

IV

ESSENTIAL ELEMENTS OF ANIMAL WELFARE LEGISLATION

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4.1 Background

This chapter surveys the most common substantive areas addressed by animal welfare legislation and the institutional mechanisms most frequently established to implement and enforce animal welfare laws. Examples are drawn from recommendations of the OIE as well as regional and national legal instruments on animal welfare. The aim is to identify the essential elements and options for countries wishing to draft or update national animal welfare legislation.

Throughout the discussion, examples are highlighted from both primary and subsidiary legislation, as well as non-binding instruments such as model codes of best practice. Which type of instrument is appropriate or how much detail should be included depends on a variety of factors: the existing national legislation related to animal welfare or protection; the country's legislative system; the institutions and resources available for implementation and enforcement; the local policy priorities and political factors at play; and the country's international obligations.

Despite national variations, there are certain essential elements that are best included in primary legislation. These include the framing of general animal welfare principles and fundamental legislative goals; the delegation of authority and establishment of enforcement mechanisms; a bare bones framework for the substantive areas of animal welfare (slaughter, transport, housing and management) to be regulated by subsidiary legislation; and guidelines for how such subsidiary legislation will be developed. The more detailed substantive regulations, including species-specific provisions, may be better left to subsidiary legislation, which can be updated more easily and frequently than primary legislation to reflect improved methods and advances in animal welfare science.

4.2 Institutional framework

An essential feature of primary legislation on animal welfare is the establishment of an institutional framework for implementation and enforcement. Legislation must designate and grant authority to a specific ministry or agency that will have primary responsibility for implementing the animal welfare legislation ("competent authority"). Usually, animal welfare will fit within the mandate of an already existing ministry, but occasionally it may be necessary or desirable to create a new ministry or inter-ministerial

agency. In addition to identifying the primary ministry, animal welfare legislation often creates an animal welfare board made up of key stakeholders from relevant fields.

The enforcement of animal welfare legislation should also be addressed in primary legislation. This means defining both the enforcement mechanisms and the actors responsible for enforcement, which may include inspectors from the ministry, members of the animal welfare board, customs officials, police or other law enforcement officials. Where inspection is required during road transport, police or traffic officials may need to be included in the enforcement system. If this is the case, it will be important to ensure that any personnel involved in inspections are properly trained to identify animal welfare issues.

Often, implementation and enforcement of animal welfare legislation requires licensing of facilities (farms, animal transportation vehicles and slaughterhouses) and personnel (farm animal owners, handlers, veterinarians, transporters and slaughterhouse personnel). The specific processes for inspection, licensing, testing and certification do not need to be established in primary legislation, but it may be useful to set out some basic principles. For example, the OIE Code frequently emphasizes the importance of having "trained and competent" personnel involved at all stages of farm animal handling, and such a provision could be included in the legislation.

Finally, national legislation often includes provisions aimed at involving key stakeholders, building community awareness of animal welfare principles and encouraging civic participation in animal welfare enforcement. Stakeholder involvement may be key to successful implementation, especially where there are potential conflicts between animal welfare goals and the objectives of other interest groups. Civic participation may also help enforcement, especially where resources for on-farm inspection and enforcement are limited.

4.2.1 "Competent authority"

In the OIE Code, the term "competent authority" is defined as:

the Veterinary Authority or other Governmental Authority of an OIE Member having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and

recommendations in the Terrestrial Code in the whole territory (OIE Code, Glossary).

Choosing the ministry that will serve as the competent authority for animal welfare depends on many factors. Depending on the governmental structure in the country, the competent authority for animal welfare may or may not be the same as that designated for animal health, and may or may not be the veterinary authority. Depending on the types of animals covered (e.g. companion animals, wild animals, animals used in scientific research or entertainment or farm animals used for food production), a different ministry may be appropriate. For example, the ministry dealing with environmental protection may be suitable to regulate wild animals, whereas the ministry of agriculture may be more appropriate to administer legislation governing farm animals used in food production.

In some jurisdictions, authority may be assigned to more than one competent authority. For example, in Peru, the Law on the Protection of Domestic Animals and Wild Animals in Captivity (2000) divides responsibilities among the Ministries of Health, Agriculture and Education. Similarly, in Puerto Rico's Law for the Welfare and Protection of Animals (2008), there is no single coordinating competent authority. Instead, much is left to local government, while certain activities are coordinated by the following federal agencies: the Department of Health; the Department of Natural Environmental Resources; the Department of Consumer Issues; and the State Office of Animal Control. Similarly, the Taiwan Province of China Animal Protection Law (1998) specifically identifies as "competent authorities" both the central Council of Agriculture and provincial, city and rural area governments (sec. 2).

The Croatian Animal Protection Act (2006) is a good example of legislation that specifies the competent authority, including it in the definitions section at the beginning of the act. The competent authority is "the Veterinary Directorate within the Ministry of Agriculture, Forestry and Water Management" (art. 3.1). In Korea, it is the Ministry of Agriculture and Forestry; in Costa Rica, the Ministry of Agriculture and Livestock; and in Tanzania, the Ministry of Livestock Development and Fisheries.

Whichever competent authority is selected, the primary legislation should clearly define its role, duties and enforcement powers. The types of activities assigned to the competent authority generally include inspecting and

licensing farms, transport vehicles and slaughterhouse facilities; training, testing and licensing personnel involved in animal handling, transport and slaughter; responding to complaints or reports of animal welfare violations; taking part in prosecution or sanctioning of animal welfare violations; and developing subsidiary legislation or non-binding instruments that detail animal welfare standards. The competent authority may have a duty to carry out public awareness activities, or this may be assigned to a ministry of education, ministry of information or an animal welfare board established in the animal welfare legislation.

4.2.2 Animal welfare board

Animal welfare legislation often establishes some form of animal welfare council or animal welfare board comprised of key stakeholders and animal welfare experts. Lawmakers revising or drafting animal welfare legislation will need to assess the national context to identify key stakeholders. These may include members of a national veterinary authority and ministries whose mission relates to farm animals or animal-based food production; scientific and veterinary experts, perhaps from universities; industry representatives involved in raising, transporting and slaughtering farm animals; and advocates from animal welfare NGOs.

A key question is whether the members of the board are appointed based on their personal expertise or to represent a certain constituency of stakeholders. Comparison between the experiences of the UK's Farm Animal Welfare Council (FAWC), an advisory body made up of appointed experts, and a similar body in Canada, made up of stakeholder representatives and now defunct, suggests that the former may be a more successful model.

The legislation may assign some implementation duties to the animal welfare board or council, or it may assign the board a purely advisory role. Depending on the assigned functions of the board, it may not be appropriate to include private sector representatives, as there is a potential conflict of interest where the regulated are acting as the regulators. In Latvia, for example, the Animal Protection Act (2000) establishes an animal protection ethics council with a purely advisory role, and includes only members of public institutions, not the private sector. The role of the ethics council is to educate the general public and give recommendations to state institutions on animal protection.

In India, where the Animal Welfare Board both plays an advisory role and is empowered to make regulations, the board includes representatives of several ministries and six members of Parliament (sec. 4). The Philippines Animal Welfare Act (1998) establishes an Animal Welfare Committee, attached to the Department of Agriculture, which may issue any and all necessary rules and regulations, subject to the approval of the Department of Agriculture (sec. 5).

Another option is to have a fully independent board with no government representatives directly involved, with the board reporting directly to a certain ministry. The UK's FAWC, for instance, reports directly to the Ministers of Agriculture and hence tends to be able to influence policy decisions. Without at least such a reporting relationship, a similar body may prove unable to have any real impact on legislation or implementation.

Norway offers an alternative example of a decentralized system that incorporates stakeholders in both an advisory and enforcement role. Rather than one central animal welfare board, the Animal Welfare Act (1974) mandates the creation of one or more animal welfare committees in each veterinary district. With a district veterinary officer serving as committee secretary, each committee is made up of between three and five members who "must primarily be persons with practical experience of keeping and caring for animals, and with knowledge of, and interest in, animal welfare" (sec. 23). The committees are not involved in issuing regulations, which is left to the ministry in charge of animal welfare (sec. 30). Rather, each committee is charged with inspection and enforcement, specifically to:

keep itself informed of the keeping of animals in the district, and carry out inspections without prior notice. Should the animal welfare committee have any reason to believe that livestock . . . run the risk of unnecessary suffering, the committee shall immediately investigate the situation. If the committee finds there is reason [to do so], it shall give advice to the owner or manager as to actions which can rectify the situation, or issue the directives which are necessary to ensure compliance with this Act . . . (sec. 24)

This sort of decentralized enforcement mechanism may make more sense in certain national contexts than in others.

4.2.3 Police and law enforcement

Police and traditional law enforcement are implicated at certain stages of implementation of animal welfare legislation, and where this is the case the roles of such authorities should be identified in the primary legislation. For example, they may be assigned to take over where the primary enforcement mechanism is not successful. As noted earlier, the Norwegian Animal Welfare Act assigns responsibility for primary inspection to the animal welfare committees as seen above, but if these committees encounter difficulties, they are empowered by legislation to "take the necessary action" (which can include resort to the police). The law provides that "police shall, should the committee so request, assist in the implementation of decisions and inspections" (sec. 24). Similarly, the Croatian Animal Protection Act (2006) states, "On request of the competent inspector, police officers of the Ministry of Interior shall, within the limits of their powers, provide assistance in the carrying out of inspectional supervision" (sec. 62).

In the context of inspection during animal transport, the assignment of inspection duties may, by necessity or as a matter of expediency, be delegated to police and other law enforcement officials since in most countries they monitor road transport. This is especially the case for international animal transport. For example, the German Animal Welfare Act (1998) specifies that customs officers under direction of the Ministry of Finance will be involved in monitoring welfare standards for imported and exported animals (art. 14(1)).

Training of police and other law enforcement personnel who will be involved in inspections is crucial to effective enforcement of animal welfare standards. The OIE Code frequently emphasizes the importance of "competence", which includes both familiarity with animal welfare standards and the ability to recognize animal behaviour that indicates poor welfare conditions.

An alternative to employing the police is to put animal welfare inspectors on equal footing as police officers for enforcement purposes, as is the case under the UK Animal Welfare Act (2006). This law grants animal welfare inspectors and specially trained constables equal powers to respond to the needs of an animal in distress (sec. 18). They are also granted associated powers of entry (sec. 19) and search pursuant to a warrant for a criminal offence (sec. 23), although only a constable has the power to execute an

arrest (sec. 24). Other countries assign to veterinary inspectors enforcement powers traditionally reserved for police: the power to enter and inspect facilities involved in the handling of animals; the power to levy fines; and the power to seize animals that are suffering under persistent or particularly serious violations of animal welfare standards.

4.2.4 Civil society

A unique feature of animal welfare legislation is the attention given to civil society as both a *raison d'être* for such legislation and a key partner in its implementation. Many laws offer as a primary legislative objective the establishment of a culture of respect for animal welfare and the recognition of the symbiotic relationship between animal and human welfare. This objective, which may be phrased in various ways, is a recurring theme of legislation (see Box 2). In addition, animal welfare legislation frequently includes civil society and the general public in the framework for implementation: the legislation may provide funding and other support for animal welfare organizations; may make the drafting of subsidiary legislation a public, participatory process; or may offer incentives for citizens to monitor animal welfare and file complaints. For example, The Malaysian Animals Act (1953, last revised 2006) offers a reward to anyone who reports a violation (sec. 50(1)).

Japan's Act of Welfare and Management of Animals (1973) puts significant focus on public awareness building as part of the implementation process. Article 3 directs the government to "endeavor to achieve dissemination and awareness raising with regard to the welfare and proper care of animals . . . through educational activities, publicity activities and other similar activities at such places as schools, communities and homes." One specific measure provided for is an annual "Be Kind to Animals" week (art. 4). The Korean Animal Protection Law (2007) also emphasizes public awareness of animal welfare as a central purpose of the law (art. 3) and assigns a central role to civic organizations. The legislation authorizes the Minister of Agriculture and Forestry to "encourage public or civic organizations to conduct animal protection campaigns . . . and other related activities aimed at promoting the love of animals" (art. 4.2) and to provide "support for the public or civic organizations to conduct animal protection campaigns" (art. 4.3).

Israel's Animal Protection Law (1994) engages civil society on various levels, for example by creating an Animal Fund to coordinate financing of

"education, information, training and assistance to Animal Protection Organisations" (sec. 14(b)). The law also allows the Ministry of Environment to appoint "any person" as an Animal Trustee, who can demand the identity of a person suspected of committing an offence under the law, so as later to be able to file a complaint (sec. 7). Procedures for becoming an Animal Trustee are made generally available online, and are open to any Israeli citizen over the age of sixteen.

Box 2 – Public Awareness as a Central Legislative Goal

*Costa Rican Animal Welfare Act (1994)**

The family and educational institutions will encourage, in children and youth, the values that sustain this law. The following will be particularly emphasized:

- a) The consciousness that cruel acts against and mistreatment of animals harms human dignity.
- b) The foundation of respect for all living beings.
- c) The consciousness that compassion for suffering animals dignifies human beings.
- d) The knowledge and practice of the norms that govern protection of animals.

*Korean Animal Protection Law (2007)***

The purpose of this act is . . . to cultivate Korean peoples' spirit to care for animals' lives and their safety and to respect animals' lives.

*Peruvian Law on Protection of Domestic Animals and Wild Animals Kept in Captivity (2004)**

The objectives of this law are . . . (d) to encourage and promote the participation of all members of society in the adoption of means aimed at the protection of animals.

*Austrian Animal Protection Act (2005)**

The . . . authorities are obligated to create and deepen understanding for animal protection on the part of the public and in particular on the part of youth

* authors' translation

** unofficial translation

Under its Animal Welfare Act (1999), New Zealand has implemented a participatory process for drafting and adopting Codes of Welfare, which establish minimum welfare standards and outline best practices for voluntary compliance. The framework for this participatory process is set out in detail in the primary legislation and includes several opportunities for public participation. First, the act specifies that in addition to the minister and animal welfare board, "any other person may prepare a draft code of welfare" (sec. 70(1)). It also requires that before the adoption of a code of welfare, the public must be notified (sec. 71) and the draft code opened up for comment and consultation between members of the public and the animal welfare board (sec. 72). The procedures for drafting and submitting a code of welfare are made public on a New Zealand government website, along with already adopted codes and those currently under consideration. The website also offers information about filing a complaint for non-compliance with the Animal Welfare Act, including an accessible guide to the act and a complaint hotline.

From public awareness campaigns to participatory drafting processes for subsidiary legislation, the implementation of animal welfare legislation often relies on the active participation of civil society. Similarly, many animal welfare laws include a variety of key stakeholders in advisory animal welfare boards. The goal is broad public participation to support and improve the widespread understanding and implementation of animal welfare principles and standards.

4.3 Slaughter

Whether or not particular jurisdictions have general animal welfare statutes, most do regulate slaughter in some fashion, and most legislation shares a common theme: minimizing unnecessary suffering in connection with slaughter. Thus the legislation covers transportation to the slaughterhouse and usually covers unloading, euthanasia/emergency killing and at the slaughterhouse, lairaging, restraint, stunning and slaughter methods. The legislation may prescribe particular slaughter methods in detail and provide for their regular review and revision so as to ensure their conformity with the

latest knowledge of animal welfare science.²⁷ Because of this need for constant review, the details of slaughter methods will normally be set out in subsidiary legislation rather than the principal legislation. Some laws, such as the Humane Methods of Slaughter Act (HMSA) of the United States (1958), also authorize scientific research and development of humane slaughter methods.²⁸

As with other areas of animal welfare, slaughter regulation generally takes animal behaviour into account and requires that competent, trained personnel be involved in all aspects of slaughter, including pre-slaughter handling and inspection, supervision and slaughter itself. The OIE Terrestrial Animal Health Code, in Chapter 7.5 ("Slaughter of Animals"), notes the importance of having sufficient numbers of "patient, considerate, competent" personnel who are familiar with the recommendations set out in that chapter of the Code and their application in the national context.

Most slaughter legislation focuses on the killing of animals in slaughterhouses for human consumption. Legislation may either make separate provisions for, or specifically exclude from coverage, the killing of animals for fur or disease control, slaughter outside of slaughterhouses (for personal consumption), hunting and ritual and religious slaughter.²⁹

One area of controversy in slaughter regulation is the extent to which religious or ritual killing of animals ought to be regulated alongside other types of slaughter or rather exempted from oversight. Some laws carve out blanket exemptions for religious or ritual killing, while others exempt slaughter for these purposes only on condition that certain basic conditions

²⁷ For example, the Philippines Animal Welfare Act (1998) provides that "the killing of the animals shall be done through humane procedures at all times" (sec. 6), and defines humane procedures as "the most scientific methods available as may be determined and approved by the [Committee on Animal Welfare]" (*id.*).

²⁸ Most slaughter legislation, like the U.S. example, prescribes "humane" slaughter methods. Because this term is used variously in legislation and may refer to different standards of animal welfare, this text generally avoids the term "humane".

²⁹ The terms "religious" and "ritual" are at times used interchangeably in legislation and at other times are used to indicate different slaughter purposes. When the terms are differentiated, ritual slaughter generally refers to slaughter for ceremonial purposes rather than for human consumption. Religious slaughter refers to religiously prescribed methods for slaughtering food animals (kosher, *halal*, etc.).

are met. Often, the approach taken is determined by political and societal factors in a given country.³⁰ The Tanzania Act, for example, provides a complete exemption for slaughter according to religious beliefs (sec. 30), provided that:

- it is performed by a person in possession of necessary knowledge and skill;
- it is performed exclusively in the presence of a veterinarian in charge of slaughtering and meat inspection;
- it is performed in a way that the large blood vessels in the throat area are opened with one single cut;
- equipment is available to ensure that the animals intended for such slaughtering can be brought into the position required for slaughtering without any delay; and
- it is performed so that other animals waiting for slaughter do not see the slaughtering process.

In the United States, by contrast, the abrogation of slaughter requirements is complete and unconditional for ritual or religious slaughter: "[I]n order to protect freedom of religion, ritual slaughter and the handling or other preparation of livestock for ritual slaughter are exempted from the terms of [the HMSA]" (7 U.S.C. 48 sec. 1906).

Internationally, Chapter 7.5 of the OIE Code offers detailed best practice recommendations based on animal welfare science for each of the general areas covered in national slaughter legislation. Perhaps more than in other areas, the OIE Code recommendations on slaughter are geared towards production in large, industrialized slaughterhouses rather than in smaller slaughterhouses (see, e.g., the design recommendations for lairages). By contrast, its recommendations on the technical and personnel requirements for certain stunning and slaughter methods are relevant to any sized slaughterhouse operation.

³⁰ For example, in 2009 government animal welfare advisers in the United Kingdom recommended ending the exemption to pre-slaughter stunning requirements for Jewish and Muslim slaughter operations. *The Independent*. 22 June 2009. *End 'cruel' religious slaughter, say scientists* (available at www.independent.co.uk); see also Liphshiz, 2009.

Most national legislation on slaughter sets out basic governing principles including providing maximum comfort before slaughter and minimizing the fear, pain and suffering that an animal experiences before and during slaughter (see Box 3). Generally, these principles are captured in provisions aimed at controlling the slaughter process so that animals are stunned immediately before slaughter and remain unconscious at the time of slaughter, that they are slaughtered using the quickest and most painless method available and that animals do not witness other animals being slaughtered.

4.3.1 Unloading, inspection and prioritization of animals

The subjects covered by slaughter legislation often begin with animals' arrival at the slaughterhouse, when they are unloaded from a vehicle or container after transportation. Many animal welfare issues arise at the unloading point. In addition to the equipment and handling methods that are common to both loading and unloading phases, the unloading phase involves post-transport inspection of animals and identification of those that require immediate euthanasia according to emergency slaughter methods or prioritization for slaughter as soon as possible.

The OIE Code recommends that "the conditions of the animals should be assessed upon their arrival for any animal welfare and health problems", and that "injured or sick animals, requiring immediate slaughter, should be killed humanely and without delay" (sec. 7.5.2.1(a)–(b)). In addition, the OIE Code recommends that certain animals be prioritized for slaughter as soon as possible, including:

- animals that have been transported in containers (sec. 7.5.2.2(c));
- unweaned animals, which cannot be properly fed (sec. 7.5.4.6);
- lactating dairy animals, or if they cannot be slaughtered immediately, they should in the meantime be milked as necessary to minimize udder discomfort (sec. 7.5.4.10); and
- animals that have given birth during the journey, unless they can be provided with appropriate conditions for suckling the newborn (although under normal circumstances animals that are expected to give birth should not be transported) (sec. 7.5.4.11).

Box 3 – General Principles of Slaughter in National Animal Welfare Legislation

Austrian Animal Protection Act (2005) sec. 32(1)

The killing of an animal may be performed only in such a manner as to avoid unjustified inflicting of pain, suffering, injury or heavy fear on the animal.

Costa Rican Animal Welfare Law (1994) art. 5*

[Animals] should be slaughtered with adequate technology, according to the species, to reduce their pain to a minimum.

Tanzanian Animal Welfare Act (2008) sec. 29(1)

An animal shall be slaughtered through a method which (a) involves instantaneous killing; or (2) instantaneously [renders] an animal unconscious and ends in death without [it recovering] consciousness.

Republic of Vanuatu's Prevention of Cruelty to Animals Act (1988) art. 3(1)

Every person who slaughters an animal, whether or not for human consumption, shall do so in a humane manner so as to avoid any unnecessary suffering and to cause death as quickly as possible.

* authors' translation

Almost all animal welfare legislation requires that sick or injured animals be euthanized immediately, either in the transport vehicle if they cannot be moved without causing additional suffering or at a nearby location designated for emergency slaughter. Some legislation identifies other classes of animals that should be prioritized for slaughter. For example, the European Council Directive 93/119/EC on the protection of animals at the time of slaughter or killing provides in Annex A.I.6 that:

animals which have experienced pain or suffering during transport or upon arrival at the slaughterhouse, and unweaned animals, must be slaughtered immediately. If this is not possible, they must be separated and slaughtered as soon as possible and at least within the following two hours. Animals which are unable to walk must not be dragged to the place of slaughter, but must be killed where they lie or, where it is

possible and does not entail any unnecessary suffering, transported on a trolley or a movable platform to the place of emergency slaughter.

Several of the classes of animals that the OIE Code recommends be prioritized for slaughter may not be universally accepted. For example, religion, culture and economic considerations in India may make the OIE recommendations on prioritizing unweaned animals or animals that gave birth during transport inappropriate. The Prevention of Cruelty to Animals (Slaughter House) Rules (2001) ("Indian Rules") issued by the Indian Animal Welfare Board absolutely prohibit the slaughter of any animal which (i) is pregnant, (ii) has offspring less than three months old or (iii) is under the three months old (sec. 3). The Animals Slaughter Control Act for the State of Punjab in India (1963) prohibits the slaughter of any "useful animal" (sec. 3(1)), which would include any female animals that are pregnant or capable of breeding. The Tanzania Animal Welfare Act also prohibits the slaughter of a pregnant animal unless it is to prevent the animal from suffering or for disease control purposes (sec. 31).

Animal welfare legislation will naturally reflect local economic, cultural and religious factors, and the goal is to accommodate these without compromising animal welfare principles. In many countries, the value of an animal that is pregnant, can give milk or has the potential to breed is much greater than the value of that animal's meat. In such circumstances, an absolute or near absolute prohibition on the animal's slaughter may be appropriate. The legislation should also explicitly prohibit the transport of such animals to the slaughterhouse.

4.3.2 Lairaging and holding pens

Lairages are animal handling facilities at slaughterhouses where livestock can be temporarily held before slaughter. Animal welfare legislation may address the duration of stay in lairages, required periods of pre-slaughter rest, proper lairage design to accommodate the daily flow of animals, frequency of inspection of animals in lairages and feeding or watering of animals in lairages. It is worth noting that lairaging requirements serve not only to advance animal welfare; lairaging may also serve to improve meat quality, as a period of rest allows animal muscles to return to normal relaxed conditions that are disturbed by long travel.

The definition of the term "lairage" varies, reflecting different economic realities and sophistication of slaughterhouse facilities. The OIE Code prescribes a particular lairage design (sec. 7.5.3) so that one facility can serve various purposes: a place for animals to rest and receive necessary care, feeding and watering; controlled passageways ("races") through to the slaughter point; and waiting pens for animals immediately prior to slaughter. The European Council Directive 93/119/EC (art. 2.3) defines lairaging as "keeping animals in stalls, pens, covered areas or fields used by slaughterhouses in order to give them necessary attention (water, fodder, rest) before they are slaughtered". The Indian Rules refer to two separate facilities: a reception area or resting grounds where veterinary inspection should occur (sec. 4), and lairages where animals must be allowed to rest after veterinary inspection for 24 hours before slaughter (sec. 5). These definitions preview divergent views of the animal welfare issues at the time of lairaging.

There are at least two legislative trends on the duration of pre-slaughter rest in lairaging facilities. Some legislation requires moving animals toward slaughter as quickly as possible rather than prolonging the period they are in lairages. Other legislation sets mandatory rest periods, sometimes determined based on the distance animals were transported before arriving at the slaughterhouse. The European Convention is an example of the former, providing first that animals not be taken to the place of slaughter "unless they can be slaughtered immediately" (art. 6(1)), whereas "animals which are not slaughtered immediately on arrival shall be lairaged" (art. 6(2)).

The second approach (making a certain period of rest mandatory) is taken by Brazil, India and Mexico. The Indian Rules require that animals rest for 24 hours in a lairage after inspection and prior to slaughter (sec. 5). The Brazilian Regulation of Industrial and Health Inspection of Products of Origin (2005) similarly prescribes that "the animals must remain at the lairage for rest and fasting for 24 hours", although this period can be reduced depending on the distance the animals have travelled.

The Official Mexican Standard NOM-009-Z00-1994 (Sanitary Processing of Meat) lays out minimum and maximum periods during which each animal species should remain in resting areas: for cows, from 24 to 72 hours; for sheep, from 12 to 24 hours; and for pigs, from 12 to 24 hours (sec. 4.7). These periods may be halved where the animals have travelled less than 50 kilometres to the slaughter facility. For birds, the period required for ante-

mortem veterinary inspection is determined to provide sufficient rest and ventilation. NOM-033-Z00-1995 (Humane Slaughter of Domestic and Wild Animals) allows a further postponement of slaughter in situations where it is suspected that an animal is temporarily unfit for human consumption due to an infection or traces of drugs in its system. Whatever the required rest time, the NOM requires that animals receive adequate care throughout (sec. 4.12).

A significant animal welfare consideration is that lairages be designed to comfortably accommodate the number of animals that will pass through the slaughterhouse on any given day (the "throughput rate"). The OIE Code recommends that the lairage be designed and constructed "to hold an appropriate number of animals in relation to the throughput rate of the slaughterhouse without compromising the welfare of the animals" (art. 7.5.3.1). Similarly, the Indian Rules provide that the "lairage of the slaughter house shall be adequate in size [to be] sufficient for the number of animals to be laired" (sec. 5(2)).

There may be some difference, for legislative purposes, in the way the throughput rate is determined – whether it is determined by the slaughterhouse or a regulator. The Indian Rules, for example, designate that a municipal or other local authority should "determine the maximum number of animals that may be slaughtered in a day" based on slaughterhouse capacity and the needs of the local population in the area of the slaughterhouse (sec. 3.3). This may be more appropriate in a country where the resources to design and build new lairages are limited, meaning that the throughput rate is determined based on existing space availability. Other laws may establish strict numerical limitations which must be followed at all costs.

The requirements for design and maintenance of a lairage resemble those for regular animal housing facilities. The OIE Code makes recommendations for proper space for animals to stand comfortably, turn around and lie down (art. 7.5.3.2(c)). It also recommends shelter to protect the animals from extreme climate conditions, and requires the use of safe building materials, adequate draining and bedding, proper lighting, ventilation and control of excessive noise (art. 7.5.3.3). The OIE Code recommends organizing animals in lairages by established social groups and separating animals that may be hostile to one another (art. 7.5.4.1).

National legislation echoes these requirements: space, grouping, safety of facilities and comfort of animals. For example, the Estonia Animal Protection Act (2000) requires that lairages be designed to protect animals from harmful weather (sec. 12(1)), high temperatures and humidity (sec. 12(2)), and calls for the separation of animals that would threaten each other (sec. 12(3)). The Indian Rules require that the resting grounds have overhead protective shelters (sec. 4(7)), and that ante-mortem pen areas have non-slip flooring and drainage capacities (sec. 4(8)). Lairage pens must meet certain minimum space requirements for large and small animals (sec. 5(3)), and animals must be separated by their type and class and be protected from heat, cold and rain (sec. 5(4)).

In the type of industrial slaughterhouse envisioned by the OIE Code, lairages have specific design features that differ from other housing facilities. First, they should be "designed to allow a one-way flow of animals from the unloading to the point of slaughter, with a minimum number of abrupt corners to negotiate" (art. 7.5.3.2(a)). This design moves animals through a holding pen with capacity for inspection, watering, feeding and rest, through a passageway or "race" to a waiting pen and through another race to the point of stunning or slaughter. The races ought to be straight or consistently curved, with space for one or two animals to move side by side and with solid walls (art. 7.5.3.2(f)). The waiting pen should preferably be circular to ensure a steady supply of animals to the stunning and slaughter facility (art. 7.5.3.2(h)).

As in other areas of animal welfare legislation, the OIE recommendations for lairage design may be feasible for certain national contexts or larger industrial facilities but too strict for smaller slaughter operations. Nevertheless, the animal welfare concerns that underlie these recommendations should be kept in mind when drafting legislation: animals should be comfortable, secure and properly cared for according to the principles of animal welfare science throughout the period they are kept in lairages.

4.3.3 Design of post-lairage stunning and slaughter facilities

After lairaging, animals are generally moved into different facilities where they are stunned and slaughtered. How these facilities should be designed to satisfy animal welfare considerations depends on the methods of stunning and slaughter used and will be discussed in connection with each slaughter

method. However, all methods share one general consideration: the objective from an animal welfare perspective is to minimize the fear and anguish that animals may experience if they witness other animals being slaughtered.

National legislation sometimes requires that certain steps be taken to prevent animals from having sensory experience of other animals' slaughter. For example, the Zambian Prevention of Cruelty to Animals Act (1921, last revised 1994) includes a provision that slaughtering an animal in sight of another constitutes cruelty. The Indian Rules make a similar prohibition (sec. 6(1)) and translate the principle into design requirements of the slaughter hall, which must "provide separate sections of adequate dimensions sufficient for slaughter of individual animals to ensure that the animal to be slaughtered is not within the sight of other animals" (sec. 6(3)). In addition, it provides that the slaughterhouse include a "curbed-in bleeding area of adequate size . . . so located that the blood could not be splashed on other animals being slaughtered" (sec. 6(6)). Poland's Animal Protection Act (1997) also makes design provisions to protect animals from experiencing other animals' slaughter, although the purpose of these provisions is not explicitly stated: "The waiting room of the slaughterhouse should be acoustically insulated and separated by a partition from the room designed for knocking animals unconscious. Similarly, the room designated for knocking animals unconscious should be separated from rooms in which animals are [bled] and undergo further slaughter-related processing" (art. 34).

These concerns are not reflected in the OIE Code recommendations, and international animal welfare science is unresolved on whether or to what extent animals suffer from witnessing other animals being slaughtered. There is no scientific evidence that animals react to the sight of another animal being slaughtered, so long as the animal is slaughtered properly – e.g., immediately losing consciousness and collapsing and therefore not being able to vocalize or otherwise manifest fear. The concern for animals' sensory experience immediately prior to slaughter is mainly responding to philosophical and religious beliefs.

4.3.4 Restraint

Another animal welfare issue that arises during stunning and slaughter is whether animals ought to be restrained, and if so, how. From the perspective of animal welfare science, certain forms of restraint may increase animals' discomfort immediately prior to slaughter. On the other hand, proper

restraint may make it easier to quickly stun the animal with less room for error, thereby minimizing the animal's suffering immediately before and during slaughter.

At minimum, animal welfare legislation should establish the principle that methods of restraint should be employed so as to minimize rather than add to animal suffering during stunning and slaughter. The legislation may or may not include more specific prescriptions, limitations or prohibitions on restraints. For example, the European Convention provides generally that animals shall be restrained when necessary immediately before slaughtering (art. 12). Article 14 provides specific restrictions: "No means of restraint causing avoidable suffering shall be used; animals' hind legs shall not be tied nor shall they be suspended before stunning or, in the case of ritual slaughter, before the end of bleeding." Article 14 also provides a species-specific limitation: "Poultry and rabbits may, however, be suspended for slaughtering provided that stunning takes place directly after suspension." European Council Directive 93/119/EC Annex B.2 includes the same provisions as the Convention, and adds that, in the case of solipeds and cattle subjected to stunning by mechanical or electrical means applied to the head, the competent authority may authorize "the use of appropriate means to restrain head movements" (Annex B.3). However, electrical stunning equipment may not be used as a means of restraint (Annex B.4).

The OIE Code provides very detailed recommendations on the use of restraint methods. Article 7.5.2.3 provides that "Methods of restraint causing avoidable suffering should not be used in conscious animals because they cause severe pain and stress," and then lists a number of methods that cause avoidable suffering, such as the hoisting and shackling of animals other than poultry. Article 7.5.6 lays out a chart of the various methods used for handling and restraint of animals immediately before slaughter. For each method, it identifies the animal welfare concerns associated with the procedure and the key animal welfare requirements. Most often, these requirements include competent animal handlers and proper equipment. It is important to note that the OIE Code specifies certain restraint methods that are always unacceptable on animal welfare grounds: "immobilization by injury such as breaking legs, leg tendon cutting, and severing the spinal cord", which "cause severe pain and stress in animals" and "are not acceptable in any species" (art. 7.5.10.1).

4.3.5 Stunning

The most common provision on pre-slaughter stunning specifies that the stunning method should be sufficient to ensure that the animal remains unconscious until it is dead, and also requires that emergency stunning procedures be in place in case an animal regains consciousness. Animal welfare legislation may also prescribe particular stunning methods (often tailored to the species) or particular ways of employing a method so that it meets animal welfare requirements.

Some regulations treat stunning and slaughter versus instantaneous slaughter as equivalents. The Belize Slaughter of Animals Act (2000), for example, provides that every animal slaughtered in a slaughterhouse "shall be instantaneously slaughtered or shall by stunning be instantaneously slaughtered, or shall by stunning be instantaneously rendered insensible to pain until death supervenes" (Chap. 154 sec. 5). The Tanzanian Animal Welfare Act offers the same two alternatives (sec. 29(1)). The U.S. Humane Methods of Slaughter Act, as another example, identifies two methods legally qualifying as humane: "(a) in the case of [livestock], all animals are rendered insensible to pain by a single blow or gunshot or an electrical, chemical or other means that is rapid and effective, before being shackled, hoisted, thrown, cast or cut; or (b) by slaughtering in accordance with the ritual requirements of the Jewish faith or any other religious faith that prescribes a method or slaughter whereby the animal suffers loss of consciousness by anemia of the brain caused by the simultaneous and instantaneous severance of the carotid arteries with a sharp instrument" (sec. 1902).

More common is to require stunning prior to slaughter, while allowing certain exceptions. For example, the European Convention provides generally that "animals shall be stunned by an appropriate method" immediately before slaughtering (art. 12). However, Article 17 allows parties to the convention to authorize exemptions to the stunning requirement in the following cases: (1) slaughtering in accordance with religious rituals; (2) emergency slaughtering when stunning is not possible; and (3) slaughtering of poultry and rabbits by authorized methods causing instantaneous death. In the event that a party to the convention does craft such exemptions, it must "ensure that at the time of such slaughter or killing the animals are spared any avoidable pain or suffering" (art.17).

Adopting this convention, the European Council Directive³¹ requires that among EU member states, certain farm animals slaughtered in slaughterhouses be "stunned before slaughter or killed instantaneously in accordance with the provisions of Annex C"³² (art. 5). The competent authority in each member state may grant exceptions "for poultry, rabbits, pigs, sheep and goats slaughtered or killed [not in] slaughterhouses by their owner for his personal consumption provided that [the general humane slaughter principle] is complied with and that pigs, sheep and goats have been stunned in advance" (art. 9(2)).

The OIE Code emphasizes that "persons carrying out stunning should be properly trained and competent" and should "be able to recognise when an animal is not correctly stunned" (art. 7.5.7.1). For mechanical stunning methods, the OIE Code includes the following list of signs of correct stunning:

- the animal collapses immediately and does not attempt to stand up;
- the body and muscles of the animal become tonic (rigid) immediately after the shot;
- normal rhythmic breathing stops; and
- the eyelid is open with the eyeball facing straight ahead and is not rotated.

The purpose of these provisions is to ensure that those carrying out the slaughter can swiftly recognize when stunning has not been carried out correctly. This then triggers the emergency measures that have been provided for.

³¹ In June 2009, the European Council adopted a new regulation for treatment of animals at the time of slaughter, which will replace the European Council Directive when it comes into force. The text is not currently available.

³² Annex C identifies four permitted methods of stunning: (1) captive bolt pistol; (2) concussion; (3) electronarcosis; and (4) exposure to carbon dioxide. For each method, it establishes certain conditions that make the method fit the requirements of animal welfare.

4.3.6 Bleeding and alternative slaughter methods

The most common method of slaughter authorized by animal welfare legislation is bleeding after an animal has been effectively stunned and before the animal regains consciousness. The Croatian Animal Protection Act actually defines slaughter for purposes of the act as "causing the death of an animal by bleeding" (art. 3.8). As discussed above, some regulations also allow for killing by other methods that cause immediate death or render the animal immediately unconscious, although some of these methods are controversial from an animal welfare perspective.

The European Council Directive requires that animals be bled in compliance with provisions laid out in Annex D (art. 5.2). Annex D requires: (1) that bleeding be started as soon as possible after stunning and in the fastest manner, so that bleeding is complete before the animal regains consciousness; (2) that all animals be bled by sticking at least one of the carotid arteries or the major blood vessels from which they begin; (3) that a person charged with stunning, shackling, hoisting and bleeding animals complete all these tasks on a single animal before continuing with the next; and (4) that a manual back-up system be in place for poultry bled by means of automatic neck cutters.

To these requirements, the OIE Code adds several recommendations (art. 7.5.7.5). It recommends limiting the delay between stunning and sticking (or cutting, depending on the species) to 20 seconds by electrical methods or a non-penetrating captive bolt. It also recommends that all animals be bled out by cutting both carotid arteries unless the stunning method has caused cardiac arrest. Personnel should observe animals throughout the bleeding process, in case an animal shows signs of regaining consciousness, in which case it should be re-stunned.

As for alternative methods of killing that cause instantaneous death, the European Council Directive prescribes four methods, detailed in Annex C: (1) free bullet pistol or rifle; (2) decapitation or dislocation of the neck; (3) electrocution or carbon dioxide; and (4) vacuum chamber. All four methods are subject to authorization by the EU member state's competent authority as well as specific requirements laid out in Annex C. The OIE also summarizes alternative slaughter methods in a table (art. 7.5.9), identifying animal welfare issues and key requirements associated with each method.

4.4 Transport

Along with slaughter, animal transport is one of the areas that is most frequently addressed in animal welfare legislation, as it is one of the most stressful experiences that animals go through in their lives. It is also the most public stage of animals' lives, and visible suffering is likely to trigger response and pressure from the public for government intervention. The animal welfare concerns during transport – whether by land, air or sea – are very real, as animals are kept in close confinement in a moving vehicle, where the potential for injury, extreme climatic conditions, disorientation, panic or heightened stress are highly likely. From an animal health and business perspective, excess stress during transport may lead to death, increased susceptibility to disease, birthing and reproductive problems, injuries and weight loss, and may have adverse consequences on the quality of the meat.³³ Careful planning, good management and handling skills and well-designed equipment must therefore be used to ensure animal welfare during transport.

The OIE Code includes three separate chapters on the protection of animals during transport: by sea (Chapter 7.2), land (Chapter 7.3) and air (Chapter 7.4).³⁴ Each chapter begins with a list of general animal behaviour patterns to be taken into consideration in planning transport, and then assigns the responsibilities and competencies of the various actors involved in each stage of transportation: owners, exporters, importers, animal handlers and the competent authorities of both importing and exporting countries. The Code then lays out specific recommendations for each phase of transportation: planning, documentation, the pre-journey period, loading, travel, unloading and post-journey inspection. For transportation by sea, land and air, the Code recommends particular designs for the vessels, containers and vehicles.

³³ The stress endured by animals during transport can result in a greater incidence of pale, soft, exudative (PSE) or dark, firm and dry (DFD) meat defects. PSE meat occurs most frequently in pigs as the result of stress during transport or the pre-slaughter phase. Pigs become agitated when crowded and rushed onto unfamiliar vehicles along with other unfamiliar pigs. Pigs that are born with a hereditary trait called Porcine Stress Syndrome have a reduced ability to cope with stress and are more susceptible to the PSE defect as a result. DFD meat, meanwhile, may occur in cattle and swine during longer journeys where the muscles' glycogen reserves are used up.

³⁴ The OIE standards for transport by air are based on the standards used by the International Air Transport Association (IATA), which has been active in regulating air transport of animals for much longer than the OIE.

The OIE Code establishes standards for international transportation of live animals. OIE member states should be mindful of the responsibilities the Code assigns to the competent authorities of both exporting and importing countries (ch. 7.2.3.2(h)-(i)). Both authorities should: (1) establish minimum standards for animal welfare, including requirements for inspection of animals before and during travel, and for certification and record keeping; (2) approve facilities, containers, vehicles and vessels for holding and transport of animals; (3) set competence standards for animal handlers and facility managers; and (4) implement these standards. In addition, the exporting country's competent authority should monitor and evaluate the health and welfare of animals at the point of loading. The importing country's competent authority should: (1) ensure that the exporting country is aware of the required standards for the transporting vessel; (2) monitor and evaluate animal health and welfare at the point of unloading; and (3) give animal consignments priority to allow import procedures to be completed without unnecessary delay. Regionally, the European Convention for the Protection of Animals during International Transport of 1965³⁵ and the European Council Regulation (EC) No. 1/2005 set standards for animal transportation within and between EU member states.

At the national level, countries take different approaches to regulating domestic and international transportation of animals, but in general this is one of the most frequently and strictly regulated areas of animal welfare. Even some jurisdictions that do not have comprehensive animal welfare statutes nonetheless regulate animal transportation (e.g. India). Other countries address transportation within general animal welfare statutes. For example, the 2008 Animal Welfare Act of Tanzania incorporates much of the OIE Code language as well as its key recommendations on animal transport.

One feature of many national laws is a statement of general principles governing animal welfare during transportation (see Box 4). More specific elements of national legislation on animal transportation, whether included in primary or subsidiary legislation, will be discussed below. Although most of the specific elements addressed in international standards established by the OIE and discussed here relate to animal transport in some form of vehicle – whether by land, sea or air – in many countries, the most arduous

³⁵ ETS No. 65.

transportation experiences for animals may be those where they are driven on foot (Rahman *et al.*, 2005). The general principles of animal welfare during transportation may easily be applied to such movement on foot, but more specific standards ought to be developed in subsidiary legislation.

4.4.1 Pre-trip planning

Careful planning of any journey is essential to ensure that animals' needs are provided for and to avoid unnecessary delays. The OIE Code emphasizes the importance of planning by devoting an entire article to the various elements to be considered: preparation of animals for the journey, consideration of type of transportation and adequacy of vehicle/vessel/container design, route, distance, weather, daily care and management of animals (including proper staffing), grouping and selection of animals and proper veterinary and emergency response procedures (arts. 7.2.5, 7.3.5). One important element of pre-trip planning is making sure that any required documentation is in order (arts. 7.2.6, 7.3.6). For international transit, this requires compliance with the requirements of the exporting, importing and any transit countries.

The OIE Code devotes a separate section to the steps that should be taken during the pre-journey period, including cleaning and inspection of the vehicle; providing animals with pre-journey rest and preconditioning to new foods, feeding methods or social groups; and pre-journey examination by a veterinarian (arts. 7.2.7, 7.3.7). Many countries' animal welfare legislation echoes the importance of planning and pre-trip preparation. The Croatian Act, for example, requires that steps "be taken in advance to minimise the length of the journey and of any delay, and to meet the animals' needs during the journey" (art. 12(2)1). To meet the requirements of the OIE Code, national legislation should require pre-trip planning to anticipate and avoid potential delays, provide for animal needs and establish emergency procedures to ensure animal welfare during transportation.

Box 4 – General Principles of Animal Welfare During Transport

Croatian Animal Protection Act (2006) art. 12

It is prohibited to transport animals in a way that causes them pain, suffering, injury or death.

Peruvian Law on Protection of Domestic Animals and Wild Animals Kept in Captivity (2000) art. 15*

The transportation of animals by truck or any other type of vehicle requires the use of procedures that do not involve cruelty, mistreatment, extreme fatigue or lack of rest, water or food for the transported animals, with special attention to sick animals.

Tanzanian Animal Welfare Act (2008) sec. 22(1)

A person shall not transport an animal in a manner that is likely to cause pain, injury or undue suffering or distress.

*authors' translation

4.4.2 Selection and grouping of animals

Careful selection and grouping of animals is one of the most important steps to ensure animal welfare during transportation. The basic selection principle in virtually all animal welfare statutes is that the animal be "fit" for the intended journey. In some legislation, what constitutes "fitness" for travel is left undefined (or left to the determination of a veterinarian), whereas other legislation spells out the necessary elements. For instance, the Croatian Act (2006) simply requires that "animals must be fit for the journey" without elaboration (art. 12(2)). The European Convention on the Protection of Animals During International Transport states generally: "No animal shall be transported unless it is fit for the intended journey" and then goes on to specify that ill or injured animals shall not be considered fit for travel (art. 9(2)). The Tanzanian Act defines fitness in more detail: "An injured animal or an animal that presents physiological weakness or pathological process shall not be considered fit for transportation" (sec. 22(2)). It tailors this determination to how the animal will be transported, and the type, duration and general circumstances of the journey (art. 23(c)).

The OIE Code sets out in detail the types of animals that are considered unfit to travel, including "those that are unable to stand unaided or bear weight on each leg", "those that are blind in both eyes" and "animals with unhealed wounds from recent surgical procedures" (arts. 7.2.7, 7.3.7). The Code also identifies animals requiring special conditions and attention during transport, including animals that are very large or obese, very young or old, very excitable or aggressive, subject to motion sickness or which have had little human contact. Similarly, the European Convention specifies that special attention must be paid to animals in late stages of pregnancy or who have recently given birth, and prohibits the transportation of pregnant female animals within the period immediately before or after giving birth or newborn mammals before their navels are healed (art. 9(3)). The Croatian Act states that pregnant females during a period prior to giving birth equal to 10 percent of the total gestation time and for one week after giving birth will not be considered fit for transport, except for required emergency veterinary treatment (art. 12(2)11). The Tanzanian Act forbids the issuance of any movement permit "where an animal (a) has given birth forty-eight hours before the departure; [or] (b) is likely to give birth during carriage" (art. 23).

Animals' fitness for the journey is often enforced by a documentation requirement, such as the need to be in possession of a certificate from a veterinarian or from the competent authority certifying fitness for travel. Under the Tanzanian Act, an animal may not be transported unless a veterinarian issues a "movement permit" (sec. 22(5)(a)). The European Convention requires a general certificate by an authorized veterinarian stating that animals are "fit for the intended journey" (art. 10(2)). Similarly, in India, the Transport of Animals Rules (Indian Rules) require that cattle, sheep, goats and pigs travel with "a valid certificate by a qualified veterinary surgeon to the effect that the [animals] are in a fit condition to travel" (arts. 47(a), 65(a), 87(1)). In the absence of such a certificate, any carrier must refuse to accept the animals for transport (arts. 47(b), 65(b), 87(2)).

A *pro forma* certificate of fitness is a useful tool to assist in standardizing both the inspection and documentation requirements. The Indian Rules, for example, include such a certificate to be completed and signed by a veterinary doctor, listing his or her qualifications, the time of examination (to be not more than 12 hours before departure), a statement that the animals are in fit condition to travel and not showing signs of disease, listing the vaccinations the animals have received and stating that the animals were adequately fed and watered prior to departure. Another useful legislative tool

is a provision that allows for the revocation of a permit in the event of changed circumstances. The Tanzanian Act, for example, provides for the revocation of a movement permit if there are changed or newly discovered circumstances relating to the fitness of an animal (art. 24).

Another important feature of legislation on the transport of animals is the requirement that they be properly grouped together, to take into account the behaviour patterns which are likely to be aggravated during the stress and close confinement of transportation. Tunisia's detailed Decree on Animal Transport (2007) is one example of national legislation implementing grouping requirements:

art. 11. – Animals of similar weight, size and age should be transported together and tethered or free inside the means of transport.

art. 12. – Animals should be separated within the means of transport in the following instances:

- according to breed,
- animals with horns,
- bulls more than 18 months old,
- yoked females,
- dangerous animals,
- tethered animals,
- stallions from other equines and from camelids.³⁶

The OIE Code also recommends maintenance of social groups already established on the farm, especially with species that tend to create particular social structures (arts. 7.2.7, 7.2.12). When mixing is necessary, the OIE Code suggests that animals go through a period of pre-trip acclimation to the new social groups. This social grouping principle also appears in the European Convention: "Mixing of animals that have not been raised together or are not accustomed to one another shall be avoided as far as possible" (art. 11(3)). Another approach is taken by the Indian Rules which set a minimum time requirement for social group formation, with "on-farm social groups" to be established at least one week prior to the journey (sec. 98).

³⁶ Authors' translation.

4.4.3 Loading and unloading

Because animal injuries occur during loading and unloading, some animal welfare regulations specifically address this phase. The OIE Code addresses several elements: competent supervision; proper facilities; the use of goads and other aids; and post-journey examination and treatment of sick or injured animals. Provisions on loading and unloading also often cover proper handling during this phase. For example, the Tunisian Decree provides, "It is forbidden to lift or pull [animals] by the head, the tail, the feet, the horns, the ears, or to hold them by the skin" (art. 8).³⁷ The European Convention includes the additional prohibition on "noise, harassment, and the use of excessive force" (art. 14.2). It also regulates the use of goads or other handling aids, limiting those that administer an electric shock and other prods that could cause injury.

Proper design and construction of loading and unloading facilities is also important to ensuring animal welfare. The OIE Code recommends that loading facilities be "designed and constructed to take into account the needs and abilities of the animals" (art. 7.2.8.2(b)), with particular attention to ramp surface, sharp projections, ventilation, appropriate lighting and sound (arts. 7.2.8.1, 7.2.8.2). The European Convention requires special design features to prevent slipping in circumstances where loading ramps are steeper than 10 degrees, and calls for well-lit loading facilities and side barriers as necessary (art. 13). The Tunisian Decree specifies that loading ramps must be on less than a 30 degree incline, with siding of certain minimum heights depending on the animal type: more than a metre for cows, sheep and goats; more than 1.3 metres for bulls; and more than 1.5 metres for horses and camelids (art. 7).

4.4.4 Transport vehicles and conditions

Most animal welfare legislation addresses the design of vehicles – whether trucks, railroad cars, boats or containers loaded on planes – requiring sufficient space, strength of partitions, safety, ventilation, climate control, waste management and light, and the provision of adequate food, bedding and water throughout the journey. Vehicle design is important because

³⁷ Authors' translation.

animals are often closely confined and occasionally immobilized or tethered and the vehicle is in motion.

The OIE Code provides detailed design and maintenance standards for vehicles for sea (art. 7.2.5.4), land (art. 7.3.5.4) and air transport (art. 7.4.1). There are several common design considerations: containers must have non-slippery floors; proper ventilation, illumination and windows for observation by handlers; protection from adverse weather conditions, including extreme temperatures; and no sharp protrusions. They must also be designed so that animal faeces and urine may be absorbed by bedding or otherwise collected so that they do not contaminate food and water or fall on animals if the container has multiple levels.

Space allowances are dealt with separately and in greater detail. They may either be stated in terms of a desired animal-based outcome or by listing certain minimum space requirements according to species or some other criterion. For example, the European Convention requires (as an outcome) that animals have sufficient space to stand in a natural position or lie down (art. 17). The Tunisian Decree lays out certain minimum space requirements for bulls, cows, sheep, goats, horses and camels, all linked to the species, sex and age of the animals being transported. For livestock containers used on airplanes, the OIE Code includes detailed species-specific space requirements (art. 7.4.1.2).

Aside from the vehicle design and space allowances, animal welfare during transportation depends on proper inspection and care throughout the journey, as animals may require more or less water or food depending on the conditions of transportation.³⁸ The Croatian Act, for example, includes several provisions aimed at animal care during transport: "the conditions of transport must be regularly checked and maintained", and "water and feed must be offered to the animals at suitable intervals and must be appropriate in quality and quantity to the species, size and age of the animals" (arts. 12.6, 12.8). The Korean Animal Protection Law (2007) requires that animals be properly fed, watered and driven carefully so that they are not shocked or harmed from sudden starts and stops (art. 8.1(1)). Such standards may be criticized as not providing any standard, since terms such as "suitable" or

³⁸ The proper feeding and watering of animals during transport is the subject of much debate, which cannot be fully canvassed here.

"appropriate" or "properly" do not give any meaningful criteria on which to judge compliance. Accordingly, subsidiary legislation may be necessary to make such standards more enforceable. The availability of resources in a particular country will affect the design of these transportation provisions as well as their enforcement.

4.4.5 Duration of travel and rest stops

Most legislation regulating animal welfare during transport makes provision for minimizing delays or limiting the duration of travel. For example, the Croatian Act states that "steps must be taken in advance to minimise the length of the journey and of any delay" (art. 12(2)1). The Tunisian Decree similarly provides that "the transporter of animals must avoid useless stops during the trip"³⁹ (art. 17). The OIE Code takes a different approach, calling for the maximum duration of a journey to be determined based on a number of factors: animal fitness, prior transport experience and special needs, as well as weather conditions, space allowance and type of vehicle (art. 7.3.5.3).

Other legislation establishes specific requirements for trips of certain lengths. The European Convention states that any journey exceeding eight hours must comply with additional documentation requirements for all farm animals other than poultry (art. 7(2)). In India, the rules on transport of sheep, goats and pigs apply only to trips exceeding six hours (secs. 64, 86), during which sufficient food, fodder and water must be provided "at regular intervals" (secs. 70, 91). Poultry cannot be transported continuously for more than six hours and must be inspected every six hours, and in the event of stops, transportation shall not remain stationary for more than 30 minutes at a time (sec. 84(e)–(f)).

Some laws impose mandatory rest stops rather than limiting total travel time. For example, the OIE Code calls for rest at appropriate intervals during the journey, "either on the vehicle or, if necessary, unloaded into suitable facilities" (art. 7.3.9.6(a)). The Croatian Act provides that "during the journey, the animals must be rested at appropriate intervals" (art. 12 sec. 9). However, what constitutes an "appropriate interval" is not defined, and rest stops are controversial since they may simply prolong the journey and therefore increase total animal stress during travel, unloading and subsequent

³⁹ Authors' translation.

lairaging. Thus a few European countries have made more specific regulations. In Austria, animals may be transported for up to six hours and a maximum of 130 km on country roads or 260 km on motorways, and these limitations cannot be avoided by rest stops during a longer journey. In many countries, national conditions such as the distances between farms and slaughterhouses and the quality of roads may make such strict limitations impractical.⁴⁰

4.4.6 Emergency treatment and slaughter

The issue of emergency treatment and slaughter of animals that fall ill or are injured during transport is complex, since it raises interlinked concerns regarding animal health, animal welfare and food safety. Some of the considerations include the need to segregate sick animals, the disposal of carcasses of animals that die during transport so as to prevent the spread of disease and treatment or slaughter during transport or post-trip unloading. Unsurprisingly, the concerns differ depending on the means of transport, as do the applicable legislative provisions.

The OIE Code includes a variety of recommendations in connection with emergency treatment and slaughter, such as having a predetermined emergency plan in place and ensuring that a veterinary consultation is available during transport and post-trip unloading (art. 7.2.9.2). The Code calls for medication to be administered only on a veterinarian's recommendation, cautions at length against the use of tranquillizers during air transport and requires keeping a detailed record of treatments used during transport (arts. 7.2.9.2(c), 7.4.7).

The European Convention makes a general provision for emergency and casualty care during transport: "Animals that fall ill or are injured during transport shall receive first-aid care as soon as possible; if necessary, they shall be given appropriate veterinary treatment or be killed in a way which

⁴⁰ In more industrialized countries, the problems of long-distance transport reflect greater consolidation of the slaughter industry, which means that plants are fewer and farther between. The longer journeys can be deleterious for animal welfare and result in spread of disease. Organizations such as the World Society for the Protection of Animals support the principle that animals should be slaughtered as close as possible to the point of origin.

does not cause them any additional suffering" (art. 25). The only additional provisions are for treatment during air transport: drugs should only be used in response to a specific problem and be administered by a veterinarian or another authorized professional; and sedation and euthanasia should only be used in an emergency with a species-suitable means (art. 30).

The most generous provisions from an animal welfare standpoint provide for immediate mid-trip treatment of any injured or sick animals. The Tanzanian Act, for example, provides: "The transporter shall ensure that an animal which falls ill or gets injured during transportation receives appropriate veterinary attention" (sec. 25(2)). Similarly, the Canadian Health of Animals Act (1990), which prohibits the transportation of any animal that by reason of infirmity, illness, injury or fatigue cannot be transported without undue suffering (sec. 138(2)), requires that an animal which becomes unfit for transport while en route must be taken to the nearest suitable place where it can receive proper care and attention (sec. 138(4)).⁴¹

Official Mexican Standard NOM-033-Z00-1995 on the humane slaughter of domestic and wild animals prescribes specific humane killing methods to be used in a mid-trip emergency (secs. 7.2, 7.2.1–7.2.6). These methods differ from the humane methods prescribed for slaughterhouses but are also species-specific. For birds, depending on the size, the appropriate methods could be decapitation, cervical dislocation or a single bullet under the left wing. For cows, sheep, goats and pigs, the method is a gunshot to the frontal region of the head or across the left elbow in the direction of the heart, with the size of the pistol depending on the species. For rabbits, the standard prescribes stunning and death by breaking the neck. The OIE Code recommendations for killing and slaughter of different species are based on detailed scientific reviews conducted by bodies such as the Humane Slaughter Association and the American Veterinary Medical Association. Thus, there is a strong scientific basis for these recommendations.

4.5 Housing

The next substantive areas addressed by animal welfare legislation are housing and management, reviewed in this and the following section.

⁴¹ These requirements are interpreted and enforced by the Canadian Food Inspection Agency.

Housing generally refers to the type and condition of the accommodations in which animals are kept, while management refers to methods of handling, controlling and caring for animals throughout their lives. Housing issues include choices about whether animals are kept indoors or outdoors, the allotment of living space, the temperature and ventilation and the methods and materials used in construction of facilities. Management issues include feeding, disease prevention, veterinary treatment, surgical procedures, non-therapeutic drugs, genetic modification and breeding methods, as well as personnel and handling.

Despite being perhaps the most important areas of animal welfare – since housing and management issues affect animals' day-to-day existence up until the point of transport and slaughter – housing and management are not extensively regulated either at international or national level. At the international level, the OIE Code includes "appropriate shelter" in its definition of animal welfare and mentions the Five Freedoms as guiding principles, but otherwise includes no specific animal welfare standards related to housing. However, certain standards for animal production systems are being developed with a view to presenting them to the member countries for consideration and possible adoption. There are more rules at the European regional level, in that EC Directive 98/58/EC addresses freedom of movement, safe buildings and accommodation, proper air circulation, dust levels, temperature and relative humidity and lighting.

Although the housing needs of different animal species vary considerably, certain basic welfare principles apply to housing for all types of animals. Animal welfare legislation generally embraces the principles of freedom of movement and freedom to express natural behaviour. For example, the Swedish Animal Protection Ordinance (1988) includes several relevant provisions:

1. Livestock buildings and other holding rooms for animals shall be sufficiently spacious to allow all the animals to lie down at the same time and to move freely.
2. The premises shall be designed in such a way as to allow the animals to behave naturally (sec. 1(b)).

The ordinance continues: "The fittings and other equipment shall not prevent the animals from behaving naturally, unnecessarily limit their freedom of movement or otherwise cause them inconvenience" (sec. 3).

Some legislation actually prescribes minimum space requirements depending on the species, although such specifications are more often included in non-binding instruments such as New Zealand's Code of Welfare for Pigs (2005).

The safety of housing materials and construction is also critical to ensuring the welfare of confined animals. For example, the Austrian Act states: "(1) Materials used for the construction and accommodation installations with which the animals may come into contact, and in particular for the construction of pens and equipment, must not be dangerous for the animals and be cleaned properly. (2) Accommodation and installations for tethering or caging animals shall be built and maintained in a way that there are no sharp edges or protrusions likely to cause injury to the animals" (sec. 18(1)–(2)).

Whether animals are confined or kept outdoors, legislation must ensure their physical comfort and well-being. If kept outdoors, animals must be provided with adequate shelter from adverse weather conditions. If animals are confined, the buildings must be adequately ventilated to provide fresh air and moderate temperatures. Other factors, such as appropriate lighting, noise control, flooring and bedding, are also important to animal welfare. The Austrian Act (2005), for example, addresses climatic considerations: "[A person] who keeps any animals shall ensure that . . . the climate, in particular light and temperature . . . corresponds to their physiological and ethological needs" (sec. 13(2)). The Swedish ordinance requires that buildings "be designed in such a way as to ensure a satisfactory indoor climate. Noise shall be kept at a low level" and, buildings must "be fitted with windows to let in the daylight" (sec. 2(1)–(2)). The Taiwan Republic of China Animal Protection Law (1998) requires that an animal keeper "pay attention to the safe living environment, shelter, ventilation, lighting, temperature, cleaning and other appropriate care to prevent the animal from unnecessary harassment, mistreatment or hurt" (art. 5).

Different animal species have different housing requirements which may be essential to maintaining their well-being. Thus the Austrian Act establishes as one of its guiding principles that "no animal shall be kept unless it can reasonably be expected, on the basis of its genotype or phenotype that it can be kept according to the state of the art of scientific knowledge without detrimental effect on its well-being" (sec. 13 (1)). The German Act (1998) provides that any person keeping, caring for or required to care for an animal "must provide the animal with food, care, and housing appropriate to its species, its requirements and behavior" (sec. 2(1)).

As housing issues differ from one species to another, animal welfare legislation often explicitly leaves flexibility for species-specific needs or else addresses these needs directly. Because of the wide variation of housing requirements between species, these will not be detailed in this paper. The OIE Code, although it does not directly address housing, includes summaries of species-specific issues in several of its animal welfare chapters (e.g. Chapter 7.3.12), which can provide good background information to guide the formulation of specific recommendations.

4.6 Management

As indicated above, management techniques refer to the ways that animals are handled, cared for and controlled throughout their lives. Like housing, management has a profound impact on animals' daily lives but is relatively neglected in animal welfare legislation. The key management issues range from competence of personnel and proper handling when moving animals to or from housing or pasture, to feeding, veterinary treatment, use of non-therapeutic surgical procedures or drugs and breeding methods, including genetic modification. Some of these issues, such as personnel competence, are frequently included in legislation and international standards, whereas other issues, such as feeding, breeding or genetic modification, are rarely addressed in detail outside Europe. These issues should, however, be of concern both from the perspective of animal welfare science and for those countries wishing to expand international trade in animal products and by-products, especially with European trading partners.

4.6.1 Personnel

The employment of knowledgeable, well-trained and competent personnel in animal handling and management is fundamental to ensuring animal welfare. Personnel issues are a frequent theme in the recommendations on animal welfare in the OIE Code. National legislation also often addresses personnel issues through various means: by setting out the requisite skills and knowledge of personnel; limiting the age of individuals employed in animal handling; prohibiting the employment of individuals who have violated animal welfare or cruelty laws; or requiring the licensing of those who handle or transport animals.

The OIE Code contains specific recommendations related to personnel employed in animal handling, such as:

- "Animal handlers should be experienced and competent in handling and moving farm livestock and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks" (art. 7.2.2).
- "Persons engaged in the unloading, moving, lairage, care, restraint, stunning, slaughter and bleeding of animals play an important role in the welfare of those animals. For this reason, there should be a sufficient number of personnel, who should be patient, considerate, competent and familiar with the recommendations outlined in the present Chapter and their application within the national context" (art. 7.5.1.2).

National legislation will usually outline the qualifications of persons owning or handling animals. For example, the German Act specifies: "Any person keeping, caring for or required to care for an animal . . . must possess the knowledge and skills necessary for providing the animal with adequate food, care and housing in accordance with its behavioural requirements" (art. 2.3).

Another legislative strategy is to charge the competent authority or another body with monitoring and certifying that personnel have the requisite knowledge and skills. The German Act authorizes the Ministry of Food, Agriculture and Forestry to issue provisions as necessary regarding "the knowledge and skills of persons keeping, caring for or required to care for animals and the proof of such knowledge and skills of persons keeping, caring for or required to care for animals for commercial purposes" (art. 2a(1)). The Croatian Act goes one step further, mandating that personnel either be trained or have "equivalent experience or knowledge", and the competent authority is required to determine how personnel should be trained (art. 37(1)–(2)).

Beyond knowledge and competence, other personnel considerations include the number of persons to be assigned to a facility, their age and the need to screen them for any prior violations of animal welfare law. The Croatian Act, for example, requires that animals be cared for by "a sufficient number of trained staff" (art. 37(1)). The Taiwan Republic of China Animal Protection Law (1998) requires that an animal owner or keeper be over age 15. The Estonian Animal Protection Law (2000) has a mechanism for a ten-year deprivation of the right to keep animals where an individual has repeatedly failed to comply with or has materially violated animal welfare requirements (sec. 65).

Legislation also often includes additional training, certification or oversight requirements for personnel involved in transport or slaughter. For example, with respect to handling in connection with slaughter, the OIE Code recommends that the competent authority establish a certificate of competence program (art. 7.5.1.2). The Croatian Act regulates personnel involved in animal transportation, but does not do the same for other personnel (sec. 14).

4.6.2 Handling

As used here, handling refers to the way that animals are moved within housing or pasture in the course of day-to-day management. Legislation generally addresses the permitted or prohibited methods to be employed by personnel in their physical interactions with animals. This includes the use of certain goads, prods or physical force.

One key consideration is animal behaviour patterns. Although acknowledging that the "behaviour of individual animals or groups of animals will vary depending on their breed, sex, temperament and age and the way in which they have been reared and handled," the OIE Code lays out a set of "behaviour patterns [] which are always present to some degree in domestic animals, [and] should be taken into consideration in handling and moving the animals" (art. 7.2.2). These include:

- the instinct of animals kept in herds to follow a leader;
- the natural hostility of certain animals towards one another, which should accordingly be identified and not mixed;
- the desire of some animals to control their personal space;
- the "flight zone" of an animal, which indicates the space in which, if a handler enters, the animal will be likely to try to escape;
- animal vision, which means they normally can perceive movement behind and to the side but can only judge distances directly in front;
- animal sensitivity to a wide frequency of sound, and the likelihood that continuous loud noise or sudden noise will cause a panic; and
- the potential of a wide range of environmental factors to distract animals and cause them to balk, stop or turn while being moved (arts. 7.2.2.1, 7.2.2.2).

According to the OIE recommendations, the best way to ensure both animal welfare and handler safety is to employ handling methods that are adapted to these animal behaviour patterns and the elimination of potential distractions from the spaces in which animals are moved. One example is for handlers to use an animal's natural "point of balance" at the shoulder during handling, standing behind this point to encourage forward movement and in front to encourage backward movement (art. 7.2.2.1).

The use of goads and other aids in moving animals should also take into account the animal behaviour patterns listed above. First and foremost, the OIE Code recommends that goads and other aids be used only where necessary (art. 7.2.8.3). Electric goads should be used only in extreme situations, not routinely, and should never be used on certain sensitive parts of animals' bodies. Certain goads are identified as preferable and more useful, including flags, plastic paddles, canes with a short leather or canvas strap attached, plastic bags and rattles. Other handling methods, including excessive shouting, loud noises and grasping or lifting animals by their fur, wool, skin, horns, tails or other body parts, are specifically prohibited in the OIE Code, except in emergencies.

National legislation, particularly in Europe, often includes similar limitations on the use of certain goads or handling methods. These terms are generally included in a list of acts strictly prohibited or defined as constituting cruelty to animals. For example, the Croatian Act prohibits the "use [of] technical devices, aids and tools aimed at controlling behaviour of animals by punishment, including prong collars or training devices involving the use of electric current or chemical substances" (art. 4(1)7). The Austrian Act contains a similar provision, prohibiting any method that "uses technical equipment, devices or auxiliary means aiming at influencing animal behaviour by severe approach or punishment incentives" (sec. 5(b)).

4.6.3 Feeding

Legislation on animal feed regulates the manufacture, import, packaging, labelling, sale and storage of feed. Such legislation serves a number of objectives, of which animal welfare is only one. Legislative provisions on animal feed are intended to protect the environment, purchasers of animal feed and the animals themselves. The provision of safe, adequate and nutritious feed is essential to maintaining both animal health and welfare.

Animal feeding can be addressed in animal welfare legislation as well as in legislation specifically governing animal feeds. Where animal welfare legislation addresses feeding, the provisions are framed in very general terms related to adequate and appropriate food supply. For example, European Council Directive 98/59/EC provides: "Animals must be fed a wholesome diet which is appropriate to their age and species and which is fed to them in sufficient quantity to maintain them in good health and satisfy their nutritional needs. No animal shall be provided with food or liquid in a manner, nor shall such food or liquid contain any substance, which may cause unnecessary suffering or injury." Similarly, the Austrian Animal Protection Act provides that the "type, characteristics, quality and quantity of fodder must be adequate for the species, age and need of the animals. The fodder must be of a characteristic and composition that the animals can satisfy their nutritional need corresponding to the need for activity their species associates with feeding" (sec. 17(1)).

Some animal welfare legislation prohibits certain feeding practices defined as constituting animal cruelty, such as force feeding animals for reasons other than veterinary necessity. For example, the Croatian Animal Protection Act prohibits giving animals substances "the ingestion of which causes pain, suffering, injury, fear or death" and forcing animals to ingest substances "unless instructed by a veterinarian to do so for animal health reasons or unless it is scientifically justified" (art. 4(1)14–15). In some legislation the prohibition against force feeding is limited to geese or ducks, which are often force fed in the preparation of *foie gras*. For example, the Polish Animal Protection Act (1997) states: "It is forbidden to fatten geese and ducks for the purposes of the fatty degeneration of their livers" (art. 12.4).

At the international level, the OIE Code addresses animal feed from an animal welfare perspective, recommending (in the context of transport and slaughter) that animals be fed at appropriate intervals. The Code also recommends that steps be taken prior to transport to allow animals to adapt to new or different foods, if they will not be fed as they were previously fed on the farm (art. 7.3.5.2(a)). The OIE Code also mentions pesticide residues in animal feed (which could compromise animal food product safety) (art. 6.1.3.4), and also refers to animal feed with respect to the prevention of bovine spongiform encephelopathy and other animal diseases (art. 11.6.2).

Some international organizations, such as FAO and the Codex Alimentarius Commission (CAC), have drawn up guidelines on good animal feeding

practices, some of which relate to animal welfare. FAO Good Agricultural Practices (GAP) principles specify, for example, that agricultural practices should "minimize risk of infection and disease by good pasture management" and ensure that animals receive "adequate and appropriate" feed.⁴² CAC has also released a Code of Practice on Good Animal Feeding, although its main purpose is to ensure the "safety of food for human consumption" (sec. 2).

Many countries are adopting increasingly detailed legislation on animal feed. In 2009, for example, the European Council of Agricultural Ministers adopted regulations that include: (1) a list of prohibited animal feed ingredients; (2) a participative process for drafting and updating an EU-wide list of safe feed ingredients; and (3) mandatory labelling requirements for animal feeds. Also in 2009, Malaysia adopted the Feed Bill, which among other detailed provisions establishes a Feed Board and sets out labelling requirements. The stated purpose of the Malaysian bill combines food safety and animal welfare concerns, aiming "to ensure that feed satisfies nutritional requirement [sic] of animals, is not harmful to animals and is not contaminated so that animals and animal products are safe for human consumption."

Whether in animal welfare legislation or in animal feed legislation, the regulation of animal feed should serve the purposes of protecting animal health and welfare and human health. Legislative provisions should list permitted and prohibited feed ingredients and additives, establish labelling requirements and generally ensure that animals are provided with adequate, safe and nutritious food. The rules should vary by species, as in the New Zealand Code of Welfare for Pigs (2005), which states that "The appropriate level of feeding will be best determined by monitoring the body condition of the pigs, and feeding accordingly, rather than feeding a pre-determined level of feed" (Part 3.1).

4.6.4 Veterinary treatment

Veterinary inspection and treatment are relevant at many stages of animals' lives. In the context of appropriate on-farm management techniques, most animal welfare legislation lays out a few basic requirements: animal owners or

⁴² FAO Good Agricultural Practices (GAP) Principle XII.

handlers must provide sick or injured animals with veterinary treatment, and veterinary consultation must be provided in connection with the use of certain surgical procedures and drugs on animals.

There is some variation in national legislation on whether and when veterinary treatment must be administered by a veterinarian. At one extreme, the Taiwan Republic of China Animal Protection Law (1998) states: "[Animal owners] must provide necessary medical treatment to the animals that are injured or sick. The medical treatment or surgery of animals, based on the need for the health or management of the animal, shall be operated by veterinarians" (sec. 11). Similarly, the Latvian Animal Protection Act (2000) provides: "In cases of disease or trauma of animals used for farming purposes, the owner must obtain the opinion of a practising veterinarian regarding necessary care and treatment" (sec. 15).

A variation is the German Animal Welfare Law (1998), which generally requires that vertebrates receive anaesthetic prior to painful operations but only requires that the anaesthetic be administered by a veterinarian in the case of warm-blooded vertebrates, amphibians and reptiles (art. 5(1)). The law also lists a number of common surgical procedures and requires that certain of these be performed by a veterinarian while others "may be carried out by other persons with the requisite expertise and skills" (art. 6).

The determination of whether a veterinarian must be consulted should be made in light of available resources in the country – i.e. the number of veterinarians and their distribution. Animal welfare considerations should also come into play, after a real assessment of which treatments or procedures really require veterinary expertise. Thus, rather than a blanket requirement that treatment be administered by a veterinarian, legislation ought to reflect a more flexible approach that requires a veterinarian for certain procedures while permitting other trained and competent personnel to carry out others.

4.6.5 Non-therapeutic surgical procedures and drugs

"Non-therapeutic" surgical procedures and drugs are those that are employed for the purpose of controlling or modifying animal behaviour and not as part of veterinary treatment of a sick or injured animal. Some such procedures (e.g. beak trimming) are justified in terms of animal welfare but are often used instead to suppress negative animal behaviours resulting from

poor housing and management. Other procedures (e.g. branding, surgical or chemical castration and use of growth hormones) are justified in terms of business necessity or farm management but are not based on animal welfare (Prunier *et al.*, 2006).⁴³ Animal welfare legislation ranges from prohibiting or limiting the use of such non-therapeutic procedures to permitting them so long as they are used to minimize animal suffering.

Commonly employed non-therapeutic surgical procedures on farm animals fall into three classes: (1) identification procedures (e.g. ear clipping, tagging, notching, branding and tattooing); (2) reproductive procedures (e.g. castration and vasectomy); and (3) other management procedures (e.g. dehorning, tail docking and beak trimming). Non-therapeutic drugs include (1) tranquilizers or sedatives used to control animal behaviour; (2) hormones or repartitioning agents used to increase growth and otherwise improve productivity; and (3) antibiotics used either to increase growth or to prevent disease. Some of these non-therapeutic drug treatments arguably improve animal welfare, for example the inclusion of antibiotics in the diets of newly weaned pigs in order to prevent disease, while others – such as growth hormones – are motivated entirely by concerns for productivity rather than for animal welfare.

In the UK, a variety of legislative instruments govern the use of non-therapeutic surgical procedures. The Animal Welfare Act (2006) makes it an offence to "carry out a prohibited procedure", defined as one that "interfere[s] with the sensitive tissues or bone structure of the animal, otherwise than for the purpose of its medical treatment" (sec. 5). Exceptions to this prohibition are detailed in subsidiary legislation, the Mutilations (Permitted Procedures) (England) Regulations (2007) and its accompanying amendment (2008). Specific procedures for each commonly farmed species are permitted by the regulations, provided that certain protective steps are taken so as to minimize the animal's pain and suffering and ensure hygienic conditions (sec. 3). With certain exceptions, these procedures may only be performed by a veterinarian (sec. 5).

A different approach to non-therapeutic surgical procedures is taken in the Austrian Animal Protection Act (2005). Section 7(1) prohibits procedures

⁴³ For example, the castration of male pigs commonly serves a dual business purpose: (1) making animals easier to control and (2) eliminating undesirable flavours and odours in meat.

"carried out for other than therapeutic or diagnostic purposes or for the expert marking of animals in accordance with legal regulations applicable." The act then specifies the following prohibited management procedures (many of which are permitted by the UK regulations):

- tail docking;
- ear cropping;
- devocalization;
- de-clawing and de-fanging; and
- beak trimming.

Exceptions to these prohibitions are permitted "to prevent reproduction" and "if the intervention is indispensable for the intended use of the animal, for its protection or for the protection of other animals" (sec. 7(2)). At the other extreme, some laws impose no limitations on the use of non-therapeutic surgical procedures but simply require that such surgery follows good veterinary practice. For example, the Korean Animal Protection Law (1991, last revised 2007) states: "Surgery on animals such as castration, de-horning and docking tails must follow veterinary methods" (art. 12).

In European animal welfare laws, it is common to prohibit the use of drugs for non-therapeutic purposes. The Swedish Animal Protection Ordinance (1988), for example, states: "Animals must not be . . . given injections except where they are necessary for veterinary medical reasons" (sec. 10(1)). The Austrian Animal Protection Act also makes it a violation to force animals "to ingest food or substances, as long as this is not necessary for reasons of veterinary medicine" (sec. 5(12)).

The UK Welfare of Farmed Animals (England) Regulations (2007) establish a slightly different principle, prohibiting the administration of any substance other than for therapeutic, prophylactic or "zootechnical" purposes, except where "it has been demonstrated by scientific studies of animal welfare or established practice that the effect of that substance is not detrimental to the health or welfare of the animals" (sec. 27(1)). The exception for zootechnical purposes is defined as "the [permitted] use in stockfarming of certain substances having a hormonal or thyrostatic action and of beta-agonists" (sec. 27(2)).

Although the UK Regulations permit the use of certain non-therapeutic hormones, other European animal welfare legislation prohibits the use of growth-producing hormones or drugs. For example, the Polish Animal Protection Act states simply: "It is forbidden to give animals growth hormones" (art. 12.3). The Croatian Animal Protection Act frames the prohibition a bit more loosely, prohibiting the administration of "unauthorised stimulants and substances to animals in order to enhance their growth and weight gain" (art. 4(1)). The word "unauthorised" appears to allow the use of some stimulants or substances.

4.6.6 Breeding and genetic engineering

Breeding is generally addressed in animal welfare legislation in two ways. The first concerns the use of breeding methods that in and of themselves would cause suffering to the animals being bred. The second concerns the use of breeding techniques or genetic modifications that select for certain animal characteristics which would result in the birth of animals susceptible to increased pain and suffering during their lives. Both issues are addressed in European animal welfare legislation and may be of increasing interest to countries engaged in trade of animals, animal products or by-products with European partners.

The Austrian Animal Protection Act is an example of legislation that addresses both issues simultaneously, and also extends prohibitions to apply to international trade partners. First, section 22(1) states: "Natural or artificial breeding or breeding methods which cause or are likely to negatively affect the well-being of animals for a longer period of time or permanently, must not be practised." Next, section 5(2)1 defines as a punishable offense where any person "breeds animals which either directly themselves or their descendants will suffer from heavy pain, suffering, injury or heavy fear; or imports, purchases or passes on such animals with features resulting from inhumane breeding practices". The inclusion of importers strengthens the scope of enforcement considerably.

Prohibitions on breeding methods or genetic engineering that will select for characteristics that will negatively affect animal welfare are detailed in the German Animal Welfare Act (sec. 11b) and the Norwegian Animal Welfare Act (sec. 5). Other countries' legislation authorizes the competent authority to regulate such practices. For example, the Swedish Animal Welfare Ordinance specifically authorizes the issuance of detailed regulations on

"breeding, the object of which is such that it may entail suffering for the animals or affect their natural behaviour" (sec. 12). The Polish Animal Protection Act requires permission of the competent authority prior to the "introduction of a previously unapplied technology of animal breeding . . . stating that it meets the requirements of [the Animal Protection Act]" (art. 13.1). Since breeding can also be used to select for traits that improve animal welfare, for example by decreasing aggressive social behaviour, some degree of legislative flexibility may be required.