. Citizens are preoccupied with food safety and not with chicken welfare. Pet animals scored high in the above mentioned survey, and some Japanese people dress their dogs in clothes.

Several NGOs in Japan focus on animal welfare (Alife, Greenpeace Japan). Their public and political influence, however, is small. Whaling, for instance, receives very little attention from the Japanese public.

The subject may be of increasing importance as indicated by the appointment of a MAFF official to deal with animal welfare issues. Animal welfare is also receiving increasing international attention, especially in the OIE (the World Organisation for Animal Health). Furthermore, developments regarding animal welfare in the EU and America force Japan to consider this too. Japan seems to be more of a following than a leading country.

India

The animal welfare situation in India is rather diverse. In the dominant Hindu culture most people are vegetarian, and vegan in the Jain culture. However, more and more people are eating meat as a cheap and high-quality source of protein (especially poultry meat). Animal welfare concerns include the many street dogs, with a high prevalence of rabies posing a public health risk. Cows can roam freely, but bulls are frequently abandoned by their owners, and cattle often suffer from lameness due to a lack of hoof trimming. There is little use for bull calves since they are unsuitable for working and they cannot be fattened for meat (because cows are sacred). As a result they are often left to die from starvation and dehydration.

Some NGOs are present, trying to protect the Bengal tiger, for example, but their influence is small. In the newspapers, attention is paid to issues concerning such topics as street dogs and work conducted by The Brooke Hospital (such as providing veterinary care for draught animals).

Malaysia and Singapore

Animal welfare was not an important issue until the 1970s, but the scene has changed over the last thirty years with increasing economic and urban development. Animal welfare was initially fought for by welfare bodies like the RSPCA, which was run by volunteers, mainly expatriates. They focused on rescuing abandoned pet dogs and cats from the streets, and addressing animal cruelty issues publicly. Veterinarians were in the forefront of promoting animal welfare and public education. Today, public awareness has increased tremendously including responsible pet keeping practices.

Today, a wide range of organisations is involved in animal welfare (over 30 government and private organisations in Malaysia and 11 in Singapore), but public perception towards intensive husbandry of pigs and poultry has not reached the same level as in the EU. In Malaysia, the National Animal Welfare Council and Foundation, and in Singapore, the Animal Concerns Research and Education Society (ACRES), spearhead several initiatives to heighten animal welfare matters.

In Malaysia and Singapore, the annual release of live small animals (e.g. tortoises, birds) is practised, especially on religious festivals (e.g. Vesak day, which is the Buddhist Day of Enlightenment) to gain merit. Although intuitively this appears to be a positive experience for the animals, many of these pet animals do not survive when released.

Halal slaughter is promoted by the Malaysians.

The tropical aquarium-fish industry is gaining importance and Malaysia is in the forefront as exporter of captive bred high-value exotic fish and this may increase animal-welfare awareness.

Philippines

Private organisations like the Philippine Animal Welfare Society (PAWS) and the Philippine Society for the Prevention of Cruelty to Animals (PSPCA) have had no mass base and focused mostly on companion animals. Animal welfare has become a public issue since the passage of the Philippine Animal Welfare Act of 1998. Over the years, the issue of the use of draught and production animals has gained importance. There is also a growing emphasis on research of animals and wildlife kept in captivity such as zoos and private animal collections. Cattle and pigs also receive a fair amount of attention from the media and NGOs. All other species (poultry, fish, and laboratory and wild animals) also receive some attention, but to a lesser extent.

Philippine society is evolving and is complex. There are different perspectives regarding animal welfare. People have become sensitive to the way in which animals are kept and raised. Consumer expectations and concerns have changed and are now also focusing on production and sustainable development. There are several aspects to this:

NGOs are becoming more organised and their influence is increasing;

Market forces do not seem to induce producers to improve welfare practices.

The Philippines may also sign 'The Johannesburg Declaration on Sustainable Development' (2002). Awareness, information, education, and campaigns are important for ensuring compliance with existing regulations concerning animal welfare. The improvement of animal welfare also depends on social, economic and environmental conditions.

South Korea

Animal welfare has never been very important in Korea, although some issues have received media attention. Examples include the burying of live poultry for Avian Influenza eradication and the cruel treatment of downer cows in U.S. slaughterhouses. Pulmuone, one of the biggest organic companies, introduced animal-welfare regulations for its meat, eggs, and milk products for the first time in Korea. Moreover, there has been some attention to pet dog abandonment and poaching of wild animals. There is little concern for animal welfare despite the fact that there is little grazing in cattle husbandry; pig, layer and poultry husbandry use high stocking densities; pig houses are not clean; there is unfriendly behaviour of humans towards animals in slaughterhouses; and poultry have been buried alive for AI-related disease control.

At present, there is only one animal welfare association in Korea; the 'Animal Preservation Association'. It has 3,800 members. It was registered in 2003 but has had little influence until now.

Increasing globalisation, food safety and quality standards have brought increasing awareness and appreciation of animal welfare in the business and trade sector, especially concerning housing, management, transport, disease control, use of biological agents and slaughtering methods. However, the extent of enforcement is limited only to companies with GMP+ and HACCP standards, particularly in the fishery and meat sectors. In general, animal-welfare enforcement is a topic of concern, deserving continuing support and education. Another mismatch concerns people's awareness of the regulations. There are some trends of sharing of best practices with countries with more developed industries.

Russia

Health, climate, and feeding are urgent animal welfare issues. Due to non-optimal management farm animals are at risk. Mortality can be very high (> 10%) due to a lack of feed during harsh years. The government is trying to improve this since it also ensures food safety and food quality. Staff at farms seems to be disassociated from the animals due to a lack of family farming in the country, low pay and a poor job appreciation.

Animal welfare is not perceived as an issue in Russia, neither for the government nor for consumers. It will probably remain this way for some time in the near future. Russian citizens appreciate having access to affordable food. The term "animal welfare" is generally interpreted in terms of food safety and health by policy makers, where the focus is on animal health and feeding technologies. Technology development is the main driver to improve existing animal health and meat or dairy production.

In intensive farming emphasis is on developing standards so that infectious and/or genetic diseases can be curtailed and on introducing preventive measures to preclude the introduction and spread of diseases. Institutions are also trying to improve animal feeding, e.g. the protein intake of animals. Improving natural conditions may be important as it could lead to better quality of meat (more 'ecologically sound').

Public awareness of animal health has been increasing in the last 15-18 years. Being able to buy safe food of good quality is extremely important to Russian consumers. Consequently, the public wants clarity on animal (health) conditions. Veterinary experts in this field are very much looking forward to a simplified system of regulations (tracking and tracing laws).

There are some NGOs present in Russia, e.g. VITA Russia and The International Fund for Animal Welfare (IFAW). IFAW, for example, focuses mainly on the protection of wildlife that is more or less regarded as 'cute' (bears), anti-fur campaigning (seals) and taking care of (stray) dogs and cats.

Agricultural development in the country can mean that economics play an important role in farming, but this will probably involve (high levels of) restriction by the government. A considerable gap exists between the institutes and real practices e.g. on farms and in laboratories. Farming in Russia is not the same as in the Netherlands and/or EU: one aspect is that family farming was destroyed during the collectivisation of the Soviet era. For farming the prevailing rule is: the more efficient, the better, without animal welfare being made an issue.

Currently a database is being established to identify and trace pedigree animals. The database will play an important role in the further development of a law on the 'identification and tracing of pedigree animals', which is currently being drafted. The idea behind this law is that (farm) animals will be traceable throughout the chain from 'producer to fork'. At this stage the draft law has been discussed with the relevant competent authorities. The expected adoption date is in 2009.

The food industry is in private hands and mainly focuses on the retail of reliable and safe products that were and still are being imported. Slowly, backward integration is rising and the industry is setting requirements for producers. The food chain is both horizontally and vertically integrated. There are several hundred large food-chain-integrations.

Growing attention is being paid to organic agriculture, although this is based on the wish for food safety and optimal health and interest in it is still very limited. Organic farming is in development, with certification and production. Animal-welfare rules will be included in the system of certification of organic farms. At present, most organic products are imported. In Russia, locally-produced agricultural products are frequently (unintentionally) organic. Furthermore, products originating from forests are widely available, such as mushrooms and berries, but also poached wildlife.

Until 2003 Russian agriculture had received little attention from the Russian government since the early nineties. In 2005, a presidential programme started involving considerable investments in agricultural development. Presently, a new president and prime minister are in office, and, consequently, it is not yet clear what their new policy will be regarding agriculture.

In the future, companies may have to produce in a more welfare-friendly manner to be able to export to the EU. Moreover, animal welfare may become more important as part of sustainable development. The large quantities of 'oil-dollars' flooding into the country may help in realising numerous investments. The more developed regions like St. Petersburg, Moscow, Samara and Belgorod will probably be the first to adopt new trends, also with respect to animal welfare.

Thailand

NGOs and governmental bodies have an important role in supporting and promoting the welfare of pets and wild animals in society. For 12 years the Thai Society for the Prevention of Cruelty to Animals (TSPCA) has combated cruelty and raised awareness about animal welfare issues in Thailand. The TSPCA has been working closely with the government and communities in several projects on a basis of six strategies:

- Baseline monitoring of animal cruelty in Thailand (to establish a national database on Thailand's population of stray and suffering animals in rural areas)
- Partnership and certification campaign (to ensure the best treatment of animals in the food, farm and entertainment industries)
- Education and awareness
- Animal welfare legislation
- Animal adoption and re-homing (to provide shelters, boarding house and clinics for stray animals)
- Volunteer and network development (to ensure national and international cooperation on animal welfare)

The Friends of Asian Elephant Foundation (FAE) is an NGO dealing with elephant welfare as the elephant is a national symbol of Thailand. For instance, the sick or injured elephants are treated at the Elephant Hospital in Lampang Province, which is owned by the Foundation. Information on any elephants that are hurt, sick or dying receives a great deal of attention in Thai society. Several governmental bodies have tried to introduce reforestation programmes to support the elephants. When the animals are not able to survive in their natural habitat, they are kept in a zoo or in a wildlife research centre and these organisations need to assure the public that the animals are well cared for.

Local consumers have different opinions about livestock welfare. The wealthier and well educated consumers in the larger cities are more aware of welfare and may be willing to pay more for a higher quality product. This is seen less in rural areas where traditional wet markets are still common. In some semi-modern wet markets, livestock products from certified farms and slaughter plants are available; this certification is mainly due to the outbreak of Avian Influenza which made domestic consumers more aware of the way livestock products are produced, and of concepts like traceability, biosafety management and surveillance.

Since animal welfare has become a topic under WTO's agricultural negotiations there have been doubts about its applicability to developing countries and in particular about its consequences for market access. From 1999 Thailand has established baseline animal welfare standards for farms, transport and slaughter, and for disease control. For broilers, animal welfare regulations appear to have been developed and implemented successfully and swine welfare regulations are being developed.

There is recognition that animal welfare could be an important quality characteristic for added-value products for the export market. Certain international retailers are already sourcing from Thailand on animal welfare grounds. Recently, DLD reported that free-range chickens produce more tasty meat than industrially-fed birds and announced that technical and financial support could be developed to promote the acceptance of these products in export markets.

Traditionally many Thai livestock farmers (both backyard and commercial) are concerned with the welfare of their animals, not only because of profit, but also because of their emotional value. The industrialisation process might suppress this and farmers need to follow guidelines provided by specialists or contractors.

The implementation and enforcement of animal-welfare regulations for livestock farming (production) and trading seem to have a high priority. All stakeholders in the livestock industry share the same opinion for global business survival and recognise that for this animal welfare is indispensable. At present, many Thai exporters view animal welfare as a necessity, e.g. related to protectionism.

Vietnam

In Vietnam some international organisations are involved in protecting wild and endangered animals, but there are no efforts as yet to protect livestock and pets. The International Fund for Animal Welfare (IFAW) asked people in China, South Korea and Vietnam about their views and found that 90% believed "we have a moral duty to minimise suffering" and the majority would like to see legislation to protect animals and to see their governments take action on the issue.

Bear farming is a key issue for the World Society for the Protection of Animals (WSPA). They are working in China, Korea and Vietnam to convince governments that it is in their best interest to close down the bear farming industry. WSPA has worked with law enforcement officials to halt the illegal trade in bear bile, conducting undercover investigations into the illegal trafficking of bear bile around the world, including traditional Asian Medicine shops in Chicago. They are also actively lobbying for the passage of HR 3029, the Bear Protection Act of 2007 (World Society for the Protection of Animals, 2008). Enforcing the ban on keeping bears for bile is a difficult task, largely as a result of very limited financial and human resources. In an article about bear farming (Bangkok Post), Sulma Warne of the Wildlife Trade Monitoring Network (Traffic) said that after the ban authorities allowed people to keep micro-chipped bears provided they were no longer exploited. Meanwhile, the bear-bile trade appears to be flourishing.

In 2004 the authorities in Ho Chi Minh City (HCMC) and the national government announced plans to set up a wildlife rescue centre in HCMC. Wildlife At Risk (WAR) agreed to fund, equip and advise on this pilot centre. Construction was completed in late 2006. Based close to Cu Chi, a popular tourist attraction, the facility offers rescue and rehabilitation for endangered species confiscated in HCMC and southern Vietnam, and also includes an Awareness Centre (Wildlife at Risk, 2008) for local communities and visitors. The centre is predominantly intended to accommodate turtles, reptiles and small carnivores, but is also equipped to handle a limited number of primates and bears. The WAR Rescue Centre is the first centre of its kind in southern Vietnam. Operational guidelines have been drawn up by WAR's veterinarian, in close collaboration with FPD HCMC, and reviewed by regional specialists. The centre is managed by qualified staff to ensure compliance with international protocols on animal rescue and husbandry. WAR is collaborating with other conservation organisations to promote a coordinated approach to the rescue of endangered species throughout Vietnam. A grant from the Winsome Constance Kindness Trust is helping to fund improved accommodation specifically for turtles, snakes and lizards. Medical supplies and equipment have been donated by Family Medical Practice, Vietnam, and a variety of sources in Australia. WAR is currently liaising with Free The Bears, an Australian animal welfare charity, with a view to obtaining support for the construction of a larger hospital and holding centre, specifically for confiscated bears (Wildlife at Risk, 2008).

3.5 Middle East

For the Middle East information was obtained from Iran, Israel, Saudi Arabia, Turkey and the United Arab Emirates. Some background information about these countries can be found in the table below. An overview of animal welfare in the Middle East is presented in Aidaros (2005).

Table 3.9 General information on the Middle Eastern countries discussed in this chapter.

Country	Population (million)	GDP per capita (\$)	Climate	Arable land (%)	Main religion
Iran	65.9	11,700	Mostly (semi)arid	9.8	Muslim 98%
Israel	7.1	26,600	Temperate & desert	15.5	Jewish 76.4%
Saudi Arabia	28.1	19,800	Harsh, dry desert	1.7	Muslim, 100%
Turkey	71.9	12,000	Temperate; hot, dry summers; mild, wet winters; harsher interior	29.8	Muslim 99.8%
United Arab Emirates	4.6	37,000	Desert	0.77	Muslim 96%

Source: CIA World Factbook

Table 3.10 Information on 2005 livestock production and export of meat for countries in the Middle East discussed in this chapter

Country	Species	Numbers present	Meat export (tonnes)	Meat export to the EU (tonnes)
Iran	Poultry	380,000,000	15,150	0
	Cattle	9,378,000	363	0
	Pigs	0	0	0
Israel	Poultry	30,828,000	8,638	4,894
	Cattle	357,000		0
	Pigs	205,000	116	51
Saudi Arabia	Poultry	141,000,000	29,757	0
	Cattle	352,000	5,409	0
	Pigs	0	0	0
Turkey	Poultry	296,876,000	46,216	827
	Cattle	10,069,346	405	16
	Pigs	4,399	573	152
United Arab Emirates	Poultry	16,500,000	13,196	0
	Cattle	116,500	14,394	0
	Pigs	0	1441	0

Source: FAOSTAT (2009)

3.5.1 Animal welfare regulations

At the OIE meeting in Cairo in October 2008, Kahn (2008) presented data from a global questionnaire on animal welfare sent out to 13 OIE countries in the Middle East. A total of five responded. Of these five respondents, 80% (four countries) indicated that they had legislation in place on animal transportation, 100% had legislation on the slaughtering of animals, and 100% on killing animals as part of disease control measures. Kahn (2008) also reports that 80% had regulations on stray dog population control. Global averages for these parameters, according to the questionnaire results, are 80%, 76%, 82% and 68%. Therefore, the countries in the Middle East who responded generally had higher scores compared to other OIE member states.

As for voluntary schemes, three out of the five respondents had schemes on transport (60%), three on slaughter (60%) and three on killing for disease control (60%). These figures are higher than the average global figures of 37%, 42% and 37% respectively (Kahn, 2008), but caution is needed as the number of respondents is relatively low.

Iran

We found no animal welfare regulations in Iran.

Israel

Israel has a number of animal welfare laws, such as the Animal Protection Law (1994), the Animal Experimentation Law (1994, which bans animal use if a reasonable alternative is available), the Wildlife Protection Law (1955), which meets the standards of the Convention on International Trade in Endangered Species and

prohibits hunting wild animals in several ways, the Animal Disease Ordinance (1985), the Dog Regulation Law (2002), which requires licenses, microchip implants and routine vaccination, as well as covering importing and keeping of dangerous dogs and the Rabies Regulations (2005).

Saudi Arabia

There are regulations for some kinds of wild animals and for some marine species. There also appears to be some local legislation about pet animals (see Text box 3.4).

Text box 3.4 Cats and dogs banned by Saudi Arabian religious police

On 30 July 2008 a prohibition went into effect in the Saudi Arabian capital, Riyadh, banning the sale of dogs and cats as pets, as well as walking them in public. Violators found outside with their pets will have them confiscated by agents of the Commission for the Promotion of Virtue and the Prevention of Vice, the religious police.

The commission's general manager, Othman al-Othman, said the ban was ordered because of what he called "the rising of phenomenon of men using cats and dogs to make passes at women as well as violating proper behaviour in public squares and malls. If a man is caught with a pet, the pet will be immediately confiscated and the man will be forced to sign a document pledging not to repeat the act."

The prohibition may be an attempt to curb the owning of pets, which conservative Saudis view as a sign of corrupting Western influence, like the fast food, shorts, jeans and pop music that have become more common in the kingdom.

In Islamic tradition, dogs are shunned as unclean and dangerous, though they are kept for hunting and guarding. In large cities around the Middle East, stray dogs are considered pests.

The ban on cats is more puzzling, since there is no similar disdain for them in Islamic tradition. A number of hadiths show the Prophet Muhammad encouraging people to treat cats well. Once, he let a cat drink from the water that he was going to use for his ablutions before prayers. Another time, Muhammad said a woman, who kept a cat locked up without feeding it, would go to hell.

Source: CBS NEWS, 2008

Turkey

Although there is no history of welfare regulations for specific species, the protection of animals and some welfare issues are partly covered in different laws and regulations which were published by the Ministry of Agriculture and Rural Affairs (MARA) and the Ministry of Environment and Forestry (MoEF). These laws are: the Law on Animal Protection (MARA); the Law on Animal Health Control, amended in 2004 (MARA); the Regulation on Implementing the Animal Protection, 2006 (MoEF).

Turkey is also a member of CITES.

In general the requirements under the animal protection laws and regulations are the same as in the Netherlands (regulations about how to keep animals, transport and import or export them). There is also a regulation implementing the Law on Animal Protection, which basically states that owners are responsible for their animals. The focus is mainly on good health, rather than welfare, as there are many endemic diseases. Animal health is the responsibility of MARA and the animal welfare and safety issue is the responsibility of MoEF and the municipalities. The Turkish government has started to harmonise its legislation in line with EU directives.

UAE

The United Arab Emirates (UAE) has the following welfare regulations for kept and/or wild animals:

The federal law No 16 for year 2007 on Animal Welfare;

The UAE Civil Procedure Code, Federal Law No. (11) of 1992;

The ministerial decree no. 384 for year 2008 on the Animal Welfare By-law;

The Resolution No. 4 of 2005 on fishing for migratory fish with the aid of ring nets;

Resolution no. 1 of the year 2003 on fishing with large hemispherical wire-mesh fish traps;

Ministerial resolution no. 302 of 2001 on the exploitation, protection and development of living aquatic resources in the UAE

New regulations are being developed;

The UAE has acceded to the following conventions, protocols and organisations:

CITES to protect endangered species;

Vienna Convention for the Protection of the Ozone Layer ;

Montreal Protocol;
 Basel Convention on Control of Trans-boundary Movements of Hazardous Wastes;
 NCCD (National Committee for Combating Desertification) to combat desert formation;
 POPs (Persistent Organic Pollutants);
 Biological Diversity Convention;
 The International Treaty on Plant Genetic Resources;
 World Trade Organisation (WTO) Agreements;
 OIE (World Animal Health Organisation).

All CITES responsible authorities in the UAE are collaborating to take action to combat the illegal trade in wildlife (endangered species) in line with Federal Law No. 11. The UAE has developed a wide falcon registration scheme which includes the issuing of passports for falcons to control their movements in and out of the country. The UAE is also focusing on protecting the natural environment, wildlife and biological diversity by carrying out several research studies on desert, marine and wildlife species and their habitats.

According to the Dubai International Air Transport Association (IATA), the UAE is in the process of adopting its live animals' regulations (LAR). The UAE is the second country in the Middle East to adopt these regulations for the transport of live animals to and from the Emirates. These regulations are believed to ensure the welfare and safety of animals which are being transported by air and will bring these transportation procedures into conformity with international or local regulations. In addition, the UAE government will have access to a comprehensive source of information about containers used for most animal species, reducing transit times. The UAE has joined a list of 45 countries including the EU, the United States and Oman that have officially recognised LAR and included them as part of their government legislation. The carriage of live animals by air is considered to be the most humane and expedient method of transportation over long distances. Emirates Airlines is a member of IATA and has experts to assist the industry on issues that often go beyond conventional airline expertise, such as the best way of transporting flamingos or whether large primates can be allowed to move around in a container.

3.5.2 Farming practices in the Middle East

Iran

There is a major constraint on feed production (for every farm animal species) in Iran due to adverse climatic conditions. Hence, Iran is a major importer of feed ingredients. Iran has been suffering from a drought crisis over the past 30 years. Poor irrigation systems are contributing to the crisis as 75% of all water resources in the country are consumed by the agricultural sector at a rather low efficiency rate.

The total population of Holstein cows in the country is about 900,000 head and the annual fresh milk production stands at around 6.2 million tonnes. Dairy farming in Iran is similar to North American practices, i.e. large herds of over 1,000 Holsteins in extensive, enclosed farms. Free stalls are becoming popular. Mats are increasingly being provided on barn floors, which are typically dry due to arid climatic conditions. Dairy farm management in Iran is quite advanced and is mostly based on recommendations by Dutch and North American sources (Veepro Magazine, Hoard's Dairyman and Intl. Livestock Management School in Guelph, Ontario, Canada). Iranian dairy farmers attend numerous courses per year both inside and outside Iran and are relatively up-to-date on the latest developments in dairy farm management. In 2008, an unprecedented price hike in the feed sector (due to drought) hit the dairy sector, leading the government to liberalise the farm-gate selling price of fresh milk to help farmers boost their income. This happened while pivotal programmes of the government were striving to help raise the acreage and output of alfalfa, maize and barley plantations, and canola seed production was being intensively promoted.

Mastitis, Bovine Tuberculosis, foot-and-mouth disease and calf diarrhoea are the most common disease challenges. Infectious Bovine Rhinotracheitis (IBR) and Bovine Viral Diarrhoea (BVD) are closely screened as well. The total red meat production of Iran at the moment is around 850,000 tonnes, but this figure also includes meat produced by sheep and goats. Beef cattle are reared in large but enclosed barns which are very similar to the dairy farms. Enclosed barns with shades and concrete floors are the most common. The enclosures are normally clean and floors and walls are regularly disinfected. The arid climate also helps in keeping the feedlots dry. Beef management in Iran is less advanced than dairy farming but is still at an acceptable level. The sector does not use beef breeds. Young dairy bulls are mostly fattened for meat production. The constraints on resources mentioned for the dairy industry also put pressure on the beef sector. Feed prices have reached a crisis point for the whole sector.

There are no specialised transport companies and cattle (dairy and beef) are normally loaded onto lorries originally designed to carry other (non-animal) goods. Stunning is practised in all slaughterhouses in Iran. Iran has no pig industry (for religious reasons).

The layer industry is huge and most layer houses are automated based on globally common technologies. Cage systems are similar to the European systems, and especially systems from the Netherlands as Dutch companies are leaders in selling cage systems to this market in Iran. Hens are kept in battery cages with automated egg collection. Management is quite advanced and based on the latest developments in global poultry science. The total annual egg production of the country is about 700,000 tonnes based on 1400 commercial layer farms. Health management in the layer industry is quite progressive but problems such as Newcastle disease, respiratory diseases and Gumboro disease are among the diseases presenting major challenges. Broiler houses are, again, similar in structure and population density to those in the West. So, welfare problems are probably comparable to those in the EU. Automated or computerised climate control systems are used and nutrition management systems are gaining ground quite rapidly. Broiler management in Iran is progressive. Broiler farmers receive regular training inside and outside the country, including the UK, Canada, France and the Netherlands. The diseases mentioned for the layer industry apply here too. The total annual chicken-meat production of the country at the moment stands at 1,330,000 tonnes, making Iran something like the 12th largest broiler producer in the world. It is also said that after the oil and gas industry, the poultry sector is the second most capital-intensive sector of the Iranian economy. Cannibalism is a commonly reported problem for poultry (layers and broilers). Iranian farmers resort to optimising feed rations and health management systems to prevent the problem. It is not a key problem in Iran but occurs in individual cases across the country. Poultry are normally jam-packed into plastic boxes with openings for respiration and ventilation and loaded onto lorries for transport. Stunning is used in Iranian poultry slaughterhouses. As in the previous sectors, the feed crisis has also stricken the poultry industry. Fish are farmed in rivers, natural lakes, artificial reservoirs, irrigation canals, aqueducts and ponds. The production of farmed fish has risen constantly since 1985, and expanded rapidly due to suitable environmental conditions and climatic diversity in Iran. The total annual production of all farmed species by the end of 2008 is estimated to reach 269,214 tonnes. The State Fisheries Organisation and the Iranian Fisheries Research Institute carry out nationwide training programmes on farm management and sustainability. Nevertheless, management standards seem to remain at an intermediate level. There are problems of yield and disease control (white spot is a commonly reported problem). Imported, specialised feeds are becoming popular. Caught fish are normally transported in plastic boxes loaded onto refrigerated vans. The catch is left on the ground to perish naturally from religious reasons and no beatings to death are practised. There are about 52 million sheep and 28 million goats in the country, which are mainly reared for red meat production. Ostriches and turkeys are other farmed species in the poultry sector. The same issues as explained for the layer and broiler industries also apply to these industries. Turkeys are kept in large, indoor houses and ostriches are kept in enclosed, shaded barns. The level of ostrich production is limited. Turkeys are placed in boxes for transportation. Stunning is the commonly practised during slaughter.

Israel

Israel has the highest fat and protein production per cow in the world. The average yearly milk production per cow is more than 11,000 litres (Israel Dairy Board, 2009). Cows are sometimes kept in large groups of 300-400 cows. High-tech systems are operated, cooling systems are used and farmers have a high level of expertise. In total, about 400,000 cattle (dairy and beef) are raised in Israel. Beef cattle are kept in areas where they can graze.

Israel has almost no pig farms. The raising of pigs was made legal according to a 1962 law, and was originally only conducted by non-Jewish citizens. Nowadays, some Jewish farmers also keep pigs.

Poultry houses have ventilation, spray systems, strict computerised supervision, fully automated drinking systems and special flooring. Very disease-resistant poultry breeds are used. These intensively farmed poultry face similar welfare problems as those in the EU (e.g. rapid growth rate of broilers).

In Israel, 20,777 tonnes of fish are processed from both aquaculture and marine culture (a specialised branch of aquaculture). Most species were originally imported from abroad. Much of the fish is kept in polyculture, and raceways and intensive fish ponds are used. Management is very technical and a further intensification of aquaculture is expected. Fish farming plays a substantial role in ecological concerns, such as water quality and consumption. Recently there was an outbreak of KHV (Koi Herpes Virus). More information about aquaculture in Israel is given in Section 5.4.6.

There are about 454,000 sheep and goats in Israel, including at least 60,000 breeding ewes of the Assaf sheep and at least 260,000 of the Awassi sheep. Husbandry systems range widely, from intensive to extensive. The sheep are highly adaptable to harsh conditions. Further improvement is achieved by breeding. The native-bred Awassi sheep produces 1 lambing per year. Approximately, 430,000 lambs are slaughtered each year.

Saanen goats are mostly kept under intensive living conditions. Their milk production is excellent and they usually have two kids per kidding. Around 70,000 goat kids are slaughtered each year.

Saudi Arabia

The hot and dry climate of Saudi Arabia makes it hard to produce feed for farm animals. Therefore, feed has to be imported.

Large numbers of dairy cattle are kept in Saudi Arabia, where enough space is available. Large farms have on average 40,000 cows, whereas middle-sized farms keep on average 10,000 cows. Housing dairy cattle is challenging due to the extreme heat. "Fogging systems" help to keep temperatures at acceptable levels.

Management of these farms is advanced and resources are available. Production is very intensive and milking takes place according to American standards. All animals in the Kingdom of Saudi Arabia are slaughtered according to the methods prescribed by Islamic law, Sharia.

Beef cattle are kept in smaller numbers. Farms have on average 4,000 heads. Housing is comparable to that of dairy cattle, and the management is good.

Pigs are not kept in Saudi Arabia for religious reasons (Sharia).

Saudi Arabia has large companies with laying hens and broilers, keeping birds under similar conditions as in the EU.

Saudi-Arabia has a small number of fish farms with reasonable production levels and a large project for the production of shrimp in the Red Sea.

Camels and sheep are kept in very intensive systems for the production of milk and meat. Most systems appear to have an unprofessional set-up. Camels are transported in various types of trucks, which normally have a crane to load and unload the animals.

Turkey

Turkey has around ten million head of dairy cattle. Open (large areas or pasture) and closed stables (no cubicles, but the animals are also not tethered) are the main housing conditions. Modern farms which belong to large-scale dairy processing companies have a capacity of between 100 and 300 heads. These farms are more or less comparable to farms in the EU. On the other hand, many small farms have between 5 and 10 animals.

The modern farms have their own professional managers, veterinarians etc. The management of large farms is comparable to that of the Netherlands (regarding health and feed) to ensure high production levels. The small farms have no management system and low production levels. On the small farms cows are part of the family. They are (financially) important and hence taken good care of. The environment is primitive. No surgical interventions like dehorning are undertaken on the smaller farms. Turkey covers a large area and has many variations in climate. Lack of water can be a problem. Animal diseases are one of the country's biggest problems (foot-and-mouth disease, tuberculosis, brucellosis etc.). This problem is due to a lack of knowledge (farmers and cattle-traders), and the suboptimal functioning of governmental agencies. These problems, however, mostly occur on the smaller farms.

Animals are transported by truck over distances of between 50 and 900 km. Illegal animal movements across the borders (with countries like Iran, Iraq and Syria) appear to take place. Many animals are transported during the Festival of Sacrifice. Local transport often takes place on open trailers. Many animals are transported in trucks similar to the ones used in the Netherlands. Animals are mostly slaughtered in slaughterhouses although the slaughter of sheep and cattle during the Ramadan period may take place in unauthorised places.

Few, if any pigs are kept in Turkey (which is a Muslim country).

Laying hens are generally kept in closed houses (batteries); the breeds are mostly imported from the Netherlands, Germany and Great Britain. Houses are modern. Laying hens may suffer from Newcastle disease. Animals are usually transported by truck, often being brought to modern slaughterhouses. Spent layers (old hens) are also regularly sold to citizens.

The Turkish broiler sector is considered to be the most modern sector in the animal-husbandry industry. Its standards are even higher than in many EU countries (modern techniques from Western Europe and farms are relatively new), with apparently no minimum regulations. There are also modern poultry processing plants with their own houses or contracts with large-scale firms. Under these contracts, feed, medicine and modern management are supplied. Health issues are, however, still present, including Avian Influenza and Newcastle disease. Animal welfare problems are probably similar to those in the EU. Transportation is, again, conducted by truck, and modern slaughterhouses are used.

Fish is farmed with modern management techniques in Turkey. Transportation is in thermally controlled trucks, and processing is conducted in modern plants.

Sheep and goats are kept for their meat and milk. The situation is comparable to that of cattle husbandry. There are large and small farms, and the animals may be kept outside on grasslands.

Horses are used for professional horse-racing, which is a popular sport, and not for meat production.

Donkeys are used as draught animals (in the countryside) and it is claimed that they are well taken care for (if not, the animals will die and people lose their transportation possibilities).

UAE

Dairy cattle are kept in large numbers in the United Arab Emirates, in both intensive and extensive systems. Balanced feeding and climate control are present. The management of dairy production is regulated by the Ministry of Environment and Water (MOEW, the Veterinary and Animal Health Department). All farms receive veterinary health care, and production is good. Transport is under the control of the municipalities and the Ministry, and the IATA Convention. Slaughter is conducted according to Halal methods.

Beef cattle are kept in small numbers, and in more extensive housing systems. Management is good (e.g. group size), and regulated by MOEW. The beef cattle industry is comparable to the dairy cattle industry. Halal slaughter is practised.

Being an Islamic country, the United Arab Emirates has no pig farming industry.

Laying hens are kept in large numbers, in intensive cage systems. Management (group size) is regulated via MOEW, FCA and the Poultry Committee. Here too, balanced feed and climate control are available. All farms are under veterinary control and Fowlpox may affect poultry. The production of laying hens is good. Transport is, just as in the cattle industry, under the control of the municipalities, the Ministry and the IATA convention. Halal slaughter is practised. The broiler industry is comparable to the layer industry.

As the United Arab Emirates has developed rapidly with significant contributions from their major oil industry and an expanding tourist industry, the commercial fishing industry has declined rapidly in economic importance. There is no major aquaculture industry in the country. There is one small commercial and experimental facility near the Emirate of Umm Al Quwain (Marine Resources Research Center). For more information about aquaculture see Section 5.4.13.

The UAE has large numbers of sheep and goats, which are kept under both intensive and extensive conditions. Practices and regulations are comparable to that of the other farm animals. The production levels in sheep and goats are medium and slaughter is conducted according to Halal procedures.

3.5.3 *Perceptions of animal welfare in the Middle East*

Iran

Iran is not a member of the WTO and is internationally isolated. It faces a (trade) boycott from the UN due to development of its nuclear technology. The income of its citizens is lower compared to the Netherlands. Animal welfare is not an important issue. Maximising revenue is given the highest priority by Iranian farmers, slaughterhouse owners and transport companies. However, several potential welfare issues can be identified, e.g. the poor, non-specialised transport methods for cattle. Farmers complain that their newly bought cattle give less milk than expected, which they believe is due to transport stress. Poultry (including turkeys) and live fish are also packed for transport. The stunning of poultry is less of a welfare concern than transport. In fisheries it is common to leave the catch on the ground to perish naturally.

Overcrowding of farm animals (cattle, ostriches) is not frequent and, due to arid climatic conditions, barn floors are typically dry resulting in adequate barn floor hygiene and welfare for cows.

Only a few very limited NGOs have tried to raise some public awareness about animal welfare in the pet sector. This includes cats, dogs and goldfish, specifically. There is also a newly formed group of pet lovers who have started a charity pet orphanage in Teheran.

There seems to be little awareness of animal welfare issues or regulations on the subject. The main reason why Iranians treat their animals in a fairly acceptable way seems to be the Old Persian culture of a love of animals and Islamic tenets whereby the good treatment of all animals has been recommended in the Koran (the longest Chapter of the Koran is named after The Cow) and sayings by the Prophet Mohammed.

Israel

In general, the system of protecting animals is very well advanced and its development is being furthered by numerous NGOs. Nevertheless, one of the problems Israel faces is the large numbers of stray animals, especially cats and dogs. Animal welfare is, however, considered to be a public issue as well.

For cattle there is some interest in advanced technology which can be used to achieve respectable production levels. The religious regulations of Judaism require animals (cattle and poultry) to be completely healthy at slaughter. Poultry receives little media attention, as do pigs. The eating of pigs is forbidden in both Judaism and Islam. Apart from the recent closure of fish farms in Eilat, due to the pollution of the coral reefs, there is (virtually) no media attention concerning farmed fish. Geese, in contrast, receive attention. Farms that were specialised in hatching and fattening geese for the production of pâté de foie gras were closed down by the Israeli parliament in 2006, although Israel used to be the fifth largest producer of pâté de foie gras.

Animal rights groups oppose the use of laboratory animals. Media attention for pet animals is moderate.

Organisations involved are Four Paws, CHAI, SPCA, Noah, and Let the Animals Live.

Wild animals also receive media attention. Public awareness of nature preservation is promoted in schools and among the population through guided excursions, publications and information campaigns organised by Keren

Kayemeth Le Israel (KKL) and the Israel Nature and Parks Authority (INPA). Their policy is based on restricting the hunting of wild animals. INPA has special rescue operations to ensure the survival of endangered species. Protected animals are gazelle, ibex, leopard and vulture. There are feeding stations for wolves, hyenas and foxes, and safe nesting sites for birds. Moreover, bird migration routes are monitored to prevent bird-aircraft collisions. 'Hai Bar' wildlife projects in the Arava and on Mount Carmel have been set up to reintroduce animal species like ostrich, Persian fallow deer, oryx, onager and Somali wild ass.

The presence of many active NGOs, organised mainly by Israeli citizens, indicates that animal welfare is a topic on the agenda of the community. Also, the government is willing to try to enhance the living circumstances of animals as indicated by its advanced legislation. In general, it seems that animal welfare and health is at a satisfactory level in Israel. Israelis love animals and keep many pets compared to neighbouring countries. For farm animals that are eaten by the Israeli people, the predominant Judaism requires that the meat should come from a completely healthy animal. It seems that animal welfare may be enhanced by religion in Israel.

The Ministry of Agriculture is responsible for implementing the law and the Ministry of Environment appointed trustees to file complaints against offenders. Yet, some NGOs such as CHAI, question the willingness of the government to enforce rules and laws such as the law against animal experimentation.

Saudi Arabia

Animal welfare as such is not really a public issue. However, since Saudi Arabia is a member of the WTO, they are concerned with ways of achieving the norms of international requirements. If animal welfare were an issue in society, it would be from religious reasons. Information concerning the treatment of animals is provided in the following sections of the Hadith books narrated by the Prophet Mohamed (PBUH):

Good attitude even in slaughter and killing and sharpening of large knife;

Providing water to animals to drink;

Beating animals;

Slaughtering tools;

Hunting.

The Muslim commitment to the PBUH is the same commitment as to the Koran. Consequently, slaughter practices for all animals in Saudi Arabia are governed by Sharia law. Animals should be slaughtered with a sharp knife so that the jugular vein is cut with the minimum possible pain and the skin should not be removed and limbs should not be cut as long as there is any sign of life in the animal.

Animal welfare does not appear to be an issue for policymakers in Saudi Arabia. It is assumed that a Muslim person will take sensible welfare measures, e.g. in relation to food and water for animals, and Halal slaughter. This is common knowledge and taught to youngsters in school. However, Mohsen Elbahaie of the Agricultural Service in Saudi Arabia wonders, for instance, whether the practice of milking cows four times a day may have a negative impact on cow welfare.

The certification and labelling of Halal feed and Halal slaughter are in the interest of farm animals. Farmed fish are mentioned in the media in relation to the pollution of sea water. No animal welfare organisations appear to be active, but there are a few individuals who defend marine life in the Red Sea and they are active in bringing this to the attention of policy makers. Wildlife protection and development is, in contrast to farm animals and fish, a major issue. There is certification and labelling, and the NCWCD (National Commission for Wildlife Conservation and Development) is active in this field. Policy and research also focus on wildlife.

Driving forces underlying current farming practices in Saudi Arabia which could affect animal welfare appear to be mainly related to religion, food security, safety and economics. Considerations underlying regulations regarding animal welfare appear to be firstly of a religious and secondly of a commercial nature.

Enforcement of religious rules principally requires a personal commitment. There is no control by the government or NGOs. Animal welfare does not seem to be a major concern for society or the government, although it may be overlooked. In order to promote animal welfare a religious reason must be found in order to attract everyone's attention and such initiatives are being developed in The Kingdom of Saudi Arabia.

Turkey

The Agricultural Service in Turkey perceives the following animal welfare issues that have to be taken care of concerning animals in Turkey:

Shelter and housing;

Ensuring their needs (e.g. food);

Animal health;

Setting standards for transport.

Many cats and dogs are homeless. Every city has its own shelter, but the available space is insufficient, and ensuring food and other needs of the homeless animals is difficult. Moreover, vaccination against rabies is very important and a programme for this has been started. Standards of transportation must be improved for farm animals. In addition, space requirements for laying hens in battery cages may require attention.

Animal welfare is an issue in development in Turkey, for all farm animals. The media are mostly interested in homeless cats and dogs, and in animal health for cattle. An Identification and Registration programme for cattle, however, started in 2001. Policies are generally aimed at the prevention of diseases (FMD, Tuberculosis, brucellosis etc.). Research concerning farm, laboratory, and pet animals is mainly conducted by the veterinary faculties of various universities.

Religious concerns focus on the slaughter of cattle, sheep and goats by Muslims according to Islamic rules during the period of Ramadan.

Laying hens receive limited media attention, some of which is concerned with the quality (health) of the products (eggs) for consumption. No certification or labelling appears to have been developed for animal welfare.

However, the Turkish Egg Producers Association has been founded and, since Turkey is one of the biggest egg producers in the world, a good image is important for the food industry.

Due to the Avian Influenza disease, there is a great deal of media attention for broilers. It seems that no certification or labelling for broiler products has been developed. For broilers there is, just as for laying hens, also an organisation in place – the Turkish Poultry Association (BESD-BIR). The broiler industry is one of the most developed sectors in Turkey, and its annual production of around 1 million tonnes makes it an important industry for the Turkish economy.

Farmed fish receive limited attention from the media, and any attention focuses mainly on the impact on the environment instead of on fish welfare. Since farmed fish are mainly exported to EU countries, it is an important sector for the economy.

Laboratory animals receive no attention at all, but they are used in Turkey. In fact, the media concentrate primarily on pet animals (cats and dogs). All animals have to be registered with the provincial municipalities, and have to wear collars. This registration is necessary due to the large number of stray animals. Voluntary activities are mostly carried out by NGOs, and CITES rules apply in Turkey. Furthermore, pet animals are protected by the religious rules. Pet food, pet medicine and pet products are an important market in the larger cities where people's incomes tend to be higher.

Wild animals like pheasants and deer also receive considerable media attention concerning animal welfare. The policy of the Ministry of Environment and Forestry is to protect endangered species. Welfare issues relate to nature conservation (especially wetlands) and endangered species (especially birds). If habitats are protected, the animals living in them are also protected. There are National Parks and Special Protection Areas in Turkey. Turkey still has a considerable number of natural areas (the Netherlands is considered to be more or less like a 'park') where there has been no human interference. There are only a limited number of watery areas in the country, so protecting these wetlands is important for the animals (birds), but also for people and industry. Consequently, complete areas are protected rather than individual animal species. Moreover, NGO lobbying has been relatively effective. For example, dancing bears were once a common sight in tourist areas of Turkey but due to WSPA activities in collaboration with the Turkish government in 1992 the custom of dancing bears stopped as complaints from tourists about animal welfare increased.

Animal welfare is a developing issue and health is important. Animal welfare may be defined as a good quality of living conditions with healthy methods. The fact that welfare is becoming an issue may be due to Turkey's economic growth, its ambitions to become a member of the EU and perhaps also due to (better) education and the media (more people are watching TV). Concerns are more prevalent in urban areas. The perception in society is that animals must be treated well. They have to be supplied with enough food and water, a clean environment and they should have enough freedom to move around. This perspective is supported by voluntary and active NGOs, and by the provincial municipalities. The Turkish government has started to harmonise its legislation with the relevant EU directives. Its main considerations are the lack of knowledge and good education.

Unfortunately implementation of some regulations fails to match current practices. The main reason for this is a lack of enforcement. The root of the problem may be the educational system. However, veterinary education in Turkey which began in 1842, now (over the last 4 years) has animal welfare included as a separate course in the curriculum of veterinary faculties.

Also there is no check on the registration of dogs and cats, especially in the countryside; not all pet animals are registered. Many regulations appear to be more carefully enforced in urban areas compared to rural areas. During the accession process with the EU, many things have changed in Turkey. Turkish people may follow the European trends if they really believe in them. Turkey also has to fulfil certain trade obligations and consumer demands from the EU, as the EU is the main trading partner of Turkey. The EUROPGAP is a good example of this trend in the horticulture sector. Since Turkey has been a candidate country targeting full EU membership, all requirements will have to be fulfilled eventually. Thus, EU-membership, economic growth and greater awareness of welfare issues may be trends towards increased concern for animal welfare in Turkey.

UAE

The UAE is a member of the WTO. Consequently, the UAE considers how international requirements can be complied with. Food safety, economics, ethics and religious considerations are the underlying principles for regulations regarding animal welfare.

Animal welfare is defined as the fulfilment of all the requirements for keeping animals under proper healthy conditions and supplying them with suitable feed and water without exposing them to any type of harm. In fact, according to the citizens of the UAE, animal welfare is not an issue; because of the prevailing religious rules, most people are aware of animal welfare. People act according to (their interpretation of) Islam and their perception is that their animals are treated well. Healthy animals are important to them. Religious rules and animal welfare rules reinforce the above perspective. Moreover, the climate in the UAE is the driving force underlying the current farming practices that could affect animal welfare.

Samar Kadri of the Agricultural Service perceived the following welfare issues to be of importance:

Building and amenities;

Animal transportation and treatment;

Animal exhibits;

The use of animals for scientific purposes.

These issues do not have to be present per se, but they may require attention. Due to the warm and dry climate, shade and ventilation are important. Animals are transported in general-purpose trucks, and this may be an issue.

Animal used in exhibitions are not really a welfare issue presently, but according to the animal Welfare law No (16) for the year 2007 and its by-law no 384 for the year 2008, exhibitors must apply for permission with the MOEW and cover all the welfare aspects before, during and after the exhibition.

Animal welfare is considered to be an issue by the people living in the UAE. Issues concerning farm animals and deer can be observed in the media. Certification and labelling is regulated via the Municipalities and the MOEW. There are also some private organisations which pay attention to cattle welfare. Federal and local laws relate to animal welfare, and Islamic rules also consider animal welfare issues. Laboratory animals receive similar attention to farm animals; the organisation involved is the UAE University. Research on these animals is for teaching purposes only. Pet animals like dogs and cats are given the same type of attention as farm animals.

Regulations are fairly new in the UAE. At present, there is a federal law for animal welfare that will be applied and modified in future to support animal welfare rules. Public awareness is the most important issue for federal law and animal welfare: it should be achieved through actions (information) on the part of the government. The ministry and the municipalities are involved in creating public awareness through the media including radio and TV programmes, lectures, workshops and newspapers. Television is becoming more important in providing information.

3.6 Discussion and conclusions: a global impression

Methodology

This chapter contains the report of a survey of animal welfare in general on a global scale. The two main sources for this chapter were a preliminary literature search by Bracke et al. (2008) and a questionnaire survey of the Dutch Foreign Agricultural Services. In addition, data were obtained from various other sources such as websites and conferences. Before discussing the content of the chapter and the overall conclusions, some methodological points have to be addressed, which should be taken into account when interpreting the results.

Firstly, the subject area (describing the regulations, practices and perceptions on the welfare of all kinds of species across the world) is of considerable size. Within the limited space of this report it has not been possible to do more than address some main points for each region and country. There are many more details which could be obtained to provide a fuller picture, but this will of course take more time and effort.

Secondly, the respondents to the survey have a broad interest and knowledge of the agriculture in their country and region, but are not primarily involved in animal welfare science or politics. This creates a dilemma when reporting their views. Scientific standards would require that sources are verified and listed, but within the time frame and resources of this project this was not possible for all the input received. The authors have chosen to report what they consider to be reliable information, but would like to add a word of caution as to the interpretation and implications of some of the feedback to the survey.

In order to address these methodological points the authors suggest that further research should build on the observations presented in this report, by involving experts in the field of animal welfare from the regions discussed. The aim would then be to obtain more transparently referenced materials, supported by published data and written by independent authors. A possible method which could be used is the Delphi method (see Anonymous, 2001). The authors also recommend narrowing down the scope of such a study, allowing resources to be efficiently focused on priority areas.

Welfare regulations

The survey data and the other information in this report generated information about animal welfare regulations in 19 countries (see Annex XII for an overview). This is, of course, only a limited part of the world. We obtained information about welfare legislation or regulations concerning kept and wild animals such as national or regional legislation, codes of practice, voluntary and private standards, and sector regulations. Countries where we found data on welfare legislation and/or the protection of farm animals were Egypt (Penal Code), South Africa (Animal Protection Act), the United States of America (Humane Methods of Slaughter Act), the Philippines (Philippine Animal Welfare Act), South Korea (Eco-Friendly agriculture upbringing law), and Thailand (Notifications about raising, transport and slaughter and a Good Manufacturing practice for Abattoirs).

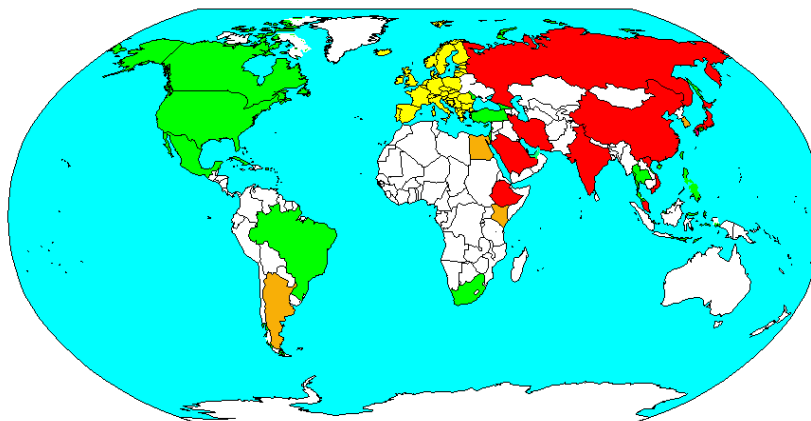
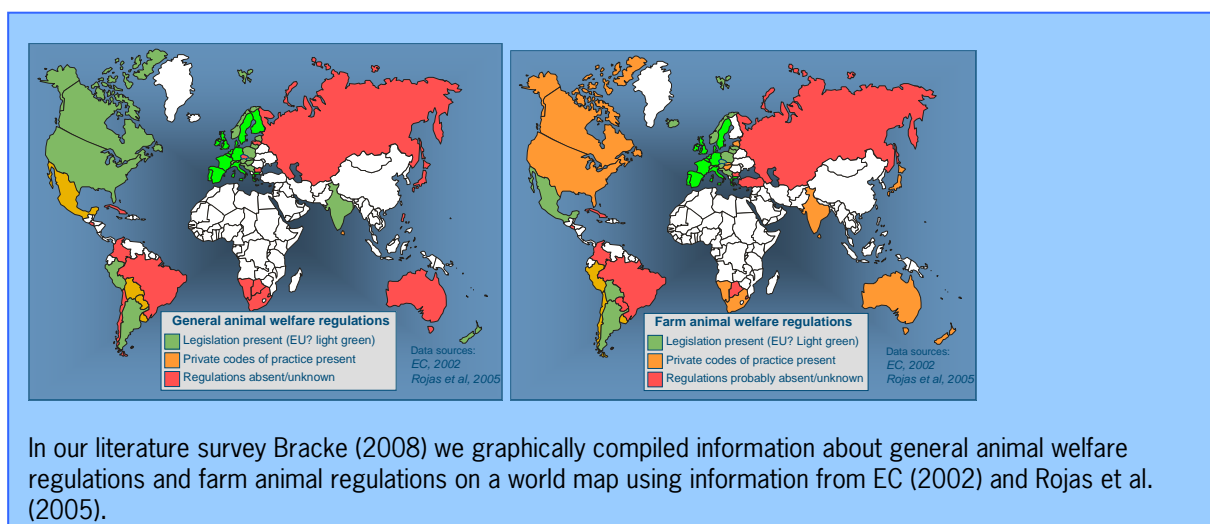


Figure 3.10 Tentative overview of general animal welfare legislation. Green countries have some legislation on animal welfare, orange countries have only limited legislation on animal welfare and red countries have no legislation on animal welfare as far as we know. Yellow countries identify the EU which was not covered in this study and for countries in white we have no data.

Figure 3.10 is an attempt to visualise the status of legislation about general animal welfare (see Annex XII for an overview). An assessment of the level of enforcement is inevitably subjective, and rather difficult to provide. Our general impression is that enforcement is particularly strict in regions where economic dependency on biodiversity and wildlife is great (e.g. some African countries) or when biosecurity measures need to be followed up for international trade purposes (e.g. South East Asia). In most regions however, it appears that the level of legislation as well as its enforcement is positively related to the countries material wealth.

The information collected on animal welfare regulations complements what we had previously collected (see Text box 3.5). While the information is difficult to compare, our impression is that, together with increased global attention for animal welfare (OIE guidelines, international conferences), world-wide animal welfare regulations are being considered and may be or become a topic for the future.

Text box 3.5 Animal welfare regulations worldwide



Farming practices

To give an overview of worldwide farming practices in a few pages of text is not an easy task, as practices vary greatly between regions as well as within regions of the world. This report therefore only touches on some general trends, or occasionally on specific points for a given region. Several factors appear to have an impact on farming practices (including fish farming) which vary across the globe.

Industrialisation, for example, increases intensive farming and reduces the use of draught animals. A widely used distinction is between small (family/backyard) and large (intensive) farms. Since welfare is difficult to assess, different points of view appear to exist as to the question whether modern farming is providing better welfare conditions compared to the smaller old-fashioned farms. Masiga and Munyua (2005) reported that large commercial farms in Africa keep animals in poorly constructed environments restricting animal movement and reducing the quality of human-animal interaction seen in traditional (small-scale) farming. Historic conditions may also affect regional farming practices. Russia, for example, developed large-scale agricultural farming during the Soviet period.

Religious factors affect farming practices in many countries. Pig farming, for example, is absent in Islamic regions of the world. Cows are considered sacred by Hindus and are therefore not slaughtered in India.

Text box 3.6 Animal welfare and religion

The question is raised if animal welfare concerns are a typical Western affair. A study of world religions (Buddhism and Jainism, Christianity, Hinduism, Islam, Judaism and modern western movements like humanism, holism and new age) shows that this does not appear to be the case. Within all religions respect for animals is an important item and it covers all Five Freedoms. Practices, however, may differ from what religions prescribe. This suggests that religion may not be suitable for an international strategy to improve animal welfare, however it is certainly a factor to be taken into account.

Source: Van Geffen et al. 2004

Climate differs considerably across the globe and can have a huge impact on production and animal welfare. In the hottest and most developed countries (e.g. Israel and Saudi Arabia) the larger farms have implemented climate control systems, while the smaller farms often lack these systems. This could be a serious welfare problem. Solutions lie in the use of more robust, traditional breeds that are adapted to the climatic conditions (Bosch, 2009). Alternatively, animals must be kept under conditions that allow coping responses (e.g. shade from trees for dairy cattle, wallowing for pigs, more space per animal).

For farm animals, transportation and slaughter are two frequently identified welfare problems (see also Text box 3.6). Animals may have to travel large distances and/or are placed in overcrowded crates or overloaded trucks and the chosen means of transport may not have been designed for animals. In some countries abattoirs may also be either absent or in a very bad state. It appears that municipal abattoirs in particular (as opposed to large company-owned abattoirs) have a rather bad track record in terms of human health and animal health and welfare (Cointreau, 2009). Finally, transportation of live animals is a considerable issue too, e.g. concerning long-distance travel, stocking densities for vehicle design and animals unfit for travel (Corson and Anderson, 2008).

Text box 3.7 Long-distance transport and animal welfare worldwide

Rahman et al. (2005) reported that in **Asia and the Far East** overloaded trucks, rough handling during slaughtering (without stunning and animals watching other animals being killed) and malnutrition are common practices. In China, live animal transport is increasing due to the increasing urbanisation, rising meat consumption especially among urban populations, the long distances between some significant areas of production and consumption, a preference for freshly killed meat and a reduction in localised production (Rahman et al., 2008).

Due to its arid climate countries [in] the **Middle East** have difficulty in being self supplying in meat. They have to import meat over long distances, and coupled to the traditional slaughtering method they need live animals (Rahman, 2008).

Concerning the distances travelled within **South America**, there is a large variation according to Gallo and Tadich (2008). It is common that animals have to travel 1-12 hours, but 60 hours also occurs.

In a report about **North America** it has been noticed that animals may be transported across multiple states, regions or provinces and across national borders for fattening and slaughter. Some may be moved across national borders for slaughter only for the meat then to be shipped back to their country of origin for consumption (Engelbreton, 2008).

Concerning **Africa**, animal welfare issues common to long-distance transport include poorly developed and degraded infrastructure, a lack of enforcement of national legislation where legislation governing livestock transport exists, and inhumane handling of livestock throughout the production chain. In South Africa however, NGOs appear to have a positive impact on livestock transport and slaughter (Menczer, 2008).

Animal welfare perceptions

There is no worldwide consensus about the definition of animal welfare, not even among ethologists (Anonymous, 2001; Text box 3.7). Van Geffen et al. (2004) stated that worldwide communication is difficult due to differences in interpretation. Moreover, the way in which humans treat animals may be based on their views of themselves as well as of the living environment around them (Oldendaal 2005). Thus, perception of animal welfare will vary between countries, between urban and rural areas and between rich and poor citizens (Wilkins et al. 2005). Several respondents referred to the Five Freedoms formulated in the UK (Brambell 1965; Farm Animal Welfare Council, 1992) to define animal welfare. Several respondents also identified a difference between animal welfare and animal rights, the latter being the more extreme with respect to protecting animals.

The OIE defined animal welfare as follows: *"Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour and is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter or killing. Animal welfare refers to the state of the animal; the treatment that an animal received is covered by other terms such as animal care, animal husbandry, and humane treatment."* (OIE, 2008).

*Text box 3.8 Definitions of animal welfare*Definition of animal welfare used by the Dutch government

"The Five Freedoms, originally defined by Brambell (1965) and later adapted by the Farm Animal Welfare Council (1992), are the basis of the legal framework concerning animal welfare in the Netherlands. These freedoms state that animals should be:

free from hunger and thirst

free from discomfort

free from pain, injury and disease

free from fear and distress

free to express normal behaviour

Most attention is given to the first three freedoms. Improvements concerning these freedoms are also often related to a higher production and therefore easy to implement. Legislation concerning the last two freedoms does not necessarily give the producer an advantage and will therefore damage their competition position." (Van Geffen et al. 2004)

Definitions of animal welfare used globally

"Some definitions of animal welfare concentrate on the idea that decreased welfare results in pre-pathological states (Moberg, 1985). Others concentrate on features as stress, coping, fitness and adaptation (e.g. Broom, 1986); on predictability and controllability of the environment (Wiepkema, 1982); on harmony with the environment (e.g. Lorz, 1973; Hughes, 1976); on emotional states, wants, subjective feelings, and suffering (Dawkins, 1988; Duncan & Petherick, 1991, Sandøe, 1996) or as the quality of life as perceived by the animals themselves (Bracke 1999a). These concepts range from more objective definitions to the more subjective concepts. Objective definitions relate welfare directly to scientifically measurable parameters (e.g. Broom, 1986). They tend to emphasise the importance of biological functioning such as survival, normal behaviour and physiology, and reproductive success as indicators of how well the animal is able to meet the challenges posed by the environment. By contrast, subjective definitions define welfare in terms of subjective emotional states of animals such as hunger, pain, fear, frustration and pleasure which animals experience (e.g. Dawkins, 1988, 1990; Duncan, 1996). These definitions relate more directly to animal ethics and societal concern about animal welfare.

While there is still no universal agreement among scientists on exactly how to define animal welfare, there is a considerable degree of consensus on a number of items. For example, sentience is generally accepted as a necessary condition for welfare. 'When people express concern about animal welfare, it is precisely the conscious experience of suffering that worries them most' (Dawkins, 1998, p. 306). Non-sentient objects like machines, computers or plants do not have a welfare status, at least not in a sense that is relevant in a socio-political context (Stafleu et al., 1996).

Furthermore, it is widely recognised that subjective definitions cannot be measured directly (Mason & Mendl, 1993); that an animal's welfare state can range on a scale from very poor to very good; and that multiple scientific measures are necessary to assess the overall animal welfare state (i.e. that welfare is multifaceted and requires taking into account different aspects, e.g. the different biological needs of the animals). There are also regional and disciplinary differences between scientists concerning welfare assessment (e.g. between ethologists, (stress)physiologists, veterinarians and animal psychologists; between scientists paid by governments, NGOs and industry; between NW-EU and South EU (and new Member States); between EU and North America and Oceania). In other countries other definitions may be used. For example, in Germany traditionally the terms Tierschutz (animal protection) and/or Tiergerechtheit (Animal-suitedness) are being used. The latter relates to the concepts of Bedarfsdeckung und Schadensvermeidung (Need-coverage and harm avoidance; Tschanz, pers. comm.). In the US, for example, poultry are sometimes not recognised as 'animals' in that 'animal science' is commonly regarded as distinct from 'poultry science', and people may call themselves vegetarians while continuing to consume poultry meat. In the US also a sharp distinction is made between animal welfare (humane treatment, HSUS) and animal rights, which represents a more extreme view (Tom Regan, PETA)." [Bracke, 2008].

A number of respondents to our survey stated that citizens and governments are not aware of animal welfare issues, or do not perceive animal welfare as an issue. This is in contrast with their own perception that there are welfare problems which need addressing. Examples of these issues which are named more than once are the transportation of animals, the presence of animal diseases and zoonoses, and the use or abuse of draught animals.

Figure 3.11 gives a graphic presentation of public awareness regarding animal welfare world wide. The number of NGOs in the various countries seemed to co-vary with the attention given to animal welfare, but not with the perceived magnitude of welfare problems (e.g. Israel has many NGOs; India has relatively few; Egypt has surprisingly many: 11 active NGOs were reported).

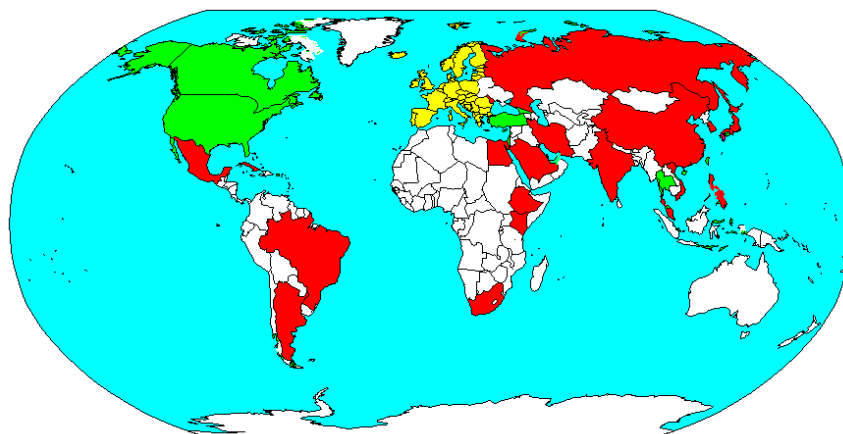


Figure 3.11 Tentative overview of public perceptions of animal welfare worldwide. Countries in green represent communities perceiving welfare problems to be an issue, whereas countries in red represent an apparent absence of welfare concern. The public perception of animal welfare issues of countries in white is unknown. Yellow countries represent the EU which was not covered in this study.

Driving forces for citizens and governments to ignore animal welfare issues are public health, hunger, safety (e.g. Ethiopia, South Africa and Korea), lack of ability to enforce legislation and/or economy in general (e.g. related to export). NGOs try to educate local citizens in dealing with such topics as animal health problems.

Religion may have a considerable effect on how welfare is perceived and practised. In India, for instance, the Hindu culture forbids the killing of animals (although lower castes eat meat). Consequently, the abandonment of cows and the tying up of bull calves without drinking water (to leave them to die from dehydration), in particular, is common practice. Furthermore, Jewish and Muslim religions appear to prescribe that animals must be conscious at the time of slaughter. Moreover, in most (if not all) Muslim countries, rules for slaughtering are set by religion, not by the government. Muslim people frequently state that slaughtering according to Halal is humane (Aidaros, 2005), but others dispute the welfare advantages of Halal slaughter (Dijkman, 2008; Anil et al. 1995, 2006). The issue of religious slaughter is one of the many sensitive issues related to animal welfare generally. Bogaert (2008) has written an article on animal rights in Islam (*Dierenrechten in de Islam; Centrum voor Islam in Europa*, 2008). It explains citations from the Koran about different subjects (general ecological perspective, animal characteristics, the relationship between man and animal, the Islam about animal welfare, the Islam and food, and an overview of animal rights). In conclusion, Bogaert (2008) states that within the Islamic culture man is considered equal to animals, setting a number of rules that regulate the relationship between man and animal. These rules focus on ensuring the physical, mental, social and emotional integrity of the life of animals. The regulations are set in such a manner that being kind to animals will eventually help mankind itself. However, today's practices in Muslim countries are sometimes considerably different from this legal and theological framework, according to Bogaert.

Animal welfare and international trade

The international debate about animal welfare has also reached global companies who are setting up standards and/or guidelines (information obtained from websites). For example, H&M decided to ban merino wool from Australia due to the practices of musing (cutting away the skin to prevent fly strike). In addition, several large fast food chains have guidelines for their meat products. Kentucky Fried Chicken (KFC), for example, has farm level and processing guidelines set up by their Advisory Council. They prohibit beak trimming of chickens and the use of hormones and steroids, and demand that the birds should be able to roam freely throughout the shelters and be slaughtered humanely (stunning before killing). In addition, all farms are audited twice every year. Similarly, McDonald's has an Animal Welfare Council to advise them about animal welfare topics. This has led to a number of principles that their suppliers have to adhere to (e.g. animals should be free from cruelty, abuse and neglect). Farms and processing plants are audited to ensure compliance with the rules. McDonald's also focuses on some major issues such as the keeping of sows in gestation stalls (which McDonald's is opposed to). Currently, in the

USA 15% and in Europe 65% of their pork meat comes from these farms. The ice cream brand Ben & Jerry's also has guidelines for farms supplying their milk. In the USA this company does not allow cattle to be treated with recombinant bovine growth hormone and in Europe they have the Caring Dairy programme, which means that all their milk comes from sustainable dairy farms, where animal welfare plays a role as well as other factors.

OIE standards have been adopted (but not always implemented) in most countries (World Organisation for Animal Health OIE, 2008; see also Text box 3.9). In some countries with welfare legislation, law enforcement appears to be a problem (e.g. in Argentina and Vietnam). Several respondents mentioned welfare problems in the absence of regulations, and that enforcement would be a problem. Many poorer countries simply do not have the manpower and resources to enforce any rules. Although pet animals, for instance, are more or less protected by legislation in the more developed countries, there are practices still in existence which represent welfare issues (e.g. illegal dog fights in the USA). In line with this, Rahman et al. (2005) reported that the efforts of these governments are too limited, in spite of the presence of Animal Welfare Boards established by governments and enacting laws to prevent cruelty to animals.

Text box 3.9: Illustration of the EU's position on animal welfare in the World Trade Organization

"The EC does not want to turn back or neglect the need to use trade to improve world prosperity, in particular the prosperity of the least developed countries. Our concerns with animal welfare are most acute in relation to highly-intensive and industrialised production methods for certain species, in particular poultry and pigs. This type of production is most often found in developed rather than developing and least developed countries."

"We fully recognise the complexity of this issue, and the fact that each WTO member has the right to choose its own animal welfare measures adapted to their own circumstances. Nevertheless, the impact of trade liberalisation on animal welfare, in particular the welfare of farm animals and the transport of live animals, cannot be denied. WTO members should not hamper trade in agriculture and food products because of animal welfare. But equally, it is important to secure the right of those WTO members that apply high animal welfare standards to maintain them."

"We are of the view that animal welfare should be globally addressed in a consistent manner within the WTO. The debate in recent times has shown very clearly the need to establish common ground and understanding on this important issue. That is why the EC wishes to raise animal welfare as an important non-trade concern in the current negotiations."

Source: EC 2002

Text box 3.10 Animal welfare within international organisations and NGOs

“Animal welfare within international (multilateral) organisations

In the WTO the question is raised about whether animal welfare demands can go hand in hand with commercial law. According to commercial law it is not allowed to discriminate between products of national origin and equivalent products from other countries. This means there cannot be a differentiation on production methods and therefore import cannot be barred on the basis of animal welfare.

The OIE has put animal welfare on their agenda. The organisation has established ad-hoc groups for transport of animals, killing for disease control and human slaughter (including ritual slaughter) and has drafted guidelines on these subjects that were adapted unanimously by its member countries in 2005. Recently, October 2008, the OIE convened in Egypt to discuss implementation of its standards (see OIE website for more information). Progress is made in small steps (on a global scale).

The World Bank has setup a workgroup: Animal Welfare. They are in favour of promoting welfare-friendly products instead of imposing Western standards. They think that certification of products, which are sustainable and humanely produced, can be an incentive for better products. Furthermore, the World Bank supports the activities of the OIE workgroup.

The FAO has also put animal welfare on their agenda. They mainly focus on good farming practice, which has led in conjunction with the Humane Society to the ‘International Guidelines for Humane Handling, Transport and Slaughter’, which are mostly aimed at developing countries. The FAO has been supportive of intensive production systems. In 2007 the FAO published a report ‘Livestock’s long shadow’ in which a detailed account was given of the (mainly) negative impact of livestock farming on environmental issues.

Animal welfare and international NGOs

Two types of NGOs can be discriminated.

- NGOs specifically concerned with animal welfare, which are often federations that lobby, inform and campaign. They focus on all categories of animals, both farm and wild animals.
- Broader nature conservation organisations (WWF, IUCN) that are concerned with wild animals and specifically their habitat and transport.”

Last year (2008) a number of international conferences were organised (e.g. in Belgium/EU, Australia, Egypt/OIE, Ireland/ISAE (Špinka, 2008) and Canada). Clearly international attention for the subject (animal welfare in a global perspective) is increasing. The European Union appears to be a pulling factor and driving force with regard to animal welfare, perhaps setting the trend. If the European Union were to set regulations for imported animal products, several (developing) countries would seem to be willing to follow these rules (e.g. Argentina and Turkey). The possibility of exporting animal products to the European Union is an economic consideration that may stimulate the drive for improvements in animal welfare in these countries. Consequently, while economic factors are a threat to animal welfare locally because poverty may reduce animal welfare or decrease concern for it and because intensified production may increase welfare problems, economic considerations are also an opportunity for improving animal welfare globally. This is in line with Rojas et al. (2005) and Brown and Hollingsworth (2005), for instance. Indeed, globalisation may be becoming a force that is revolutionising international trade, particularly that of animals and animal products (Thiermann and Babcock, 2005).

Text box 3.11 Animal welfare; global issues, trends and challenges (OIE)

“Certain features of animal agriculture remained largely unchanged over time until the mid-twentieth century; humans had provided animals with food and shelter from the elements and from predation, while the animals provided food, fibre and energy in return. The 1950s saw the emergence of two major developments with huge implications for this traditional human-animal relationship. Firstly, animal usage in biomedical research increased dramatically during that decade, and secondly, animal agriculture was industrialised, resulting in a twofold increase in productivity gains over ten years. Previously such increase in productivity had taken 30 years and prior to that, it had taken a century (1820-1920) for productivity to increase at such a rate. The industrialisation of agriculture and increasing urbanisation have isolated the majority of people from contact with agriculture.

Whereas the number of animals used in research is counted in millions, that of those utilised for food and fibre is measured in billions and public attention is being drawn to farm animal welfare issues because of its links with environmental and food safety concerns. While today the public continues to require and accept animal products, it also seeks assurances that animals are not suffering because of this demand.

The second major animal welfare publication in the OIE Scientific and Technical Review series is designed to provide a contemporary, and truly global, perspective on animal welfare. Detailed reviews on historical, current and future approaches to the scientific assessment of animal welfare are complemented by perspectives and updates from the five OIE regions and selected international stakeholders. The publication includes specific chapters on the work of the four OIE ad-hoc groups of international experts which drafted the four sets of animal welfare guidelines adopted at the 2005 OIE General Session (i.e. on slaughter for human consumption, land and sea transport of animals, and killing of animals for disease control purposes). Implementation of the agreed OIE strategic initiative on animal welfare presents significant challenges, as they must ensure that appropriate priorities are identified and that resources are used effectively. In addition to the backing of the 167 OIE Member Countries, it is considered strategically and politically important that other stakeholder groups, including industry groups, NGOs and the World Trade Organization, are also fully supportive of the organisation's animal welfare role.”

Source: Bayvel 2005

Conclusions

Animal welfare legislation and its enforcement are not a widespread reality at present. Moreover, there are worldwide variations in practices concerning farming and the keeping of animals and regarding wildlife. In many countries concern for animal welfare is not a major issue. Religion and economy play a major role in public perceptions of animal welfare or the absence of these. At the same time a trend may be recognised of increasing attention for global animal welfare issues. Providing policy and legal frameworks (capacity building) and economic incentives (access to global markets) may provide opportunities to further improve animal welfare on a global scale (see also Masiga and Munyua, 2005; Seng and Laporte, 2005).

There is a positive trend of increasing attention for animal welfare issues around the globe. There are different motivations for this:

- The interest in animal welfare can be driven by legislation through public (citizen) concern. Countries in the EU are included in this category;
- It can also be driven by export considerations. These mainly affect animal welfare through health and food safety standards. Latin America and exporting countries in South East Asia are examples;
- In some cases domestic (and foreign) consumers are forcing the production chain to change (e.g. North America).

Some countries in Africa and in Asia may lack these three driving forces. Animal welfare in these countries can most likely be improved if the population can a) be shown how to keep, transport and slaughter animals in an animal friendly way, and b) see the advantages of these measures in terms of such factors as food quality, worker safety and hygiene.

As different countries view the need to improve animal welfare very differently, and because the driving forces for change also differ per country and region, there is a need to create internationally accepted standards. For this, the focus of the international community is on the OIE. The OIE has already developed standards on transport and slaughter, and is encouraged to develop more. The main trading countries in the world suggest that these standards will eventually make their way into multilateral trade agreements, e.g. via WTO.

3.7 References

- Aidaros H.** (2005) Global perspectives – the Middle East: Egypt. *Rev. sci. tech. Off. int. Epiz.*, 24(2): 589-596
- Africa Network for Animal Welfare**, Overview of the animal welfare status in Kenya, www.anaw.org, last visited August 19, 2008
- Anil, M.H., T. Yesildere, H. Aksu, E. Matur, J.L. McKinstry, H.R. Weaver, O. Erdogan** (2006). Comparison of Halal slaughter with captive bolt stunning and neck cutting in cattle: exsanguination and quality parameters, *Animal Welfare* 15: 325-330
- Animal Anti Cruelty League**, www.aacl.co.za, last visited August 19, 2008
- Animal Care Egypt**, <http://www.ace-egypt.org.uk>, last visited August 28, 2008
- Animal Legal and Historical Web Center**, www.animallaw.info/statutes/stusfd49usc80502.htm and www.animallaw.info/topics/spushumaneslaughter.htm, last visited August 19, 2008
- Anonymous** (2001) Scientists' Assessment of the Impact of Housing and Management on Animal Welfare. *Journal of Applied Animal Welfare Science* 4(1): 3-52
- Baracat T. R., Da Silva, T., Nääs, A. and D'Alessandro Salgado, D.** (2008). Brazilian Animal Welfare Legislation Scenario for Broiler, Swine and Dairy Production. *Proceedings of Livestock Environment VIII*, 31 August – 4 September 2008, Iguassu Falls, Brazil 701P0408. Published by the American Society of Agricultural and Biological Engineers, St. Joseph, Michigan www.asabe.org
- Bayvel A.C.D.** (2005) Animal welfare: global issues, trends and challenges, *Rev. sci. tech. Off. int. Epiz.*, 24 (2), 475-477
- Beauty Without Cruelty**, www.bwcsa.co.za, last visited August 19, 2008
- Blanco-Traba, I.** (2009). Auditing in the international context. Presentation at the conference on Global Trade and Farm Animal Welfare, Brussels, 20-21 January 2009.
- Bosch, M.** (2009). Producers. Presentation at the conference on Global Trade and Farm Animal Welfare, Brussels, 20-21 January 2009.
- Blokhuis, H.J., Jones, R.B., Geers, R., Miele, M., Veissier, I.** (2003) Measuring and monitoring animal welfare: transparency in the food product quality chain. *Animal Welfare* 12: 445-455
- Bowles, D., Paskin, R., Gutierrez, M., Kasterine A.** (2005) Animal welfare and developing countries: opportunities for trade in high-welfare products from developing countries. *OIE Scientific and Technical Review* 24(2), 783-790
- Bracke, M.B.M., J.H.M. Metz & B.M. Spruijt** (1999) Overall animal welfare assessment reviewed. Part 1. Overall animal welfare assessment reviewed: Is it possible? *Netherlands Journal of Agricultural Science* 47: 279-291.
- Bracke M.B.M.** (2008) Animal welfare in a global perspective – Draft report of the work in 2007, internal working document of ASG of WUR
- Bracke, M. B. M., S. A. Edwards, B. Engel, W.G. Buist and B. Algers.** 2008. Expert opinion as 'validation' of risk assessment applied to calf welfare. *Acta Veterinaria Scandinavica* 50: 29.
- Brambell F.W.R** (1965) Report of the Technical Committee to Enquire Into the Welfare of Animals Kept Under Intensive Livestock Husbandry Systems, Her Majesty's Stationery Office, London, British Veterinary Association, www.bva.co.uk/profession/overseas/worldwide/taws_kelly_bowlit.pdf, last visited August 19, 2008
- Broom, D.M.** (1986) Indicators of poor welfare. *British Veterinary Journal* 142: 524-526
- Brown, K.H.** (2004a) "A marketplace perspective", in *Proceedings of the Global conference on animal welfare: an OIE initiative*, February 23-25 in Paris, Luxembourg: Office for Official Publications of the European Community, pp. 79-92
- Brown K.H., J. Hollingsworth** (2005) The Food Marketing Institute and the National Council of Chain Restaurants: animal welfare and the retail food industry in the United States of America *Rev. sci. tech. Off. int. Epiz.*, 24(2): 655-663
- Canadian Food Inspection Agency**, www.inspection.gc.ca/english/anima/heasan/transport/infrastructuree.shtml, last visited August 19, 2008
- Caporale, V., Alessandrini, B., Dalla Villa, P., Del Papa, S.** (2005) Global perspectives on animal welfare: Europe. *OIE Scientific and Technical Review* 24(2), 567-577
- CBS NEWS**, www.cbsnews.com/stories/2008/07/31/world/main4311444.shtml?source=RSSattr=World_4311444, last visited August 19, 2008
- Centrum voor Islam in Europa**, www.flwi.ugent.be/cie/bogaert/bogaert1.htm, last visited August 19, 2008

- Clayton, L.A.** (2003). Overview of Brazil's Legal Structure for Animal Issues. Last viewed on 7 February 2009 at <http://www.animallaw.info/nonus/articles/ovbrazil.htm>
- Cointreau, S.** (2009). Animal welfare as a challenge and opportunity for urban public live markets and slaughterhouses. Presentation at the conference on Global Trade and Farm Animal Welfare, Brussels, 20-21 January 2009.
- Corson, S., L. Anderson** (2008) Europe, in Appleby et al., Long distance transport and welfare of farm animals, 355-386
- Da Cunha** (2007) A Brazilian Perspective of Layer Welfare, *World Poultry*, 23 (6)
- Dawkins, M.S.** (1988) Behavioural deprivation: A central problem in animal welfare. *Applied Animal Behaviour Science* 20: 209-225
- Dawkins, M.S.** (1990) From an animal's point of view: Motivation fitness and animal welfare. *Behavioral and Brain Sciences* 13: 1-61
- Department of Agriculture**, www.nda.agric.za, last visited August 19, 2008
- Department of Environmental Affairs and Tourism**, www.environment.gov.za, last visited August 19, 2008
- Dijkman A.** (2008) Dierenartsen: Ritueel slachten onaanvaardbaar www.elsevier.nl/web/10162136/Nieuws/Nederland/Dierenartsen-Ritueel-slachten-onaanvaardbaar.htm, March 15
- D'Silva, J.** (2003) The growth of factory farming in China. (Presentation paper)
- Duncan, I.J.H.** (1996) Animal welfare defined in terms of feelings. *Acta Agricultura Scandinavica Section A, Animal Science, Supplement* 27: 29-35
- Duncan, I.J.H. & J.C. Petherick** (1991) The implications of cognitive processes for animal welfare. *Journal of Animal Science* 69: 5017-5022
- Dutch Ministry of Agriculture, Nature and Food Quality**, Brazilië creëert functie van landbouwattaché op ambassades, http://www.minlnv.nl/portal/page?_pageid=116,1640321&_dad=portal&_schema=PORTAL&p_file_id=29244, last visited September 24, 2008
- Eaton, D., Bourgeois, J., Achterbosch, T.** (2006) Product differentiation under the WTO: an analysis of labelling and tariff or tax measures concerning farm animal welfare. The Hague, The Netherlands: Dutch Agricultural Economics Institute
- EC** (2002) Communication from the commission to the council and the European Parliament on animal welfare legislation on farmed animals in third countries and the implications for the EU. 626 final, Brussels: EC
- EC** (2006) Communication from the commission to the European parliament and the council on a community action plan to the protection and welfare of animals 2006-2010. 13 final, Brussels: EC
- Engebretson, M.** (2008) North America, in Appleby et al., Long distance transport and welfare of farm animals, 218-260
- Enting, J., Vermeij I., Bosma, A.J.J., Buiten, A. van** (2006) Level playing field in pig production. [Implementatie, interpretatie en controle op naleving van EU-richtlijnen voor de varkenshouderij] Wageningen, The Netherlands: Animal Sciences Group of Wageningen University
- Health and Senior Services**, www.state.nj.us/health/animalwelfare/links.shtml, last visited August 19, 2008
- Food Safety and Inspection Service**, www.fsis.usda.gov/OPPDE/rdad/FRPubs/04-013N.htm, last visited August 19, 2008
- Gallo, C.B., T.A. Tadich** (2008) South America, in Appleby et al., Long distance transport and welfare of farm animals, 261-287
- Geffen van J., C. de Pater, G. Hovens, L. Kersbergen, B. Loseman, G. van der Peet, T. Brandwijk** (2004) Dier en welzijn wereldwijd. Verkenning van beleid en denken over dierenwelzijn in internationaal perspectief. Ede, The Netherlands: Assessment center of the Dutch Ministry of Agriculture, Nature and Food Quality.
- Grethe, H.** (2007) High animal welfare standards in the EU and international trade – How to prevent potential 'low animal welfare havens'? *Food Policy* 32(3): 315-333
- Grigéra Naón, J.J.** (2008). Farmer's Organisations Work in Support of the OIE Animal Welfare Standards. Proceedings of the 2nd Global Conference on Animal Welfare. Cairo, Egypt, 20-22 October 2008.
- Harris T.** (2005) Animal transport and welfare: a global challenge. *Rev. sci. tech. Off. int. Epiz.*, 24(2), 647-653
- Holwerda J.** Sector Vlees, www.minlnv.nl/portal/page?_pageid=116,1640321&_dad=portal&_schema=PORTAL&p_file_id=29244, Dutch Ministry of Agriculture, Nature and Food Quality, last visited September 24, 2008
- Horgan, R., Gavinelli, A.** (2006) The expanding role of animal welfare within EU legislation and beyond. *Livestock Science* 103(3), 303-307
- HSUS** (2006) An HSUS Report: The Welfare of Animals in the Meat, Egg, and Dairy Industries. http://www.hsus.org/web-files/PDF/farm/welfare_overview.pdf

- Hughes, B.O.** (1976) Behaviour as an index of welfare. In: Proceedings of the Fifth European Poultry Conference, Malta, pp. 1005-1081
- International Fund for Animal Welfare**, www.ifaw.org/ifaw/general/default.aspx?oid=17928, last visited August 19, 2008
- Israel Dairy Board**, 2009. <http://www.israeldairy.com/info/about/facts.htm>, last visited 3 February 2009.
- Jongeneel, R., F. Brouwer, M. Farmer, R. Müssner, K. de Roest, X. Poux, G. Fox, A. Meister, Z. Karaczun, J. Winsten and C. Ortéga** (2007) Compliance with mandatory standards in agriculture; A comparative approach of the EU vis-à-vis the United States, Canada and New Zealand. The Hague, LEI, Report 6.07.21
- Kagawaran ng Kapiligiran at Likas Yaman** (Department of Environment and Natural Resources), www.denr.gov.ph, last visited August 19, 2008
- Kahn, S.** (2008). Implementation of OIE animal welfare standards: preliminary analysis of Members' replies to OIE Questionnaire 2008. Proceedings of the 2nd Global Conference on Animal Welfare. Cairo, Egypt, 20-22 October 2008.
- Li B.** (2008) Presentation of Animal Farming in China and Research Focus in China Agricultural University (CAU), August 28, 2008
- Li, P.J., A. Rahman, P.D.B. Brooke, L.M. Collins** (2008) Asia, in Appleby et al., Long distance transport and welfare of farm animals, 288-323
- LNV** (Dutch Ministry of Agriculture, Nature and Food Quality) (2007) *Nota Dierenwelzijn*. The Hague, the Netherlands: LNV
- Lorz, A.** (1973) Tierschutzgesetz. C.H. Beck'sche Verlagsbuchhandlung, Munich, 272 pp
- Masiga W.N., S.J.M. Munyua** (2005) Global perspectives on animal welfare: Africa. Rev. sci. tech. Off. int. Epiz., 24(2): 579-587
- Mason, G. & M. Mendl** (1993) Why is there no simple way of measuring animal welfare? *Animal Welfare* 2: 301-319
- Menczer, K.** (2008) Africa, in Appleby et al., Long distance transport and welfare of farm animals, 182-217
- Michie's Legal Resources**, www.michie.com/newjersey/lpext.dll?f=templates&fn=main-h.htm&cp=, last visited August 19, 2008
- Moberg, G.P.** (1985) Biological response to stress: Key to assessment of animal well-being? In: G.P. Moberg (Ed), Animal Stress. American Physiological Association, Bethesda, pp. 27-49.
- PEW Commission** (2008) Putting Meat on the Table: Industrial Farm Animal Production in America. A Report of the Pew Commission on Industrial Farm Animal Production. <http://www.ncifap.org/>.
- Pickett, H.** (2006) The way forward for Europe's egg industry: keeping the ban on battery cages in 2012. CIWF Trust, Petersfield, Hampshire, UK. 25 pp
- National Association for Biomedical Research**, <http://www.nabranimallaw.org>, last visited August 19, 2008
- Odendaal J.S.J.** (2005) Science-based assessment of animal welfare: companion animals. Rev. sci. tech. Off. int. Epiz. 24(2): 493-502
- Office of the Law Revision Counsel**, <http://uscode.house.gov/download/pls/07C48.txt> last visited August 19, 2008
- Punished Paws**, www.pawtal.za.net, last visited August 19, 2008
- Rahman, S.A.** (2008) Middle East, in Appleby et al., Long distance transport and welfare of farm animals, 387-411
- Rahman S.A., L. Walker, W. Ricketts** (2005) Global perspectives on animal welfare: Asia, the Far East, and Oceania. Rev. sci. tech. Off. int. Epiz., 24(2), 597-612
- Rojas H., L. Stuardo, D. Benavides** (2005) Políticas y prácticas de bienestar animal en los países de América: estudio preliminary, Rev. sci. tech. Off. int. Epiz., 24 (2): 563
- Rollin, B.E.** (2007) Cultural variation, animal welfare and telos. *Animal Welfare* 16(1), 129-133
- Sandøe, P.** (1996) Animal and human welfare: Are they the same kind of thing? *Acta Agriculturae Scandinavica Section A, Animal Science, Supplement* 27: 11-15
- SANParks (South African National Parks)**, www.sanparks.org, last visited August 19, 2008
- S.A.T.I.S. LTD**, www.satis.co.za/aac/animal_protection.htm, last visited August 19, 2008
- Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca Y Alimentación**, www.sagarpa.gob.mx, last visited August 19, 2008
- Secretaría de Medio Ambiente Y Recursos Naturales**, www.semarnat.gob.mx, last visited August 19, 2008
- Seng P.M., R. Laporte** (2005) Animal welfare: the role and perspectives of the meat and livestock sector. Rev. sci. tech. Off. int. Epiz., 2005, 24(2): 613-623
- Smithfield**, 2007. Corporate social responsibility report. SMITHFIELD FOODS, INC. 200 Commerce Street, Smithfield, VA 23430

- Špinka M.** (2008) Promoting Applied Ethology Worldwide Summary of talks and discussion of the workshop held on August 6, 2008 during the ISAE congress in Dublin
- Stafleu, F.R., F.J. Grommers & J. Vorstenbosch** (1996) Animal welfare: Evolution and erosion of a moral concept. *Animal Welfare* 5: 77-84
- Sumernet**, www.sumernet.org/news/mekongnews_detail.asp?id=19, last visited August 19, 2008
- The Brooke**, <http://www.thebrooke.org>, last visited August 28, 2008
- The Cape of Good Hope SPCA** (Society for the Prevention of Cruelty to Animals), www.sPCA-ct.co.za, last visited August 19, 2008
- The Durban and Coast SPCA** (Society for the Prevention of Cruelty to Animals), www.spcadbn.org.za, last visited August 19, 2008
- The Humane Society of the United States**, http://www.hsus.org/farm/news/ournews/congress_downers_usda_070908.html, last visited August 19, 2008
- The National Farm Animal Care Council**, www.nfacc.ca/code.aspx and www.nfacc.ca/Projects/Default.aspx, last visited August 19, 2008
- The Wildlife Group**, www.wag.co.za, last visited August 19, 2008
- Thiermann A.B., S. Babcock** (2005) Animal welfare and international trade. *Rev. sci. tech. Off. int. Epiz.*, 24(2): 747-755
- Turner, J. Graces, L., Smith, W.** (2005) The welfare of broilers in the European Union. CIWF Trust, Petersfield, Hampshire, UK. 32 pp
- Van Geffen, J., de Pater, C., Hovern, G., Kersbergen, L., Loseman, B., Van der Peet, G., Brandwijk, T.** (2004) *Dier en welzijn wereldwijd. Verkenning van beleid en denken over dierenwelzijn in internationaal perspectief*, Ede, The Netherlands: Assessment center of the Dutch Ministry of Agriculture, Nature and Food Quality
- Van Horne, P.L.M., Bondt, N.** (2006) *Kostprijsontwikkeling kuikenvlees 2004-2010: Basisjaar 2004*. Report, The Hague, the Netherlands: Dutch Agricultural Economics Institute
- Van Horne, P.L.M., Achterbosch, T.J.** (2008). Animal welfare in poultry production systems: impact of EU standards on world trade. *World's Poultry Science Journal*, Vol. 64, March 2008
- Veissier, I., Forkman, B. and Jones, B.** (2007) Assuring animal welfare: from societal concerns to implementation. Second Welfare Quality stakeholder Conference, May 3-4 in Berlin, Germany
- Vrolijk, B.** (2008) Dierenwelzijn: minister van landbouw stelt commissie in. The Dutch Embassy in Brasília, www.mfa.nl/bra/landbouw_natuur_en/actualiteiten#224631, last visited August 19, 2008
- Wiepkema, P.R.** (1982) On the identity and significance of disturbed behaviour in vertebrates. In: W. Bessei (Ed), *Disturbed Behaviour in Farm Animals*. Hohenheimer Arbeiten 121. Verlag Eugen Ulmer, Stuttgart, pp. 7-17
- Wildlife at Risk**, www.wildlifeatrisk.org/index.php?id=5&subid=22&lang=en, last visited August 19, 2008
- Wilkins D.B., C. Houseman, R. Allan, M.C. Appleby, D. Peeling, P. Stevenson** (2005) Animal welfare: the role of non-governmental organisations. *Rev. sci. tech. Off. int. Epiz.*, 24 (2), 625-638
- World Organisation for Animal Health (OIE)**, www.oie.int/eng/OIE/en_about.htm?e1d1, last visited September 1, 2008
- World Society for the Protection of Animals**, www.wspa-international.org, last visited August 19, 2008
- Zonderland, J.J., Enting, J.** (2006) Varkenshouderij in Brazilië, Sterke integraties en stevige merken. Practice report 48 (for a summary see: <http://www.pv.wageningen-ur.nl/index.asp?producten/boeken/praktijkrapport/var/48.asp>)

4 Animal welfare and ethics in population control of local overabundant wildlife

Author: Geert W.T.A. Groot Bruinderink

4.1 Introduction

In this project on animal welfare in a global perspective, Dutch Foreign Agricultural Services were asked to fill out a questionnaire. Part of this questionnaire aimed at animal welfare aspects and ethics in wildlife management, in particular of locally overabundant species. Questionnaires filled out by the Agricultural Services of Argentina, China, India, Malaysia, Singapore, The Philippines, Ethiopia, Kenya, Uganda, Tanzania, Eritrea, Turkey, Israel and Palestinian territories, the United Arab Emirates, Saudi-Arabia, Iran, and Mexico revealed no relevant information on animal welfare issues in wildlife management. The Agricultural Service for Korea reported on overpopulation of wild boar in the Kyung-gi province (near Seoul). Local densities reach 7/100 ha (with a country mean of about 4/100 ha). Wildlife welfare is, however, not an issue in management. The Agricultural Service for Malaysia reported on the Malaysian Wildlife Dept, which was considering allowing the export of nuisance monkeys which had been rounded up near residential estates (this idea was abandoned after lobbying by animal welfare groups).

Local overabundance of a given species can be deemed to exist when the conservation, management objectives or desired state of an area are not being met due to the species' activity (Balfour et al. 2007). Since these qualifications are subjective, local overabundance is in itself a subjective qualification, even more so where personal (financial and emotional) interests are at stake. Structural overabundance is also unnatural. The more natural the ecosystem, the lower the chance that structural overabundance will appear, since natural density dependent or density independent mechanisms will reduce numbers in accordance with food supply, social interactions, shelter, weather or climate. Structural overabundance of wildlife is in many cases the result of the deterioration of ecosystems as a result of human influence. This is illustrated by ungulates, rodents, rabbits, geese and pigeons that are considered 'pest' species in western world agricultural practice or motorised traffic. Management options to counteract 'peak numbers' include non-intervention, translocation, culling, fertility control, repelling (including fencing) or habitat manipulation or a possible combination of these. Whatever option is used, it will always spark protests from people against it. In particular birds and large mammals (furbearers) appeal to the feelings of people, who refuse to tolerate that these animals are being chased away, let alone killed. Species may even turn into flagships of economic, ecological, cultural and aesthetic value. They provide a focus for raising awareness and stimulating action and funding for broader conservation efforts (e.g., whales, seals, giant panda, elephant, rhino and tiger). In the following paragraphs we will show examples of this.

In the following we will look into the case of 'overabundant' elephant in South Africa. In addition we will devote some paragraphs to the management of overabundant Australian kangaroo, Canadian elk and bison and Canadian and Namibian seals, and look at the western world's attitude towards large mammals in general and large predators in particular. We cover South African elephant management in detail, because it illustrates many aspects of wildlife management, including animal welfare. In fact problems with African elephants in South Africa illustrate dilemmas that may accompany successful management of a (still) threatened species, using large, fenced-off areas. This is more or less also the case in the management of elk and bison in Canadian parks. Australian kangaroo illustrate how a species may react to increasingly important resources, in this case the cultivated grasslands offered by man (agriculture). Hunting 'overabundant' seals clearly bears the aspect of (indigenous) people that depend for a living on natural resources in a rapidly changing world.

All examples given have a relation with aspects of wildlife management in the Netherlands, a small, highly industrialised West European country, with nature under pressure from infrastructure and lack of space. Nobody hunts for a living in the Netherlands, except for fishermen. Large mammal predators have been extirpated and remaining larger mammal species like red deer (*Cervus elaphus*) and wild boar (*Sus scrofa*) are living almost exclusively in fenced natural parks. Management of these species in their fenced areas, in particular culling for number control, each year generates much public debate in which animal welfare and ethics play a role. The Netherlands also has problems with a number of species that prefer cultivated, agricultural areas as a (seasonal) habitat, like some goose species. Number control of these species is under debate since many NGOs do not accept their culling. Dutch tourists visit nature parks all over the world, including South Africa, the USA and Canada, to experience the wilderness. Here they find inspiration and actively mingle in nature conservation all over the world. We present these cases to facilitate the multilateral dialogue between the Netherlands and third countries on the management of natural resources and threatened species.

4.2 African elephants (*Loxodonta Africana*) in Kruger NP, South Africa

Elephants appeared in virtually all South African ecosystems as recently as three hundred years ago. After hunting reduced the elephant population to a few hundred individuals by the end of the nineteenth century, their numbers in South Africa have risen to about 20,000 as a result of successful conservation efforts, and continue to grow at around 4 to 6% per annum. Locally overabundant elephants are considered by some scientists a serious threat to species diversity of the ecosystem, and potentially pose a threat to the well-being of people. Management measures must endeavour to limit these threats. The elephant population in Kruger National Park, Republic of South Africa, is growing rapidly. For a better understanding of animal welfare attitudes in South Africa we refer the reader to Text box 4.1.

4.2.1 Regulations and legislation

In September 2005, the South African Minister of Environmental Affairs & Tourism presented Norms and Standards for Elephant Management. This followed a submission by the South African National Parks (SANParks, 2008) which recommended that:

- In order to maintain biodiversity in national parks, elephant populations should be controlled in some areas and left to fluctuate naturally in other zones of the parks;
- Guidelines should be developed to help parks decide when population control is needed, and what measures are best for that specific location;
- Population control measures (such as capture, translocation, contraception or culling) should be overseen by an Animal Ethics Committee; and
- Where culling was necessary, animal products should be utilised to the benefit of local communities.

4.2.2 Perceptions of management options

Possible counteracting management tools in cases of locally overabundant elephants are culling, fertility control (contraception, sterilisation), translocation and habitat manipulation.

The perceptions of the scientists involved towards specific tools are outlined below in a brief interpretation of Balfour et al. (2007) by the author.

Culling

Although culling can rapidly reduce elephant numbers, this effect may be short-lived in open (unfenced) or large and closed protected areas if new individuals move into the areas where densities have been reduced. The reduced population will continue to grow if not otherwise controlled. Culling is therefore not a 'one-off' solution and may need to be undertaken repeatedly to maintain lower population sizes. After culling in Kruger National Park in 1994, elephants moved in from surrounding areas to such an extent that elephant numbers actually increased locally after culling.

Ethical considerations

Many people believe that elephants are sentient animals and as such consider it wrong to kill them. Other people argue that it is not acceptable for other species to be threatened due to elephant activity. Allowing the possibility that elephants themselves may die as a result of their overpopulation is also considered by some to be unethical, e.g. because of welfare and economic reasons. Letting elephant populations increase to such an extent that large numbers may die of starvation and wasting a significant resource that could benefit poverty-stricken people may also be questioned on ethical grounds. Culling purely for economic reasons is generally not considered ethical in protected areas, where objectives are ecosystem management and maintenance of biodiversity.

Culling is currently the only method that enables large elephant populations to be reduced rapidly but humane, ethical and political considerations all contribute to making any decision to cull elephants a difficult one. The culling of elephants has been, and is, the cause of much controversy and vociferous and often emotional discussion. It is largely considered a last resort. No large-scale culls have been reported anywhere in Africa since the last cull in the Kruger National Park in 1994, and opposition to the activity has led to the development and research into alternative population reduction methods such as translocation and fertility control.

Text box 4.1: Attitudes towards animal welfare in South Africa

South Africa is a country which has to deal with many problems such as severe poverty in rural and urban areas, high crime rates and social development issues. There is one general law about animal welfare (Animals Protection Act (NO. 71 OF 1962) - an Act to consolidate and amend the laws relating to the prevention of cruelty to animals. There is a large wildlife conservation constituency in South Africa. South Africans love nature and wildlife. There are professional animal welfare organisations such as the RSPCA, ARA and international NGOs like IUCN, WWF and IFAR have their office in South Africa and are involved in CITES discussions.

Animal welfare is defined by different departments and by the National Council of Societies for the Prevention of Cruelty to Animals. The NSPCA considers that the welfare of an animal includes its physical and mental state and that good animal welfare implies both fitness and a sense of wellbeing. An animal's welfare should be considered in terms of the five freedoms which form a logical and comprehensive framework for analysis of animal welfare:

freedom from hunger and thirst;
 freedom from discomfort;
 freedom from pain, injury or disease;
 freedom to express normal behaviour and
 freedom from fear or distress.

The NSPCA is the most active organisation with regard to animal welfare. They have developed in cooperation with industry and government different codes of practices which can be seen as soft law.

NSPCA is not really involved in wildlife welfare issues. Welfare of wildlife is more important than other animal welfare in South Africa. South Africa is a wildlife-rich country and the national parks are some of the biggest tourist attractions in the country. There are special regulations with regard to hunting and the management of elephants. As of 1 June 2007, 'canned hunting' of big wild animals is prohibited in South Africa. Canned hunting is the hunting of an animal that has been prevented from escaping the hunter, either due to physical or mental constraints (such as fencing or habituation to humans). The regulations specifically prohibit hunting large predators and rhinoceros this way. To make sure that there is no overpopulation with regard to elephants, the government has announced a new management standard for elephants. This means that elephant culling is no longer prohibited. It is prohibited to keep elephants in captivity. The culling of elephants should be considered as a measure of last resort. The national norms and standards for the hunting industry in South Africa regulate the hunting practices of wildlife in South Africa. South Africa was one of the first countries to sign the ban on the catching of whales.

Animal welfare nowadays is really a growing issue in wildlife management in South Africa. Illustrative is the public debate on ethical aspects of canned hunting (now prohibited) and restocking programmes of cheetah, Siberian tiger (!), wild dogs, and lions.

More information can be found by the following organisations:

Department of Environmental Affairs and Tourism, 2008

Department of Agriculture, 2008

The Wildlife Group, 2008

Beauty Without Cruelty, 2008

The Punished Paw, 2008

The Cape of Good Hope SPCA, 2008

The Durban and Coast SPCA, 2008

International Fund for Animal Welfare, 2008

Animal Anti Cruelty League, 2008

Economic and socio-economic considerations

Economic costs and gains from elephant culling are difficult to calculate because of trade regulations. Where possible, all products should be used fully – meat should be dried or processed, skins prepared for storage prior to curing and tusks stored securely with a view to the possibility of a legal commercial use in the future. All costs and revenues should be documented and calculated accurately so that the net return can be calculated accurately. In areas where safari hunting is permitted, targeting family groups (females and young) only would lead to an increased number of bulls available for hunting.

Political considerations

Since different societies have different values, there are political issues that need to be considered. The decision as to whether culling should be used to manage an elephant population depends on the societal values of the range state faced with the decision.

Fertility control

Induced abortions, contraception and sterilisation pose ethical and health questions that far outweigh any advantages. The non-lethal characteristics of these fertility control techniques make them appear ethically appealing (see also Section 4.7.2).

Translocation

Translocation may be defined as the deliberate movement of elephants from one natural habitat to another for the purpose of their conservation and/or management at the source site, release site or both. Translocation avoids some of the ethical and moral dilemmas associated with killing animals and is therefore emotionally appealing to the general public and finds international approval. However translocation is costly, can be stressful to the animals and bears the risk of destroying family ties. As families are the basic fabric of elephant society, the changing of this family structure is an issue that requires ethical consideration and debate.

Translocations are often economically unfeasible and may, in effect, merely transfer the problem elsewhere. As a result, translocations are very rarely carried out now.

Habitat manipulation

Fences have been most widely used in South Africa, where they are constructed to keep most of the national elephant herd inside protected areas. This has led to overabundance rather than reducing it. Kruger NP was, until very recently, an elephant-proof fenced-off NP.

Numbers or densities of elephants can be reduced by range expansion or manipulation of water sources. This is in fact what has been achieved through the creation of Transfrontier Parks or Transfrontier Conservation Areas (TFCAs), such as those between Botswana and South Africa (the Kalahari Transfrontier Park) and between South Africa and Mozambique (the Limpopo National Park and the Tembe-Futi Transfrontier Park). Realisation of these parks requires high-level political cooperation, particularly regarding the management of the joint elephant population once the fences have been removed and the corridors between the participating countries must be maintained. Cooperation concerning the occupants of both new range areas and corridors between ranges should include agreements for increasing the sharing of benefits to be derived from the elephants, mitigation measures against human-elephant conflicts, and tight control of the illegal hunting of elephants.

In May 2008 new legislation was adopted by the South African government on the management of elephants. Shooting elephants may only take place under certain preconditions (Norms and Standards for Elephant Management). The new policy of South African National Parks for the Kruger NP focuses on the extent and intensity of elephant impacts on biodiversity rather than on numbers of elephants per se. It proposes that the Kruger National Park be divided into six zones – two botanical reserves, two high-elephant-impact zones (no population reduction) and two low-elephant-impact zones (where numbers will be actively reduced). There has been no substantial culling of elephants in Kruger NP so far. The realisation of the Limpopo TFCA (South Africa/Zimbabwe/Mozambique) and the KavaNGO-Zambezi TFCA (Angola, Namibia, Botswana/Zimbabwe/Zambia) has extended the elephant habitat significantly and elephant movements are now monitored by the Scientific Staff of Kruger NP. Of course the Ethical Committees which were recently installed to oversee measures under the new legislation have only started working. The extent to which and for how long this range expansion may replace culling is now unclear.

4.3 Cape fur seal (*Arctocephalus pusillus*) Namibia, Harp and Hooded seals (*Phoca groenlandica*) and (*Cystophora cristata*) Greenland and Canada

Seal hunting (killing and skinning) is commonly carried out around the Arctic and in southern Africa. Around 750,000 seals belonging to at least fifteen species are killed and skinned by humans for commercial purposes each year with Canada, Greenland and Namibia accounting for approximately 60% of all seals killed in 2006. The degree to which seal hunts are regulated by law and monitored by observers varies in different countries and range states. For a better understanding of animal welfare attitudes in South Africa we refer to Text box 4.1, for the USA, Canada and Namibia to Text box 4.2.

*Text box 4.2: Attitudes towards animal welfare in the USA, Canada and Namibia*Attitudes in USA and Canada

As a result of NGO activities, in particular by the Humane Society of the US, the animal welfare issue is of growing importance in the USA and Canada. Concerning animal welfare laws, states differ from each other only in detail. NGOs like the Humane Society of the US, measure the degree of animal welfare by the five freedoms presented in Text box 1. Urban citizens are clearly more concerned about animal welfare than people from the countryside and seem to look at welfare from a pet point of view.

Hunting is generally permitted, even in National Parks, except for a closed season. There is a red list of threatened animals, but it is questioned whether this really helps these species forward. The wildlife debate is more on nature conservation than on animal welfare.

Attitude of the government of the Republic of Namibia

Seals harvesting is conducted in line with the constitution of the Republic of Namibia, art. 95, that calls for sustainable harvesting of the country's resources. The level of harvesting takes into account available scientific data.

According to Namibian and Canadian fishermen and hunters, respectively, Cape fur seals and Harp and Hooded seals can be considered locally overabundant in their fishing grounds, because their fish consumption is competing with the fishing industry. Governments of these states have granted permission to commercial hunters to kill certain quotas of both species. No licence is required for Aboriginal fishing for food, or for social or ceremonial purposes. Animal welfare NGOs from Europe, North America and Canada (Green Peace, WWF) have been protesting against commercial culling and the culling method. The culling practice, clubbing by sealers using hakapiks or clubs, is considered inhumane. Landing both the pelt and the meat is considered impracticable by the Department of Fisheries and Oceans in some areas where meat processors are not close at hand and meat could become contaminated during transport.

In 2008, EU governments pleaded in a letter to the Namibian and Canadian governments for a stop to the culling and if not, a more humane culling method (sometimes referring to a hunting ban in their own country). Some EU countries introduced a ban on products of these animals and others intend to do so in the short term. Canadian and Namibian governments are in agreement with each other in this debate and argue, supported by their own scientists, that hunting does not threaten the seal populations involved, that hunting practices are controlled strictly and may be considered acceptable from a point of view of animal welfare (reacting to EU-governmental letters).

The Namibian Ministry of Fisheries and Marine Resources argues that harvesting is in line with Namibia's constitution and quotas are based on scientific data (reacting to EU-governmental letters; Text box 4.2). Clubbing the pups on the head and stabbing them through the heart is the only method that is used worldwide: there is no alternative. Adults are shot. The Ministry stresses that seal harvesting is an economic activity in Namibia which sustains direct jobs for the unemployed, poor and destitute Namibians, especially the rural poor women and children. The Canadian government states that the economic aspect of culling seals also holds for Canada.

EFSA (2007) published a scientific opinion on Animal Welfare aspects of the killing and skinning of seals (http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1178671319178.htm) in which it concluded that seals are sentient mammals that can experience pain, distress, fear and other forms of suffering. It also pointed out that there are only a very limited number of studies published in peer-reviewed journals that can be used to evaluate, with a high degree of certainty, the efficacy of the various killing methods employed in different seal hunts around the world. Reference to welfare aspects of killing seals is not included in any current regulation. The killing of seals can be compared with the killing of wild, domesticated and captive animals; the criteria used to assess whether or not the killing methods are humane could be similar (EFSA 2007). The conclusion in EFSA (2007) was that many seals can be, and are, killed rapidly and effectively without causing avoidable pain, distress, fear and other forms of suffering, using a variety of methods that aim to destroy sensory brain functions. However, there is strong evidence that, in practice, effective killing does not always occur but the degree to which it does not happen has been difficult to assess, partly because of a lack of objective data and partly because of the genuine differences in interpretation of the available data.

ESFA 2007: In some countries the training of sealers is mandatory and only hunters who pass a shooting proficiency test are allowed to kill seals. However, there is little information recorded by independent observers available on the effectiveness of the training programmes, as well as on ways in which hunts can be monitored using criteria that define avoidable pain, distress and fear. As a way to help ensure the humane killing of seals, the 'three-step' method of effective hitting and/or shooting, effective monitoring, and effective bleeding-out, as well as a fourth step of effective implementation should be recommended.

4.4 Conservation of bison (*Bison bison*) and wolf (*Canis lupus*) in the Greater Yellowstone Ecosystem, USA

The cases presented in this and the following paragraphs concern species that are experienced as overabundant by local stakeholders (hunters, ecologists, farmers and politicians). As such they are illustrative of perceptions towards large mammal management in general and towards predators (brown bear, lynx and wolf) in particular.

*4.4.1 Bison (*Bison bison*) in Yellowstone National Park, Wyoming, USA*

Since 2000 over 3500 bison emigrating near or beyond Yellowstone Park boundaries have been killed due to (the supposed) fear of disease transmission (brucellosis). In 2008 culling removed more than a third of Yellowstone's bison due to this controversy, and scientists are worried about the genetic health of the park population. Thus far no transmission of brucellosis from buffalo to domestic stock has been documented.

4.4.2 Wolves in the Greater Yellowstone Ecosystem, USA

After 60 years of persecution (1914-1974) in the USA, the gray wolf was listed as endangered. In the absence of wolves, herds of elk, moose and antelope in the Greater Yellowstone Ecosystem expanded, devastating vegetation, increasing erosion and threatening the niches of other wildlife species. This was experienced by ecologists as a clear example of overabundance (but see Chase 1986). In 1973, Congress enacted the Endangered Species Act, and the Wolf Recovery Programme was started to reintroduce the gray wolf to its natural habitat.

In 1992 Congress directed the U.S. Fish and Wildlife Service (USFWS), in consultation with the NPS and the U.S. Forest Service (USFS), to develop an Environmental Impact Statement (EIS) on reintroducing the gray wolf to Yellowstone and Central Idaho, launching one of the most extensive public involvement efforts ever conducted on a natural resource issue. During the next two and a half years, the EIS team held more than 130 hearings and meetings and considered 160,000 public comments from every state and 40 foreign countries. Within two months after completion of the EIS in April 1994, Interior Secretary Bruce Babbitt and Agriculture Secretary Michael Espy signed a Record of Decision and Statement of Findings on the EIS, officially endorsing the restoration of wolves to Greater Yellowstone Ecosystem.

About 160 wolves have been reintroduced to Central Idaho and Yellowstone National Park. By 2004 there were 760 gray wolves in these areas; by 2008 there were an estimated 1,500. The reintroduction of this large predator was a success.

However, in early spring 2008 the US Fish and Wildlife Service removed federal Endangered Species Act (ESA) protections for gray wolves living in the Greater Yellowstone and Northern Rockies region. Just a month earlier the Bush administration handed down a licence-to-kill rule to hunters in Wyoming and Idaho, where the majority of these 1,500 wolves reside. Thus wolf management was transferred to individual states which will allow the slaughter of hundreds of wolves. Wolves now share the 'varmint' status with coyotes, skunks, jackrabbits and stray cats. Wolf populations could be reduced by as much as 80% in the tri-state region, while scientists believe that assuring the future of this still recovering species would require a population of somewhere between 2,000-5,000 animals. Wildlife advocacy organisations have filed several lawsuits challenging the US government's actions to remove federal protections for gray wolves across the country (AWI Quarterly 57, spring 2008).

4.5 Conservation of elk (*Cervus elaphus canadensis*), plains Bison (*Bison bison*) and wood bison (*Bison bison athabasca*) in Elk Island NP, Canada

The 15,000 ha Elk Island National Park is surrounded by a 2.2-metre high fence that prevents the movement of large herbivores (elk, bison, moose) into and out of the park. The park lacks large predators such as wolves and bears. The elk population is approximately 1,000 for the entire park. Present bison (plains and wood bison) management actions result in a pre-calving population of around 450 plains bison and 350 wood bison. Elk and

bison populations must be managed in the park to prevent overpopulations of these species; this intervention is necessary as continuous annual intensive grazing (overgrazing) in the very long-term impacts both plant and animal diversity and predisposes large herbivores to disease and large "die-offs." Elk Island is the traditional hunting ground of the native people and animals are not removed by culling. Surplus animals are removed from the park to establish and supplement free-roaming populations in former areas of their historic range (restocking programmes). All of the park's surplus elk and bison are released to the wild through co-operative transplants with provincial and state governments. Elk Island is used as a source herd for re-establishing elk and bison populations in native ranges throughout North America. Funds generated through the sale contribute to National Parks (http://www.pc.gc.ca/pn-np/ab/elkisland/index_E.asp). This includes funds from the selling of meat of elk and bison in years when restocking areas are not or not sufficiently available. In that case, some of the animals are sold for slaughter to private, sometimes native people, deer and bison farms and meat-packing industry (pers. comm. J. Griekspoor, State Forestry Service, The Netherlands).

4.6 Eastern Grey Kangaroo (*Macropus giganteus*) Canberra, Australia

Around Canberra, Australia, Eastern Grey Kangaroo are impacting on conservation, animal welfare, the farming economy and tourism. Their abundance has increased due to ecological changes such as the suppression or removal of predators (e.g. thylacine (*Thylacinus cynocephalus*), or dog-headed pouched-dog, is a large carnivorous marsupial now believed to be extinct, dingo), clearing of trees to create grasslands, or addition of water sources, in particular on the dry inland plains. Although the size of the problem depends on the site and circumstances, the result may vary from advantage to severe problem. Eastern Grey Kangaroo are considered locally overabundant, because they cause damage to crops and form an increasing road safety risk. In the ACT (Australian Capital Territory, less than 1% of Australia) a relatively high 3-5,000 kangaroo are culled per year on farms for 'damage mitigation'. The national commercial harvest quotas of kangaroos (not applicable in the ACT, Victoria or Tasmania) for seven kangaroo species between 1980 and 2000 were an average 2.6 million animals, of which approximately 1.8 million were Eastern Grey Kangaroo (<http://www.environment.gov.au/biodiversity/trade-use/wild-harvest/kangaroo/national.html>; later data not published on this site).

According to Animals Australia, the voice for animals, the commercial kangaroo kill 'quotas' for 2007 (the number permitted to be killed) is just over 3.6 million kangaroos (<http://www.animalsaustralia.org>). Due to the remote locations where this shoot takes place there is no effective monitoring of animal welfare. No statistics are available for the animals that are wounded and escape only to endure a long painful death. "Even conservative estimates suggest that at least 4% of adult kangaroos commercially 'processed' each year, or around 100,000 carcasses, show evidence that they were not humanely shot in the head as is required by the kangaroo industry's Code of Practice. The fate of orphaned young, too small to be of any commercial value to hunters, is equally grim. 'In pouch' joeys of shot mothers are either decapitated (if very small) or killed with a blow to the head. Dependant 'at foot' joeys often escape, and suddenly face a life alone, often falling victim to predators, exposure or starvation. The mother and joey bond is immensely strong. Red kangaroos are not weaned until a year after birth and Eastern and Western grey kangaroos are not weaned until they are nearly 18 months old. It is estimated that 300,000 'at foot' joeys die each year. Don't be fooled by protests that kangaroos are shot because they compete with grazing animals – this mass slaughter is purely and simply a commercial kill of Australian wildlife. Some skins and meat products are used domestically (60 to 70 % of kangaroo meat goes into the Australian pet food market), and the rest is exported to 55 countries as leather or meat for human consumption. Kangaroo leather is widely used in the manufacture of sporting shoes and gloves as well as in dress shoes and accessory manufacture" (<http://www.animalsaustralia.org>).

Dr. Fletcher (pers. comm.):

"Management options in case of overabundant kangaroo are culling, fencing (always small scale, e.g. for a golf course) and fertility control (still under research, see below). Most of the other options advocated by animal-right-to-life people are not effective. Excluding weeds, i.e. in regard only to animals, in the Canberra region there are requirements only for some of the non-native species, such as rabbits, and only in restricted circumstances. But in some Australian states (far from Canberra) control is compulsory for all rural landholders for a wider range of exotic animals and the dingo. Values and criteria that play a role in decision making are conservation, animal welfare, economy of farmers and tourism. The public debate concentrates on welfare aspects on the culling of thousands of kangaroos (including the problem that joeys in the mother's pouch take a long time to die when the mother is shot). Scientists are assisting in research to develop contraceptives delivered in food. However it will take a long time before this will be ready for use. At present it is still necessary to catch each animal. Once it has been caught, either surgery, implantation, or vaccination could be used. Effective life of these methods in Eastern Grey Kangaroos is, respectively, permanent, 1-3 years, 1-3 years. For Eastern Grey Kangaroos, shooting is the

only control method which is effective in protecting vegetation over large areas (pers. comm. Don Fletcher, Research and Monitoring in Parks, Conservation and Lands, Department of Territory and Municipal Services, ACT Government, Canberra)".

Dr Fletcher (continued):

"Animal welfare is a major public issue and a legal one too. My organisation wrote and now enforces the Animal Welfare Act, and authorises inspectors who can prosecute universities, schools, or anyone else for cruelty. We work closely with animal welfare organisations, and help pay their costs, e.g. the RSPCA. Animal-right-to-life organisations such as Animal Liberation and Wildcare are ones we tend to be in constant discussion with very limited agreement. By 'animal welfare' I mean the minimisation of animal suffering caused by humans. By 'animal-right-to-life' I mean preventing humans killing other species of animals."

4.7 Discussion

4.7.1 Ecology

From an ecological point of view temporal peak numbers of a species may be the case, but structural overabundance can never be. As a result of the dynamics of ecosystems, there is no natural standard to measure structural overabundance. A species density may temporally rise, only to decrease later as a result of negative feedback by density dependent or density independent mechanisms. In most cases, food supply regulates numbers that depend on it. If for example, as a result, the number of ungulates fluctuates around a long-term mean, it is likely that the number of predators depending on ungulate prey will follow suit. Structural (local) overabundance of a species can be the outcome, however, of the deterioration of ecosystems by man. Large scale fencing like in Kruger NP and Elk Island NP may have this effect. Fencing of complete or incomplete (no large predators) ecosystems may result in (local) overabundance of large herbivores in terms of the (temporal) impact on biodiversity (Kruger NP, Elk NP). Some ornithologists in the Netherlands consider the combination of red deer, horses and cattle in the fenced nature reserve Oostvaardersplassen as overabundant (> 200 head/100 ha), because their grazing changes the ecosystem as a result of which some plant and bird species have disappeared (www.volkskrant/wetenschap/article502087; www.trouw.nl/groen/nieuws/article910488.ece/Grote_grazers_verdringen_broedvogels; see also pdf-files in Literature cited). They are opposed by others arguing that this situation is the outcome of natural processes and therefore a management objective.

Qualifications like 'management objectives' or 'desired state of an area', are, however, subjective terms in judging whether overabundance is the case. Overabundance is in itself a subjective (human but not natural) experience since personal views or interests (emotional, ethical, ecological, financial, safety) may be at stake (Curtis 2002). An illustration of this was given by Alston Chase (1986) in the case of Yellowstone NP management. In his book 'Playing God in Yellowstone' Chase illustrates what may happen to ecosystem composition and functioning when it is submitted to the personal ideals and views of park managers. In the EU this dilemma is illustrated by the debate on Natura 2000. Member states should manage their Natura 2000 areas in such a way that the presence of certain habitat types and animal species is sustainably assured. Consequent realisation of Natura 2000 goals takes intensive management and bears the risk of conflicts with the natural dynamics of ecosystems and the wish to give room to natural processes like grazing, floods, fires, periodic peak numbers of certain species, subsequent starvation, etc. Ultimately the question of whether culling elephants in Kruger NP is acceptable is not a technical one. The answer will depend upon societal values and other objectives set for an area, including respect for animal welfare.

Free living species can be experienced as overabundant when people feel that their economic interest is at stake. Examples in the western world are the Eastern Grey Kangaroo, seals, wolves and bison. In Western Europe this seems to be the case with all mammal species larger than a fox (Text box 3). Although potential new habitat for Red deer (*Cervus elaphus*) and Wild boar (*Sus scrofa*) has become available over the past twenty years in the Netherlands, there is a strong opposition to a further distribution of these species because of the fear of the transmission of contagious diseases, crop damage and traffic collisions. In the case of the Yellowstone bison, there is also the fear of the transmission of a highly contagious disease (brucellosis), although transmission from bison to domestic stock has never been demonstrated. One could argue that these examples show that the western world fails to set the right example to developing countries on how to conserve biodiversity.

4.7.2 Ethics

There are clear indications of a shift towards 'mutualism orientations' in Western societies, meaning that different perspectives can be found in animal welfare and ethical aspects of wildlife management, varying from assignment of human characteristics to wildlife to a basic ethical position that animals have the same rights as humans (Jacobs 2007).

In this debate scientists discriminate between animal-based ethics, in which the wellbeing of an individual animal takes a central place, and eco-ethics in which the welfare debate concentrates on populations of animals (Keulartz et al. 1998). These are only two examples of attitudes which stakeholders may have towards ethics and animal welfare aspects in wildlife management. Both attitudes are represented in the examples given above; it is always important to realise whose ethics do apply. As stated by Balfour et al. (2007) regarding contraception as an option in elephant management (quote):

"To an African farmer, an average westerner, or an animal rights advocate, ethical elephant management may mean very different things. Consultation programmes with communities adjacent to Kruger National Park have shown that they have little understanding of (and even opposition to) spending large amounts of money on contraception or sterilisation programmes when to them, elephants represent a potential sustainable harvest." (end quote)

Text box 4.3: Wolf (*Canis lupus*), European lynx (*Lynx lynx*) and European brown bear (*Ursus arctos*) in Europe

Conservation of large predators will be a growing challenge in the future because the human population is growing and habitat is getting lost. American black (*Ursus americanus*) and brown (*Ursus arctos*) bear in Alaska kill about ten people each year. Between 1987 and 1997 tigers (*Panthera tigris sumatrae*) killed 146 people, injured 30 and killed at least 870 livestock on the island of Sumatra, Indonesia (Nyhus & Tilson 2004). During the 19th century wolf, bear and lynx were extirpated in most West European countries. They were considered a risk for cattle and people. Gradually in the 20th century these views changed and nowadays these large predators are protected by hunting and nature conservancy laws in all West European countries.

A major set back regarding spontaneous re-colonisation and migrations of large predators in Central and Western Europe is the large scale infrastructure that fragments the landscape (Groot Bruinderink et al. 2002). Many of these dispersing animal migrants, including the large predators, die in traffic collisions. It seems that large parts of former large mammal habitat in Northwestern Europe have been lost indefinitely due to man's economic interests and population growth. They have brought an end to dispersal, one of the most fundamental processes that affect the dynamics of a metapopulation system (Andr n 1996). This is one of the reasons why reintroduction programmes were started in the 20th and 21st century for European brown bear (Austria, Spain, and France), wolf (Italy) and European lynx (Slovenia, Czech Republic, Austria, Switzerland, France and Germany). Recent spontaneous movements of wolves from Italy into France or from Poland westward into northern Germany from 1980-2000, were frustrated by illegal culling (Pers. comm. M. Petrak and F. Lingsdorf). The one brown bear that migrated from Austria into Germany in 2007 was shot because he was labelled 'dangerous for man'. French shepherds tried to stop both reintroduction programmes of the brown bear in the Pyrenees and spontaneous colonisation of the Alp region by wolves during the last decade of the 20th century. At the start of the re-introduction of brown bears in the Pyrenees, some of the animals were shot. Also the return of the lynx in Western Europe is counteracted by illegal hunting (Groot Bruinderink et al. 2006). Till very recently, Scandinavian aboriginals (Samoyeds) killed wolves that preyed on their semi-domestic reindeer and hunters were allowed to cull a few brown bear, wolves and lynx each year.

Norway

In 2003 the Norwegian government confirmed that Norway had an obligation to contribute to the common effort to secure the viability of all large carnivore species that occur naturally in Norway (Linnell 2004). The policy also points out that maintaining viable rural economies based in part on sheep grazing, reindeer herding and hunting is also a national goal. Balancing these two goals is the key issue of the Norwegian policy making. National goals were set: three wolf packs in Norway, 15 annual reproductions of brown bear, 39 for wolverine, 65 for lynx and 850-1200 nesting pairs of golden eagles. Regional committees will set quotas for hunting and for damage prevention. Wolf packs will be limited to an area along the Swedish border. As soon as conservation goals are met, control of their number will begin (Linnell 2004).

Large carnivore conservation, certainly in cases where they are returning (re-introduced) after many years of absence, can be highly controversial due to livestock predation (sheep, semi-domestic reindeer, beehives, cattle), conflicts between hunters and carnivores, and social conflicts (fear, tensions, hatred; Linnell 2004; Wilson 2004; Text box 3). In Russia, during the 1990s the wolf population grew and peaked at an estimated number of 48,000 animals in 1998. The population is now stabilising at a level of 42-45,000 (questionnaire) but these animals are still considered to be overabundant by farmers, which leads to an annual harvest of wolves of an estimated 12-13,000. Despite the wolf's reintroduction into the Greater Yellowstone Ecosystem being hailed as a success, public opposition remains intense in many rural communities surrounding the reintroduction site. According to Wilson (1997) this is much more than a debate over wolves. Wolves are merely symbols delineating the battle lines of a much larger conflict about: 1) differential access to social power, 2) conflicting ideas about private property and 3) divergent beliefs about nature. It is likely to be a starting point for future land use controversies, dividing the environmental movement from the wise use movement. As stated above, in 2008 the US Fish and Wildlife Service removed federal Endangered Species Act (ESA) protections for gray wolves living in the Greater Yellowstone and Northern Rockies region.

And again, even a small number of large predators may be considered overabundant by western world stakeholders. Attitudes to reintroductions and carnivores generally tend to be favourable amongst the general public, but negative amongst those likely to be adversely affected (Wilson 2004).

Carnivore conservation seems to depend on the socio-political landscape as much as the biological landscape. Formerly goals were based on fear and narrow economic interest, whereas nowadays there is a better understanding of ecosystem functioning and adaptive management. This should diminish the mismatch between western world theory and practices regarding carnivore management including management ethics, and gives hope that carnivore populations may persist for decades despite human population growth and modification of habitat (Treves & Karanth 2003). Thus far, Europe has not been very successful, however, in bringing back large mammals into their former habitat where their niche is currently vacant.

4.7.3 *Management options*

The role of information on large mammal ecology and of financial compensation for damage inflicted is important tools for the acceptance of these species (Groot Bruinderink & Hazebroek 1996). Over 90% of the free-ranging cheetahs (*Acinonyx jubatus*) in Namibia are found on commercial farms outside protected areas. Marker et al. (2003) conducted a baseline survey of Namibian farmers from 1990-1999 to quantify their perceptions towards cheetahs. After the introduction of educational material, the number of animals culled per annum dropped significantly. Although the animals were still seen as a problem, farmer's tolerance increased due to management strategies and economic incentives that promoted cheetah conservation (formation of conservancies, development of ecotourism, and marketing of 'predator friendly' meat).

In Norway and France a compensation system for livestock depredation pays for all livestock killed by a carnivore, sometimes even in advance. Most likely there will also be compensation to landowners for lost hunting income in areas where wolf packs are present (Linnell 2004). Given the very low local acceptance for even small carnivore populations, it seems the best option for the moment.

Other management options to counteract the negative impact of locally overabundant species may include non-intervention, translocation, culling, fertility control, repelling (including fencing) and habitat manipulation. From an ethical and animal welfare point of view, all options have negative setbacks. In the case of non-intervention the problem may last for too long, crops and jobs may be at stake, and there may be debate on the welfare of animals dying from starvation. Translocations are expensive and may negatively affect the wellbeing of animals involved. In a similar way to the use of fences, the problem may be translocated as well. Application of fertility control on a population level is still a subject of study. Habitat manipulation in the examples quoted consists of habitat enlargement on an international scale. It is a broadly accepted tool for diminishing, if only temporarily, the problem of locally overabundant elephant, for example. Examples include the realisation of Transfrontier Parks like the Kalahari Transfrontier Park, the Limpopo National Park and the Tembe-Futi Transfrontier Park.

Most debate is on the culling of animals, in particular large-scale culling. The latter takes place in many parts of the world and is authorised by local governments, where the jobs of native people are involved. One of the frequently used arguments by the governments involved (Namibia, Norway, Canada, Japan) is that scientific information shows that the animal populations involved are not at risk.

4.8 Conclusions

4.8.1 *Naturalness of ecosystems*

Natural ecosystems have their own methods (feedback mechanisms) to deal with overabundance. But whatever their number, man may experience wild animals as overabundant because his personal interests are at stake. These interests may be financial, ethical or related to human safety. In the case of large mammals in general, and large predators in particular, the presence of even one animal can be felt as overabundant.

In the western world and increasingly in the developing countries too, social values and other objectives set by humans for a given area determine to a large extent the number of a given species tolerated, thus converting disturbed ecological conditions into a status quo in the interest of man. Subsequently national governments protect this status quo by law and in this way each society creates its own type of nature: a compromise nature acceptable for the most important stakeholders. Animal rights and animal welfare NGOs play an increasingly important role in this process all over the world. Since this may conflict with undisturbed natural processes or completeness of ecosystems, it is presented as an ethical conflict in this report: a mismatch between the wish to conserve biodiversity in a sustainable way (Rio Convention on Biodiversity) and create sufficient room for, sometimes border-crossing, natural processes.

The results of independent ecological research by respected scientists should underlay a country's and even a worldwide nature conservancy policy.

4.8.2 *Ethics and economics*

The countries involved in the examples given above experience comparable problems with animal welfare and ethical aspects of wildlife management. These aspects are not equally important in all countries and appear on a gradual scale, as direct economical dependence of natural resources is diminishing (Curtis 2002; Marker et al. 2003; Wilson 2004; Text box 4.4).

The examples also show that, taking possible controversies into account, the degree to which a country incorporates animal welfare aspects and ethics in wildlife management, in terms of a natural distribution of a species in its present or former habitat, can be measured by the degree of tolerance towards larger animal species generally and large predator species, in particular.

With regard to the conservation of large mammals in general and large mammal predators in particular, the rich western world fails on many occasions to set the right example for the concern of animal welfare and ethics in wildlife management to third world countries

Text box 4.4: Ethics and interests

Illustrative in this respect are the results of the 60th conference of the International Whaling Committee (IWC) held in Santiago, Chile from 23-27 June 2008 (to be found at: http://www.minInv.nl/portal/page?_pageid=116,1640321&_dad=portal&schema=PORTAL&p_file_id=29627)

For the first time all EU member states (that are also member of the IWC) had a common mandate to oppose whaling activities. The first result was a rejection for Denmark that asked for a 'quotum' of 10 hump back whales for Greenland's native whaling. There is a field of tension between the right of native people to hunt whales based on their social, cultural and economic pattern of life on the one hand, and the protection of the whales on the other. The EU action was condemned strongly by the countries with native people and native whaling. South Africa and a few Latin-American countries stressed the importance of eco-tourism (whale watching) for local economies.

By this EU action parties were roughly divided into three groups:

Countries opposed to whaling: EU member states, Latin-American countries, India, Israel, Australia and New Zealand

Countries in favour of whaling: Japan, Norway, Iceland, many African, Asian and Caribbean countries

Countries in between: USA, Russia, Denmark, Switzerland and South Africa.

4.8.3 *The Netherlands in an international perspective*

There are parallels in protection of wildlife by law and rules between the Netherlands, South Africa, Australia, Namibia, USA and Canada. Wildlife and its habitat are protected by Nature Conservancy Laws and the Flora and Fauna Act that incorporates the hunting law.

Farmers (wood pigeon, starlings, rooks, wild boar and wild geese), water boards (muskrats) and fishermen (cormorant) may experience species as locally overabundant. The (locally and temporarily) large numbers of the species involved are partly the result of successful nature conservation and partly the outcome of a successful adaptation to urban and agricultural conditions, combined with vacant niches for predators. Basically, the Flora and Fauna Act is based on the non-intervention principle. There are no examples of translocation, fertility control and habitat manipulation in order to avoid or diminish local overabundance of wildlife. Management options applied in reducing the negative impact of locally overabundant species include culling (shooting) and repelling (including fencing) or a combination of these. Trapping animals and subsequently killing them with the aid of carbon dioxide gas is done on a small scale and only very recently in the case of wild geese. Year-round trapping is restricted to invasive, exotic species like the musk rat (*Ondatra zibethicus*). Six 'game' species can be hunted during an open season (autumn/winter): rabbit (*Oryctolagus cuniculus*), wood pigeon (*Columba palumbus*), mallard (*Anas platyrhynchos*), pheasant (*Phasianus colchicus*), hare (*Lepus europaeus*), and partridge (*Perdix perdix*). During the closed season these species, like the other species that are protected on a year-round basis, can only be culled under specific conditions where the interests of farmers, animal welfare (including population structure) and human health are involved. The latter group includes the wild ungulate species roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*), fallow deer (*Dama dama*) and wild boar (*Sus scrofa*). As in the other countries mentioned, designated species may be culled for a certain period of each year and hunters must have a licence. Apart from the hunting seasons the bag size may also be limited. Annual cull quotas amount to 4,000 wild boar, 800 red deer, 15,000 roe deer, and 500 fallow deer.

So in practice, the non-intervention principle does not apply to the management of wild ungulates except for the roe deer in a few conservation areas.

Although wild boar is one of the species that can be culled legally by hunters in the Netherlands, their number in the Veluwe area increased significantly over the past 30 years from about 800 in the early seventies of the past century to about 3,000 in 2008 (spring numbers). As a result the number of boar traffic collisions has also risen, so the local authorities in the province of Gelderland regard wild boar as a locally overabundant species. Hunters of the Veluwe, the Veluwezoom NP excluded, and the local government of the province of Gelderland argue that the boar do not visit the feeding places where they can be shot because they prefer beechnuts and acorns. The authorities now seek the solution in an increased early culling during the months before mast availability peaks. They do not wish to wait for density dependent resource limitation, because 1) they do not want the animals to suffer and die from starvation and 2) they do not wish to take responsibility for boar-traffic collisions.

The animal welfare aspect plays an important role in Dutch wildlife management. Farmers and hunters in the Netherlands who consider a larger cull to be part of the solution are confronted with well organised animal welfare and animal protection NGOs like the Faunabescherming or the Dierenbescherming, which oppose large-scale culling more or less successfully. In many cases farmers are consequently compensated by the Fauna fund of the Ministry of Agriculture, Nature and Food Quality. Hunters are obliged under the laws mentioned above to avoid unnecessary suffering of the animals. For this reason the *chasse battue* was forbidden in 2007 because of the relatively high risk of animals suffering because they were not culled instantly. This also explains the Dutch protest against the clubbing of seals, and the subsequent support of an EU ban on the import of seal products.

A form of ungulate management close to non-intervention is applied in the Oostvaardersplassen, a fenced off 5,000 ha natural area in the central part of the country. Here the culling of ungulates is restricted to a short time window in late winter and to the deer, cattle and horses that die from starvation. Normally animals are culled shortly before natural death. Carcasses of culled red deer are left in the field; the carcasses of cattle and horses fall under the Dutch Destruction Law and have to be removed and transported for destruction. This method was the outcome of an (international) debate on the ethics and animal welfare aspects in the management in this area. A comparable type of ungulate management concerns the Veluwezoom NP, a 5,000 ha, unfenced part of a 100,000 ha natural area in the central part of the Netherlands called De Veluwe. Here an annual quota of red deer, fallow deer, wild boar, and cattle is culled to prevent overpopulation. Carcasses are treated like those in the Oostvaardersplassen area. In the remaining 95,000 ha part of the Veluwe, culled deer and boar are destined for human consumption.

As the examples presented above show, there are parallels between the public debate on the management of wild ungulates in the Netherlands, the elephants in Kruger NP in South Africa, and the elk and bison in Elk NP in Canada. However, culling wild ungulates, whether starving or not, and leaving their complete carcasses in the field to be part of the natural cycle and benefit necrophilic organisms involved is a unique type of wildlife management. Everywhere else in the world the skin, antlers and meat would be sold (see Section 4.5) or serve the benefit of aboriginal people (see Section 4.2.3). An exception is the commercial seal hunt, where most carcasses are left on the ice. Aboriginal people in South Africa consider costly contraception programmes as a waste because the animals represent a potential sustainable harvest (see Section 4.2.3).

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4.10 References

- Andrén, H.** (1996) Population responses to habitat fragmentation, statistical power and the random sample hypothesis. *Oikos* 76, 235-242.
- Balfour, D., H.T. Dublin, J. Fennessy, D. Gibson, L. Niskanen & I.J. Whyte** (2007) Review of options for managing the impacts of locally overabundant African elephants. IUCN, Gland Switzerland. 80 pp.
- Chase, A.** (1986) *Playing God in Yellowstone. The destruction of America's first National Park.* Harvest Books, San Diego, New York, USA.
- Curtis, J.A.** (2002) Ethics in Wildlife Management: What Price? *Environmental Values* 1:145-161.
- ESFA** (2007) Scientific Opinion of the Panel on Animal Health and Welfare on a request from the Commission on the Animal Welfare aspects of the killing and skinning of seals. *The EFSA Journal* 2007: 610, 1-122.
- Groot Bruinderink, G.W.T.A. and E. Hazebroek** (1996) Ungulate-traffic collisions in Europe. *Conservation Biology* (10)4: 1059-1067.
- Groot Bruinderink, G.W.T.A., T. van der Sluis, R. Pouwels & D.R. Lammertsma** (2002) Perspectives for an ecological network for red deer (*Cervus elaphus*) in the Belgium - Dutch-German border area. *LUTRA*45(1): 19-28.
- Groot Bruinderink, G.W.T.A., H. Kuipers, D.R. Lammertsma, K. DeSmet, M. Petrak & J. Eylert** (2006) Met stille trom? Nederland en de Europese lynx. *De Levende Natuur* 107(2): 37-40
- Jacobs, M.H.** (2007) Wildlife value orientations in the Netherlands. *Human Dimensions of Wildlife* 12:359-365.
- Keulartz, J., H. van de Belt, B. Gemmen, I. Klaver & M. Korthals** (1998) Goede tijden slechte tijden. Ethiek rondom Grote grazers. Ministerie van landbouw, Natuur en Voedselkwaliteit, 's-Gravenhage.
- Linnell, J.** (2004) A new predator policy for Norway. *Newsletter LCIE*, nr. 1: 1-5.
- Marker, L.L., M.G.L. Mills & D.W.** (2003) Factors influencing perceptions of conflict and tolerance toward cheetahs on Namibian farmlands. *Conservation Biology* 17: 1290-1298.
- Nyhus, P.J. & R. Tislon** (2004) Characterizing human-tiger conflict in Sumatra, Indonesia: implications for conservation. *ORYX* 38: 68-74.
- Staatsbosbeheer** (2008) Ontwikkelingsvisie Oostvaardersplassen; Voorbij de horizon van het vertrouwde,
- Treves, A. & K.U. Karanth** (2003) Human-carnivore conflict and perspectives on carnivore management worldwide. *Conservation Biology* 17: 1491-1499.
- Verburg, G.** Kamervragen over de broedvogel inventarisatie van de Oostvaardersplassen, Ministerie van landbouw, natuur en voedselkwaliteit, 19 March 2008
- Whyte, I., R. van Aarde, R. & S. L. Pimm** (1998) Managing the elephants of Kruger NP. *Animal Conservation* 1: 77-83.
- Whyte, I., H.C. Biggs, A. Gaylard & L. Braack** (1999) A new policy for the management of the Kruger National Park's elephant population. *Koedoe*, Vol. 42, no. 1, pp. 111-132.
- Wilson, M.** (1997) The wolf in Yellowstone: science, symbol or politics? *Deconstructing the conflict between environmentalists and wise use.* *Society and Natural Resources* 10: 453-468.
- Wilson, C.J.** (2004) Could we live with reintroduced large carnivores in the UK? *Mammal Review* 34: 211-232.

5 Welfare of farmed food finfish in global perspective

Author: Hans van de Vis

Results from a questionnaire of Dutch Foreign Agricultural Services and a literature study.

5.1 Introduction

The coalition statement of the Dutch government formed in 2007 described the welfare of farmed fish as an issue of concern. In the European Union, concern is also considerable and still growing and applies mainly to farmed finfish at present.

Regarding fish welfare, the animal concerned must have the capacity for perception of feelings, as without this capacity a fish is not able to experience pain, fear or a positive state of mind. Recent evidence suggests that external stressors and painful stimuli elicit aversive states in fish, as they do in birds and mammals (Sneddon, 2003; Braithwaite & Huntingford, 2004; Chandroo et al., 2004), even though these may differ in degree from those experienced by higher vertebrates. In any event, a wide range of organisations in Europe now have fish welfare on their agenda including national governments, NGOs and the Council of Europe.

Public compassion with fish welfare in production systems boils down to the question whether individuals know measurable and recognisable subjective states, which do morally matter. With regard to perception of fish welfare, there is a growing public concern in various EU member states (Kießling, 2005). Though not as widespread as the public concern for the welfare of warm-blooded animals, the relevance of fish welfare as perceived in Europe is increasing.

In response to this growing concern about the welfare of farmed fish in Europe, the European Commission requested EFSA to issue scientific opinions on the animal welfare aspects of husbandry systems and on the main systems of stunning and killing for farmed fish.

Water quality is crucial for the welfare of farmed fish. Hence, the welfare of fish is also related to stocking density. Increasing stocking densities compared to the natural densities of fish species may imply that the number and the type of fish interactions increase. The naturally evolved behaviours are adaptive and reflect the most adequate way to react, in order to cope with the environment in an efficient way, which implies that increased stocking densities would normally affect this balance. The biology of cultivated fish species is complex. To identify adequate stocking densities is therefore difficult and must take age, size, environmental conditions and biological characteristics of the species into consideration (Wolffrom, 2004).

Trade of farmed food finfish can be affected by welfare during its production and therefore fish welfare will inevitably affect relationships with other countries, but information is limited. Information about trade and fish welfare is useful when the Dutch Ministry of Agriculture, Nature and Food Quality (LNV) or the European Commission wishes to identify multilateral and bilateral options to improve understanding, acquire knowledge and to obtain support for animal welfare. Before a dialogue could be started, information was needed on the (a) practices, (b) regulations and (c) underlying perceptions of animal welfare in third countries (i.e. countries outside the EU) and how these relate to the Dutch and European situation.

In this study the focus was on gaining more detailed information by using a worldwide survey on farmed food finfish welfare practices, regulations and perceptions. All Dutch Foreign Agricultural Services outside the European Union were contacted. In addition to the general aquaculture survey, Nile tilapia (*Oreochromis niloticus*) was considered in more detail with a view to addressing welfare concerns related to trade.

The knowledge questions addressed in this research were:

- Regulations (especially laws). Which norms are set for farmed food finfish in third countries?
- Practices. What is the factual situation in third countries? This represents the state of how animals are treated, in part in relation to how regulations (if any) are implemented and enforced.
- Perception. How are these welfare issues perceived in the country itself. How is animal welfare regarded socio-culturally?
- Mismatches. Are there any mismatches, e.g. between perceptions of animal welfare and (factual) practices in the third countries?
- Trade. Which countries export farmed food finfish to the EU and the Netherlands, and in what quantities? In other words, which third countries are providing animal products for the EU market?

5.2 Systems for on-growing food finfish

In general, food fish are farmed in four types of systems, which vary considerably. For the sake of clarity a brief description of these four systems is given, a fish pond being the oldest system used.

5.2.1 *Ponds*

Since ancient times, fish have been held in various man-made structures. These structures were built using simple methods and readily available materials. The fish or other aquatic crop were cared for and relied upon as an important source of food for families. The typical fish farming operation usually involved hand digging of a small pond or an even simpler method of trapping tidal flow water from an existing water plain. In many parts of the world, the basic earthen pond is still the principal system relied upon in modern day aquaculture. Naturally, considerable technical advances have been made in the design and engineering of aquaculture systems, but the basic system remains the same in most developing nations. Proper design and construction remains an essential component governing the success of today's aquaculture ventures. Species like channel catfish, carp species and tilapia species are being farmed in ponds.

The size of earthen ponds built today can vary anywhere from 20 square meters to 20 hectares (44 acres) and larger. Pond size is determined by the type of species cultured, the intensity of the system, land availability, water availability, the harvesting method, market goals, the commercial nature of the project and other variables. For example, a commercially oriented tilapia farming operation typically utilises 0.1 or 0.2 hectare ponds for nursery phases and 0.3 to 0.5 hectare ponds for grow-out. (Anonymous, 2008a)

5.2.2 *Land-based intensive flow-through farming*

Flow-through farming aims to produce high value fish at high stocking density, compared to cage farming (see Section 5.2.4). A combination of good water quality, appropriate temperature and oxygenation can allow stocking densities of more than 50 kg/m² (5% fish in water).

The most important species concerned are trout, salmon, sea bass, sea bream, eel and turbot. Artificial reproduction of almost all these species is possible. Specialised commercial hatcheries exist, equipped for breeding, hatching and the first stages of larval and juvenile development. Year-round supplies of fry are assured by the control of the maturation and breeding processes of the broodstock, using techniques like the manipulation of light and/or temperature regimes. Larvae need live feed for first feeding but once these develop into fry they are fed on fabricated diets, up to market size.

The final on-growing is accomplished in land-based concrete or earth tanks, raceways or ponds, usually supplied with high volumes of pumped water, which is always released outside the farm after its use (for this reason these systems are also called 'flow-through systems'). (FEAP, 2008)

5.2.3 *Recirculation systems*

Indoor systems where the culture water is treated and recirculated are a particular development of the land-based intensive culture system. The development started in Japan in the 1950s and on an experimental basis in Europe in the 1970s. Commercial utilisation started in northern Europe, mainly in the Netherlands, Denmark and Germany in the early 1980s. Instead of being released, the waste water is recycled after mechanical and biological filtration and oxygen injection. A combination of good water quality, appropriate temperature and oxygenation can allow stocking densities of more than 100 kg/m² (10% fish in water) without compromising the health or welfare of the fish.

These units have shown modest economic viability so far, but there are clear signs that increasing pressure for a more effective utilisation of the water resource and more stringent environmental legislation will lead to further development of this technique in the future. At present recirculation systems are used successfully for weaning glass eels and in the on-growing phase for eel, Nile tilapia and African catfish. Recently, other species such as turbot, sole, pike perch and a hybrid of African catfish and *Heterobranchus longifilis* have also been farmed in recirculation systems. (FEAP, 2008)

5.2.4 *Cage farming*

The intensive on-growing of marine and freshwater fishes, mainly salmon and, more recently, trout, sea bass, sea bream and halibut is often carried out using marine, floating enclosures such as net cages. Originally, cages tended to be placed at well-protected, largely enclosed and insufficiently flushed sites. The scarcity of protected sites and certain environmental setbacks have contributed to the development of programmes and strategies that determine the carrying capacity of areas in accordance with their geophysical, oceanographic, hydrographic and bio-ecological characteristics. In most cases, these strategies require the operation of cage systems in somewhat more exposed sites where stronger and more resistant equipment is then required to withstand heavy weather conditions, allowing for the exploitation of sea areas more distant from the coasts. Other developments of cage farming concern the construction of submersible cages (which, so far, have not provided the same economic performances as floating cages) and automation of feeding and control by the use of computers. Some cage farming is also practised in freshwater lakes, mostly for the growing of (juvenile) salmonids. (FEAP, 2008)

5.3 **Export of farmed food fish to the EU or the Netherlands**

Using data provided by the research institute LEI (pers. comm. H. Kelholt) and Fishion Aquaculture (pers. comm. F. Aartsen), the following countries were identified as the major exporters to the Netherlands:

USA
Vietnam
Iceland
Norway
China
Chile
Turkey
Zimbabwe

Information was obtained from the Dutch Foreign Agricultural Services for the following countries: South Korea, Malaysia and Singapore, Philippines, Japan, China, Israel, Russia, Chile, Turkey, United Arab Emirates, Mexico and South Africa. Data on Norway, Iceland, Brazil and Egypt were obtained from a literature search. These countries produce various farmed fish species, such as Atlantic salmon, pangasius, Nile tilapia, sea bass and sea bream. More detailed information was obtained for Nile tilapia and is presented below.

5.3.1 *Export of Nile tilapia*

The website of the Food and Agriculture Organization (FAO, 2008) contains an overview of the culture of tilapia. The culture of Nile tilapia (*Oreochromis niloticus*) can be traced to ancient Egypt and the species was originally found in a variety of fresh water habitats.

Worldwide distribution of Nile tilapia developed during the 1960s up to the 1980s. Nile tilapia from Japan was introduced to Thailand in 1965, and from Thailand was sent to the Philippines. Nile tilapia from Cote d'Ivoire was introduced into Brazil in 1971, and from Brazil was sent to the United States in 1974. In 1978, Nile tilapia was introduced into China, which leads the world in tilapia production and consistently produced more than half of the global production every year from 1992 to 2003. Research on nutrition and culture systems, along with market development and processing advances, has led to rapid expansion of the industry since the mid 1980s. Several species of tilapia are cultured commercially, but Nile tilapia is the predominant cultured species worldwide (FAO, 2008).

In general, four on-growing techniques are used for Nile tilapia. Pond culture is practised in northeast Brazil, Honduras and Thailand. Floating cages are used in large lakes and reservoirs in several countries including China, Indonesia, Mexico, Honduras, Colombia and Brazil. Tilapia are cultured in flow-through tanks and raceways of varying sizes (10-1000 m³) and shapes (circular, rectangular, square and oval). In temperate regions, recirculation systems have been developed to culture tilapia year-round under controlled conditions (Anonymous, 2008c).

Table 5.1: Worldwide production of farmed tilapia species

Country	Fish	Production (metric tonnes) in 2005
Brazil	Various tilapia species	68,000
China	Nile tilapia	978,000
Colombia	Various tilapia species	19,000
Costa Rica	Various tilapia species	16,000
Ecuador	Nile tilapia	24,000
Egypt	Nile tilapia	200,000
Honduras	Nile tilapia	28,000
Indonesia	Nile tilapia	148,000
Malaysia	Nile tilapia	24,000
Philippines	Nile tilapia	124,000
Taiwan	Various tilapia species	74,000
Thailand	Nile tilapia	109,000
Lao People	Nile tilapia	20,000
TOTAL		1,832,000

Stocking densities for table-size tilapia production are extremely variable, and vary according to fish size and production system. In fed and aerated production ponds, young (50 g) hybrid tilapia is usually stocked at 9,500 to 19,500 fish per hectare (4,000 to 8,000 fish/acre). In tanks or raceways, tilapia of 25-50 g (0.88-1.77 oz) is stocked at densities between 140 to 248 fish/m³ (4-7 fish/ft³) of container space. In final grow-out production cages, stocking densities for 60-100 g hybrid tilapia range from 250 to 400 fish/m³ (7-11 fish/ft³) of cage. When cages are placed in ponds, the pond stocking density cannot exceed those numbers (e.g. fish/acre) which would be achieved by growing the fish free-swimming in the pond (Anonymous, 2008b). In recirculation systems stocking density in the grow-out phase increases up to 100 kg/m³ (pers. comm. W. Fleuren).

An overview of the production of farmed Nile tilapia and tilapia species in 2005 is presented in Table 5.1 (pers. comm. H. Kenholt, LEI). As shown in this table, Asia is the main region where tilapia is produced and is also mainly responsible for the spectacular growth experienced during the past decade. Asia accounts for 63% of total tilapia production today, while in 1990 this percentage was 50%. However, Africa and South America have also experienced a substantial increase in their tilapia output during the past decade (Anonymous, 2008c). Between 1999 and 2005 the production of farmed fish in South America almost doubled.

Tilapia production consists mainly of Nile tilapia (*Oreochromis niloticus*). All new countries entering tilapia production concentrate on this species, which is easy to grow. Total tilapia production in 2010 is forecasted to be 3.5 million tonnes, with the bulk coming from aquaculture, and the majority of the increase will come from Nile tilapia being produced in China (Anonymous, 2008c).

5.4 Inventory of third countries

A literature study on general trends in aquaculture production in third countries (as designated in our study), as well as within the EU, revealed that there is increasing concern on sustainability issues among consumers worldwide. For example, products that are grown in a responsible manner without harm to the environment are gaining a competitive edge, particularly in the developed countries (FAO, 2006). These societal and political developments show that demand, market and marketing aspects have become an important set of driving forces in shaping the aquaculture sector, globally. Demand for aquaculture produce continues to grow and future growth will be driven largely by market requirements.

Consumers are becoming more quality conscious and demanding. Issues such as socially and environmentally responsible aquaculture practices, food safety, traceability, certification and eco-labelling are becoming increasingly important. During the past five years, in particular, market access and trade issues have dominated events in many parts of the world. The events can be categorised into low international prices, trade barriers, non-tariff barriers, traceability issues, changing tastes according to demographics and consumer purchasing power and intense global competition, particularly for internationally traded commodities.

In addition to WTO (World Trade Organization) rules and regulations that are meant to level the international trading field, it has been the non-tariff trade barriers and other market access requirements, related to food safety, environmental concern, animal welfare and other issues such as bio-terrorism imposed by importing blocs, that have driven reforms in production sectors (FAO, 2006). Given these developments, it is likely that societal and political developments within the EU with respect to the welfare of farmed finfish will have an impact on farmed fish practices and industry guidelines, regulation and legislation in third countries outside Europe.

With regard to developments at universities in third countries outside Europe, Australia, Canada and the USA we observed that fish welfare is slowly becoming a topic for research. In the 80s a considerable amount of research on the stunning of fish was carried out at the Tilapia Research Unit, University of Zululand, KwaDlangezwa, Republic of South Africa. Recently, research on anaesthesia in fish has been started at the University of Tehran in Iran (B. Lambooi, pers. comm.). At present a research programme on fish welfare is being conducted at the Research Center on Animal Welfare (CNPq), Instituto de Biociências, Caunesp, São Paulo in Brazil (Research Center on Animal Welfare, 2008).

In the following sections, information on farmed fish species, regulation and legislation, farming practices and industry guidelines and how fish welfare is perceived in the country itself is described for the selected third countries. In addition, existing mismatches and/or trends within an area are described. This information was obtained from Dutch Foreign Agricultural Services in the selected countries, a literature study and a search on internet. In addition, experts were also consulted with respect to the presence of legislation and regulations in third countries. When, for instance, no information was obtained for perception of fish welfare, this topic is not described.

5.4.1 *Brazil*

Tilapia

Brazil is a major producer of tilapia.

Regulation and legislation

No regulation and legislation is in force with respect to the welfare of fish.

Perception

Recently a research programme on fish welfare started at the Research Center on Animal Welfare (CNPq), Instituto de Biociências, Caunesp, São Paulo in Brazil (Research Center on Animal Welfare, 2008). This may have an impact on farming practices in Brazil.

5.4.2 *Chile*

Chile is the second largest producer of Atlantic salmon. Chile appears to be continuing to increase its salmon production to become the world leader (FAO, 2006). The products are exported to the USA and Japan.

Regulation and legislation

The law 18.892 "Ley General de Pesca y Acuicultura" regulates aquaculture in Chile. The industry has signed voluntary agreements regarding clean production in cooperation with the "Centro de Producción Limpia", a state office in charge of promoting cleaner production at a national level.

Farmed fish practices and industry guidelines

The major fish species is Atlantic salmon. When fish is about one year of age, it is ready for transport to cages in salt water by well boats.

Concerning slaughter; producers apply a form of general anaesthesia by reducing the provision of oxygen. Thereafter electric shocks are applied and then the gills are cut. The salmon die by bleeding. The use of medicine including antibiotics to avoid illnesses is not forbidden.

Perception

There is very little awareness about this subject in Chile. Only a small part of the Chilean salmon production targets the domestic market. Consumer's institutions are neither well organised nor strong enough in comparison with their counterparts in Europe.

The present regulations are not sufficient to guarantee a clean farmed salmon production. Moreover, there is also a clear lack of enforcement of governmental regulations.

5.4.3 China

Tilapia

China is the largest producer of farmed food tilapia in the world (see Table 5.1).

Regulation and legislation

There are no specific regulations or legislation to protect fish welfare.

Farmed fish practices and industry guidelines

Fish farming is practised in ponds and floating cages.

Perception

At present consumer awareness of the welfare of warm-blooded animals is minimal, compared to the EU; so it is not supposed that consumers are concerned about fish welfare. For example, live fish can be served as a dish in a restaurant.

5.4.4 Egypt

Tilapia

Egypt has been expanding its culturing industry in recent years and is now producing 200,000 tonnes of Nile tilapia (Anonymous, 2008c). Tilapias and mullets together account for more than 50% of all fish produced in Egypt. These species are highly valued by local consumers (Verdegem and Taal, 2005).

Regulation and legislation

The main articles related to aquaculture are those specifying the type of water and land that can be used. First-use freshwater is only allowed for hatcheries and not for grow-out operations. Also, only non-agricultural land can be used for fish farms. The law prohibits the gathering of, transferring or possessing fish fry from the sea or lakes or other water bodies without the written consent of the GAFRD (General Authority for Fish Resources Development). The law also specifies the licensing procedures for setting up aquaculture enterprises, which require approval from the Ministry of Water Resources and Irrigation (MWRI) that defines the volume and source of water allowed to be used and the method of draining. Marine farms require licensing approval from the Shores Protection Authority, the Ministry of Tourism and the Ministry of Environmental Affairs (Source: Law No. 124) (Verdegem and Taal, 2005).

The study, performed by Verdegem and Taal (2005), revealed that cage aquaculture of tilapia is highly profitable but has been banned, without offering the sector the possibility of developing 'best management practice' (BMP) rules for tilapia cage farming. If done properly, and when observing the carrying capacity of the receiving waters, cage tilapia farming can be definitely sustainable, both environmentally and economically. There are presently no BMP-rules for cage aquaculture.

Specific regulation or legislation dealing with fish welfare is not in force in Egypt.

Farmed fish practices and industry guidelines

Governmental farms tend to auction their products well in advance of harvest, while private operators depend on daily prices and demand. Cage farms harvest on demand, usually selling directly to retailers. However, as the contribution of Nile tilapia has increased, most fish farms tend to harvest before winter to avoid the risk of cold-related mortality. With the exception of two public sector fish marketing companies, fish marketing is a business that is almost totally private (Verdegem and Taal, 2005).

Perception

Diversification and mariculture were foreseen in 2005 (Verdegem and Taal, 2005), as these would avoid declining prices due to the surplus production of tilapia. Sea bass, sea bream and other species are expected to contribute more in the future.

5.4.5 Iceland

Tilapia

There is no tilapia production in Iceland.

Regulation and legislation

There is no specific act on fish welfare in Iceland but it will be covered by the Animal Welfare Act No. 15/1994.

The following is a rough translation of the most relevant points:

This act applies to all animals, but is especially aimed at animals held for farming purposes, such as horses, cattle, sheep, etc. It applies to the general public but is not specifically aimed at controlling scientific experimentation. It states that all animals must be treated well. It is not allowed to hurt or harm animals. An attempt should be made to avoid testing their strength and endurance. The animals must be provided with satisfactory accommodation, feed, drink and caretaking. They must have sufficient room for movements according to general practice and knowledge. Animals must be protected against too much noise. The owners or the caretakers of the animals are responsible for their health and must do what is necessary to avoid their suffering. Inspection by police, animal welfare committees and official veterinarians may be carried out at any time.

Farmed fish practices and industry guidelines

In Iceland there is no legislation or regulation to protect the welfare of farmed food finfish.

Perception

It is possible that fish welfare will become an issue of concern in order to be able to export farmed fish to the EU.

5.4.6 Israel

Tilapia

There is farming of tilapia species. Exports of tilapia and other species to the EU or the Netherlands are minor or non-existing.

Regulation and legislation

Israel has no legislation to protect the welfare of fish.

Farmed fish practices and industry guidelines

Fish farming is increasing in Israel. Nowadays, fish cages can be found floating in the Mediterranean Sea, off the Israeli coast. Previously cages used to be in the bay of Eilat in the Red Sea, but due to environmental concerns, the exploitation of these cages has been halted.

Perception

In general, there is no interest in fish welfare. At present, no change with regard to fish welfare is foreseen.

5.4.7 Japan

There is substantial fish farming in Japan. In 2007 the aquaculture production (1.24 million tonnes) accounted for 23% of the total fisheries and aquaculture production. Nearly all aquaculture production is derived from sea culture. Among farmed fish, yellowtails (*Seriola quinqueradiata*) and red sea bream (*Chrysophrys (Pagrus) major*) are the major species.

Tilapia

Nile tilapia is not produced in Japan.

Regulation and legislation

In Japan, legal requirements are mainly aimed at reducing the burden on the environment and promoting sustainable fisheries and aquaculture. There are no requirements which have been created solely for the purpose of farmed fish welfare. The current situation in the EU with regards to fish welfare may result in concern on this issue in Japan.

Farmed fish practices and industry guidelines

During the inventory study no data were obtained. However it is known that in restaurants fish are served alive on a plate to customers.

Perception

At present consumer awareness of the welfare of warm-blooded animals is low. An inventory showed that only 6% of the people who filled in a questionnaire appeared to establish a link between animal welfare and farmed animals. It is unlikely therefore that there is concern for fish welfare and no change is foreseen in this respect.

Awareness of fish welfare is also low within the sector but there is a high level of awareness that maintaining good environmental conditions for fish as well as preventing the spread of diseases is the key to healthier fish and better economic results. From this perspective, the aquaculture sector is making efforts to improve its performance and such efforts are in turn contributing to fish welfare to some extent.

*5.4.8 Malaysia and Singapore**Tilapia*

The major tilapia species in Malaysia is the Nile tilapia. At present there is no export to the EU or the Netherlands. As Malaysia is producing the species at high cost, the production is too expensive for export. Fish is sold alive to local restaurant outlets and also to Singapore. Second grade fish is sold fresh in supermarkets (in aquarium tanks) and fish markets.

Regulation and legislation

There is no regulation and/or legislation to protect the welfare of farmed finfish species.

Farmed fish practices and industry guidelines

Tilapia is farmed in ponds and cement tanks, using fresh and brackish water.

Practices in slaughterhouses are basic and traditional. In rural areas there is still a great deal of manual slaughtering. A separate issue is Halal. Halal slaughtering of warm-blooded animals is not very animal friendly to say the least, but is being increasingly promoted by the Malaysians, not only internally, but there is also a strong drive to promote Halal in general, and therefore also Halal slaughtering outside Malaysia. Seen from the perspective of animal welfare this should be a serious area of concern.

Perception

Given the fact that Halal slaughtering is being promoted, it is not likely that fish welfare is a matter of concern at present. Regarding the export of ornamental fish it is likely that more attention will be given to fish welfare in the future.

Trends

No change with regard to food fish welfare is foreseen. The tropical ornamental fish industry is gaining in importance and with Malaysia in the forefront as exporters of captive-bred high-value exotic fishes (e.g. Arowana) animal welfare will only improve for this sector.

*5.4.9 Mexico**Tilapia*

Fish farming is a developing activity. The main species are: shrimp, goldfish, trout, tuna and tilapia

Regulation and legislation

The Mexican government relies on its Ministry of Agriculture, and specifically its organisation, National Aquaculture and Fisheries Commission (CONAPESCA, 2008), to manage fishing policy and the national programme of aquaculture regulations.

The main regulations are: General Wild Life Law, General Sustainable Fishing and Aquaculture Law, Federal Sea Law and Law of National Waters, which cover regulations protecting water species of all kinds, as well as other matters. There are also regulations and norms that supplement these laws, as well as local laws. Normally several species are involved.

Farmed fish practices and industry guidelines

Most products are exported to: the United States (live, fresh, chilled, frozen, fillets of fish, dried fish, crustaceans, molluscs), Japan (live, chilled, frozen, fillets of fish, crustaceans, molluscs) and other countries: South Korea, Canada, Malaysia, Thailand and Hong Kong. France imports crustaceans and Italy imports molluscs from Mexico.

Perception

Fish welfare is mainly perceived as a means to maintain fish in good healthy conditions for present and future consumption or other human use, as well as for ecological and ecosystem maintenance. The government also wishes to safeguard the country's marine fauna and regulate water production activities to the benefit of the country's natural resources. In many cases, there is a lack of enforcement of regulations. There has been criticism by NGOs mainly, on the fishing practices of certain fish in Mexico, as well as their effects on other fish or marine mammals. There is printed material criticising the management and handling of farmed fish areas. Consumers are also aware that pollution and bad fishing practices affect fish welfare. No changes with respect to fish welfare are foreseen.

5.4.10 Norway

Norway is the largest producer of farmed fish in Europe. The growth rate of aquaculture is comparable to that of production in Asia.

Tilapia

Norway does not farm tilapia.

Regulation and legislation

The law to protect the welfare of fish at slaughter only came into force on 1 July 2008. Due to strong requests from Norway's salmon industry, which has argued that the legislation will put Norway on its back foot in competing with other salmon-producing nations, lawmakers have been persuaded to defer enforcement of the rules until 1 January 2010 (for more information on this law, see Annex XIV).

Farmed fish practices and industry guidelines

The major fish species is Atlantic salmon. The on-growing phase is carried out in sea cages.

Perception

In general, there is increasing interest in animal welfare in Norway. In the view of public opinion, the welfare of fish needs to be protected with regard to export to the EU.

This study revealed that there is an awareness about fish welfare, which is increasing in Norway. Legislation was being prepared to protect the welfare of fish at slaughter to support the export of fish products to the EU (pers. comm. H. Digre, Sintef, Norway).

*5.4.11 Philippines**Tilapia*

The Philippines only exports prawns (*Penaeus monodon*) to the EU.

Regulation and legislation

By 1991 under the Local Government Code, the appointment of a veterinarian officer was deemed mandatory; his specific function was to enforce all laws and regulations for the prevention of cruelty to warm-blooded animals. In general, animal welfare enforcement is still in an infant stage.

Farmed fish practices and industry guidelines

Milkfish, prawn and grouper (Lapu-Lapu) are produced in earthen or semi-concrete ponds. Initially the pond is prepared or drained, dried and fertilised to produce algae for feed. The ponds will then be stocked with the proper number of fish per cubic meter. When natural food is gone supplemental feeds are given. Some producers are dependent on commercial feeds alone. Water management is implemented by water change during high and low tide. Carnivorous species like mudcrab and lapu-lapu are fed with trash fish. Recirculation systems are not common practice.

Concerning slaughter; shrimp and milkfish are placed directly in a freezing tub, then sorted and placed in styrofoam boxes with ice. HACCP (Hazard Analysis and Critical Control Points) has been implemented in the post-harvest procedure since 1999. At farm level, nationwide information dissemination on the application of HACCP in fish production started two years ago. Fish for export is strictly inspected to check if it is free of hazards and safe for human consumption, while fish for the domestic market is not strictly inspected.

Perception

At present consumer awareness of the welfare of warm-blooded animals is low, compared to the EU. Thus, it seems likely that there is no public concern about fish welfare at present and no change with regard to fish welfare is foreseen.

*5.4.12 Russia**Tilapia*

Farming of tilapia species does not occur.

Regulation and legislation

Legislation to protect welfare of fish is not in place.

Farmed fish practices and industry guidelines

In Russia there is farming of trout in Leningradskaya and Murmanskaya oblast, and aquaculture of scallop (*Mizuho-pecten yessoensis*) is carried out in the Far East. In Sakhalin and Kamchatka there are hatcheries of the Far East salmon, Pink salmon & Chum salmon (*Oncorhynchus gorbusha* and *O. Keta*). It was reported that there is export to Germany, and through China re-export to the EU.

Perception

Perception on fish welfare depends on the area; in coastal zones, especially in Primorye, Murmansk and Kamchatka, consumers do care (this information was confirmed by Mr Frode Kjølås, SeaSide, Norway). In the central part of Russia, for example in Moscow, a lot of imported and farmed fish is sold and people's awareness about fish welfare is low.

No change with regard to fish welfare is foreseen.

5.4.13 South Africa

Farming of catfish, tilapia, shellfish, abalone, oysters, mussels, Koi carp and rainbow trout is growing slowly. South Africa is a leading supplier of farmed abalone. Growth in other farming sectors of lower value, such as mussels, oysters, prawns and sea-weed, has been modest. There is some export to Japan and China (catfish and abalone). South Africa does not export to the EU.

Tilapia

As described previously, tilapia is farmed in South Africa.

Regulation and legislation

There is a National Aquaculture Policy which aims at:

- Facilitating the development of a united and prosperous aquaculture sector by unifying and simplifying aquaculture legislation and regulations, as well as ensuring sustainable and equitable use of aquatic resources;
- Promoting the responsible and sustainable development of a globally competitive aquaculture sector in South Africa by identifying current constraints and by proposing action aimed at creating an enabling environment for effectively addressing those constraints.

Farmed fish practices and industry guidelines

Catfish is kept in ponds, and shellfish in flow-through systems.

Perception

Fish welfare is not yet an issue in South Africa.

The main purpose of government policy is to encourage acceleration of the development of the marine aquaculture industry. A further aim is promoting the development of an economically sustainable and globally competitive industry with minimum negative impact on the environment.

*5.4.14 South Korea**Nile tilapia*

South Korea produced 97 metric tonnes of farmed fish in 2007. There is no tilapia farming. At present there is no substantial export to the EU or the Netherlands.

Regulation and legislation

There is no legislation to protect fish welfare.

Farmed fish practices and industry guidelines

Sea fish species (rockfish, sea bream, flatfish and sea bass) are farmed in cages. The use of guidelines was not reported.

Perception

Public concern about animal welfare in general is minimal. Even concern about the welfare of pets is minimal, so it is unlikely that there is concern for fish welfare.

No change with regard to fish welfare is foreseen.

5.4.15 Turkey

Tilapia

Turkey does not farm tilapia.

Regulation and legislation

There is no legislation to protect fish welfare.

Farmed fish practices and industry guidelines

In Turkey sea bass, sea bream and trout are produced. Sea bass and sea bream are grown in cages or in ponds using flow-through systems.

Perception

There is not much awareness about fish welfare in Turkey.

It is likely that fish welfare will become relevant for export reasons. For one Turkish farm, named NSU, this awareness of fish welfare in the EU was a reason for them to participate in a European project on the stunning of farmed fish species (Craft project StunFishFirst, contract COOP-CT-2004-512991).

5.4.16 United Arab Emirates

Tilapia

The United Arab Emirates does not farm tilapia.

Regulation and legislation

UAE has seven Emirates and each Emirate has its own self-regulated municipality, which is the competent authority. In addition, the federal body, the fisheries department of the Ministry of Environment and Water, is also responsible for the enforcement of the federal regulation concerning fish farming in the UAE, but there is no legislation to protect fish welfare.

Farmed fish practices and industry guidelines

Presently, there is only one large, floating cage fish farm on a commercial scale which cultures gilthead sea bream (*Sparus aurata*) and subaity (*Sparidentex hasta*), and exports the fish to France, Germany, Italy, Spain and the UK. This fish farm in the Gulf of Oman in UAE waters imports juveniles from both species from Bahrain, Kuwait, Turkey and Greece and complies with all the norms and regulations imposed by the EU, and the company's processing facility is also EU approved.

Perception

Consumers are not well aware of the welfare of farmed fish, as there is not much activity in the UAE in this respect, nor in the region itself. No changes with respect to fish welfare are foreseen.

5.5 Discussion and conclusion

Worldwide, consumers are becoming more quality conscious and demanding, and issues such as socially and environmentally responsible aquaculture practices, food safety, traceability, certification and eco-labelling are becoming increasingly important. Given these developments, it is likely that societal and political developments within the EU with respect to the welfare of farmed finfish during farming and at slaughter will have an impact on farmed fish practices and industry guidelines, regulation and legislation in third countries outside Europe. At present there is no legislation in the EU to protect the welfare of farmed finfish during its production. It is

foreseen that once legislation comes into force in the EU, this may promote changes in third countries with respect to welfare.

Data provided by Dutch Foreign Agricultural Services and information obtained from a literature survey revealed that awareness of fish welfare, which is increasing in third countries like Norway and to some extent in Russia, Brazil and Turkey, can be characterised as a predominantly European issue. In Norway legislation has been prepared to protect fish welfare at slaughter and to support the export of fish products to the EU, and this legislation will come into force as of 1 January 2010. For Turkey there is a growing awareness among fish farmers that fish welfare needs to be improved to facilitate export to the EU. For the Turkish farm NSU, this awareness regarding fish welfare in the EU was a reason for their participation in a European project on the stunning of farmed fish species (Craft project StunFishFirst, contract COOP-CT-2004-512991).

The results obtained revealed that in other third countries than Norway, Turkey, Brazil and Russia societal and political developments with regard to sustainability and food safety show that demand, market and marketing aspects are becoming an important set of driving forces in shaping the aquaculture sector, globally. Demand for aquaculture produce continues to grow but future growth will be driven largely by market requirements.

Information obtained for the United Arab Emirates suggested that, in the opinion of the government, fish welfare is an issue of concern. In order to substantiate this remarkable finding, an internet search was carried out. No information was obtained to confirm that the government of the UAE pays attention to fish welfare. This shows that data obtained from the questionnaire may not necessarily be unequivocal or complete.

Our inventory showed that there is little or no overall detailed information with respect to regulation and legislation, farming practices and industry guidelines, perception of welfare, mismatches and trends. Consumer awareness regarding fish welfare is growing in Norway and may be present to a limited extent in some parts of Russia.

It is known that within the EU NGOs as well as supermarkets strongly promote an improvement in conditions during the production of farmed fish. In the UK the RSPCA (Royal Society for the Prevention of Cruelty to Animals) and fish farmers form partnerships to optimise fish welfare (pers. comm. J. Avizienius, RSPCA).

In Europe the Commission is aware that consumers require healthy, safe and quality farmed food fish with a focus on production systems that are tending towards those which are more sustainable, more environmentally- and welfare-friendly, and which have lower requirements for inputs. It is known that in the EU this interest for the welfare of fish has grown rapidly over the past 5 to 10 years. As a consequence, at the request of the Commission the European Food Safety Authority (EFSA) has recently issued scientific opinions which consider stunning-killing of farmed fish. Recently, the Commission requested EFSA to issue a scientific opinion on the animal welfare aspects of husbandry systems for farmed fish. Where relevant, animal health and food safety aspects should also be taken into account. This scientific opinion should consider the main fish species farmed in the EU, including Atlantic salmon, gilthead sea bream, sea bass, rainbow trout, carp and European eel and aspects of husbandry systems such as water quality, stocking density, feeding, environmental structure and social behaviour.

In the EU it is foreseen that the profitability and competitiveness of fish farms will be substantially improved by reducing the under-performance of fish associated with poor welfare, in part through the reduction of disease in farmed fish populations. A secondary benefit of improved fish welfare will be the reduction of the environmental impact of fish farms as a consequence of the decreased use of pharmaceuticals for disease control. These benefits will help to fulfil the ultimate goal of ensuring the long-term sustainability of commercial aquaculture. Additional strategic benefits include improved European and international consumer confidence in farmed fish products, which will be similarly associated with ethical fish farming, the perceived minimal impact of aquaculture upon the environment and the reduction in the use of chemicals in the production of fish (Kiessling, 2006).

To summarise:

- A part of the data collected in this study was obtained from completed questionnaires only, and therefore more information is needed regarding this data. Therefore, we propose that for a possible future study collaboration with research institutes in third countries and visits to farms should be considered. Moreover, it is recommended that developments regarding the welfare of farmed fish in third countries are studied in more detail, as it is foreseen that the current situation within the EU, which is developing rapidly, will contribute to changes in these exporting countries. We recommend that a future study focuses on Norway, Brazil, Turkey and the Northern region in Russia close to Finland.

As to South America, its farmed fish production almost doubled from 1999 to 2005 and research on fish welfare is being carried out at the Research Center on Animal Welfare (CNPq), Instituto de Biociências, Caunesp, São Paulo in Brazil. This ongoing research in Brazil may facilitate a more detailed study in the future.

- Current societal and political developments in the EU with regard to the welfare of farmed fish contribute to changes in third countries.
- The Norwegian legislation to protect farmed fish at slaughter and the growing awareness among fish farmers in Turkey and a part of Russia, which is close to the North of Finland, clearly result from developments within the EU.

5.6 References

- Anonymous** (2008a) <http://www.fishfarming.com/build.html>, last visited 6 July 2008
- Anonymous** (2008b) <http://edis.ifas.ufl.edu/FA012>, last visited 30 August 2008
- Anonymous** (2008c) <http://www.thefishsite.com/articles/331/world-tilapia-trade>, last visited 10 October 2008
- Barham W.T., Schoonbee H.J., Visser J.G.** (1989): Some observations on the narcotizing ability of electric currents on the common carp *Cyprinus carpio*. *Onderstepoort J Vet Res.*; 56(3):215-8
- Braithwaite, V.A. and Huntingford, F.A.** (2004), Fish and welfare: do fish have the capacity for pain perception and suffering? *Animal Welfare*, 13, S87-92
- Chandroo, K.P., Duncan, I.J.H. and Moccia R.D.** (2004), Can fish suffer?: perspectives on sentience, pain, fear and stress. *Applied Animal Behaviour Science*, 86, 225-250
- CONAPESCA** (2008) www.conapesca.sagarpa.gob.mx, last visited 30 August 2008
- FEAP** (2008) www.feap.org. last visited 15 May 15, 2008
- FAO** (2008) http://www.fao.org/fishery/culturedspecies/Oreochromis_niloticus/en, website visited on 1 August 2008
- Kiessling, A.** (2005) "WELFARE OF FISH IN EUROPEAN AQUACULTURE" COST Action 867, 162nd CSO Meeting, 14 - 15 June 2005, 22pp.
- Research Center on Animal Welfare** (2008) <http://recawbrazil.googlepages.com/home>, last visited 10 October 2008
- Sneddon, L.U.** (2003) The evidence for pain in fish: the use of morphine as an analgesic. *Applied Animal Behaviour Science*, 83, 153-162.
- Verdegem, M and Taal, K.** (2005) Action plan to alleviate constraints hampering the further development of the fisheries sector in Egypt – mission report for Royal Netherlands Embassy, Cairo, Egypt, 41 pp.
- Wolffrom, T.** (2004) Farmed fish and welfare. Student report for Directorate-General for Fisheries Research and Scientific Analysis Unit (A4), Brussels, Belgium, 39 pp.

6 Welfare of poultry in a global perspective

Authors: Peter van Horne, Thea Fiks

In this chapter the welfare of laying hens and broilers will be discussed. For laying hens the focus will be on the countries USA and India, which are the second and third largest in the list of egg-producing countries, respectively. China is by far the largest producer of eggs with a share of 41% in the world total. Both the USA and India export shell eggs and egg products (frozen liquid egg product and egg powder). For broilers the focus will be on Brazil and Thailand, which are both large producers of poultry meat and are important exporters of frozen breast meat to the EU. Some additional information is given on the USA, because this country has introduced voluntary guidelines for the housing of broilers. Through the agricultural services we collected a certain amount information on the current situation on animal welfare in these countries and this has been combined with information from other sources and some scientific literature.

6.1 Laying hens

6.1.1 *General*

Laying hens throughout the world are mainly kept in cage systems as this has proven to be a highly efficient and reliable system, producing eggs with a very high hygiene status. However, there are a number of issues raised concerning the welfare of birds in these systems:

- Behavioural possibilities of the hens are restricted due to a lack of space and a lack of furnishing of the environment (nest boxes, litter, perches);
- Some management practices are seriously challenging bird welfare (induced moulting involving withdrawal of feed/water, beak-trimming).

The first issue, especially, has led to European legislation which aims at introducing better possibilities for the hens to express their species-specific behaviour. In other continents there has been little debate on these issues due to a lack of public interest, but in more recent years animal welfare has become an issue outside Europe, although the number of countries involved is still limited.

As a result of stricter regulations for the keeping of laying hens in Europe, the production cost of eggs has increased. After implementation of the EU directive 99/74/EC (with a ban on traditional cages after 2012) the economic competitiveness of the European egg industry on the global market will be further weakened. However, there will still be a limited trade in locally-produced table eggs. Differences in welfare standards can have an impact on the world trade in egg products, especially egg powder. The EU is considering the use of labelling to provide consumers with more information concerning the standard of production (Van Horne and Achterbosch, 2007).

The absence of legislation does not necessarily mean that welfare is impaired. Due to local circumstances (e.g. climate, public debate) the industry may adopt voluntary standards that guarantee a certain welfare standard. Where egg production is concerned, some countries are large producers and thus of potential importance to the European market, and the USA and India have been taken as the most important countries in this study.

6.1.2 *United States of America*

Introduction

Around 95% of the eggs produced in the USA come from caged layers. The remaining 5% are produced in non-cage systems. These systems vary and include both barn and free-range systems, producing non-cage eggs for a niche market. Modern egg farming in the USA has no government assistance programmes and operates on a free market. Although they may be large farms, they are still classified as "family farms" with owners working on the farm and making the day-to-day decisions. Only two egg production companies in the USA share ownership with publicly traded stock. Public concern has only been directed to the keeping of laying hens since about ten years. Although this has not yet led to major changes in legislation, the debate has started and many industrial initiatives have been undertaken. Currently, there are eight states with more than 10 million layers. Figure 6.1 gives an overview.

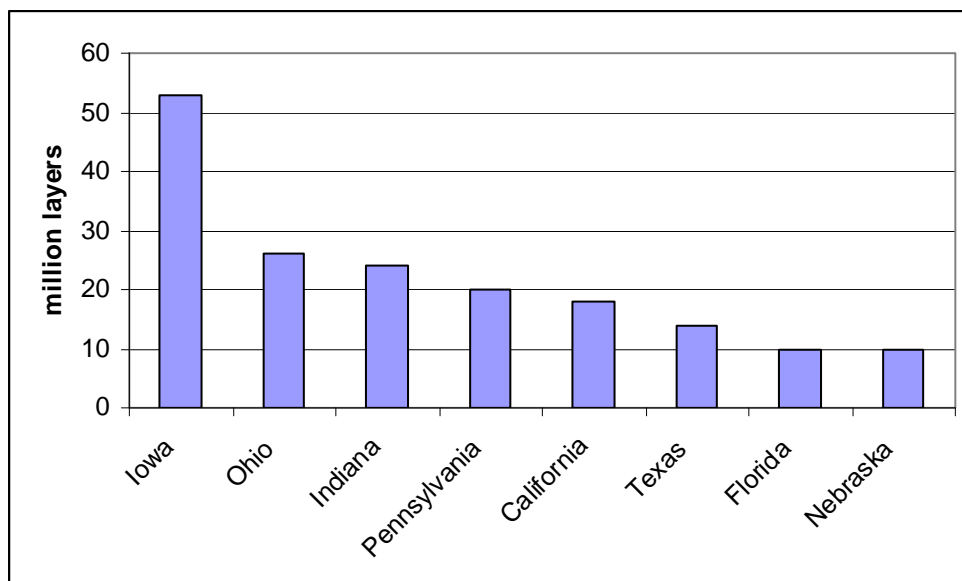


Figure 6.1: Main egg producing states in the USA

The five largest egg producing states represent approximately 50% of all USA layers. Presently, there are 60 egg producing companies with more than 1 million layers and 12 companies with more than 5 million layers. To date, there are approximately 245 egg producing companies with flocks of 75,000 hens or more. These 245 companies represent about 95% of all the layers in the United States.

In 2007, the average number of egg-type laying hens in the USA was 284 million. Flock size for 1 February 2008 was 284 million layers; down from 288 million the previous year. Rate of lay per day on 1 February 2008 averaged 70.8 eggs per 100 layers, up slightly from the previous year.

For 2007 exports of processed egg products continued to soar, rising 8% for the year to \$74.2 million, while table egg export volume increased 42% to 78.7 million dozen, with a value of \$63.5 million, up 74%.

Exports of processed egg products to Japan, the single largest market, showed some slippage, falling 19%, to \$25.3 million. Japan accounted for 34% of total exports in 2007. Helping boost the bottom line, however, was Mexico, thanks in part to the USA Poultry and Egg Export Council (USAPEEC) efforts there to promote the use of US egg products in commercial applications and food service. Shipments to Mexico shot up by 33%, to \$9.5 million. Sales to Canada, another leading market, increased 2% to \$7.9 million.

Hong Kong remained, as it has for years, the top market for US table eggs. Shipments to Hong Kong of 25.4 million dozen were up 20% last year, while the value increased even more significantly by 40% to \$19.0 million (USDA, 2008).

Welfare regulation and legislation

The USA is made up of independent states, which all have their own legislation. There are federal regulations that apply for all states, but very few relating to on-farm practices related to animal welfare or husbandry.

The Twenty Eight Hour Law governs animal welfare during transport and came into force in 1877. It is a federal law addressing the transportation of animals, including those raised for food or in food production, across state lines. The statute provides that animals cannot be transported by "rail carrier, express carrier or common carrier" (except by air or water) for more than 28 consecutive hours without being unloaded for five hours for rest, water and food. Since its revision in 2006 this law has also applied to transport by trucks (boat and ship do not fall under this law) (Councillor USA, 2008).

At state level more far-reaching legislation has only been implemented in states with minor animal production (Mench, 2008). At local government level, resolutions opposing battery cage egg production and an urge to city residents to ban cage eggs have been an issue in Cambridge, Mass., Takoma Park, Md., West Hollywood, Calif., New Port Richey, Fla., Winter Springs, Fla., Berkeley, Calif., Santa Cruz, Calif., West Palm Beach, Fla., Hollywood, Fla., and San Francisco, Calif. (HSUS, 2008).

At state level animal welfare issues are addressed by means of referenda, which are held at the same time as elections. These referenda are usually initiated by local or national animal rights organisations. As a consequence, several states have adopted legislation on various welfare issues. An example is the ban on the production of pâté de foie gras in California. Bills relating to battery cage confinement have been introduced in states as varied as Arizona, New Hampshire, Vermont, and Washington. At the end of 2008 several referenda were planned to discuss a possible ban on cages for laying hens. One of the most important bills is California's Prevention of Farm Animal Cruelty Act, which was passed by voters on 4 November 2008. This bill requires that "an enclosure or tether confining specified farm animals allow the animals for the majority of every day to fully extend their limbs or wings, lie down, stand up, and turn around." The purpose of the measure is to prevent three intensive systems: veal crates, battery cages (layers), and gestation crates (sows). The measure is the result of a six-month signature-gathering effort sponsored by the Humane Society of the United States (HSUS) and other animal-welfare groups. As this measure will be enforced by law, California's egg farmers will have to move the state's 19 million caged birds into cage-free facilities by 2015. A lawsuit is pending in California to remove tax advantages for producers to purchase cages.

The most far-reaching animal welfare legislation can be found in New Jersey. Minimal requirements have been formulated for laying hens. They are not very precise but state in general terms that hens should have enough space to stand, lie down, get up, walk, spread their wings, move their heads freely, turn around and rest. Cage hens should be able to stand upright in the cage without having their heads protrude through the top of the cage. Traps and other risks of injury should be prevented for both cage and non-cage systems. Construction of the keeping system should minimise soiling of birds by faecal material from birds in cages above them. When inducing a moult (in which the hens shed feathers, lose weight and go through an egg production rejuvenation process) in laying hens, the light period should be reduced to not less than eight hours in closed houses or to natural day length in open houses for the duration of the moult period. When the flock is placed back on a layer diet, lights should be returned to the normal layer programme schedule.

As New Jersey is not an important producer of poultry products, the implication of this far-reaching legislation is not very pronounced. In states with large poultry production units, there is much more limited or no legislation with regards to welfare.

Farming practices and industry guidelines

As the pressure through animal welfare groups rises, the industry has realised that it will need to change its production methods and will have to meet the requests of the public. A clear example of this is McDonald's, which has posed demands on the production of eggs used in its products. This signal was taken over by others and nowadays a lively discussion is being held.

The United Egg Producers (UEP) is the largest organisation of egg producers for laying hens. It comprises about 95% of all egg producers. As it spotted the growing concern for animal welfare, it formed an independent scientific advisory committee to provide the UEP Producers Committee with scientifically based advice. This committee started in 1999 and was asked to review the scientific literature regarding the welfare of laying hens. In addition, the committee was asked to formulate animal husbandry guidelines to improve the welfare of laying hens in cages and non-cage systems. The guideline for US egg laying flocks is a 'living' model, which will be modified according to the latest state of the art. Eggs produced according to these guidelines are labelled. At the moment egg producers representing more than 200 million layers or 80% of the industry have already signed on to participate in the programme. Participating producers are audited yearly through an independent certification programme to ensure that the new standards are being met. The Food Marketing Institute and National Council of Chain Restaurants have endorsed UEP's Animal Husbandry Guidelines.

The guidelines place top priority on the comfort, health and safety of the chickens and include:

- Increased cage space per hen, which is being phased in to avoid market disruptions;
- Standards for non-feed withdrawal moulting procedures based on the most current, verified scientific studies;
- Standards for trimming of chicks' beaks, when necessary, to avoid pecking and cannibalism;
- Maintaining a constant supply of fresh feed, water and air ventilation throughout the chicken house and monitoring for ammonia;
- Standards for daily inspection of each bird as well as proper handling and transportation;
- Availability of a new training video to instruct producer staffs on the proper handling of chickens to avoid injury to the animals.

In Table 6.1 details of the UEP guideline (UEP, 2008) are compared to the EU-Directive 1999/74. It shows that the UEP guidelines are stricter than the EU-Directive on some aspects.

The UEP guidelines will be implemented stepwise. For cage houses a stepwise introduction of extra space per bird is set, starting in 2002 and ending in 2008. From August 2008 onwards all equipment should meet the space requirements. The guidelines for non-cage systems have to be implemented in any new house or any house conversion that has taken place after 1 April 2008. By 1 January 2018, all non-cage systems must comply with the guidelines. Figure 6.2 gives an example of a cage and a barn system for layers.



Figure 6.2: Example of a cage (left) and barn system (right) for layers.

Perception

Animal welfare

The perception of animal welfare is growing in the USA, although this does not apply for all parties in society. In politics and governmental issues animal welfare is very low on the list of priorities, and in daily life animal welfare is also not really a widely discussed issue. In contrast, animal welfare organisations are very active. They have published various reports on the welfare of laying hens (HSUS, 2008a, b), which have been written by respected scientists in the field and are based mainly on literature that has been produced in Europe. Scientists are using the information available from European research groups. Bell (2005), for instance, referred to the work of EFSA and LayWel, and Shields and Duncan (2008) have compared the welfare of hens in cages and non-cages, using principal European literature on this subject. Mench and Swanson (2000) discussed science-based animal welfare guidelines, taking space allowance per bird as an example and presented a brief review of the European work that has been done in this field. Consequently, the scientific view on the welfare of laying hens in the USA may not be significantly different from that in Europe and seems to be following in the direction Europe has chosen. The perception is that animal welfare cannot be based on a single measurement, but is a sum of various factors. Natural behaviour and behavioural needs are important issues in the assessment of animal welfare. The main scientist in this field in the USA is Dr. Joy Mench. Joy Mench is a Professor in the Department of Animal Science and the Director of the Center for Animal Welfare at the University of California, Davis. She conducts research on the behaviour and welfare of farm, laboratory and companion animals, and teaches courses on animal welfare and the ethics of animal use. She has published numerous papers and articles on these and related topics, and serves on many committees and boards related to farm and laboratory animal welfare, including the Animal Welfare Advisory Committee of the Food Marketing Institute/National Council of Chain Restaurants and the Council on Accreditation of the Association for the Assessment and Accreditation of Laboratory Animal Care, International. She is involved in helping farm animal producers, like the United Egg Producers, develop and implement animal care standards, and assisting the two major retail trade groups representing supermarkets and fast-food restaurants in the creation of a national farm animal care and handling program. Other scientists that are mentioned are Dr. Ian Duncan (Department of Animal and Poultry Science, University of Guelph, Canada) and Dr. Michael Appleby, who are both European scientists that have or have been connected to the University of Guelph (Canada) for a considerable time.

As a consequence of the pressure that animal welfare organisations have exercised in relation to the issue of farm animal welfare, farming practices have been changed in various states. This has triggered the concern of

the industry and although it is not eager to change animal husbandry practices, it has been forced to think about it and is slowly being compelled to pay attention to animal welfare.

Table 6.1: UEP guideline compared to the EU-Directive 1999/74

UEP- guideline	Comparison with EU-Directive 1999/74 Equal or better	Worse
Cage space		Cages should provide 67 inch ² /hen (= 432 cm ² /hen) for white layers. 86 inch ² /hen (= 555 cm ² /hen) for brown layers 1.0-1.2 sq.ft./hen (= 7.5-11 hens/m ²) (EU-directive has no regulations for moulting)
Floor space (non-cage system)		
Moulting	Moulting only allowed under certain conditions: only non-feed withdrawal moult methods are permitted, water should be available at all times and a minimum of 8 hours light should be given during moult	
Beak trimming	Not only should this be done at 10 days of age at the latest, but also management measures are prescribed to reduce the risk of complications	A second trim between 5 and 8 weeks of age is allowed, therapeutic trimming at later age allowed if an outbreak of cannibalism occurs
Feed, water	Cages: max. 12 birds/drinking nipple (none-cage=10 birds/nipple=EU-directive) Non-cage: feeders and drinkers max. 26 ft (= 8 m) from birds	Cages: no precise feeder space given Non-cages: feeder space 3 inch/hen (= 7.6 cm)
Light levels	Cages: 0.5-1 foot candle (= 5-10 Lux) Non-cage systems: min. 0.5 foot candle (= 5 Lux)	
Nest space		9 sq.ft./100 hens (75 cm ² /hen)
Perches	Non-cage systems: 6 inch/hen (= 15 cm/hen), 20% elevated (16 inches = 40 cm above floor)	
Litter		Non-cage system: 15% of usable area No size defined
Free range		
Air ventilation, ammonia	Ammonia level ideally max. 10 ppm, but rarely more than 25 ppm	
Proper handling and transport	Description of how to handle birds, preferably one-by-one; no more than 24 h feed withdrawal, no water withdrawal prior to catching; personnel should be trained	
On-farm euthanasia and depopulation	Personnel should be trained; description of methods to ensure minimal stress and transport of live birds and a rapid and sure killing method.	

Animal welfare and animal rights groups

There are many NGOs campaigning in the interest of animal welfare and animal rights groups in the USA. The largest animal welfare organisation is the Humane Society of the United States (HSUS), which has a yearly budget of around 30 million dollars and is funded by the public. It enforces legislation on various items by organising referenda. Its approach is not as extreme as groups like PETA (People for the Ethical Treatment of Animals), for instance. HSUS takes a position that is more similar to that of the European organisation Eurogroup for Animals or the Dutch *Dierenbescherming*. Although national politics do not focus on animal welfare, the various animal welfare and rights groups force state politics to pay attention to this issue and to set regulations on various items. The success of the NGOs depends more or less on the economic situation of the people in the state. Examples of actions taken by the HSUS are:

- Routine support of bills in state legislatures that would ban battery cages. Bills relating to battery cage confinement have been introduced in states as varied as Arizona, New Hampshire, Vermont and Washington;
- Primary sponsor of California's Prevention of Farm Animal Cruelty Act, which, if passed by voters on 4 November 2008, will ban battery cages in California by 2015;
- Cooperation, at local government level, with Cambridge, Mass., Takoma Park, Md., West Hollywood, Calif., New Port Richey, Fla., Winter Springs, Fla., Berkeley, Calif., Santa Cruz, Calif., West Palm Beach, Fla., Hollywood, Fla., and San Francisco, Calif. to pass resolutions opposing the cruelty inherent in battery cage egg production and urging city residents not to buy battery eggs;
- Pressure on major corporations from retail chains to tech giants to ban the selling or use of battery eggs, including national grocery chains (e.g. Whole Foods Market) and various fast food chains (e.g. Burger King, Hardee's).

The attention animal rights organisations have been drawing to the issue of caged layers has induced not only producers and retailers to change their attitude, but more than 300 schools, colleges and hospital cafeterias have either entirely ended or reduced their use of battery cage eggs (Mench, 2008). And several corporations have done the same in their employee cafeterias, including Google, AOL, Yahoo and Nike (HSUS, 2008).

Another group that is active in poultry welfare issues is Compassion over Killing (COK). COK is a non-profit animal advocacy organisation based in Washington, D.C. It has been working to end animal abuse since 1995, focussing on cruelty to animals in agriculture and promoting vegetarian eating. One of its activities was a movement to stop the use of the logo "Animal Care Certified", being used by the United Egg producers. COK exerted pressure, stating that the logo was misleading as hens under the certification scheme were still housed in battery cages with very little space and, as a result, the programme and logo name were officially changed to "United Egg Producers Certified". Another action recently taken by the COK was a video distributed on the internet showing very rough handling and very bad conditions for laying pullets and hens.

Retail

As a reaction to the pressure from animal rights organisations, several retailers have switched to cage-free eggs, including Burger King, Hardee's, Carl's Jr., Ben & Jerry's and others. Some retailers' measures are already comparable with those of the majority of Dutch supermarkets and battery cage eggs are no longer sold in these stores (e.g. Whole Foods Market) but not all retailers have switched. McDonald's was one of the first companies to set stricter regulations for eggs produced for their food, but these stricter rules still make it possible for hens to be housed in battery cages. The HSUS is putting a great deal of pressure on McDonald's to ban cage eggs, but so far McDonald's has not changed its point of view (HSUS, 2008).

Conclusions

The issue of animal welfare has become a topic in the USA in recent years. Although there is very little legislation with regards to poultry welfare, the producer organisation UEP has set guidelines to stepwise improve the welfare of laying hens. This is done as a reaction to the pressure exerted on it by national and local animal rights organisations. When these guidelines are fully implemented, the housing and management situation will be equal or better on some points, and even worse on others, compared to the European situation at the moment. The guidelines include more space for the hens in cages, conditions for moulting and standards for beak trimming but, even so, there will be far better housing conditions for layers in the EU, after implementation of EU directive 99/74/EC in 2012.

Among scientists and animal rights organisations the perception of animal welfare in the USA is not much different from that in Europe and, in fact, follows in the direction Europe has chosen. Due to the attention the animal right organisations have drawn to the issue of cage-layers, retailers and food services (fast food restaurants) have changed their attitude but the market for alternative eggs (around 5%) in the USA is still very low at the moment compared to the countries in North West Europe.

6.1.3 *India*

Introduction

India is the world's third largest egg-producer. According to the 2004 census the number of pullets was 25 million and the number of layers (older than 18 weeks) was 102 million. The egg production in 2004 was estimated to be around 43 billion pieces. India exports shell eggs and dried egg products and has a number of egg powder plants which have been developed for the export. The export of dried egg products increased to 6,500 tonnes during 2003 compared with 5,000 tonnes during 2002.

There are 20,000 farms around the country. Farm sizes vary from 5,000 birds per farm to a maximum of 500,000 birds. Most of the farms keep the laying hens until they are 76 weeks, and forced moulting is not practised in India. Although western breeds are used in India, the local breed BV-300 has a high market share. This breed is completely acclimatised to Indian agro climatic and feed conditions resulting in high egg production.

General

India comprises different states. Various issues have been dealt with on paper with regard to animal welfare. India wants to strengthen trade bonds with Europe and has therefore joined in the welfare discussion but this has only been in the newspapers. In real life there are limitations that make it almost impossible to really solve the indicated problems (Councillor India, 2008). These limitations are caused by:

- 85% of the population is Hindu with a particular philosophy of life, which gives them little inclination to actually solve problems. The Hindu culture forbids the killing of animals, but is unreceptive to suffering and abuse. As a result, animals are easily left alone without care and ending the suffering of animals by killing them is not done and is not a subject for discussion;
- A large part of the population lives in great poverty. This group has other priorities than animal welfare;
- In general, there is a great deal of corruption in India, causing rules to be ignored, because they do not serve the business of the powerful.

The fast growing population in India is the cause of a rapid decline of wildlife areas and a growing demand for food. Although India used to be mainly vegetarian, more people are now starting to eat meat as a cheap and valuable source of protein, generally poultry meat.

Animal welfare is not a major issue in India. The concept of welfare is hardly known and is more associated with good health and good feeding. Civil society is weak as the country is mainly governed by the elite. There are some NGOs that deal with the protection of the Bengal Tiger, but their influence is weak and the growth of the Indian population is strong (Councillor India, 2008).

In India, the Animal Welfare Board of India, under the Ministry of Environment and Forests, plays an important role in monitoring the role of non-governmental organisations involved in animal welfare; assisting them both technically and financially and functioning as a watchdog for all animal abuse (Rahman et al., 2005).

Farming practices

In addition to modern hybrid layers and broilers, India has a huge population of indigenous chicken in backyards or free range, which act as a source of pin money for housewives (Narahari, 2008). The commercial egg production in India started in the early seventies. Now India has developed its own technology in poultry housing suitable for the tropics. Almost all commercial hens in India are kept in cages (Narahari, 2008). On small farms they are kept in two-tier cages and in larger farms in three-tier cages on elevated platforms in open shed houses. The farm capacity is 20,000 to 50,000 hens. Automatic feed trolleys are used in the bigger houses. Eggs are collected manually due to the availability of cheap labour. In these wire cages the hens cannot flap their wings, the conditions are so barren they have no nest for their eggs, and are so restricting that the birds' bones often become so brittle they can snap like dry twigs (Rahman et al., 2005). Figure 6.3 gives two examples of a poultry house with cages in India.

In the warmer areas hens are kept in a kind of free range system, where the space per bird is large (no information on exact space per bird and exact keeping system). In the cooler areas cage systems are used. Often these are self-made wire constructions in daylight houses. Exact stocking densities and other details are not known. Birds are beak trimmed, but the exact age and number of times are not reported. Production is mainly for the local market. Although producers have to conform to the rules with regards to food safety etc. there are no regulations for bird welfare. A problem is the high incidence of diseases (Kumar, 2008; Councillor India, 2008). Problems with *E.coli* infection, mycotoxins, coryza and wing rot are health problems faced by layer farmers

(Narahari, 2008).



Figure 6.3: Two examples of a poultry house with a cage system for layers in India.

All commercial layers kept on modern farms have open-sided houses where birds are housed in three to four rows and three-tier conventional cages. The new poultry houses in India have a length of 106 meter by 13.4 meter and can house 20,000 hens. The standard cage size for three birds is 37.5 cm by 30 cm. The space allowance is 375 cm² per bird (NECC, 2002), which is much lower than the current EU standard of 550 cm² per bird.

Conclusions

In India commercial layers are kept in cages in which the space allowance is much lower than allowed under European standards. There are no welfare standards; welfare is not an issue for the Indian government. Improving animal welfare is limited in real life by the poverty of a great part of the population and the life philosophy within the Hindu culture. Egg production in India focuses mainly on the national market and the growing population in India will increase the local market for poultry products, making export efforts unnecessary for Indian producers. On the other hand, some of the larger companies are exporting egg powder to the EU and Japan, as a result of the low production costs and the lack of regulations. In the near future India will have competitive advantages to be a player on the world market for egg powder (Van Horne, 2005).

6.2 Broilers

6.2.1 General

Broilers are generally held in large groups in either environmentally controlled housing or open, naturally ventilated poultry houses. Broilers are usually kept free, and housed on litter with (automated) provision of feed and water. In most countries, commercial breeds are used which are selected for rapid growth. Farmers around the world understand that raising the birds with maximum efficiency requires many conditions to be fulfilled: stress prevention, supply of good feed and water and sanitation (Van Horne et al., 2007). In providing these conditions, farmers ensure a basic level of animal welfare. However, there is a growing consensus of opinion that good productivity and health are not sufficient indicators of a good standard of welfare (Jones, 1996).

In May 2007 the European Commission agreed on a new Directive covering the welfare of broilers. All European producers have to meet certain standards by June 2010. The main provision of the Directive is to reduce the stocking density by setting a maximum of 33 kg per m². Under certain conditions, with good ventilation and a temperature control system, the maximum can be 39 kg per m². Under exceptionally high welfare conditions, with low mortality rates, the density can be increased by a further 3 kg per m². The Directive also sets conditions covering lighting, litter, feeding and ventilation requirements.

6.2.2 Brazil

Introduction

Brazil is one of the leading poultry producing countries in the world and is the number one exporter of poultry meat. There has been an enormous development and expansion since the 1970s. With a unique set of natural resources Brazil has earned its excellent competitiveness on the international poultry meat market. The main factors explaining the success are the huge availability of areas of arable land to grow corn and soybeans to feed the poultry, the friendly climate, availability of water, low labour costs and vertically integrated companies with

good management (Van der Sluis, 2005). In 2005 the total production was around 9 million tonnes of which 25 to 30% was exported. Brazil exports breast meat to the EU, whole birds to the Middle East, leg meat to Russia and deboned leg meat to Japan. Brazil exports large amounts of frozen and cooked breast meat to the EU, primarily to Germany, the United Kingdom and the Netherlands.

General

In Brazil there is little information available on animal welfare, simply because this subject receives little attention in the country. It should be stressed that Brazil is a huge country (bigger than the EU) with several climate zones, a population with different backgrounds (local, immigrants), farming systems and an uneven distribution of welfare status of the population (Councillor Brazil, 2008). The differences are also large within poultry farming, with three main types to be distinguished:

Subsistence farming. Mainly in the north-eastern part of Brazil where farming focuses on production for own use;
Small and middle scale farming. Independent or cooperative production for the regional and local market;
Multinationals (e.g. Perdigao and Sadia). Large companies producing for the Brazilian market and for export.

Welfare regulation and legislation

For the local (Brazilian) market animal welfare is not an issue and receives very little attention as a topic. There is no legislation on animal welfare for poultry at farm level or during transport in Brazil. A large part of the population simply wants to survive and lives from day to day.

In March 2003 the Minister of Agriculture installed a permanent committee for animal welfare. This committee will initiate studies on animal welfare and marks the first official government attempt to give attention to animal welfare (Vrolijk, 2008). Although there is no government legislation on animal welfare, the large exporting companies will nevertheless consider animal welfare on their farms as part of their marketing strategy.

Farming practices

Only companies which export to the EU take animal welfare into account. The chairman of ABEF (the Brazilian association of poultry exporters) stated: 'We deliver what the market asks for'. This remark was made when the EU decided to maximise the density for broilers to 21 birds per m² poultry house. According to the ABEF the density in Brazil is 14 birds per m². Since Brazil can maintain low costs in producing broilers, its industry is competitive with the EU even after a further decrease in density (Councillor Brazil, 2008). The agricultural councillor referred to a LEI report entitled 'The Brazilian poultry industry' (Van Horne and Goddijn, 2005) with a paragraph on broiler welfare. This information is based on the findings during a study tour made in 2005 with visits to several institutions and companies in Brazil. The poultry industry is mainly concentrated in the south of Brazil where the climate is sub-tropical. The broilers are often kept in simple open houses. In general three types of housing can be distinguished;

- Low density housing: the density is 10 to 12 birds per square meter in simple traditional poultry houses. The poultry houses have open sidewalls with natural ventilation. The density per square meter is up to 30 kg.
- Middle level density: the density is 14 birds per square meter. In this housing system there is mechanical ventilation and there is some kind of cooling during the hot summer periods. The density per square meter is in general around 34 kg.
- High density: the density is 14 to 16 birds per square meter. The poultry houses are very modern with mechanical tunnel ventilation. At high temperatures the incoming air is cooled through a pad cooling system. Calculated at an average live weight of 2.5 kg per bird the density is up to 38 kg per square meter.

Figure 6.4 gives an example of poultry houses for broilers in the Netherlands and in Brazil. Europe has mostly closed housing systems with medium to high density, while South America has mainly open housing systems with low to medium density.



Figure 6.4: Example of a poultry house for broilers in the Netherlands (left) and in Brazil (right).

There is not much information available on other aspects of the welfare of broilers regarding the situation in Brazil. According to economic studies (van Horne, 2006) the average live weight of the broilers in Brazil is higher than in the Netherlands. As a result the mortality rate is slightly higher. From this report it can be concluded that there is no real difference in mortality rate in Brazil compared to the Netherlands. The catching of the birds is done in a very welfare friendly way by taking only two broilers at a time. This method can be used due to the low cost of labour. The transport of the broilers takes place in crates, which method is less animal welfare friendly than the container system commonly used in the Netherlands. The transport to the processing plant is often over bad roads. However, the distance from farm to processing plant is, in general, short (van Horne & Goddijn, 2005). The large multinationals commonly use modern European processing equipment. When properly used there should not be any difference in processing with the European situation. The number of foot pad lesions (dermatitis) in broiler chickens is one of the parameters of the broiler welfare assessment system that is currently being developed in Europe. At the moment there is no information available on the numbers on foot pad lesions in Brazil.

Conclusions

For the local (Brazilian) market animal welfare is not an issue. The EU has concentrated on the density of broilers in recent legislation. In Brazil the density is already at EU target level. Brazilian producers are likely to respond to regulatory demands from the EU for increased animal welfare if they were to be implemented; large companies exporting to the EU have already demonstrated their willingness and capacity to respond.

6.2.3 *Thailand*

Introduction

The Thai poultry industry is a main player within Asia. Besides the local market there is a substantial amount of export, important destinations for poultry meat being the EU and Japan. Although Thailand has higher production costs than Brazil, its advantage is low labour costs. Thailand can compete with breast meat on the EU market as a result of a preference for dark leg meat on the regional market. The Thai broiler industry was severely hit by the outbreaks of Avian Influenza (AI) in recent years, which led to low prices and farm closures. As a result of the AI situation only the export of cooked poultry meat is allowed to EU, which can be used in Europe by companies for further processing poultry meat into convenience products.

Welfare regulation and legislation

In November 1999 the department of Livestock Development (DLD) issued a notification of standardisation for all economic livestock farming on behalf of the Thai Ministry of Agriculture and Cooperatives (MOAC), covering poultry, cattle, sheep and goats, among other livestock. The government wanted to tighten enforcement as food safety and animal welfare are both concerns in the export and domestic market. See the paragraph on practices for details.

Farming practices

Since the above notification in November 1999 from the Thai government, animal welfare has been taken into account on the national agenda. The notification contained:

Criteria of standards for livestock farming;

The manual/handbook to achieve the standards on farms.

For poultry, the regulations apply at all stages of the chain:

Welfare at farm level;

Welfare during transport to the slaughterhouse;

Welfare at the slaughterhouse.

As one of the leading poultry meat exporters, Thailand needs to assure international clients that it meets international standards. As a result, the poultry industry must follow the notification of the MOAC, DLD1999, which imposes farm standards based on Good Agricultural Practice (GAP) with the purpose of improving the quality and safety of livestock products. The standards address not only animal welfare but also environmental concerns (waste management), food safety (e.g. withdrawal time of some pharmaceuticals), disease monitoring, biosafety and traceability. The government has certified certain farms as export farms but it should be stated that, in practice, the government notifications are mostly implemented on a voluntary basis by the sector. However, the regulations are compulsory with regard to the export of poultry meat (Councillor Thailand, 2008).

All export-oriented farms need to comply with the international standards:

- Density: not to exceed 20 kg of live weight per m² broiler house for open houses and not to exceed 34 kg per m² in closed poultry houses;
- Not more than 10,000 broilers per worker in an open system and not more than 40,000 broiler per worker in closed systems;
- For every 400,000 broilers an animal husbandry officer (BS degree);
- For every 500,000 broilers a veterinarian;
- Average light intensity not less than 10 lux;
- At least one hour of darkness per day;
- Temperature must be 32-33 °C for chicks and 20-30 °C for broilers.

Many farms found that following these standards is beneficial since the mortality rate is low and the feed conversion rate is improved.

The poultry industry has switched to modern slaughterhouses for processing and here too the international standards have to be met ('no cruelty slaughter process').

Perception

Although government bodies play a key role in the welfare of animals, several NGOs also play an important role in supporting and promoting animal welfare among the public. Mention should be made of the Thai Society for the Prevention of Cruelty of Animals (TSPCA) and the friends of Asian Elephant Foundations. NGOs focus especially on pets and wild animals (with special attention for the elephant as it is a national symbol).

The local consumers give mixed reactions when asked about animal welfare for livestock. The higher income and well educated consumers in big cities or more urbanised areas are more aware of welfare and are more willing to pay for higher quality. This provides opportunities for modern retailers to sell products produced according to international standards. There is less perception of such aspects by consumers in rural areas where products are sold on the traditional wet markets. The outbreak of AI in Thailand has resulted in domestic consumers becoming more aware of product quality and more inclined to choose certified products with the label of traceability, biosafety management and surveillance (Councillor Thailand, 2008).

Conclusions

The enforcement of regulations focuses on the export market. The sector is very market driven and as a result standards for animal welfare and food safety are implemented on a voluntary basis, leading to the existence of two standards in Thailand, one mainly for the export market with high quality products and one for the domestic market with a wide range of qualities. Thai exporters have a strict control system in place to meet international standards as well as certain requirements of European buyers. Both government and the sector recognise that animal welfare is an important criterion for the export market.

6.2.4 *United States of America*

Introduction

For broilers the countries Brazil and Thailand were selected due to their large exports of poultry meat to the EU. Next to Brazil the USA is a leading exporter in the world. At the moment (summer 2008) there is discussion within the EU whether the USA should be allowed to export poultry meat to the EU. In this light, it may be interesting to give an overview of the practices concerning broilers in the USA. For legislation and perceptions there, we refer the reader to the paragraph on laying hens in the USA.

Welfare regulation and legislation

In the USA federal legislation focuses on transport (Farm Bill, 1996), methods of slaughtering (update 1958) and laboratory animals (1966). On a more specific level, the legislation can be different in some states.

The USA has fewer regulations for the animal welfare of farmed animals than the EU. US animal welfare is primarily regulated by the Animal Welfare Act (AWA), passed in 1966 and strengthened through subsequent amendments. The AWA sets standards for the animal welfare of pets and laboratory animals, but does not regulate welfare standards for farmed animals. There are specific regulations for poultry, which dictate that poultry must be slaughtered using good commercial practices. Otherwise, the welfare of poultry during slaughter or transport is generally not regulated by legislation (Gains, 2005).

Farming practices

In the USA the national chicken council (NCC) sets criteria for the animal welfare of broilers. The NCC is the association which represents vertically integrated broiler producer-processors. It recommends guidelines to its members to assure the humane treatment of animals to promote the production of quality products. The practices promote good health and welfare of broilers in several segments: education and training, proper nutrition and feeding, appropriate comfort and shelter, health care, ability to display most normal behaviours, best practices on farm, catching and transport.

The chapter on the ability to display most normal behaviours is especially relevant. Bird welfare at different stocking densities will depend on access to feeders and drinkers, ventilation systems, litter management and husbandry but density must not exceed the following limits:

Below 2.0 kg (4.5 lbs) maximum 31.7 kg per m² (6.5 lbs per square foot)

2.0 to 2.5 kg (4.5 to 5.5 lbs) maximum 36.6 kg per m² (7.5 lbs per square foot)

Above 2.5 kg (5.5 lbs) maximum 41.5 kg per m² (8.5 lbs per square foot)

Birds that exhibit stunted growth and obvious gait defects should be humanely euthanised. The use of a lighting programme is recommended to help manage growth and weight gain; the flock should be provided with at least four hours of darkness in every 24 hours except for the first and the last two weeks of grow-out (NCC, 2005).

6.3 Conclusions

The majority of commercial layers are kept in cages for egg production. There is a wide variation in the space allowance per bird from 300 to 400 cm² in Asia and South America to 430 cm² in the USA and 550 cm² in Australia and New Zealand. The difference in housing conditions will increase after 2012 when the layer farmers in the EU will change to enriched cages with a minimum space allowance of 750 cm² per hen or to non-cage systems with at least 1111 cm² per hen.

Throughout the world, birds are generally kept on litter for broiler production. Recently the EU agreed on a new Directive to set standards for maximum bird density. At present, the difference in animal conditions, including bird density, in countries like Brazil and Thailand is limited compared to the EU. Companies in these countries recognise that animal welfare is an important quality characteristic to meet the market standards for export to Europe and exporters comply with the standards on food safety, sustainability and animal welfare.

In this chapter the focus was on the countries USA and India for layers and on Brazil and Thailand for broilers, compared to Chapter 3 where the current situation on animal welfare was reported for more countries. This information was combined with literature and data from international organisations like the World Poultry Science Association (WPSA) and the International Egg Commission (IEC). Reference is often made to the income situation in a country as an explanation of the situation of poor animal welfare conditions or the lack of legislation in this field. In Figure 6.5 the average income in a country (FAO data) is related to the level of regulations (including

public and also private welfare standards) to improve the welfare of layers. Switzerland has very strict regulations on the housing of layers. Within the EU Sweden, Austria, Germany and Netherlands have higher standards than regulated in the EU directive 99/74/EC. Outside the EU there are voluntary guidelines or laws for the housing of layers in the USA, Australia and New Zealand. Figure 6.5 shows that Eastern European countries have higher and Australia, USA and especially Japan have lower welfare standards for layers than would be expected on the average income situation in these countries. In Japan the government and the industry are in the process of discussing the introduction of voluntary private welfare standards for which the UEP guidelines of the USA layer industry would act as an example. Figure 6.5 relates only to the situation for layers. There is not enough detailed information available for broilers.

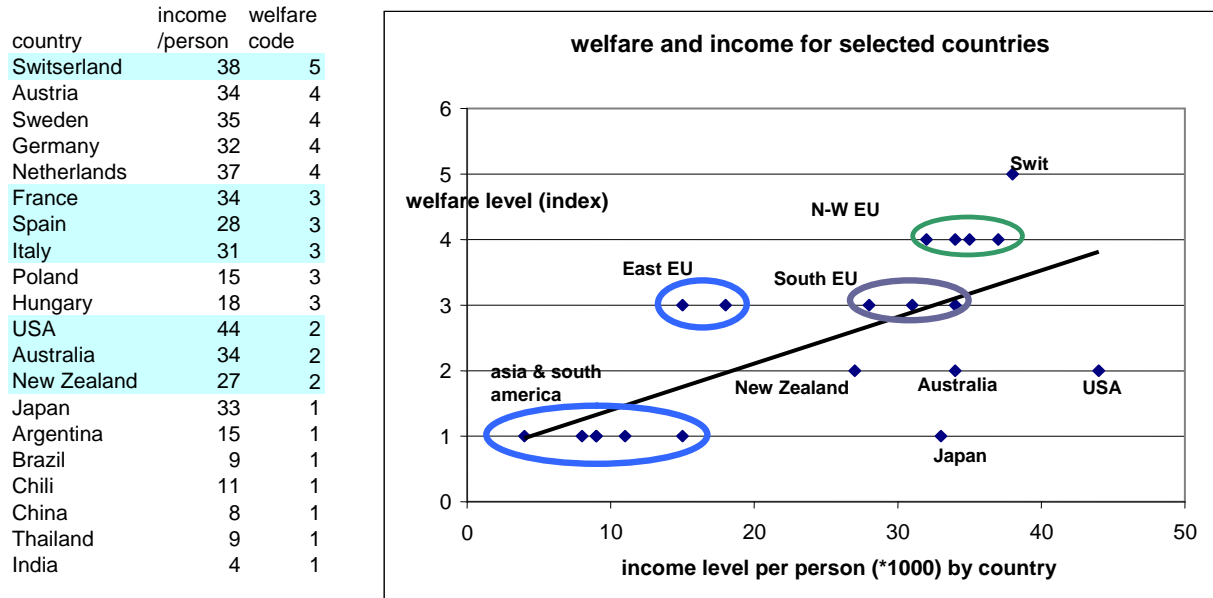


Figure 6.5: Average income related to the level of regulations to improve the welfare of layers.

6.4 References

- Bell, D.** (2005) A Review of Recent Publications On Animal Welfare Issues For Table Egg Laying Hens. United Egg Producers Annual Mtg., Oct 2005, University of California, Riverside, CA
<http://animalscience.ucdavis.edu/Avian/WelfareIssuesLayingHens.pdf>
- Councillor, Brazil.** (2008) Agricultural councillor Brazil. Personal communication and mail 30 May 2008
- Councillor, India.** (2008) Agricultural councillor India. Personal communication
- Councillor, Thailand.** (2008) R. Agricultural councillor Thailand. Personal communication and mail 4 June 2008
- Councillor, USA.** (2008) Agricultural councillor USA. personal communication
- Gains** (2005) Report E35166 USDA Foreign Agricultural Service
- Horne, P. van and T. Achterbosch** (2007) Animal welfare in poultry production systems: impact of EU standards on World trade World poultry Science Journal.Vol.64. March 2008: 40-51
- Horne, P. van and S. Goddijn** (2005) LEI report, project 30221. De Braziliaanse pluimveesector
- Horne P. van and N. Bondt.** (2005) Impact of EU Directive 99/74/EC 'welfare of laying hens' on the competitiveness of the EU egg industry (update base year 2003). LEI report, project 30354. June 2005
- HSUS** (2008a) 'No battery eggs' campaign exposes the hard-boiled truth about laying hens. <http://www.hsus.org>
- HSUS** (2008b) An HSUS report: the welfare of animals in the egg industry. The Humane Society of the United States. 16 p. http://www.hsus.org/web-files/PDF/farm/welfare_egg.pdf
- Jones, R.B.** (1996) Fear and adaptability in poultry: insights, implications and imperatives. World Poultry Science Journal 52: 131-173
- Mench, J.** (2008) Animal Welfare: The global Challenge. International Egg Commission meeting, London, 2008
- Mench, J.A. & J.C. Swanson** (2000) Developing science-based animal welfare guidelines. Poultry Symposium and Egg Processing Workshop, 6 p. <http://animalscience.ucdavis.edu/Avian/mench.pdf>
- Narahari, D.** (2008) The Indian poultry industry – now and future prospects. Proceedings of World Poultry Conference of the World Poultry Science Association. Brisbane, Australia
- Kumar, P.** (2008) Indian poultry Industry, challenges and opportunities. Rabobank International
- NCC** 2005. National chicken council animal welfare guidelines and audit checklist. National Chicken Council. April 2005. Washington
- NECC** (2008) information by mail from the National Egg Co-ordination Committee
- Rahman, S.A., L. Walker & W. Ricketts** (2005) Global perspectives on animal welfare: Asia, the Far East, and Oceania. Rev. sci. tech. Off. int. Epiz., 2005, 24 (2), 597-610
- Shields, S.D. & I.J.H. Duncan** (2008) An HSUS Report: A Comparison of the Welfare of Hens in Battery Cages and Alternative Systems. HSUS. <http://www.hsus.org/web-files/PDF/farm/hsus-a-comparison-of-the-welfare-of-hens-in-battery-cages-and-alternative-systems.pdf>
- Sluis, van der.** (2006) Brazil will continue to be a major poultry producer and exporter. World Poultry.Vol.22. No. 5
- UEP** (2008) United Egg Producers Animal Husbandry Guidelines for U.S. Egg Laying flocks, 2008 edition. <http://www.unitedegg.org>
- USDA** (2008) Selected sources of UDSA, American Egg Board and USAPEEC

7 Overall discussion and recommendations

The aim of this study was to give an overview of animal welfare practices, regulations and perceptions in countries outside the European Union. For this purpose, the following sources of information were used: a literature study, contacts with the Dutch Foreign Agricultural Services outside the EU and contacts with parties in third countries (e.g. at conferences). In addition to a study of animal welfare in general, several cases were considered in more detail with a view to addressing welfare concerns related to trade and policy making, such as the import of poultry meat, eggs, welfare regulations on aquaculture and management options for overabundant wildlife.

A general overview of animal welfare in third countries

- In several third countries there is legislation in place concerning animal welfare and/or animal protection for one or more species (farmed, pet and/or wildlife). The extent of this legislation varies between countries: sometimes the legislation merely addresses cruelty; in others it also involves minimal standards for such matters as housing or transport duration. In all cases, it was difficult to identify whether this legislation is enforced. Reasons for poor enforcement can be lack of finances and/or manpower.
- Although we believe attention for animal welfare is increasing on a worldwide basis, we think the presence of general animal welfare legislation in third countries has only marginally increased over the past ten years.
- Farming practices vary greatly between and within countries. There is a large difference in numbers of small (family) and large (intensive) farms. The consequences of this for animal welfare are less clear. It can be argued, for example, that large intensive systems are generally associated with better animal health, but less behavioural freedom.
- Often citizens and governments seem to be unaware of animal welfare issues and/or fail to perceive animal welfare as an issue. Public health, hunger, safety, the lack of ability to enforce any legislation if present, or the economy in general are likely explanations for citizens' and governments' failure to place animal welfare high on their agendas.
- The number of NGOs in the various countries seemed to co-vary with the attention given to animal welfare, but not always with the perceived magnitude of welfare problems. It is likely that NGOs are a driving force for change.
- Religious and cultural views (e.g. Hinduism and Islam) play a major role in the approach of people towards animal welfare. None of the major religions of the world advocate cruelty to animals: they promote respect for living creatures. However, in everyday practice some of the religious guidelines may result in negative effects related to husbandry situations or slaughtering methods.
- In addition to problems with pets (including stray dogs), transportation and the slaughter of farm animals are frequently identified as global welfare problems. Farming practices, however, are often a threat to animal welfare as well.
- The driving forces for change differ per country and region, and there is a need to create internationally accepted standards. For this, the focus of the international community is on the OIE, which has already developed standards on transport and slaughter. Suggestions from the main trading countries in the world indicate that these standards will eventually make their way into multilateral trade agreements, via WTO, for example.
- High quality standards and comprehensive welfare legislation in countries which import livestock products can act as a potential stimulus to an improvement in the standards of the countries exporting to them. This impetus is only partly driven by legal barriers, but – perhaps more importantly – through market forces.

Wildlife

- Free living species can be experienced as overabundant, when people feel that their safety and economic or ethical interests are at stake.
- Structural local or regional overabundance of a species can be the outcome of man's harmful effect on ecosystems. In addition the fencing of complete or incomplete (no large predators) ecosystems may result in the local or regional overabundance of large herbivores in terms of their general and temporal impact on biodiversity.
- Management options to counteract the negative impact of locally overabundant species may include non-intervention, translocation, culling, fertility control, repelling (including fencing) and habitat manipulation. From an ethical and animal welfare point of view, all options have negative setbacks.
- Culling wild ungulates (starving or not) and leaving their carcasses in the field to be part of the natural cycle (which is practised in the Oostvaardersplassen and the Veluwezoom National Park in the Netherlands), is a unique type of wildlife management. Elsewhere in the world the skin, antlers and meat would be sold to benefit local people. An exception is the commercial seal hunt, where most carcasses are left on the ice.

Local people in South Africa consider costly contraception programmes as a waste because the animals represent a potentially sustainable harvest.

- There are parallels in legislation and perspectives on ethics and animal welfare in the management of overabundant wildlife in the Netherlands, Australia, South Africa, USA, Canada and Denmark.

Aquaculture

- Attention for fish welfare is more apparent in Europe, but developments in the EU will probably influence the attitude of exporters from third countries. Consequently, it is important that attention is paid to the manner in which welfare and health are dealt with in countries that export to the EU.
- Within the EU, NGOs and large supermarkets promote fish welfare (e.g. large supermarkets in the UK demand that fish is stunned before slaughter and the RSPCA has partnerships with fish farms).
- The EFSA is working on a recommendation concerning the welfare of cultured salmon, rainbow trout, bass, sea bream, carp and eel which will formulate a risk analysis to be presented to the European Commission, which may then decide whether to draft legislation for fish welfare.
- Across the world there is little legislation in place to ensure fish welfare. A most notable exception is Norway, which has developed a new law, called "Regulations concerning slaughterhouses and processing plants for aquaculture animals", which will be implemented in 2010.
- Developments in the EU encourage countries wanting to sell to EU companies to meet these companies' standards (e.g. fish farms in Turkey want to stun bass before slaughter).

Poultry

- Laying hens throughout the world are kept mainly in cage systems. There is a wide variation in space allowance per bird from 300 to 400 cm² in Asia and South America to 430 cm² in the USA and 550 cm² in Australia and New Zealand. In recent years the welfare of layers has also become an issue outside Europe, although the number of countries involved is still limited.
- The USA and India are large egg producers with some export of eggs and egg products to other countries.
- In the USA 95% of the eggs are produced by laying hens kept in cages. There is very little legislation with regards to poultry welfare, but the issue of animal welfare has become a topic in the public debate in recent years. Due to the attention the animal welfare organisations have been drawing to the issue of caged layers, producers and also retailers are changing their attitudes. This debate induced the industry to set guidelines to improve the welfare of laying hens, guidelines which include more space for hens in cages, conditions for moulting and standards for beak trimming. The perception on animal welfare in the USA seems to differ little from that in Europe, and the US seems to be following Europe as regards animal-welfare perception (but not as regards legislation). The recent outcome of the referendum in California to ban cages for layers is expected to considerably change the egg industry in the USA over the next decade(s).
- In India, commercially kept laying hens are mainly kept in cages in which the space allowance per hen is much lower than under European standards. There are no welfare standards for layers. Welfare is not an issue for the government in India, and improving animal welfare is difficult to achieve in real life due to the poverty of a large part of the population and the life philosophy within Hindu culture.
- Broilers are generally held in large groups in either environmentally controlled housing or open, naturally ventilated poultry houses. They are usually kept loose, housed on litter with (automated) provision of feed and water. In most countries, commercial breeds are used which are selected for rapid growth.
- Recently the EU agreed on a new Directive to set standards for maximum bird density. At present, the animal conditions, including bird density, in countries like Brazil and Thailand, are comparable with those in the EU.
- In Brazil there is no legislation on the welfare of poultry at farm level or during transport. Brazil is a huge country and as a result the practice on farms ranges widely due to differences in climate (several climate zones), background of the population (local or immigrant) and average income in a region. Animal welfare is not an issue for the local market, but the large exporting companies take animal welfare into account as part of their marketing strategy and have already demonstrated their willingness and capacity to respond to EU regulations or retailer demands.
- Thailand exports large volumes of poultry meat to the EU and Japan. The government established a notification with standards on food safety and animal welfare. In practice these standards are voluntary, but compliance is required from exporting companies. This leads to the situation that Thailand has two standards, with high quality products mainly for the export market and a wide range of qualities for the domestic market. Both government and the poultry sector recognise that animal welfare is an important criterion for export to Europe.

Recommendations

Our findings can serve as a basis to formulate a number of recommendations. This research shows that animal welfare is a very broad subject and that there are a number of subtopics that need further investigation:

- As the subject area is relatively new and booming, we have only been able to take the initial steps in exploring the amount of information available about animal welfare on a global scale. The developments in this area follow each other in quick succession. The OIE, for example, first discussed animal welfare in 2004 and has now, at the end of 2008, reconvened to discuss the implementation of its standards of welfare during transport, slaughter and killing for disease control. More effort is required to develop and maintain a complete picture of global welfare developments. A specialised team or project would be needed to monitor these developments and interpret them, for the benefit of national governments or international organisations, for instance.
- Considering animal welfare on a global scale requires consideration of the sometimes entirely different sets of constraints in which animal welfare has to be interpreted and which can differ in individual countries. Cultural, religious and economic constraints seem to be the main ones. The first step in identifying opportunities of improving animal welfare in different countries would be an understanding of how culture, religion and economics affect animal husbandry.
- Developed countries have to be careful not to 'export' their welfare problems. This can happen in two ways, at least in theory. Firstly by exporting technology which is below the EU standard. Caged systems for laying hens, about to be banned in the EU, are sold second-hand to less developed countries. Secondly: problems are exported when products are allowed into the EU which are produced in a way considered to be bad animal welfare in the member states. In particular when the production method used is cheaper than the welfare-friendly one, the production process (and thus the negative welfare aspects associated with it) may move to third countries. Although to date no clear evidence for this exists, extra attention to the welfare quality level of imported products to the EU may help to avoid this negative effect, and help to increase welfare globally.
- Global trade can be a threat, but it can also be an opportunity for animal welfare. In many third countries labour, buildings and space are cheaper compared to those in the European situation. Organic farming, for example, has provided opportunities for a number of developing countries to sell their produce at a premium, whilst using their traditional low input farming systems. If Western society's demand for higher animal welfare levels is accompanied by higher prices for livestock products from these systems, then developing countries may benefit.
- Potentially, a considerable amount of welfare improvement can be achieved at little expense. Examples in this report show that there is a great deal of progress to be made, simply by increasing awareness and gaining a little knowledge.