

Section E

Legislation and regulation

1 International legal framework – major instruments

1.1 Introduction

A number of international legal frameworks, relevant to the current and future management of AnGR are described in this section. The frameworks include both legally binding and non-binding instruments. The term “soft law” is used here to refer to non-binding legal instruments, which are utilized for a variety of reasons, including strengthening member commitment to agreements at the policy level, reaffirming international norms, and establishing informal precedents for subsequent treaties.

1.2 Legal framework for the management of biodiversity

This subchapter describes international-level legally binding instruments and soft laws by which national governments undertake to address the management and conservation of biodiversity, to develop policies on the issue, and to implement relevant actions.

Adopted in 1992, Agenda 21 is a plan of action to be undertaken at the global, national and local levels by governments, the organizations of the United Nations System and other stakeholders, to address all areas of human impact on the environment¹¹. The Agenda was prepared to coincide with the 1992 United Nations Conference on Environment and Development (Earth Summit) held in Rio de Janeiro, and was adopted at the time by 179 governments. Chapter 14 of

Agenda 21, “Promoting Sustainable Agriculture and Rural Development”, addresses the question of increasing food production in a sustainable way and enhancing food security. Among the programme areas included in Chapter 14, is programme area (h) on the conservation and sustainable utilization of AnGR. The management-related activities specified in this programme stipulate that governments should:

“a) draw up breed conservation plans for endangered populations, including semen/ embryo collection and storage, farm-based conservation of indigenous stock and in situ conservation, b) plan and initiate breed development strategies, and c) select indigenous populations on the basis of regional importance and genetic uniqueness, for a ten-year programme, followed by selection of an additional cohort of indigenous breeds for development.”

Subsequently, at the World Summit on Sustainable Development held in Johannesburg in 2002, sustainable agriculture and rural development was one of the issues considered in the Plan of Implementation. Paragraphs 6(i) and 38 of the Final Declaration stress the importance of sustainable agriculture and rural development to the implementation of an integrated approach to increasing food production and enhancing food security and food safety in an environmentally sustainable way.

¹¹ www.un.org/esa/sustdev/documents/agenda21/

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The The Convention on Biological Diversity (CBD)¹², a legally binding international framework for the management of biodiversity, was signed by 150 governments at the Rio Earth Summit. By 2005 it had 188 parties. The three objectives of the CBD, as set out in Article 1, are: the conservation of biological diversity, the sustainable use of components of biological diversity, and the fair and equitable sharing of the benefits arising from the utilization of genetic resources. Conservation of animal and plant genetic resources required for food and agriculture is addressed by its programme of work on agrobiodiversity. The CBD states that, while states have the sovereign right to exploit their own resources (Article 3), they also have the duty to conserve them and to facilitate access for sound uses to other contracting parties (Article 15). The need for policy development and integration is acknowledged in the CBD, and governments are requested to develop national strategies on biodiversity (Article 6a), and to integrate “the conservation and sustainable use of biological diversity into relevant sectoral and cross-sectoral plans, programmes and policies” (Article 6b). In 2000, the CBD was supplemented by the Cartagena Protocol on Biosafety, which is considered in greater detail below.

The special nature of agricultural biodiversity has been consistently recognized by the Conference of the Parties (COP) to the CBD. Decisions V/5 and II/15 specifically mention “the special nature of agricultural biodiversity, its distinctive features, and problems needing distinctive solutions.” Decision V/5 supports FAO’s work on AnGR, and states that:

“Country-driven assessments of genetic resources of importance for food and agriculture ... shall be implemented, including through programmes of FAO.” Moreover, the COP’s Decision VII/5, “Invite[d] Parties, other Governments, the financial mechanism and funding organizations to provide ... support to enable countries ... to participate fully in the

preparatory process for the first Report on the State of World’s Animal Genetic Resources, and implement follow-up actions identified through the process.”

The Commission on Genetic Resources for Food and Agriculture (CGRFA) was the first permanent intergovernmental forum dealing with agricultural genetic resources. At present, 167 Governments and the European Community are members. Its statutes provide that it shall:

“have a coordinating role and shall deal with policy, sectorial and cross-sectorial matters related to the conservation and sustainable use of genetic resources of relevance to food and agriculture ...

“provide an intergovernmental forum for negotiations and ... oversee the development, upon the request of the FAO Governing Bodies, of other international agreements, undertakings, codes of conduct or other instruments relating to genetic resources of relevance to food and agriculture, and ... monitor the operation of such instruments ...

“facilitate and oversee cooperation between FAO and other international governmental and non-governmental bodies dealing with the conservation and sustainable use of genetic resources, in particular with the Conference of Parties to the Convention on Biological Diversity and the UN Commission on Sustainable Development, and ... seek to develop appropriate mechanisms for cooperation and coordination in consultation with such bodies.”

The Commission was established in 1983, as the Commission on Plant Genetic Resources. In 1995, its mandate was extended to cover all components of biodiversity of relevance to food and agriculture. This mandate is being implemented through a step-by-step approach, and work has so far focused largely on plant and animal genetic resources for food and agriculture. Major achievements of the Commission include:

- the adoption, in 1983, of the International Undertaking on Plant Genetic Resources, a voluntary instrument that was the first international agreement dealing with the

¹² www.biodiv.org

conservation and sustainable use of any component of genetic resources. Farmers' Rights were first recognized, in 1989, in the context of the International Undertaking;

- the establishment, in 1994, of the International Network of *Ex situ* Collections of Plant Genetic Resources for Food and Agriculture under the auspices of FAO. This currently provides the legal framework under which the most important collections for food security and sustainable development are held, in trust for the international community, and under the Commission's policy guidance;
- the adoption, in 1996, of the first report on the State of the World's Plant Genetic Resources for Food and Agriculture¹³ and of the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture¹⁴;
- the adoption, in 2001, of the legally binding International Treaty on Plant Genetic Resources for Food and Agriculture¹⁵ (IT-PGRFA);
- the launch of the preparation process for the State of the World's Animal Genetic Resources for Food and Agriculture including the Strategic Priorities for Action, to be finalized in 2007.

The IT-PGRFA came into force on 29 June 2004, 90 days after 40 governments had ratified it.

Article 1 of the Treaty states that:

"The objectives of this Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security."

Further:

"These objectives will be attained by closely linking this Treaty to the Food and Agriculture Organization of the United Nations and to the Convention on Biological Diversity."

1.3 Access and benefit-sharing

In the context of AnGR management, it is often the case that livestock breeds or varieties, and the knowledge associated with their management have been developed by local or indigenous communities. Scientific institutions and commercial enterprises may further develop such materials in the same country or elsewhere. In such circumstances, controversies may arise over access to genetic material and the distribution of benefits deriving from its utilization. A number of international frameworks attempt to address the issue.

The CBD recognizes the importance of ensuring "the fair and equitable sharing of the benefits arising out of the utilization of genetic resources". With regard to access, Article 15 of the CBD acknowledges the sovereign rights of states over their natural resources, and states that access is subject to national legislation (Article 15.1). Access is to be granted on mutually agreed terms (Article 15.4) through bilateral agreements. Prior informed consent of the party providing the genetic resources is required (Article 15.5). The provisions can be taken to mean that the provider of genetic resources must be fully informed in advance by the access-seeking party about the objectives, as well as the economic and environmental implications of such access. The CBD foresees the necessity of legislative, administrative or policy measures to provide for fair and equitable sharing, with the party that provided the resources, the results of research and development and benefits arising from the commercial and other utilization of genetic resources (Article 15.7). A benefit-sharing component is also found in Article 8(j), which contains provisions to encourage the equitable sharing of the benefits arising from the

¹³ <http://www.fao.org/ag/agP/AGPS/Pgrfa/pdf/swrfull.pdf>

¹⁴ <http://www.fao.org/ag/AGP/AGPS/GpaEN/gpatoc.htm>

¹⁵ <http://www.fao.org/AG/cgrfa/itpgr.htm>

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utilization of knowledge, innovations and practices of indigenous and local communities, embodying traditional lifestyles relevant for conservation and sustainable use of biological diversity.

Under the IT-PGRFA, countries agree to establish a multilateral system of access and benefit sharing to facilitate access to plant genetic resources for food and agriculture, and to share the benefits in a fair and equitable way (Article 10). In the case of commercial products that may not be used without restriction by others for further research and breeding, the Treaty provides for a mandatory payment of an equitable share of the resulting benefits. It also identified capacity building, exchange of information and technology transfer as relevant mechanisms for non-monetary benefit sharing. The Treaty recognizes the enormous contribution that farmers and their communities have made and continue to make to the conservation and development of plant genetic resources. "Farmers' Rights" under the Treaty, include the protection of traditional knowledge, and the rights to participate equitably in benefit sharing and in national decision-making about plant genetic resources. The Treaty makes national governments responsible for implementing these rights. The Treaty also foresees a funding strategy to mobilize funds for activities, plans and programmes particularly aimed at helping small farmers in developing countries. This funding strategy also includes the voluntary and mandatory sharing of the monetary benefits paid under the Multilateral System (Article 13) and voluntary payments by Contracting Parties and other stakeholders (Article 18). No similar treaty exists in the case of AnGR.

Falling within the category of "soft laws" are the Bonn Guidelines, which were developed by the CBD and adopted under Decision VI/24. It is, however, evident from the wording of the guidelines that they were drawn up with attention being paid to wild biodiversity rather than AnGR. The guidelines provide a set of voluntary rules which will assist parties, governments and other stakeholders when establishing legislative, administrative or policy measures on access and benefit sharing and/

or when negotiating contractual arrangements for access and benefit sharing.

The Bonn Guidelines state that before collecting any genetic resources, a collector should have a written agreement that includes: prior informed consent of the national government of the country of origin; prior informed consent of the indigenous community or communities whose "traditional knowledge" is being accessed; details of the non-monetary and/or monetary benefits the collector will provide; and information on whether, and under what conditions, the collector may transfer the collected genetic resources to another party. The development of mutually agreed terms should be based on the principles of legal certainty and minimization of costs. The Bonn Guidelines set out a detailed description of the type of provisions that could form part of a contractual arrangement. Some of the proposed elements are quite innovative and include specification of the uses for which consent has been granted; the regulation of these uses in light of the ethical concerns of the parties to the agreement; provisions for the continuation of customary uses of genetic resources; possible joint ownership of intellectual property rights according to contributions; confidentiality clauses; and the sharing of benefits from commercial and other utilization of genetic resources including derivatives.

1.4 Legal framework for international trade

The main legal framework regulating international trade in livestock and livestock products is the WTO Agreement on Agriculture adopted in 1994. The basic principles of the WTO¹⁶ agreements include:

- Trade without discrimination – this principle was one of the foundations of the General Agreement on Tariffs and Trade (GATT). In the WTO Agreement, this principle is effected through the operation of

¹⁶ <http://www.wto.org>

various clauses included in the Multilateral Agreements on Trade in Goods, the General Agreement on Trade in Services (GATS), and the Trade-Related Intellectual Property Rights Agreement (TRIPS). The main elements include:

- o Most favoured nation (MFN) clause – requires WTO members to grant to the products of other contracting parties treatment no less favourable than that accorded to products of any other country.
- o National treatment principle – condemns discrimination between foreign and national goods or services and service suppliers or between foreign and national holders of intellectual property rights.
- Transparency – provisions on notification requirements and the Trade Policy Review Mechanism are set out in the WTO Agreement and its annexes, with the objective of guaranteeing the fullest transparency possible in the trade policies of its members in goods, services and the protection of intellectual property rights.

Further details relating to the TRIPS Agreement of the WTO are provided below in the discussion of international legal frameworks for intellectual property rights.

Of potential relevance to trade in animal products, and hence to the development of the livestock sector in developing countries, are preferential access regimes to important markets. Such access regimes are permitted, but not required, to be granted to developing countries. An example is the Cotonou Agreement between the African–Caribbean–Pacific (ACP) states and the EU and its Member States. The EU and the ACP States have agreed on a process to establish new trading arrangements to promote trade liberalization between the parties and formulate provisions in trade-related matters. The agreement's Protocol 4 applies to several African countries (Botswana, Kenya, Madagascar, Namibia, Swaziland and Zimbabwe) which are traditional exporters of beef and veal. Within defined quantities of meat per year, set for each

country, "customs duties other than *ad valorem* duties applicable to beef and veal ... shall be reduced by 92 percent." While arrangements of this nature, can serve to promote export-oriented livestock production in developing countries, trade in animals and animal products is also greatly affected by the WTO Agreement on Sanitary and Phytosanitary Measures (SPS Agreement), which is discussed in greater detail below.

1.5 Intellectual property rights

Rapid developments in the field of biotechnology have increasingly drawn attention to the issue of intellectual property rights in relation to AnGR. The prospect of patents being applied to livestock genes, genetic markers or methods for genetic improvement has given rise to much controversy. The issue potentially has substantial implications for the management of AnGR and access to the benefits arising therefrom (see Section E: 2.1 for further discussion of this issue).

The TRIPS agreement has been in force since January 1995. TRIPS requires WTO members to establish minimum standards for the protection of various forms of intellectual property. The scope of the agreement is broad, applying to copyright and related rights, trademarks, geographical indications, industrial design, patents, the layout designs of integrated circuits, and undisclosed information such as trade secrets and test data. TRIPS requires members to make patents available for any inventions, whether products or processes, in all fields of technology without discrimination, subject to the normal tests of novelty, inventiveness and industrial applicability. Several elements covered by the agreement potentially affect the management of AnGR. While it appears that no patents covering types or breeds of livestock used for food production have been granted, an increasing number of patents relating to genes have been issued. In the event of the introduction of transgenic technologies in animals used for agricultural production, the issue of animal patenting may become more prominent. Article 27.3(b) of TRIPS provides member countries with the option of

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excluding “plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes” from the basic rule on patentability. There is, therefore, no all-embracing framework covering the issue of patentability with respect to AnGR, and approaches vary from country to country.

Some other elements covered by the TRIPS agreement may have an influence on the management of AnGR. For example, rules related to indications of geographical origin may have an important influence on the ability to market the products obtained from local livestock breeds.

The World Intellectual Property Organization (WIPO)¹⁷ is an intergovernmental organization whose mandate is to ensure that the rights of creators and owners of intellectual property are protected worldwide, and that inventors and authors are recognized and rewarded for their creativity. In a number of policy areas, including agriculture and genetic resources, concerns related to the exploitation of traditional knowledge systems have emerged. In an attempt to address the issue, WIPO's Intergovernmental Committee (IGC) on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore was established in 2000. The committee provides “a forum for international policy debate about the interplay between intellectual property and traditional knowledge, genetic resources and traditional cultural expressions (folklore)”. Key questions being addressed by the committee at the time of writing were a possible International Instrument on Intellectual Property in Relation to Genetic Resources and on the Protection of Traditional Knowledge and Folklore, and a possible requirement that patent applications include a disclosure of the source of the genetic material used. The committee has accomplished substantial work on traditional knowledge including a “toolkit” for managing intellectual property when documenting

traditional knowledge and genetic resources; a survey of intellectual property protection of traditional knowledge; and a database of intellectual property clauses in bilateral access agreements. WIPO's General Assembly authorized “the possible development of an international instrument or instruments.” However the matter remained contentious, with some South American and African countries favouring swift movement towards an international treaty, and developed countries favouring a more gradual approach.

Another significant development in this field is the Substantive Patent Law Treaty (SPLT), which at the time of writing was under negotiation in the WIPO Standing Committee on the Law of Patents, in Geneva. The draft SPLT covers a number of basic legal principles underpinning the granting of patents in different countries, such as the definition of prior art, novelty, inventive step (non-obviousness), industrial applicability (utility), sufficiency of disclosure, and the structure and interpretation of claims. The trend is towards upward harmonization of patent law, raising standards much further with little space for national adaptation.

1.6 Legal framework for biosecurity

FAO uses the term “biosecurity” to describe the “the management of biological risks in a comprehensive manner to achieve food safety, protect animal and plant life and health, protect the environment and contribute to its sustainable use” (FAO, 2003). Within the field of biosecurity, a range of laws and regulations have been put in place relating to plant and animal life and health, associated environmental risks, food safety, invasion by alien species, and some aspects of biosafety (Stannard *et al.*, 2004). Several international legal frameworks which affect the management of AnGR focus on issues of biosecurity, and are discussed in the following subchapters. The importance of information exchange at the international level and the establishment of international standards (agreed guidelines, recommendations and procedures) is recognized to be important in facilitating

¹⁷ <http://www.wipo.int>

the implementation by developing countries of biosecurity measures (*ibid.*). FAO has launched an Internet-based International Portal for Food Safety and Animal and Plant Health¹⁸, which serves as a single access point for authorized official international and national information related to biosecurity.

Animal health and food safety

Matters related to animal health are of major international concern, particularly in the context of increasing levels of trade in livestock and livestock products. Governments are keen to ensure that national livestock industries are protected from the potentially devastating effects of transboundary livestock diseases. Serious threats to human health on an international scale, notably outbreaks of HPAI, intensify the need for effective measures at the global level. Marked differences between countries, in terms of their animal health status and standards for food safety, increase the potential for disputes related to international trade. Developing countries in particular tend to be affected by animal health-related trade restrictions. These restrictions can have major impacts on the movement of AnGR (Box 43).

The SPS Agreement of the WTO encourages governments to establish national sanitary and phytosanitary measures consistent with international standards, guidelines and recommendations. International standards are often higher than the national requirements of many countries, including developed countries. The SPS Agreement explicitly permits governments to choose not to use the international standards. However, if the national requirement that differs from the international standards results in a greater restriction of trade, the country imposing the different standard may be asked to provide scientific justification, demonstrating the need for the stricter measure. Countries must establish SPS measures on the basis of a realistic assessment

of the risks involved. If requested, countries must make known the factors that were taken into consideration, the assessment procedures used, and the level of risk which was determined to be acceptable. Governments are required to notify other countries of any new or changed SPS requirements that affect trade, and to set up offices (called "Enquiry Points") to respond to requests for more information on new or existing SPS measures. Governments must also open to scrutiny their methods of applying food safety and animal and plant health regulations. As far as animals are concerned, the relevant international standards under the SPS Agreement are those set by the World Organisation for Animal Health (OIE)¹⁹ and the FAO/WHO Codex Alimentarius Commission²⁰.

The OIE is recognized as the standard-setting body for animal health under the SPS agreement. Health measures contained in the organization's Terrestrial Animal Health Code (in the form of standards, guidelines and recommendations) have been formally adopted by the OIE International Committee. The Terrestrial Animal Health Code is a reference document for use by veterinary authorities, import/export services, epidemiologists and all those involved in international trade. Because of the relationship between animal health and animal welfare, the representatives of the OIE's member countries have asked the OIE to take the lead role in the setting of international standards for animal welfare. A Permanent Working Group on Animal Welfare was established and held its first meeting in October 2002. In 2005, the International Committee of OIE Member Countries adopted a set of animal welfare standards to be included in the Terrestrial Animal Health Code. The standards cover the transport of animals by land, the transport of animals by sea, the slaughter of animals, and the killing of animals for disease control purposes.

¹⁸ <http://www.ipfsaph.org/En/default.jsp>

¹⁹ <http://www.oie.int>

²⁰ http://www.codexalimentarius.net/web/index_en.jsp

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Box 43

Impact of international zoosanitary regulations on animal genetic resources management – the example of FMD

On a global scale, perhaps the most significant transboundary disease in terms of its impacts on trade is foot-and-mouth disease (FMD). Even a limited outbreak of FMD can be devastating for a country's livestock trade. The ability or failure to maintain FMD-free status is likely to have a marked effect on a country's patterns of livestock development. International trade-related rules associated with FMD control may affect the management of AnGR in several ways.

According to OIE rules, a distinction is drawn between disease-free countries where vaccination is practised, and those where vaccination is not practised. To achieve the latter status, and the resulting benefits associated with livestock exports, a country must: have a good record of disease reporting; declare to the OIE that during the past 12 months there has been no outbreak of FMD, no evidence of FMD virus infection, and no vaccination against FMD; have maintained required levels of surveillance; and not have imported any vaccinated animals since the cessation of vaccination.

To meet these requirements, disease-free countries, or those aiming to achieving disease-free status, often combat disease outbreaks with stamping-out or slaughter policies. The mass culling of animals following an outbreak potentially threatens rare-breed populations found in a restricted geographical area. Disease-free countries may also face problems if they require the import of genetic material from countries where FMD is endemic. This can particularly be a problem for tropical countries, as many countries with similar production conditions will be affected by the disease. This point is raised in the Country Report from Trinidad and Tobago (2005). Less direct impacts may relate to differences in the utilization of AnGR between disease-free and disease-endemic countries. Export-oriented producers in the former countries may adapt their production objectives to meet the demands of external markets, and adopt management practices associated with a more commercial outlook. These changes may result in shifts in the balance of breed utilization.

The Codex Alimentarius Commission was created in 1963 by FAO and WHO to develop food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme. In addition to food standards, the Codex has also addressed safety issues related to animal feed. One of its projects is the preparation of a Code of Practice for Good Animal Feeding, undertaken in response to food trade and health problems arising from animal feed. The Code applies to feed manufacturing and to the use of all feeds, other than those taken while grazing free-range. The primary objective of the Code is to encourage adherence to good manufacturing practices during the production, harvesting, handling, storage, processing (however minimal) and distribution of feed for

food-producing animals. A further objective is to encourage good feeding practices on the farm. In recent years, both the Codex Alimentarius and the OIE have also addressed issues related to the safety of genetically modified organisms. These matters will be considered further in the following subchapter on international legal frameworks for biosafety.

Biosafety

Potential for increased output and novel livestock products has stimulated interest in the development of transgenic livestock. The widespread introduction of these technologies would clearly have considerable implications for the management of AnGR. Recombinant DNA technologies are at present applied in the

field of veterinary pharmaceuticals. Transgenic crops such as maize are used for animal feed in some countries. A number of environmental and health-related concerns have, however, been raised with regard to genetic modification. Several international frameworks seek to address issues related to the safety of genetically modified organisms (GMOs) or living modified organisms (LMOs) and products derived therefrom.

The Cartagena Protocol on Biosafety was adopted in January 2000 by the Conference of the Parties to the CBD as a supplementary agreement to the CBD, and entered into force on 11 September 2003. The Protocol seeks to protect biological diversity from the potential risks posed by LMOs. The Protocol applies to the transboundary movement, transit, handling and use of all LMOs that may have adverse effects on the conservation and sustainable use of biological diversity, as well as risks to human health. However, LMOs that are pharmaceuticals for human consumption are excluded from the scope of the Protocol if they are covered by another international agreement or arrangement.

The Cartagena Protocol establishes an Advanced Informed Agreement (AIA) procedure in order to ensure that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory (Article 7). However, a number of LMOs are excluded from the AIA procedure because of the specific activity or the intended use of the LMO. The LMOs that may be excluded from the AIA procedure are: LMOs in transit, LMOs destined for contained use, and LMOs intended for direct use as food or feed or for processing. The Protocol reserves the right of countries to take decisions on imports on the basis of the precautionary principle in relation to both LMOs to be introduced into the environment and LMOs to be used for food, feed or processing. Socio-economic considerations arising from the impact of LMOs on biodiversity may also be taken into account in import decisions.

In 1999, the Codex Alimentarius Commission established an Ad Hoc Intergovernmental Task

Force on Foods Derived from Biotechnology to consider the health and nutritional implications of such foods. In particular, the objectives of the Task Force are to develop standards, guidelines or recommendations, as appropriate, for foods derived from biotechnology or traits introduced into foods by biotechnology. This is to be done on the basis of scientific evidence, risk analysis and having regard, where appropriate, to other legitimate factors relevant to the health of consumers and the promotion of fair trade practices. An expert consultation on the "Safety Assessment of Foods Derived from Genetically Modified Animals including Fish" was held in November 2003, continuing the work of FAO and WHO on the safety assessment of genetically modified (GM) foods, and focused on GM animals, including fish, and the foods derived therefrom. The main purpose of this consultation was to discuss and describe ways to assess the safety and risk of GM animals. A working paper on the state of the art related to GM farm animals was produced (WHO/FAO, 2003). Environmental and ethical matters related to the production of GM animals (including fish) were discussed as additional issues.

In May 2005, the OIE International Committee adopted resolutions on genetic engineering applications for livestock and biotechnology products, and the implementation of standards in the framework of the SPS Agreement. Members requested the development of standards and guidelines relating to animal vaccines produced through biotechnology, animal health risks linked to cloning, the exclusion of unapproved animals and products from the livestock population, and genetically engineered animals.

1.7 Conclusions

Animal health-related trade regulations are probably the aspect of international legal frameworks that have the greatest impact on AnGR management at present – affecting both the exchange of genetic material, and the nature of production systems and disease control measures at the national level. The growth of

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trade in livestock and livestock products, and the associated need to maintain strict animal health standards without imposing unjustified restrictions on trade, has required the establishment of binding international regulations in this field. The increasing significance of international trade has also driven the establishment of international regimes to regulate other aspects of commerce. One area of potential importance to the management of AnGR is that of intellectual property rights. The TRIPS agreement of the WTO, however, allows for the exemption of animals from patenting, and it is national-level legislation, along with regional or bilateral trade agreements which, at present, have the greatest influence in this field.

The recognition that biological diversity is an important resource and aspect of the world's heritage has also motivated the development of legal measures on an international scale – the main instrument being the CBD. Although the distinctive nature of agricultural biodiversity is recognized by the COP of the CBD, the main focus of the Convention's provisions is on wild biodiversity. There is a concern that legal instruments developed in accordance with the provisions of the CBD, for example in the field of access and benefit sharing, may fail to take sufficient account of the specific problems of AnGR management, and place unnecessary restrictions on exchange and utilization. The IT-PGRFA, established a legally binding international framework specifically for the crop sector, with the objective of ensuring conservation, sustainable use, and equitable sharing of the benefits of genetic resources. There is a need to clarify whether a similar instrument is required for AnGR.

Although many international instruments affect AnGR management, to date, most have paid little or no attention to the topic. Moreover, a number of ongoing and emerging forces are likely to drive further developments in the field of international legislation. Intellectual property rights and issues of access and benefit sharing,

for example, may well be issues of increasing significance in coming years; and transboundary livestock diseases are a constant concern. It is vital to ensure that as international law develops, the need for effective and equitable frameworks for the utilization and conservation of AnGR is not overlooked.

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2 Emerging legal issues

This section introduces two policy issues in the field of AnGR management that are increasingly being discussed by stakeholders – patenting and Livestock Keepers' Rights.

2.1 Patenting

General principles and mechanisms

Intellectual property rights (IPRs) are granted in order to provide innovators with a greater opportunity to capture the benefits arising from the products of their inventiveness. The need for IPRs can be justified in economic terms as a means of overcoming a characteristic of market economies which tends to reduce the rate of innovation below the social optimum when innovations can be copied freely. This "market failure" arises as a result of the "public goods" nature of knowledge; the costs of research and development are borne by the innovator, but the benefits accrue to the wider society (Lesser, 2002). Moral arguments in favour of IPRs can also be put forward, related to the justice of rewarding those whose work results in useful innovations (Evans, 2002). However, these two general justifications are seldom tested with empirical data to find whether there is actually a need for stronger IPRs to stimulate research and development in a particular field of innovation.

The discussion below focuses largely on the issue of patents. However, it should be noted that other forms of IPR are of potential relevance to the management of AnGR, particularly trademarks, trade secrets and geographic indications. The holder of a trademark is given exclusive rights to use a name or symbol associated with a product. The goodwill that the holder has built up while providing the product under a given name cannot then be expropriated by others or dissipated through the supply of inferior products under the same name (Lesser, 2002). A relevant example would be Certified Angus Beef[®] protected by federal trademark law in the United States of America. Similar to trademarks

are rights to geographical appellations of origin, which indicate that a product was produced in a particular geographical area where the production conditions are associated with distinct characteristics. These rights are of considerable relevance to niche markets, and hence potentially to the utilization of local livestock breeds. In the EU, rules for the use of "geographical indications and designations of origin" are set out in Council Regulation (EEC) No 2081/92.

Trade secrets relate to the protection from misappropriation of any commercially sensitive information (and materials) that the holder takes reasonable precautions to conceal. Crop breeders have for many years used this approach to protect the parent lines and related information used in the production of hybrid seed for sale, and similar approaches are adopted in the poultry and pig industries (Lesser, 2002). Plant breeders' rights (PBRs) (an example of so-called *sui generis* systems) have been developed to protect the IPRs of plant breeders. PBRs offer a protection that is adapted to the agricultural sector, and include certain levels of exemption for further breeding and for farmers to retain seed from the crop. An internationally harmonized framework for the management of PBRs is established under the auspices of UPOV, the International Union for the Protection of New Varieties of Plants. This body was established by the International Convention for the Protection of New Varieties of Plants, signed in 1961, which came into force in 1968 and was subsequently revised in 1972, 1978 and 1991; the latter revision coming into force in 1998 (UPOV, 2005).

In the case of patents, the holder is given exclusive rights over the commercial use of an innovation for a set period of time, often 20 years, in the country in which the patent is granted. This competitive advantage serves to counteract the effects of the above-mentioned market failure. In order to obtain a patent, the innovation must be inventive or not obvious; and it must be novel, in the sense of not being previously known through public use or publication (Lesser, 2002). A further formal criterion is that the invention must have

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a practical use; in Europe, the term “industrial application” is used in this context, while in the United States of America, “usefulness” or “utility” is a requirement. A patent can be obtained to cover, a product *per se* (in itself), a process, or a product derived through a process; it may be dependent on previous patents. The requirement for a description of the invention to accompany the application, in such a way that a person “skilled in the art” is able to reproduce it, promotes the dissemination of information and may stimulate research in related fields (*ibid.*).

While patents may serve to promote innovations, it must be recognized that once a new product has been developed, the existence of a patent inhibits competition and thereby reduces the availability of the product. The balance between the two effects, and hence the outcome in terms of the economic benefits to society as a whole, is a matter of complex interactions between the length and scope of the patent and the nature of demand for the product (Langinier and Moschini, 2002). Moreover, the propensity of patents to promote innovation has sometimes been challenged. Criticisms are advanced on the

Box 44

The first patented animal

While patenting has a long history, the inclusion of living things under patent laws is a relatively recent phenomenon. This text box focuses on historical developments in the United States of America related to the applicability of patents to living things and leading to the first case of a patent on a higher animal.

Patent law in the United States of America dates back to 1793, but the original statute makes no reference to living things. Indeed, a ruling of 1889 established a precedent indicating that “products of nature” could not be patented. The first provision specifically related to the patenting of living organisms was the Plant Patent Act of 1930, which introduced a specially designed form of protection for asexually reproducing plants (except edible roots and tubers). European countries followed in the next decade with the introduction of their own “*sui generis*” Plant Breeders’ Rights laws.

The 1970s and 1980s saw the emergence of technologies that enabled scientists to manipulate the genomes of living organisms. Individuals or organizations undertaking these activities were in a position to claim that the resulting organisms were the products of their own inventiveness rather than simply products of nature. It was not long before the issue was tested in the courts, and in 1980 the case of

Diamond vs. Chakrabarty established the precedent that micro-organisms were patentable in the United States of America. The case related to a bacterium engineered to consume oil slicks. Some years later, in 1987, the question of the patentability of higher organisms also came to court. This time, the organism in question was an oyster manipulated to make it more edible. While the application was rejected, the ruling in the case of *Ex Parte Allen* established that there was no legal restriction to the patenting of oysters on the grounds that they are higher animals. In the wake of this ruling the world’s first patent on an animal was soon issued. In this case, the animal was a type of mouse developed at Harvard University for use in the study of disease. The mouse had been genetically engineered to make it highly susceptible to cancer. Subsequently, in 1992 the “oncomouse” became the first patented animal in Europe. Not surprisingly, the production of animals deliberately rendered susceptible to a distressing disease provoked widespread public unease, and has served to fuel the controversy surrounding animal patenting.

For further reading see: Kevles (2002); Thomas and Richards (2004).

grounds that access to inputs, or procedures, vital to further innovation may be restricted through the exercise of patents, or that overly broad patents stifle further research in related fields (Evans, 2002; Lesser, 2005).

Patents and living organisms

The extension of patent law to cover plants and animals, or processes related to the production or genetic manipulation of living organisms, gives rise to additional concerns. The idea of asserting ownership over biological processes offends many people's religious or spiritual sensibilities. In this respect, misgivings about patenting are to some extent tied to its association with technologies such as genetic modification. Such concerns are reinforced by fears about the health or environmental impacts of these technologies (Evans, 2002). Other objections to patents on living organisms relate to the belief that natural processes are part of the common heritage of humankind, which should not be alienated for private profit. Similarly, concerns relate to the expropriation of the genetic material developed by local communities, or the associated knowledge of crop/animal breeding activities, through the granting of patents to outside interests (*ibid.*). Moreover, in the context of food and agriculture, the impacts on food security and social justice of restricting access to animal or plant genetic resources are further causes for concern.

Many of the world's countries do not permit the patenting of plants and animals. However, prominent exceptions include the United States of America and Japan (Blattman *et al.*, 2002). While the EU does not permit the patenting of plant or animal varieties, under Council Directive 98/44/EC of 6 July 1998, it allows patents for inventions concerning animals or plants the feasibility of which "is not confined to a particular plant or animal variety". Moreover, the fact that the term "variety" is not well-defined in the context of animal breeding means that the scope of the exemption is far from clear (see below for a further discussion of the EU Patent Directive).

Both the 1973 European Patent Convention (EPC), under Article 53(a), and EU Council Directive (98/44/EC) (Article 6), allow for patent applications to be refused if their exploitation is contrary to "ordre public" or "morality". This exemption has been carried over into the TRIPS agreement of the WTO. Unsurprisingly, definitions of "ordre public" or "morality" have not been easy to establish, and the patenting in Europe of the "Harvard oncomouse" (Box 44) has been subject to ongoing legal challenges on the basis of the EPC's "morality exemption" (Thomas and Richards, 2004). More generally, the TRIPS agreement allows countries to exclude plants and animals from patent protection (although there is a requirement for the protection of plant varieties by an effective *sui generis* system). Notwithstanding these exemptions, there is a concern that developing countries' scope to exclude living things from patenting may increasingly be limited by bilateral and regional trade agreements (Correa, 2004). For further discussion of TRIPS and developments at WIPO, see subchapter 1.5.

It was in the fields of medical research and pharmaceuticals that the first legal battles related to granting patents on higher animals were fought out (Box 44). The emergence of animal patenting in the field of food and agriculture has lagged somewhat behind. Patents on transgenic salmon have been granted in the United States of America (US Patent Number 5,545,808, August 13, 1996) and in the EU (EP 0578 635 B1, July 18, 2001). However, among the species covered by this Report, no examples of patents granted on any breeds or types of animal intended for food production could be found at the time of writing. Nonetheless, animal patenting is emerging as significant issue in the livestock sector, driven in part by technological developments such as cloning and transgenetics, and the desire to profit from or promote such developments. Once again, ethical objections are raised both regarding patenting as such, and regarding some of the biotechnologies to which it might be applied. It is, however, also important to note that there are numerous practical legal issues that also need to

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be addressed – particularly related to the scope of patent protection.

Among the factors complicating the application of patenting to farm animals is the tendency of livestock to reproduce, which complicates the process of identifying the animals to which patent rights should apply (e.g. if patented animals were to be bred with non-patented) (Lesser, 2002). Similarly, long production cycles, particularly in the case of cattle, complicate decisions regarding when in the production cycle patent-related payments should apply (*ibid.*). The significance of these issues is to an extent dependent on species and production system. The problems are rather less significant in the case of commercial poultry and pig industries, where hybrid lines are provided by large breeding companies, animals are confined, and breeding management is highly controlled. However, even under these production systems, the legal basis for patent claims is debatable. It is not clear that the animals or their breeding methods can be considered non-obvious, or whether the requirement for a description that allows the reproduction of the innovation can be met. A parallel with plant breeders' rights is also difficult to implement in the case of animals, partly because the concepts of plant variety and animal breed differ significantly.

Patent claims related to livestock

Notwithstanding the absence of patents on types of livestock *per se*, patents have been granted on a number of innovations in the field of livestock breeding and genetics. For example, the patenting of biotechnological processes and biological materials derived through such processes is permitted under EU legislation (Council Directive 98/44/EC), even if the material has previously occurred in nature. "Essentially biological processes" consisting "entirely of natural phenomena such as crossing or selection" are exempted (*ibid.*). However, it is debatable whether any modern breeding technologies involve only "natural phenomena", and the scope of the exemption may therefore be limited.

With regard to the scope of patents on biological materials within the EU, Article 8(1) of the Patent Directive states that:

"The protection conferred by a patent on a biological material possessing specific characteristics as a result of the invention shall extend to any biological material derived from that biological material through propagation or multiplication in an identical or divergent form and possessing those same characteristics."

Similar rules apply to "patent on a process that enables a biological material to be produced possessing specific characteristics" (Article 8(2)). Thus, under EU legislation patent protection is not necessarily limited to an initial process or to the material directly obtained therefrom. Articles 10 and 11 of the Directive place some restrictions on the protection conferred by such patents. In particular, Article 11 indicates that even if breeding stock or genetic material is subject to a patent, a farmer who purchases the material is allowed to use the "animal or other animal reproductive material ... for the purposes of pursuing his agricultural activity" without infringing the patent. However, this does not include sale of the genetic material for the purposes of "commercial reproduction activity". These provisions limit to some extent the potential impact of patenting on AnGR management. However, the border between "agricultural activity" and "commercial reproduction" is not easy to establish. The precise implications of these rules, thus, remain to be tested in practice.

Patents covering genes and markers associated with a range of economically important traits have been granted in several livestock species (Rothschild *et al.*, 2004). There are also patents covering several methods for breeding management and breeding-related computer applications (Schaeffer, 2002). In some cases, the technologies have been successfully commercialized based on these patent rights (Barendse, 2002; Rothschild *et al.*, 2004; Rothschild and Plastow, 2002).

Among the patents granted on breeding-related technologies, it has often been those

covering genes or genetic markers (normally as a part of a patented method to enhance the efficiency of selective breeding) that have proved to be controversial. Patenting naturally occurring sequences of genetic material provokes those who are concerned about the implications of patenting "life". Moreover, the granting of a patent which is in some way related to a breed from another country or a breed which has been developed by local communities, may give rise to accusations of "biopiracy". Additionally, the owners of animals naturally carrying the genes in question, or those wishing to utilize the offspring of animals produced by the patented method, may be alarmed about the implications of the patent. The latter issue gave rise to some initial objections within the livestock breeding industry and the research community to the patenting of genetic markers (Rothschild and Plastow, 2002). However, objections from this quarter declined as it became clear that the patents in question did not restrict the utilization of the genes or animals as such, but applied to the methods or processes involving the genes (*ibid.*). Applications placed at WIPO by the Monsanto Company for patents on a breeding method and gene sequence in pigs, however, provoked a storm of controversy in 2005. If granted, these patents would include rights over the pigs produced by the patented method and their offspring (WO 2005/017204; WO 2005/015989), and the broad scope of the patent applications has raised fears that the activity of many pig breeders could be affected.

In contrast to the criticisms outlined above, an alternative view is that the extension of patenting offers a feasible means of facilitating beneficial scientific developments. Modern biotechnological innovations generally require considerable investments. In the absence of large amounts of public funding for research and development, it can be argued that the availability of patents serves to stimulate the investments required to enhance the efficiency of livestock breeding (Rothschild and Plastow, 2002; Rothschild *et al.*, 2004). General arguments of this kind related to the impact of

patenting on investment, while they may be relevant, are unlikely to answer the concerns of the critics, and it is safe to say that controversy over the issue is unlikely to go away.

Concluding remarks

To conclude, the extension of patenting into the fields of livestock genetics and breeding is rife with controversy and practical difficulties. Factors influencing future trends will include developments in biotechnology, and the political debate regarding the ethics and socio-economic implications of applying patenting to farm animals. As in the medical field, the introduction of GM technologies is potentially a driving force promoting the wider use of patenting in animal breeding. The extension of cloning technology to commercial livestock production could be a further factor encouraging patent applications. However, the use of these biotechnologies in the livestock sector is, in itself, highly controversial.

Patents for breeding-related technologies have already been granted in a number of countries, and the commercialization of these technologies will have had some impact upon the management of AnGR, mainly in commercial production systems. Successful applications for broader-scope patents related to breeding methods, or patents which cover the animals *per se* or their offspring, could have considerable implications for commercial producers. Such technologies are of little direct significance in the lower external input production systems where much of the world's livestock genetic diversity is to be found. However, developments in large-scale commercial production systems are not isolated. If wider use of patenting reinforces trends towards greater concentration within, and dominance by, the commercial sector, this would have consequences for the structure of the livestock industry more broadly. Moreover, if the critics' fears are realized, and gene-related patents become widely used to restrict access or demand payments, implications for the utilization of AnGR would be considerable.

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http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!c_elexapi!prod!CELEXnumdoc&lg=EN&numdoc=31992R2081&model=guichett

DIRECTIVE 98/44/EC of the European Parliament and of the Council of 6 July 1998 on the legal protection of biotechnological inventions .

http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!c_elexapi!prod!CELEXnumdoc&lg=EN&numdoc=31998L0044&model=guichett

Patent applications at WIPO

(WO 2005/015989) *Method for genetic improvement of terminal boars.*

(WO 2005/017204) *Use of single nucleotide polymorphism in the coding region of the porcine leptin receptor gene to enhance pork production.*

2.2 Livestock Keepers' Rights

The prospect of increased exertion of IPRs in the field of animal breeding (see above) is raising concerns about the continued freedom of livestock keepers to use and develop their own breeding stock and breeding practices. In response to these developments there have been calls by Civil Society Organizations (CSOs) for the establishment of "Livestock Keepers Rights" – initially in allusion to the "Farmers' Rights" that have been enshrined in the International Treaty on Plant Genetic Resources for Food and Agriculture (IT-PGRFA). In light of intense global exchange of PGR, a legal instrument was considered necessary to facilitate access and ensure benefit sharing. The IT-PGRFA relies strongly on the institutions of the seed sector, which were already heavily involved in the international movement of germplasm.

The situation of exchange in the livestock sector is different from that in PGR. The global movement of live animals is limited by strict sanitary regulations designed to protect the health of national herds, and by the high costs involved. The movement of germplasm is based on commercial agreements and mainly involves international transboundary breeds. Collection and testing of AnGR from the developing world rarely occur, and it is therefore essential that potential regulations governing access and benefit sharing do not further limit these activities.

The development of legal agreements to define Livestock Keepers' Rights with regard to AnGR and to address international transfers of AnGR was proposed by some NGOs during the World Food Summit in 2002. It is feared that the increased use of IPRs could have negative impacts for both within and between-breed diversity, as well as on the livelihoods of poor

livestock keepers. Moreover, it is argued that there is an inherent injustice in the fact that the traditional knowledge that has gone into the development of many local and indigenous breeds, and often forms the foundation and prerequisite for the scientific improvement of breeds, remains unrecognized and unprotected. The objective of any such arrangements should be to ensure rights for those that maintain AnGR, without discouraging further characterization, development and utilization.

3 Regulatory frameworks at regional level

3.1 Introduction

Legal frameworks are frequently negotiated in political and regional country groupings to improve cooperation, coordinate activities, and minimize duplication of work. In the field of AnGR management, the EU is the regional grouping with by far the most comprehensive body of legislation, and is the focus of the following discussion. Examining these frameworks gives an indication of how the objectives of the CBD are interpreted and further developed at the regional level, and how different areas of regulation, and their interactions, affect AnGR management. In addition to binding legal frameworks, groups of countries have the option of establishing so-called "soft laws," which may serve to strengthen member country commitment to agreed goals, or act as a model for national-level legislation. One such example is the Model Law drawn up by the African Union (Box 45).

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Box 45

The African Union Model Law

The African Model Law for the Protection of the Rights of Local Communities, Farmers and Breeders and for the Regulation of Access to Biological Resources was adopted in 1998 by the Ministerial Session of the African Union. The Model Law was developed to assist Member States deliberate on, formulate, and implement national policies and legal instruments compatible with their national goals and political aspirations, while at the same time satisfying their international obligations. So far, the Model Law has not been adopted by any country.

The Model Law provides a legal framework for the conservation, evaluation and sustainable use of biological resources, and associated knowledge and technologies. In particular, it provides for the rights of local communities, farmers and breeders, over these resources. Although the framework includes agricultural genetic resources, it was developed mainly for plant genetic resources and does not address specific issues related to AnGR in great depth. The Model Law is clear with respect to patents related to forms of life and biological processes, in that such patents are not recognized and cannot be applied for.

Under the Model Law, access to biological resources, community knowledge and technologies, will be subject to the prior informed consent of the state and the affected local communities. Access to biological resources is considered invalid when no

such consent has been granted. This is considered to be the case even when permission has been granted but consultation has not taken place, is incomplete, or does not comply with the criteria for genuine and equitable participation. Countries must designate a competent authority to act as the focal point for receiving and processing applications for access. The Model Law recognizes benefit-sharing as a right of local communities; the state must guarantee that a specific percentage (minimum 50 percent) of any financial benefit accruing from the utilization of the resources returns to the local community.

With regard to farming communities, this right is reiterated in the section of the Model Law that deals with farmers' rights. Non-financial benefits may include participation in research and development, in order to build capacity; the repatriation of information on the biological resources accessed; and access to the technologies used to study and develop the biological resources. One of the proposed mechanisms for financial benefit-sharing by communities in the Model Law is the establishment of a Community Gene Fund. The fund would be established as an autonomous trust and used to finance projects developed by the farming communities.

For further information see:
http://www.grain.org/brl_files/oau-model-law-en.pdf

3.2 European Union legislation: an example of a comprehensive regional legal framework

The EU regional framework has been established in the context of economic and political integration among Member States. EU legislation consists of Directives and Regulations, which must be implemented at the Member State level. Directives define the outcomes to be achieved, but leave Member States to decide on the means by which the Directive is transposed into national laws. Regulations are binding in their entirety,

and automatically enter into force on a set date in all Member States. The EU has built up a significant body of legislative texts relevant to AnGR management in fields such as conservation, zootechnics (animal breeding), food hygiene, animal health, trade in animals and animal products, organic agriculture, animal feed safety and GMOs.

The Common Agricultural Policy (CAP) is comprised of a set of rules and mechanisms which regulate the production, trade and processing of agricultural products in the EU. The CAP's objectives, as set out in Article 33 of the EC Treaty, are:

- to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilization of the factors of production – in particular labour;
- to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;
- to stabilize markets;
- to ensure the availability of supplies; and
- to ensure that supplies reach consumers at reasonable prices.

Recent years have seen various moves to reform the CAP. These changes have been partly driven by developments at the international level, notably by agricultural negotiations within the WTO framework. Substantial changes began in 1992; further changes were introduced under the Agenda 2000 policy agreed in 1999. The CAP reform adopted by the Council in June 2003 means that the vast majority of agricultural subsidies will be paid in the form of single farm payments, and are, thus, independent of the volume of production. The new payments are linked to environmental, food safety and animal welfare standards. This shift in policy objectives potentially has significant implications for the utilization of AnGR. Relevant EU legislation in this context included Council Regulation (EEC) No. 2078/92, one of the so-called "accompanying measures" to the 1992 reforms of the CAP, which introduced agri-environment measures intended to promote environmental protection and the conservation of the countryside. This Regulation was subsequently replaced by Council Regulation (EC) No. 1257/99, which in turn is replaced by Council Regulation (EC) No. 1698/2005, which

will provide the framework for the work of the new European Agricultural Fund for Rural Development (EAFRD) from 2007 onwards.

More broadly, EU policy aims to promote sustainable and integrated rural development, and to encourage the participation of local stakeholders in the development process. To this end, Council Regulation (EC) No. 1257/1999 "on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF)" established the framework for support for sustainable rural development, including protection of the environment. The CAP also seeks to promote economic and social cohesion, by encouraging the development of new activities and sources of employment. In this context, the LEADER+ initiative (described in Commission Notice 2000/C 139/05) has been established to encourage rural stakeholders to consider the longer-term potential of their area, and to develop new ways of enhancing its natural and cultural heritage. This is intended to reinforce economic development and job creation, and to improve the organizational capabilities of rural communities.

Management of genetic resources

This subchapter discusses legislation directly related to the management of AnGR – the legal framework for conservation and animal breeding. In the field of conservation, Commission Regulation (EC) No. 817/2004 provides for financial support to be given to farmers rearing farm animals of "local breeds indigenous to the area and in danger of being lost to farming" under the framework of Regulation 1257/1999 (see above). The breeds in question must contribute to the maintenance of the local environment. Threshold population sizes, determining the eligibility of local breeds (of cattle, sheep, goats, pigs, equines or poultry) for inclusion in the scheme are set out in Commission Regulation (EC) No. 817/2004. Population thresholds (number of breeding females) below which a breed is considered to be endangered

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for the purposes of incentive payments are specified. The figures are based on the number, summed across all Member States, of breeding females available for pure-bred reproduction, included in a register (e.g. herd book or flock book) recognized by a Member State. The thresholds are 7 500 for cattle, 10 000 for sheep, 10 000 for goats, 5 000 for equidae, 15 000 for pigs and 25 000 for avian species. Opportunities to support conservation measures are to be further strengthened from 2007 onwards under Commission Regulation (EC) No. 1698/2005. The objective is to compensate farmers who provide environmental services for the "additional costs and income foregone ... [and where necessary] ... may cover also transaction cost" (Article 39:4). The Regulation specifies that payments can be made for the "conservation of genetic resources in agriculture" (Article 39:5). The Regulation provides for the adoption of strategic guidelines for rural development at the Community level for the period 2007 to 2013, and requires that Member Countries establish national strategy plans setting out details of agri-environmental payments. A further Regulation, intended to replace Commission Regulation (EC) No. 817/2004, was in preparation at the time of writing.

Some concerns have been raised regarding the effectiveness of incentive payment schemes under Regulations 1257/1999 and 817/2004, as payments to farmers did not take into account differences between breeds in terms of their extinction probabilities, and subsidy payments were frequently insufficient to compensate farmers for the losses involved in keeping the local breeds (Signorello and Pappalardo, 2003²¹). Only around 40 percent of breeds classified as at risk by FAO were covered by the payment schemes established under these Regulations, and in some countries no schemes existed (*ibid.*).

²¹ Signorello, G. & Pappalardo, G. 2003. Domestic animal biodiversity conservation: a case study of rural development plans in the European Union. *Ecological Economics*, 45(3): 487-499.

The EU is a party to the CBD and, as a consequence, all EU countries are obliged to develop national biodiversity strategies which, in the context of agricultural biodiversity, address conservation of AnGR. *In situ* conservation is regarded as the preferable approach, as it enables utilization and further characterization of AnGR. At the regional level, the Biodiversity Action Plan for Agriculture²² was adopted in 2001. The CAP instruments, as shaped by Agenda 2000 and subsequent reforms, provide the framework for integrating biodiversity concerns into EU agricultural policy. The priorities of the Action Plan are: the promotion and support of environmentally friendly farming practices and systems that benefit biodiversity; the support of sustainable farming activities in biodiversity-rich areas; the maintenance and enhancement of good ecological infrastructures; and the promotion of actions to conserve local or threatened livestock breeds or plant varieties. All these priorities are supported by research, training and education. Biodiversity conservation greatly depends on the appropriate application of measures within the CAP, notably compensatory allowances for less favoured areas, and agri-environmental measures.

A Regulation, related to the implementation of the Action Plan, is Council Regulation (EC) No. 870/2004. This Regulation explicitly aims to increase the emphasis on the conservation of AnGR. There was a concern that under previous legislation in the field, such as Council Regulation (EC) No. 1467/94, livestock received less attention than crops. "Targeted actions", under Article 5, of Regulation 870/2004 include: the promotion of characterization, collection, utilization and *ex situ* and *in situ* conservation of genetic resources; the establishment of a Web-based inventory of genetic resources included in conservation programmes, and of *in situ* and *ex*

²² Communication from the Commission to the Council and the European Parliament Biodiversity Action Plan for Agriculture. Commission of the European Communities, Brussels, 27.3.2001. http://europa.eu.int/comm/agriculture/envir/biodiv/162_en.pdf

situ conservation facilities; and the promotion of the exchange of relevant scientific and technical information. For AnGR kept on farms, the focus is to be on a network of inventories of administrative aspects (funding, endangerment status of breeds, location of herd books, etc.). Transnational “concerted actions”, under Article 6, will promote information exchange to improve the coordination of actions and programmes for the management of genetic resources in Community agriculture. “Accompanying actions”, under Article 7, will cover the dissemination of information and advice to stakeholders such as NGOs; the provision of training courses; and the preparation of technical reports. Proposals for actions may be put forward by stakeholders such as genebanks, NGOs, breeders, technical institutes and experimental farms.

Areas related to AnGR eligible for funding under the Regulation include: the development of standardized criteria to identify priorities in the field AnGR management; the establishment of European genebanks based on national or institutional genebanks; the characterization and evaluation of AnGR; the establishment of a standardized performance testing regime for AnGR, and documentation of characteristics of endangered breeds; the establishment and coordination of a European-wide network of “Ark farms”, rescue stations and parks for endangered breeds; the development of cross-national breeding programmes for endangered breeds and the establishment of rules for the exchange of information, genetic material and breeding animals; the development of strategies to promote linkages between local breeds and niche markets, environmental management and tourism; and the development of strategies which promote the use and development of underutilized AnGR that could be of interest on a European level. It should, however, be noted that Council Regulation (EC) No. 870/2004 only allows for joint actions involving several countries, and, therefore, its value to the implementation of national measures, as part of national action plans, is limited. The new

Commission Regulation (EC) 1698/2005 will be an improvement in this respect.

A further body of EU legislation relates to the management of livestock breeding. The efficient management of AnGR is dependent on the availability of trustworthy information relating to animals’ pedigrees and performance data. Reliable mechanisms must be in place for animal identification, recording, and the definition of breeding objectives. An effective legal framework covering livestock breeding activities is, therefore, required. A number of laws have been put in place to regulate intra-Community trade of pure-bred breeding animals. The legislation covers bovine, porcine, ovine, caprine and equine animals. Poultry and rabbits, although they are important commercial species, are not covered. For bovine animals, Council Directives 77/504/EEC and 87/328/EEC require that Member States do not allow restriction, on zootechnical grounds, of trade with other Member States in pure-bred breeding animals, semen, ova or embryos. Countries must enable the establishment of herd books and breeders’ organizations, and not prevent the entry in their herd books of pure-bred animals from other Member States. EU legislation defines a pure-bred animal as an “animal the parents and grandparents of which are entered or registered in a herd-book of the same breed, and which is itself either entered or registered and eligible for entry in such a herd-book.”

Detailed rules are set out for bovine animals in Commission Decision 84/247/EEC, covering the recognition of breeders’ organizations; Commission Decision 84/419/EEC, covering the keeping of herd books; Commission Decision 2005/379/EC, covering pedigree certificates; Commission Decision 86/130/EEC, covering performance testing and genetic evaluation; and Council Directive 87/328/EEC, covering acceptance of animals for breeding. The latter Directive is of considerable importance in terms of liberalization and reducing trade barriers in cattle breeding. Similar sets of rules are in place for other species/classes of livestock. In the case of hybrid pigs (but

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not breeding programmes for pure-bred animals), private undertakings can be approved to maintain breed registers (Commission Decision 89/504 EEC). With regard to bovines, Council Decision 96/463/EC establishes the INTERBULL Centre in Uppsala Sweden as the reference body for uniform testing and genetic evaluation for pure-bred animals. In the case of equidae, Commission Decision 93/623/EEC sets out provisions relating to identification documents (passports) for animals registered in stud books (legislation related to animal identification is discussed further in the subchapter on animal health below).

Several points arise from this body of breeding-related legislation: breeders' associations are state-approved, and as such are mandated to keep herd books for pure-bred animals, and to perform breeding programmes including conservation breeding programmes. Provided certain conditions related to the organization's capacities and its rules are met, breeders' associations have to be approved. Any group of breeders can set up a new breeding organization for an existing breed, unless it is considered that a partition of the population would endanger the conservation of the breed or jeopardize the zootechnical programme of an existing organization. As such, an existing breeding organization has no property right on the basis of which it can exclusively breed the breed in question. In the case of equines, some additional legal privilege is given to breeders' organizations which maintain the "stud-book of the origin of the breed", as it can set rules that must be followed by newly established "filial stud-books".

Specialized food products and organic agriculture

Niche markets for distinctive livestock products are recognized as being potentially important to the economic viability of many local breeds. EU legislation provides for a number of schemes under which distinctive products can be registered so that producers are protected against imitation and can take advantage of the higher prices that consumers are willing to pay. One aspect

of these schemes relates to the association of a product with a distinct geographical area. Council Regulation (EEC) No. 2081/92 states that to qualify for a protected "designation of origin" a foodstuff must have

"quality or characteristics ... which are essentially or exclusively due to a particular geographical environment with its inherent natural and human factors, and the production, processing and preparation of which take place in the defined geographical area".

Similar, but less narrowly defined, criteria are set out for the registration of a "geographical indication". Under Article 4 of the Regulation, requirements for product specification are outlined. Among the requirements are a name and description of the product; definition of the geographical area involved; evidence regarding the origin of the product and its links to the local area; an outline of methods used to obtain the product; a description of inspection structures; and details of labelling. Although not always the case, some product specifications prepared under these rules indicate that products or the raw materials used in their manufacture are to be sourced from specific livestock breeds. Even where a breed is not specified, the marketing of specialized local products may promote the survival of traditional management systems in the specified locations and thereby support the continued utilization of well-adapted local breeds.

In a similar manner, Council Regulation (EC) No. 2082/92 sets out the rules whereby a "certificate of specific character" can be obtained for a foodstuff or product. The Regulation allows for the registration of distinguishing features that are not a matter of provenance or geographical origin and that do not relate solely to the application of a technological innovation. In order to appear in the register of certificates of specific character set up by the Commission a product or foodstuff

"must either be produced using traditional raw materials or be characterized by a traditional composition or a mode of production and/or processing reflecting a traditional type of production and/or processing".

Once again, the promotion of diverse products of this kind potentially has positive implications for the genetic diversity of livestock populations. Some EU countries actively promote and provide support for a wider use of “certificates of specific character” as a means to valorize, and thereby protect, rare breeds.

The management of AnGR may also be affected by EU legislation related to organic agriculture. This legislation aims to establish a harmonized framework for the production, labelling and inspection of products, in order to increase consumer confidence and ensure fair competition between producers. Council Regulation (EEC) No. 2092/91 establishes a framework for the labelling, production and control of agricultural products bearing or intended to bear indications referring to organic production methods. Regulation (EEC) No. 2092/91, however, did not include any standards for livestock and was, therefore, supplemented by Regulation (EC) No. 1804/1999.

The latter Regulation sets out detailed rules covering conversion to organic farming, the origin of the animals, feed, disease prevention and veterinary treatment, husbandry practices, transport, identification of livestock products, utilization of manure, free range areas and housing (animals must, providing conditions allow, have access to open-air grazing or exercise areas), stocking densities, and overgrazing. The Regulations cover bovine, porcine, ovine, caprine, equine and poultry species. Separate rules are set out for bees. With regard to the origin of the animals, the rules state that:

“In the choice of breeds or strains, account must be taken of the capacity of animals to adapt to local conditions; their vitality, and their resistance to disease. In addition, breeds or strains of animals shall be selected to avoid specific diseases or health problems associated with some breeds or strains used in intensive production (e.g. porcine stress syndrome, PSE syndrome, sudden death, spontaneous abortion, difficult births requiring caesarean operations, etc.). Preference is to be given to indigenous breeds and strains.”

The rules further specify that the first principle to be applied in the prevention and control of disease is the choice of appropriate livestock breeds; the use of veterinary pharmaceuticals is highly restricted. As such, adaptations required of livestock kept under organic systems are often quite different to those required under non-organic systems, most notably in terms of animal health and housing conditions. While much organic livestock production makes use of conventional high-output breeds, there is considerable potential for the utilization of rarer, locally adapted breeds.

In 2004 the European Action Plan for Organic Food and Farming²³ was adopted with a view to ensuring further development of the organic sector in the coming years and to providing an overall strategic vision for organic farming’s contribution to the CAP. One of the actions was to render the public benefits of organic farming explicit by defining its objectives and basic principles. To this end EU Member States were, at the time of writing, negotiating a proposal for a new legal framework which will eventually replace Council Regulation (EEC) No. 2092/91. With regard to biodiversity, the proposed objectives state that:

“The organic production system shall maintain and enhance a high level of biological diversity on farms and their surrounding areas.”²⁴

Animal health

The EU has a body of legislation aimed at improving animal health within the Community, while permitting intra-Community trade and imports of animals and animal products in accordance with health standards and obligations under international law. Specific sets of laws apply

²³ Communication from the Commission to the Council and the European Parliament European Action Plan for Organic Food and Farming. Commission of the European Communities, Brussels, 10.06.2004 COM(2004)415 final. http://europa.eu.int/comm/agriculture/qual/organic/plan/comm_en.pdf

²⁴ Proposal for a Council Regulation amending Regulation (EEC) No 2092/91 on organic production of agricultural products and indications referring thereto in agricultural products and foodstuffs.

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to bovines, ovines and caprines, equines, porcines, poultry and hatching eggs, as well as aquaculture, pets and non-commercial animals, and other live animals. A distinction is drawn between imports and intra-Community trade – in many respects, separate legal frameworks apply to each. Preventive health measures cover live animals, semen and embryos, and animal products.

Restrictions on the movement of genetic material have the potential to constrain the activities of livestock breeders in EU Member States. Moreover, animal health-related restrictions on imports of animals, germplasm and animal products to the markets of the EU will, in some cases, limit the development of export-oriented livestock production in countries which are not members of the EU, and hence affect decisions regarding the utilization of AnGR in these countries.

For intra-Community trade in bovines and porcines, rules are set out in Council Directive 64/432/EEC and subsequent amendments. Rules are laid down relating to measures required to prevent the spread of disease during the transport of animals; diagnostic tests for specific diseases; animal identification to ensure traceability; and the harmonization of veterinary health certification. With regard to imports, bovines and porcines imported from non-member countries must comply with the standards stipulated in Council Directive 72/462/EEC. Standards which must be met by the exporting country are set out, covering the state of legislation; the health status of livestock and other animals; the state of disease reporting to the OIE; standards for the production, processing and transit of animal products; disease control measures, and the state of national veterinary services. Conditions also stipulate that the exporting country must be free of specific livestock diseases. Standards must be verified by the European Commission's Food and Veterinary Office. Once this verification is completed the exporting country can be included, under Council Decision 79/542/EEC, in a list of third countries from which the Member States

authorize imports. Rules covering certification for import, and veterinary border inspection posts for live animals are set out in Council Decision 79/542/EEC and Council Directive 91/496/EEC, respectively. Similar legislation is in place covering other animal species.

Intra-Community trade and imports of bovine semen and embryos are regulated by Council Directive 88/407/EEC and Council Directive 89/556/EEC, respectively. The Directives set out health standards that semen and embryos must meet in order to be imported or traded within the EU, and conditions required for the approval of semen collection and storage centres. Lists of approved countries for the importation of semen and embryos and approved centres are drawn up. Rules are also set out covering the health certification of traded semen and embryos. Similar rules are in place for other livestock species. Council Directive 88/407/EEC was subsequently amended by Council Directive 2003/43/EC, which allows semen storage centres in addition to semen collection centres (having their own bulls) to engage in trade in bovine semen between Member States – a significant step towards the liberalization of this market.

The objectives of these Directives are to regulate animal health-related aspects of intra-Community trade and import of semen, rather than to facilitate the cryoconservation of genetic material. Indeed, the legislation may present problems with regard to obtaining semen from endangered breeds for conservation purposes. Collecting semen at an AI centre is costly compared to on-farm collection, and collecting semen from rare breeds is usually not of commercial interest to the AI industry. A further issue relates to the long-term storage of genetic material for conservation purposes. Material collected in the past inevitably fails to conform to current standards. The dissemination of the material to breeders, therefore, becomes legally problematic. This is particularly the case for exchange of genetic material between Member States. However, in some countries, the rules set out in the Directives, when incorporated

into national legislation, are applied not only to semen destined for intra-Community exchange, but also to semen used at the national level.

Trade in fresh meat is regulated by Council Directive 2002/99/EC. The objective is to ensure harmonization of health-related requirements across all Member States, and to prevent the entry into the EU of products that may be carrying infectious diseases dangerous to animals or humans. Conditions relating to animal health status are set out for importing countries. The conditions are similar to those for live animals, but include the requirement that meat comes from an approved establishment (slaughterhouse, etc.). Additional guarantees may be required in response to specific disease problems, such as the deboning and maturation of meat from animals vaccinated against FMD. It is also possible that a third country may only be permitted to export meat from certain categories of animals to the EU. Further rules relate to chemical residues, BSE (bovine spongiform encephalopathy) and animal welfare at the time of slaughter. Separate legislative frameworks are in place for meat products, poultry, milk and milk products, and for other categories such as game meat.

In addition to the trade-related laws outlined above, the EU has a body of laws dealing with the prevention, control, monitoring and eradication of specific diseases. Separate Directives cover African horse sickness (Council Directive 92/35/EEC), African swine fever (ASF) (Council Directive 2002/60/EC), FMD (Council Directive 2003/85/EC), avian influenza (Council Directive 2005/94/EC), bluetongue (Council Directive 2000/75/EC), classical swine fever (CSF) (Council Directive 2001/89/EEC), Newcastle disease (Council Directive 92/66/EEC), and certain diseases of fish and molluscs. A further Directive (Council Directive 92/119/EEC) covers a number of other exotic livestock diseases. Eradication and monitoring programmes aim to progressively eliminate diseases that are endemic in parts of the EU. Council Decision 90/424/EEC relates to the provision of funding for such programmes, and Council Decision 90/638/EEC sets out criteria

which have to be met in their preparation. Disease control measures may specify restrictions on livestock movement in the case of an outbreak, requirements for vaccination or vector control, or in the case of certain serious diseases, require the culling of infected and in-contact herd/flocks. The latter action potentially has serious consequences for rare-breed populations located in the affected areas.

In recognition of the threat posed by culling measures, provisions for the exemption of rare breeds are included in Directives related to several diseases. For example, Council Directive 2003/85/EC, which relates to FMD, allows (under Article 15) for the derogation of the requirement for immediate slaughter of affected herds/flocks in the case of "a laboratory, zoo, wildlife park, and fenced area or in bodies, institutes or centres approved in accordance with Article 13(2) of Council Directive 92/65/EEC and where animals are kept for scientific purposes or purposes related to conservation of species or farm animal genetic resources" becoming infected with the disease. A list of premises that are identified as a "breeding nucleus of animals of susceptible species indispensable for the survival of a breed" must be established in advance (Article 77). The Commission must be notified in the event of a Member State deciding to derogate slaughter measures, and it must be ensured that "the animal health status of other Member States, are not endangered and that all necessary measures are in place to prevent any risk of spreading foot-and-mouth disease virus."

Similarly, Directive 2005/94/EC relating to avian influenza, allows for derogation of slaughter measures the case of "an outbreak of HPAI in a non-commercial holding, a circus, a zoo, a pet bird shop, a wild life park, a fenced area where poultry or other captive birds are kept for scientific purposes or purposes related to the conservation of endangered species or officially registered rare breeds of poultry or other captive birds, provided that such derogations do not endanger disease control" (Article 13). Requirements relating to the

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confinement and restrictions on the movement of birds covered by such derogations are set out in Article 14. The Directives relating to CSF and ASF also allow for exemptions for rare-breed populations if specified conditions are met. It should, however, be noted that similar provisions, designed to protect rare genetic resources, are not included under older Directives relating to other serious livestock diseases (e.g. Newcastle disease and African horse sickness).

As discussed in Part 1 – Section F: 4, measures outlined in Commission Decision 2003/100/EC on breeding programmes for the elimination of scrapie have also raised concerns. Rare sheep breeds that lack or have low frequency of the resistant genotypes may be threatened. Participation in breeding schemes will be compulsory for flocks of “high genetic merit”, and will result in the castration or slaughter of rams carrying the “VRQ” allele associated with susceptibility to the disease. The Decision does, however, allow for derogations of these requirements in the case of breeds which have low frequencies of the resistant ARR allele and which are in danger of being lost to farming.

The implementation of animal health-related rules is backed up by a body of legislation on animal identification. These laws are also relevant to food safety and traceability, management and supervision of livestock premiums, and to the certification of animals for breeding purposes. In the case of bovine animals, for example, rules are set out in Regulation (EC) 1760/2000. The identification system for bovines comprises ear tags for individual animals, computerized databases, animal passports and individual registers kept on each holding.

The identification requirements (specifically ear tagging) present practical problems with respect to the keeping of animals for certain specific purposes or under some management conditions. There could, thus, be implications for particular AnGR normally kept in such circumstances. Some steps have been taken to adapt legal measures in order to address these problems. In the case of bovine animals kept for cultural and historical purposes on approved premises, provisions are made under

Commission Regulation (EC) No. 644/2005 for alternative means of identification. There are also separate rules for bulls kept for sporting or cultural purposes (Commission Regulation (EC) No. 2680/1999); and in the case of cattle kept on nature reserves in the Netherlands for landscape and conservation purposes, the maximum period for the application of ear tags (normally 20 days after birth) can be extended up to 12 months (Commission Decision 2004/764/EC). Similarly in Spain, an extension of up to six months was permitted, under Commission Decision 98/589/EC, for animals of certain breeds, kept under extensive conditions in specified geographical regions. The specific provisions for Spain were subsequently repealed when a more general provision was introduced (Commission Decision 2006/28/EC) covering all Member States. The rules allow extensions of up to six months for holdings where cattle are kept under extensive conditions, where ear tagging presents practical problems because of geographical conditions and the animals are unused to handling, and provided the calves can be clearly assigned to their mothers at the time of tagging.

Animal welfare

Council Directive 98/58/EC sets out rules protecting the welfare of farmed animals. Further Directives deal specifically with laying hens, calves and pigs. The legislation outlines standards for veterinary care; freedom of movement for animals in accordance with their physiological and behavioural needs; shelter, cleanliness, ventilation and lighting in buildings and accommodation; provision of feed and water; mutilations and breeding procedures; as well as staffing levels, inspection of animals, and record keeping. With specific regard to animal breeding, the Directive states that:

“natural or artificial breeding procedures which cause, or are likely to cause, suffering or injury to any of the animals concerned shall not be practised”,

and that:

“no animal shall be kept for farming purposes

unless it can reasonably be expected, on the basis of their genotype or phenotype, that they can be kept without detrimental effect on their health and welfare.”

Council Regulation (EC) No. 1/2005 provides for the protection of animals during transport. The Regulation radically overhauls existing EU rules on animal transport. Salient features include new rules to cover the treatment of animals before and after transportation at locations such as farms, markets, slaughterhouses and harbours; training and certification of drivers; improved enforcement, including tracking of vehicles by satellite navigation systems; stricter standards for journeys over eight hours – including improved standards for lorries; and stricter standards for the movement of young and pregnant animals. Council Directive 93/119/EEC relates to the minimizing the pain and suffering undergone by animals at the time of slaughter. The regulations cover the equipping of slaughterhouses; the competence of slaughterhouse staff; and specify that animals must be stunned before slaughter or killed instantaneously.

Food safety

EU legislation related to food safety has in recent years undergone significant reform. Legislative and other actions have been developed, to ensure compliance with EU food safety standards in Member States; to manage international relations with non-member countries and international organizations concerning food safety; to manage relations with the European Food Safety Authority (EFSA); and to ensure science-based risk management. The central element of legislation in this field is Regulation (EC) No. 178/2002.

Food safety measures may have negative implications for the production of specialized foodstuffs such as cheeses made with raw milk from local breeds, and thereby undermine the potential contribution of niche markets to breed conservation. Concerns about food safety are also a driving force behind legislation aimed at the eradication of scrapie. As described above and Part 1 – Section F: 4, these measures pose a threat some

rare breeds of sheep. A further outcome is that many developing countries are concerned that they are unable to meet increasingly complex and burdensome EU standards and regulations. Indeed, environmental, and SPS measures are considered by a number of countries to be a greater constraint to exports to the EU than are tariffs and quantitative restrictions. The EU legislative framework for food safety, thus, affects livestock production and marketing, and, hence, the utilization of AnGR, both within the EU and elsewhere in the world.

The production, marketing and utilization of livestock feed is also covered by EU legislation. Developments in this field are increasingly driven by concerns about human and animal health. These laws do not directly impact the management of AnGR, but form a part of the framework within which livestock producers have to operate and take decisions regarding their management practices. Regulation (EC) No. 882/2004 sets out rules designed to ensure that impacts on feed and food safety are considered at all stages in the process of feed production and utilization. With regard to the inclusion of GMOs in livestock feed, Regulation (EC) No. 1829/2003 covers applications for the placing on the market of GMOs, and products containing or derived from GMOs. The labelling and traceability of such products is covered by Regulation (EC) No. 1830/2003.

3.3 Conclusions

Many regulatory aspects of AnGR management would benefit from regional or subregional coordination. Regional transboundary breeds are found in substantial numbers in most regions of the world, and thus conservation measures should be planned at subregional or regional level. Trade in livestock products can be promoted by common standards guaranteeing quality and safety. Breed improvement is facilitated if a common framework for registration and genetic evaluation is put in place.

The EU provides an example of a comprehensive set of regional regulations affecting AnGR management. Legislation promoting conservation measures has been in place for some years, and has

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recently been strengthened. Incentive payments for breed conservation appear to fit well with the need to find alternatives to production-related subsidies. However, the evidence suggests that schemes have not always been sufficiently well targeted to effectively promote the conservation of some of the most endangered breeds. The overall focus of the EU legislative framework is less on conservation than on providing an enabling environment for breed improvement, promoting free trade in breeding material among Member States, and ensuring an effective regime for the control of livestock diseases. Unsurprisingly, regulations promoting these objectives have at times clashed with conservation goals. It is, however, interesting to note that in some such cases the problems have been recognized, and relevant adaptations to the legislative framework have been implemented.

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COUNCIL DIRECTIVE 2002/99/EC of 16 December 2002 laying down the animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption. http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_018/l_01820030123en00110020.pdf

COUNCIL DIRECTIVE 2003/85/EC of 29 September 2003 on Community measures for the control of foot-and-mouth disease repealing Directive 85/511/EEC and Decisions 89/531/EEC and 91/665/EEC and amending Directive 92/46/EEC. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32003L0085&model=guichett

COUNCIL DIRECTIVE 2003/43/EC of 26 May 2003 amending Directive 88/407/EEC laying down the animal health requirements applicable to intra-Community trade in and imports of semen of domestic animals of the bovine species. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32003L0043&model=guichett

COUNCIL DIRECTIVE 2005/94/EC of 20 December 2005 on Community measures for the control of avian influenza and repealing Directive 92/40/EEC. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32005L0094:EN:NOT>

COUNCIL REGULATION (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31991R2092&model=guichett

COUNCIL REGULATION (EEC) No 2078/92 of 30 June 1992 on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31992R2078&model=guichett

COUNCIL REGULATION (EEC) No 2081/92 of 14 July 1992 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31992R2081&model=guichett

COUNCIL REGULATION (EEC) No 2082/92 of 14 July 1992 on certificates of specific character for agricultural products and foodstuffs. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31992R2082&model=guichett

COUNCIL REGULATION (EC) No 1467/94 of 20 June 1994 on the conservation, characterization, collection and utilization of genetic resources in agriculture. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31994R1467&model=guichett

COUNCIL REGULATION (EC) No 1257/1999 of 17 May 1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF) and amending and repealing certain Regulations. http://europa.eu.int/eur-lex/pri/en/oj/dat/1999/l_160/l_16019990626en00800102.pdf

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COUNCIL REGULATION (EC) No 1804/1999 of 19 July 1999 supplementing Regulation (EEC) No 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs to include livestock production. http://europa.eu.int/eur-lex/pri/en/oj/dat/1999/l_222/l_22219990824en00010028.pdf

REGULATION (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products and repealing Council Regulation (EC) No 820/97. http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32000R1760&model=guichett

REGULATION (EC) No 178/2002 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_031/l_03120020201en00010024.pdf

REGULATION (EC) No 1829/2003 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 September 2003 on genetically modified food and feed. http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_268/l_26820031018en00010023.pdf

REGULATION (EC) No 1830/2003 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC. http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_268/l_26820031018en00240028.pdf

REGULATION (EC) No 882/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules. http://europa.eu.int/eur-lex/en/refdoc/L_165/L_2004165EN_1.pdf

COUNCIL REGULATION (EC) No 870/2004 of 24 April 2004 establishing a Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture and repealing Regulation (EC) No 1467/94. http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l_162/l_16220040430en00180028.pdf

COUNCIL REGULATION (EC) No 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97. http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2005/l_003/l_00320050105en00010044.pdf

COUNCIL REGULATION (EC) 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD). http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2005/l_277/l_27720051021en00010040.pdf

COMMISSION NOTICE TO THE MEMBER STATES 2000/C 139/05 of 14 April 2000 laying down guidelines for the Community initiative for rural development (Leader+). http://europa.eu.int/eur-lex/pri/en/oj/dat/2000/c_139/c_13920000518en00050013.pdf

4 National legislation and policy

4.1 Introduction

Functioning legal frameworks, or at minimum, clear policies and programmes, are prerequisites for effective management of AnGR. Clear legislation, and the security which it provides, is important both for economic activities such as international and domestic trade, and for the definition of the competences, rights and duties of the stakeholders involved in AnGR management.

From a country-level perspective, the effectiveness of a legal framework can be assessed on the basis of the extent to which it promotes or hinders the achievement of the country's agricultural development goals. These goals are manifold and trade-offs between them are often necessary. National-level goals may include ensuring food security and food safety, promoting national economic growth, enhancing the income and livelihoods of the rural population, preventing the degradation of the natural environment, or maintaining biological diversity. Countries are also very diverse in terms of their ecological, cultural and political environments. This section describes both general frameworks and specific solutions that have been developed in the field of legislation and policy. It aims to highlight difficulties and gaps in existing provisions, and to facilitate the exchange of ideas, solutions and experiences.

4.2 Methods

The analysis draws on information from the following sources:

- the Country Reports submitted as part of the SoW-AnGR preparation process, supplemented in some cases by e-mail correspondence with the NCs;
- an earlier survey carried in 2003 by out by FAO's Development Law Service; and
- additional information found in FAO's legal data bank (FAOLEX²⁵).

The starting point for the analysis was a broad definition of both "management of AnGR" and "legal framework". The former term was taken to encompass conservation of AnGR (including the indirect effects of sustaining the production systems where the genetic resources are utilized); genetic improvement (including regulation of specific techniques and the associated infrastructure); and animal health (including provisions related to trade, breeding and transport). Supporting factors, such as institutional structures and incentive measures were also considered.

For the purposes of the analysis, "legal framework" was taken to include all types of legislation reported as being relevant to AnGR management. Additionally, as many countries mentioned policies and strategies or similar instruments for the management of AnGR, these instruments were taken into consideration, even if in many instances the legal basis for their implementation was not clear.

The descriptions provided by the Country Reports present a differentiated picture, which cannot be fully represented here. The objective of the following discussion is, therefore, to offer an overview of the subject and to describe general patterns and models. Examples drawn from the Country Reports are included to illustrate typical cases or those that are particularly useful or creative. Region-specific statistical overviews are presented where this illustrates particular points of interest. However, it should be noted that not all Country Reports present the same degree of detail in their discussion of legal frameworks. The statistics presented should not, therefore, be taken to represent a complete picture of the state of legal provision, but rather as broad indicators of regional capacities with respect to AnGR-related laws and policies.

²⁵ <http://faolex.fao.org/faolex>

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4.3 Implementation of AnGR-related legislation and programmes

Management, sustainable use and conservation of AnGR may involve the mandates of different public agencies, and involve a great variety of private actors – from farmers and breeders, to food processing and marketing enterprises. It entails a great amount of knowledge (both traditional and related to modern biotechnologies). The creation and implementation of legislation is a multifaceted task, requiring a high degree of coordination and organization.

Legal frameworks are, clearly, not the only option for achieving policy goals. An important question to be considered is the relative efficiency of legal means (often requiring expensive control measures) as compared to other policy measures (creating incentives and supporting mechanisms of various kinds, and removing distortions or disincentives). Thus, the following thematic sections describe examples of both legislative and policy measures.

Institutional Framework

Institutions that have a clear mandate and that function well are the backbone of the implementation of laws and policies. A basic institutional structure is essential for the coordination of strategies for AnGR management. Clear legal definitions of institutional roles are important. Complicated or unclear arrangements may cause problems for coordination and communication between stakeholders.

Institutional mechanisms for the implementation of AnGR-related laws are diverse. Frameworks vary between countries according to the characteristics of national administrative systems, the availability of financial resources, and the overall economic and social conditions. Two main approaches to institutional development can be discerned: 1) the establishment of ad hoc bodies to meet particular needs; and 2) the optimal use of existing institutions with possible adjustment of their mandates or structures (FAO, 2005).

A great variety of institutions are reported to have a role in AnGR management. However, as a rule, AnGR management at the national level is

Box 46

Malawi's Environmental Management Act

Articles 35 and 36 of the Environmental Management Act contain provisions on the conservation of biodiversity and on access to genetic resources. The Minister may assess and identify Malawi's biological resources before formulating and implementing policies and frameworks for their protection. The Act also contains suggested actions that the Minister may undertake for the conservation of biological resources. The Minister may also restrict access to Malawi's genetic resources, or impose fees or benefit sharing measures involving the owner of the technology and the government.

Source: Legal Questionnaire (2003).

the responsibility of the Ministry of Agriculture; health-related issues may be the responsibility of the Ministry of Health, other Ministries such as Trade or Environment may also play a role. The discussion presented below focuses only on the specific institutions involved (i.e. not the "basic" ministries). These may include government agencies, private organizations to which tasks are delegated, or mixed public-private ventures. Competences and duties of such institutions (or at least of higher-level bodies) ought to be defined by law. The legal mechanisms involved are, not always clear from the information contained in the Country Reports. However, wherever possible an analysis of the legal basis for the roles of institutions is included in the following discussion.

Economic Instruments

Because the management of AnGR is a complex task, which involves a variety of stakeholders, implementation of legal measures may be difficult and costly. As noted above, it may be more cost-effective to use other mechanisms to achieve the desired objectives. Measures might include subsidies of various kinds – this of course is dependent on the economic means of the country

and on compliance with international trade regulations. Measures to support the marketing of livestock products may be another means to foster and maintain AnGR diversity.

4.4 Country Report analysis

In the following subchapters, legislative measures, institutional frameworks and other mechanisms for the management of AnGR at the country level are discussed.

Biodiversity-related legislation

Several countries report that they have legislation in place to implement the provisions of the CBD (see Section E: 1). Some countries mention having instruments related to the conservation of biodiversity in general, without specifying whether AnGR is included. With respect to access issues, some countries report laws regulating access to genetic resources in general – examples include Malawi²⁶, the Bolivarian Republic of Venezuela²⁷ and Colombia²⁸. Others explicitly indicate that laws are in place to regulate access to AnGR. One example is India's Biodiversity Act (2002) which regulates access to plant and animal genetic resources by foreigners (Legal Questionnaire, 2003). CR Sri Lanka (2002) reports the preparation of a Biodiversity Act which covers access and benefit-sharing for genetic resources including domestic animals.

Instruments related to supporting livestock production systems

This subchapter analyses legal instruments that create a facilitating environment for the management of AnGR. The link to AnGR is indirect – by sustaining specific production systems, these measures also sustain the associated AnGR. The Country Reports describe quite a diverse set of

instruments of this type, varying according to the specificities of the production systems, and the objectives and challenges associated with the country in question.

Instruments related to agricultural development and land use

Included under this heading are instruments that aim to promote the development of rural areas and rural communities. These instruments may take the form of policy measures – see for example CR United Republic of Tanzania (2004) and CR Lesotho (2005); or be defined in legislative acts – such cases are reported from the Republic of Korea²⁹, Viet Nam³⁰ and Slovakia³¹. They may form part of a country's strategy for poverty reduction and food security (Box 49). Some explicitly regulate the development and modernization of agriculture (Honduras³², Ecuador³³), or the use of agricultural or arable land (Bosnia and Herzegovina³⁴, Georgia³⁵, Mexico³⁶). Measures may also be put in place to address the problems of specific production systems. Mongolia for instance has created the legal basis for support of, and incentives for, grassland systems affected by severe weather conditions. Its National Program on Protecting Livestock from Natural Disaster, Dzug and Drought, approved under Resolution 144, of 2001 aims to strengthen damage relief systems – creating aid distribution networks, and enhancing the involvement of livestock keepers and administrative institutions (CR Mongolia, 2004).

²⁶ Environmental Management Act (Legal Questionnaire, 2003).

²⁷ Law of Seeds, Material for Animal Reproduction and Biological Inputs. Official Gazette of the Bolivarian Republic of Venezuela Number 37.552 of 18/10/2002 (CR Bolivarian Republic of Venezuela, 2003).

²⁸ Article 81 of the Political Constitution of Colombia, 1991 (CR Colombia, 2003).

²⁹ Rural Development Law and Rural Community General Law (CR Republic of Korea, 2004).

³⁰ Resolution No. 06 of Central Government (10/11/1998) (CR Viet Nam, 2003).

³¹ Act No. 240 of 1998 (on Agriculture); Rural Development Plan of the SR 2004–2006 (E-mail Consultation Slovakia, 2005).

³² Decree No. 31/92 – Law for the Modernization and Development of the Agricultural Sector (CR Honduras, undated).

³³ Law of Agricultural Development, Official Register No.55 of 30 April 1997 (Legal Questionnaire, 2003).

³⁴ Law on Arable Land, 1998 (CR Bosnia and Herzegovina, 2003).

³⁵ Agricultural Land Act (CR Georgia, 2004).

³⁶ Agricultural Law, 1992 (Legal Questionnaire, 2003).

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Instruments related to pasture and rangeland management

In countries with large areas of rangeland and scarce water resources, a variety of measures are put in place to regulate access and management. These measures may fall under general legislation related to pastures and rangelands or be included in specific acts.

Legislation in the area of general pasture and rangeland management is reported by countries including Kyrgyzstan³⁷ and Oman³⁸. Measures may also be integrated into other legislation. CR Yemen (2003) reports that measures related to rangeland management are included under the country's environmental law, and Australia has a range of legal instruments at the Commonwealth and State Government levels that deal with biodiversity conservation and rangelands management. Other countries report having corresponding policies in place (examples include Uganda³⁹, Lesotho⁴⁰, Algeria⁴¹ and Bhutan⁴²), but the legal basis for these is not always clear.

The instruments may be directed specifically at the maintenance and/or improvement of pastures – examples include the laws reported by Uzbekistan⁴³, Pakistan⁴⁴, the Republic of Korea⁴⁵ and China⁴⁶. Iraq's Government Law number 2, 1983 contains measures to improve natural pastures, to provide for rotational grazing, and to control toxic plants (CR Iraq, 2003). Turkey includes integrated measures on pasture improvement in its leasing regulation (Box 47).

³⁷ Law "on pastures" (CR Kyrgyzstan, 2003).

³⁸ Royal Decree No. 8 of 2003 issuing Law on Pasture and Animal Resources Management, 21 January 2003 (FAOLEX).

³⁹ Pasture and Rangelands Policy (CR Uganda, 2004).

⁴⁰ Livestock and Range Management Policy, 1994 (CR Lesotho, 2005).

⁴¹ National Agricultural Development Plan (CR Algeria, 2003).

⁴² National Pasture Policy (CR Bhutan, 2002).

⁴³ Law No 543-1 of 1997 on protection and usage of vegetation (FAOLEX).

⁴⁴ Punjab Frontier Grazing Regulation (E-mail Consultation Pakistan, 2005).

⁴⁵ Grassland Law (CR Republic of Korea, 2004).

⁴⁶ Grassland Law (CR China, 2003).

Box 47**Turkey's Law on Pastures No. 4342 (1998)**

This law sets out basic procedures and rules for the allocation of pastures to villages and municipalities. The Ministry of Agriculture and Rural Affairs is authorized to determine the boundaries of pastures, and their allocation to relevant entities. The finalized boundaries are recorded in corresponding title deeds. The allocation process is renewed every five years. Areas that can only be used after improvement measures can be leased to individuals and companies who undertake the improvement. Areas that are allocated under this law cannot be used for any other purposes unless written consent is obtained from the Ministry of Agriculture. This consent can only be given under specific conditions that are set out in the law. The law also has provisions to prevent overgrazing in these areas. A "Pasture Fund" will be established under the direct management of the Ministry of Agriculture for financing the activities set out in this law.

Source: Legal Questionnaire (2003).

A number of countries indicate regulations relating to the prevention of pollution by manure run-off. Examples include the Republic of Korea's Sewage, Faeces and Urine, Waste and Water Treatment Law (CR Republic of Korea, 2004). The impact of laws regulating the run-off of manure is also mentioned in CR United States of America (2003) and CR United Kingdom (2002). CR Cook Islands (2003) indicates that the country's Environmental Law has had some effect on the size and distribution of livestock holdings, particularly pig farms. Similarly, CR Kiribati (2003) mentions that under the Environmental Act of 1999, livestock development is a prescribed activity, and that new livestock farms require ministerial approval.

Norway promotes the organized use of pastures by grazing associations – the Decree Relative to Incentives for Organized Use of Pastures regulates the efficient use of pastures in outlying lands (FAOLEX). Incentives are provided for organized grazing under the control of registered grazing associations which meet set criteria (ibid.). Pakistan also has a substantial set of measures⁴⁷ to regulate pasture use.

In extensive grassland systems, access to grazing land and water sources is crucial. This is especially true in the case of mobile pastoralism. Regulations covering the access of transhumant pastoralists to pastures are included in the pastoral codes and similar legislation, which exist in a number of African countries such as Benin⁴⁸, Botswana⁴⁹, Guinea⁵⁰, Mali⁵¹ and Mauritania⁵². Guinea's Pastoral Code, for example, regulates pastoral land-use rights and provides for conflict resolution. It regulates the use of pastures, use of water resources, transhumance and protection of the environment (CR Guinea, 2003). Botswana's Tribal Land Act restricts the granting of land-use rights in land specified to be for grazing; grazing land may be set aside for commonage (FAOLEX). Access to pastures may also be important for sedentary livestock keeping communities. Laws relating to the allocation of pastures at the community level are found for instance in Turkey (Box 47) and Albania⁵³.

⁴⁷ Punjab Frontier Grazing Regulation, 1874; Grazing of Cattle in Protected Forests (Range Lands) Rules, 1978; By-laws for Regulating Grazing of Animals, 1981; Pasturage of Animal Rules, 1900 (Email Consultation Pakistan, 2005).

⁴⁸ Law No. 87 of 21 September 1987 on the regulation of the animal guard, common grazing (la vaine pâture) and transhumance (Legal Questionnaire, 2003).

⁴⁹ Tribal Lands Act (FAOLEX).

⁵⁰ Pastoral Code (CR Guinea, 2003).

⁵¹ Law No. 01-004 on the Pastoral Charter in the Republic of Mali (Legal Questionnaire, 2003).

⁵² Law No. 44-2000 on the Pastoral Code in Mauritania (CR Mauritania, 2004).

⁵³ Instructions No. 1 of the General Directorate of Forests and Pastures on technical criteria for leases of pastures and meadows, 23 May 1996, implementing Law No. 7917 on protecting pastures and meadows, 13 April 1995 (FAOLEX).

Box 48 Slovenia's Livestock Breeding Act (2002)

The principal objective of this act is to harmonize Slovenia's livestock breeding legislation with the "acquis communautaire" of the EU, and to adapt to the CAP. It also sets out principles in accordance with the goals of agricultural policy, and outlines the economic, spatial, ecological and social roles of animal husbandry and sustainable agricultural development. The more specific objectives of the act are:

- regulating the field of animal husbandry, with the aim of promoting stable production of quality food and ensuring food safety;
- conserving settlements in rural areas, and the cultivated landscape;
- utilizing natural resources for food production in such a way as to maintain the productive capacity and fertility of the land;
- managing the operation of recognized breeding organizations and the implementation of breeding programmes;
- providing a higher level of education in the field of animal husbandry;
- maintaining biodiversity in animal husbandry and protecting the environment; and
- providing a suitable income for those involved in agriculture.

Source: CR Slovenia (2003).

Several countries report laws regulating access to water. Examples include Chad's Order on Pastoral and Village Hydrology⁵⁴, and Mongolia's Resolution on the National Program on Protecting Livestock from Natural Disaster, Drought and Drought (see above). Access to water may be included in other regulations, such as the above-mentioned pastoral codes. It is integrated, for example, under Australia's Land Protection Act⁵⁵.

⁵⁴ Ordinance No. 2/PR/MEHP/93, on the creation of the Office of Pastoral and Village Hydrology (CR Chad, 2003).

⁵⁵ Land Protection (Pest and Stock Route Management) Act 2002 – reprinted on 19 May 2005; Rural Lands Protection (General) Regulation, 2001 (FAOLEX).

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TABLE 88
Instruments for sustaining livestock production systems

Types of instruments	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Agricultural development	[3]			3	2	2	
Pasture and rangeland management	3 [3]	3 [1]	3	4	5		1
Access to pastures and water	6		1	2	2		
Conservation of rural environments, ecological/organic farming				10		1	1
Number of CRs	42	7	11	39	25	22	2

[n] = policies/strategies.

Note that inclusion of instruments under two categories is possible.

Box 49 Mozambique's Livestock Development Policy and Strategies

A new document on Livestock Development Policy and Strategies is presently submitted for approval. Its objectives are to contribute to poverty reduction and food security in rural areas, stimulating the role of livestock in families' socio-economic growth, and contributing to satisfying the needs of the national market. This policy has a lifespan of ten years.

Source: CR Mozambique (2004).

Conservation of rural areas and organic/ ecological agriculture

In industrialized countries, measures tend to be focused on conservation of the natural environment or maintaining rural areas rather than being aimed primarily at assuring food security. Such measures may indirectly foster the use of traditional, locally adapted breeds of livestock.

Legislation promoting the conservation of rural areas is particularly reported by European countries. Examples include Slovenia (Box 48)

and Bosnia and Herzegovina⁵⁶. Legal measures may be used to promote desirable changes in agriculture, and may support specific production methods such as ecological/organic farming. A number of European countries report such legislation. CR United States of America (2003) also mentions its National Organic Standards, and CR Brazil (2004) mentions programmes furthering organic meat production. In the case of organic production in particular, a clear legal framework is necessary to ensure consumer confidence (rules for production standards, labelling, etc.). Industrialized countries may also have legislation supporting the maintenance of agricultural production in unfavoured areas. Examples include Switzerland's Agricultural Law (CR Switzerland, 2002). Slovenia's Livestock Breeding Act follows an integrated approach, outlining the economic, spatial, ecological and social roles of animal husbandry (Box 48).

Some countries, particularly in Africa, mention that they have policies and strategies in place for agriculture, rangeland management or livestock production. However, from the information in the Country Reports it is difficult to know the legal basis of these measures – for example, whether they are

⁵⁶ Law on Arable Land, 1998 (CR Bosnia and Herzegovina, 2003).

based on a general legal frameworks relating to agriculture and land use, or on legislation relating to the competences and duties of a government agency. Similarly, it is often unclear whether they have to be approved by a legislative body. The example from Mozambique presented in Box 49 illustrates a strategy that is explicitly integrated in the context of the country's policies promoting poverty reduction and food security.

Institutions supporting livestock development

This subchapter discusses regulations related to institutions that have specific functions in AnGR management. Such institutions may be organized in a centralized or in a decentralized way. Several countries mention specialized central institutions involved in the management of livestock. Examples include Cape Verde's National Institute of Agriculture and Livestock⁵⁷.

The role of decentralized organizations such as cooperatives, community groups and farmers' associations varies from region to region. Organizations of this type are usually involved in a variety of activities related to AnGR management. Several African countries report legislation regulating local-level rural cooperative groups. CR Chad (2003), for example, mentions a decree⁵⁸ related to the recognition and functioning of rural groups, and an order⁵⁹ regulating the status of cooperative groups. Regulations affecting rural community organizations are reported in the Central African Republic⁶⁰, and have also been put in place in Equatorial Guinea⁶¹. Botswana has instituted tribal Land Boards as corporate bodies – tilling rights and titles to land are vested

in the Land Boards, which determine and grant customary forms of land tenure (FAOLEX).

Some countries in Latin America (e.g. Mexico⁶²) and Europe (e.g. Poland⁶³ and Bosnia and Herzegovina⁶⁴) report legislation regulating farmers' and breeders' organizations. These groups are conceived as professional associations, and represent the (economic) interests of the producers. Malaysia⁶⁵ and Pakistan⁶⁶ also report legislation on farmers' organizations and agricultural cooperative societies respectively.

Access to Credit

Access to credit provision tailored to the specific needs of livestock keepers is an important institutional requirement. This is a particular issue in countries with a poorly developed banking infrastructure. In some countries, especially in Africa, the state has taken initiatives in this field. Examples include the creation of the Caisse de Développement de l'Élevage du Nord in Cameroon⁶⁷; the Mutualité Agricole in the Central African Republic⁶⁸, the projected law on an agricultural fund in the Congo⁶⁹; Senegal's credit fund for crop and animal production⁷⁰, and Mozambique's Livestock Development Fund⁷¹. Another example of legislation in this field is Pakistan's Cooperative Societies and Cooperative Banks (Repayments of Loans) Ordinance of 1966 (E-mail Consultation Pakistan, 2005).

⁵⁷ Regulation No. 125/92 approving the constitution of the National Institute of Agriculture and Livestock, 1992 (FAOLEX).

⁵⁸ Decree No. 137 /PR./MA/93 determining the modalities for the recognition and the functioning of rural groups and to allow women and men to be given responsibility in the development of the livestock sector.

⁵⁹ Order No. 25/PR/92, regulating the status of cooperative groups and cooperatives.

⁶⁰ Decree No. 61/215 of 30 September 1961 regulating agricultural cooperatives and mutual plans in the Central African Republic (CR Central African Republic, 2003).

⁶¹ Law of Cooperatives, Ministry of Labour, Malabo (Legal Questionnaire, 2003).

⁶² Law of Agricultural Associations, 1932 and Law of Livestock Organizations, 1999 (Legal Questionnaire, 2003).

⁶³ Act on Social and Professional Agricultural Organizations, 1982 (Legal Questionnaire, 2003).

⁶⁴ Law on Farmers's Associations (CR Bosnia and Herzegovina, 2003).

⁶⁵ Farmers' Organization Act, 1973 (CR Malaysia, 2003).

⁶⁶ Punjab Livestock Associations and Livestock Associations Unions (Registration and Control) Ordinance, 1979 (E-mail Consultation Pakistan, 2005).

⁶⁷ Decree No. 81/395 of 9 September 1981 modifying and completing Decree No. 75/182 of 8 March 1976 (Legal Questionnaire, 2003).

⁶⁸ Decree No. 61.215 of 30 September 1961 (Legal Questionnaire, 2003).

⁶⁹ Projected law on the creation of the Agricultural Fund (Legal Questionnaire, 2003).

⁷⁰ Decree No. 99-733 (Legal Questionnaire, 2003).

⁷¹ No legal basis indicated.

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Instruments related to conservation

This subchapter covers legislative measures, policies and strategies for the conservation of AnGR (for definitions of the different types of conservation referred to in this subchapter, see Box 94 in Part 4 – Section F). A first step for the conservation of AnGR diversity is to identify and designate the breeds to be conserved. Conservation may have various motivations, including economic, sociocultural and scientific objectives. It may be aimed at conserving specific endangered breeds, or at maintaining AnGR diversity more generally.

Several examples of legislation relating to AnGR conservation are clearly culturally motivated. The Republic of Korea, for example, protects specific breeds as “national monuments” under the Cultural Properties Protection Law (CR Republic of Korea 2004). Some Canadian Provinces have designated “heritage breeds” or “heritage animals” in their legislation – the Canadienne cow, Canadien horse and Chantecler chicken in Quebec, and the Newfoundland Pony in Newfoundland and Labrador (CR Canada, 2003). In Peru, the Peruano de Paso horse, along with alpacas and llamas are regarded as national symbols (CR

Peru, 2004), and legal measures⁷² have been put in place to protect them. In the case of Japan, scientific value is also mentioned as a criterion – the Law for the Protection of Cultural Properties (1950) designates autochthonous species, including livestock that have high scientific value, as “natural treasures” (CR Japan, 2003). In other cases, the motivation for legislative measures is more related to broader concerns about biodiversity (see for example Box 50 describing Slovenia’s Regulation on Conservation of Farm Animal Genetic Resources of 2004).

In some cases, strategies may be directed at the conservation of particular species, – for example Peru’s *in situ* and *ex situ* measures to conserve alpacas and vicuñas (CR Peru, 2004). In other cases, conservation measures are integrated within broad programmes for the management of AnGR such as Mongolia’s programme on “Improving Livestock Quality and Breeding Services”⁷³. Programmes may be supported by additional measures such as promoting scientific research (CR Kazakhstan 2003; E-mail Consultation the Netherlands, 2005; CR Ukraine 2004), or awareness building among farmers (CR India, 2004). If programmes are to be properly targeted, measures for the characterization and inventory of AnGR are required, along with the establishment of procedures for the identification and registration of the breeds and animals to be covered by the programmes (Box 50).

Box 50
Slovenia’s regulation on
Conservation of Farm Animal Genetic
Resources

This regulation establishes systematic procedures for monitoring and analysing the state of AnGR diversity, and defines means and instruments for *in situ* and *ex situ* conservation. It establishes a register which includes a zootechnical assessment of breeds and species. It also provides definitions of degrees of breed endangerment and criteria for the estimation of genetic variability within breeds.

Source: E-mail Consultation Slovenia (2005).

In situ in vivo conservation

In contrast to the above-mentioned measures providing general support to livestock production systems, the measures analysed in this subchapter relate directly to the conservation of AnGR. Only a small minority of countries (mostly from the Europe and the Caucasus region) report legislation

⁷² Decree No. 25.919 – declaring the De Paso horse as a native species of Peru, 1992.

⁷³ Based on the law on Livestock Gene-pool Protection and Health (CR Mongolia, 2004).

TABLE 89
Instruments in the field of conservation

Type of Conservation	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
<i>In situ</i>				8	3	1	1
<i>Ex situ in vivo</i>				2	4		
<i>Ex situ in vitro</i>	1			6	3	2	1
Number of CRs	42	7	11	39	25	22	2

Note that a measure may be included under more than one category. Details of conservation programmes are reported in Section C.

covering *in situ* conservation of AnGR (Table 89). Various strategies and mechanisms to support this type of conservation can be implemented. Some countries grant financial support to breeders, breeders' organizations, or other institutions that maintain traditional breeds (e.g. Japan⁷⁴ and Greece⁷⁵); or to NGOs that promote and manage *in situ* conservation (e.g. Switzerland⁷⁶).

Few such measures are reported from developing countries. CR Ghana (2003) mentions efforts by the Animal Research Institute to support five communities in the Northern Region keeping Ghana Shorthorn cattle. However, the exact mechanisms involved are unclear. In India, conservation programmes under the National Bureau of Animal Genetic Resources include the establishment of *in situ* conservation units in the native tract of the breed, performance recording, selection and registration of genetically superior animals, and the provision of incentives to the owners of the animals to retain them for breeding. These measures are combined with *Ex situ in vivo* and *in vitro* conservation for specific breeds (CR India, 2004). However the Country Report does

not provide information on the legal framework for these measures. Another type of programme is reported in CR Peru (2004) – involving the designation of specific zones for the rearing of vicuñas in semi-liberty to reclaim their wool.

Ex situ in vivo conservation

Again, only a limited number of countries indicate that they have instruments in place related to *Ex situ in vivo* conservation (Table 89). Examples include Slovenia and Ukraine (Boxes 50 and 52).

Box 51 Uganda's National Animal Genetic Resources Programme

The main objectives of the National Animal Genetic Resources Programme are to ensure the conservation and sustainable full use of AnGR diversity. The programme is charged with developing a national AnGR conservation policy including *in situ* and *ex situ* measures; establishing an appropriate institutional framework for coordinating, regulating and monitoring conservation activities; creating awareness among the population of current initiatives related to AnGR management; characterizing and documenting the country's livestock breeds; and promoting research.

Source: CR Uganda (2004).

⁷⁴ Law for the Protection of Cultural Properties – grants provided to municipalities affected by measures (CR Japan, 2003).

⁷⁵ Presidential Decree No. 434/95; Decision 280/343571/4969/8.9.97 of the Ministers of Agriculture and Economy; 167/08.03.95 Decision of the Minister of Agriculture (CR Greece, 2004).

⁷⁶ Subsidy based on the Law of Agriculture (CR Switzerland, 2002).

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**Box 52
Ukraine's Law on Animal Breeding**

In Ukraine, the conservation of threatened breeds of all species is an integral part of the Law on Animal Breeding. Conservation work is implemented by a specially created centralized body with executive authority financed from the state budget. The programme involves a range of activities, including preserving frozen semen from high-output breeds, strains and breeding groups that are at risk of extinction; the use of reproductive biotechnologies in breeding and selection work; and the organization of exhibitions and auctions of breeding animals.

Source: CR Ukraine (2004).

In Indonesia, the Law on Animal Husbandry and Health⁷⁷ requires that conservation programmes are conducted in well-managed areas such as on smaller islands, in Village Breeding Centres, or on private and government farms (CR Indonesia, 2003). Malaysia⁷⁸, and India (CR India, 2004) have networks of conservation farms, and Sri Lanka's Zoological Garden Act covers zoo farms (E-mail Consultation Sri Lanka, 2005).

In vitro conservation (cryoconservation)

Several countries report legislation relating to conservation in *in vitro* facilities. One example is Uganda, which has comprehensive legislation in the field AnGR management (Box 59). In the United States of America, the Food, Agriculture, Conservation and Trade Act (1990) established the conservation of AnGR as a national priority (CR United States of America, 2003). As a result, the National Animal Germplasm Program

⁷⁷ No. 6 of 1967, Article 13 (CR Indonesia, 2003).

⁷⁸ Based on Animals Ordinance of 1953 and the National Policy on Biological Diversity, launched by the Ministry of Science, Technology and Environment (CR Malaysia, 2003; Legal Questionnaire, 2003).

**Box 53
Turkey's Regulation on Protection of Animal Genetic Resources (2002)**

This regulation, based on the Livestock Improvement Act No. 4631, sets forth procedures and principles regarding all activities related to the protection and registration of AnGR in Turkey.

A National Committee on Protection of AnGR is established, composed of representatives of: (a) the General Directorate of Agricultural Research; (b) the General Directorate of Agricultural Enterprises; (c) the Faculty of Veterinary Sciences; (d) the Faculty of Agriculture; (e) the Ministry of Environment; (f) the Ministry of Forestry; (g) the Central Council of the Union of Turkish Veterinarians; (h) the Society for Protecting Wildlife; (i) the Society for Protecting Turkish Habitat; and (j) the Anatolian Horse Breed Development Society. The functions of this Committee include: determining activities regarding the protection of AnGR; reviewing past activities and planning future actions; specifying breeds under threat of extinction; formulating policies for the protection of AnGR; and taking decisions regarding the import and export of AnGR.

Source: Legal Questionnaire (2003).

was initiated in 1999, and is developing a comprehensive management strategy for AnGR, including the establishment of cryoconservation measures. Measures regulating procedures for access to genebanks and transfer of genetic material are reported only by the Czech Republic. Its Breeding Act Amendment⁷⁹ and the associated implementing regulation and programme also include a model "genetic material provision and transfer agreement".

⁷⁹ Breeding Act Amendment 154/2000 (E-mail Consultation Czech Republic, 2005).

TABLE 90
Instruments in the field of genetic improvement

Type of measure	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Definition of breeding strategies, genetic improvement and selection	6	0	2	17	11	4	0
Registration, branding	5	1	1	21	5	10	0
Laws for reproductive biotechnology	2		1	18	5	5	1
Number of CRs	42	7	11	39	25	22	2

Details of genetic improvement programmes are reported in Section B.

Institutions involved in the conservation of AnGR

A number of countries report measures to establish institutions responsible for conservation. For example, Uganda's Animal Breeding Act (2001) established the National Animal Genetic Resources Center and Databank, which is responsible for overseeing conservation measures (Box 51).

Other examples include Ukraine (Box 52), Kazakhstan⁸⁰ and the above-mentioned National Animal Germplasm Program in the United States of America.

CR Bolivarian Republic of Venezuela (2003) reports a National Center for the Conservation of Genetic Resources (animal and plant species) under the Ministry of Environment, created by the Law on Biological Diversity. Turkey has established an interministerial and multistakeholder committee for AnGR (Box 53).

Instruments related to genetic improvement

Genetic improvement encompasses a broad range of activities related to the breeding process, including animal identification and herd book keeping, performance recording, genetic evaluation, and the dissemination of improved

genetic material. Many countries have legal measures in place to regulate some or all of these activities. Legislation may also cover the exchange of breeding stock, both within and between countries. The following aspects of legal frameworks are discussed in this subchapter:

- the definition of breeding strategies and programmes;
- animal identification and registration systems;
- infrastructure and institutional issues related to AI and natural service – including sanitary control measures.

Table 90 shows that Europe and Asia have the greatest density of legal regulations in the field of genetic improvement. Conversely, in African countries, policies are less likely to be backed up by legal frameworks. In some countries, legislation is currently being developed and has not yet been implemented. A number of developing countries report difficulties in implementing their policies and programmes in this field.

The definition of breeding strategies

The goals of breeding strategies differ from country to country. Several countries mention breeding policies directed at optimizing the utilization of indigenous breeds, either by straight-breeding or focused cross-breeding. In Nigeria, for example, breeding and selection of indigenous breeds

⁸⁰ Law of Pedigree Animal Breeding, and respective sublegislative acts (CR Kazakhstan, 2003).

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Box 54 Lesotho's Importation and Exportation of Livestock and Livestock Products Proclamation

The Importation and Exportation of Livestock and Livestock Products Proclamation 57 of 1952 amended in 1953, 1954, 1965 and 1984 dictates: (a) that livestock should not be imported or exported without permit; (b) that no permit shall be granted for importation of "undesirable livestock", including but not limited to bastard sheep and goats; (c) that conditions for importation should include the desirability of the animals including their ability to improve the standard of livestock in the country. These legal instruments influence breed utilization. Merino sheep and Angora goats are being reared in larger numbers than any other breeds. The laws also encourage use of Merino sheep in mountain zones, and higher concentrations of the breeds are, therefore, found in these areas. The import controls have allowed improvement of the country's livestock, as imports are restricted to superior Merino rams, Angora bucks, and beef and dairy bulls.

Source: CR Lesotho (2005).

Box 55 Malaysia's Animals Ordinance

This ordinance prohibits the possession of a bull, older than 15 months, that is not sterilized. Exceptions can be granted for bulls suitable for reproduction. These bulls are tested (health and breeding criteria) and registered by an official agency. Breeding is only allowed utilizing registered stud bulls.

Source: CR Malaysia (2003).

the ecological zones to which they are adapted is encouraged; but there is also promotion of controlled cross-breeding of indigenous dairy cattle to a level not exceeding 50 percent exotic blood (E-mail Consultation Nigeria, 2005). Other examples include India, which has a strategy promoting genetic improvement in indigenous cattle and buffalo breeds, but also promotes the cross-breeding of local animals with Jerseys or Holstein-Friesians (CR India, 2004), and Trinidad and Tobago which promotes genetic improvement of the local Criollo goat breed (CR Trinidad and Tobago, 2005). Serbia and Montenegro⁸¹ and China⁸² have measures in place promoting the use of both, indigenous and exotic cattle breeds. Some countries have laws relating to specific species or breeds. Examples include Argentina's recovery programme for sheep⁸³. Lesotho has legislation limiting the import of livestock to those meeting the requirements of the national breeding objectives (Box 54).

Another example of laws regulating the use of animals for breeding is Malaysia's Animals Ordinance (Box 55).

Animal registration and identification

Various aspects of AnGR management require systems for animal identification and registration if they are to be effective. Examples include the implementation of veterinary control measures or traceability rules related to food safety, the prevention of theft, monitoring the status of breed populations, and the implementation of breeding and conservation programmes. A clear and enforceable legal basis for registration and identification is likely to be particularly necessary where public goods such as food safety or the prevention of epidemic livestock diseases are the main objectives. For targeted breeding,

⁸¹ The law on Measures for Livestock Improvement regulates the sustainable management of both locally adapted breeds and imported foreign breeds (FAO, 2005).

⁸² CR China (2003); Legal Questionnaire (2003).

⁸³ Law for the Revival of Sheep Keeping No. 25422, 27 April 2002 (Legal Questionnaire, 2003).

more elaborate recording methods (e.g. herd books) are required and normally encompass the documentation of the genealogy of pedigree animals and the performance of the offspring. Systems of this type necessitate regulation to ensure uniform standards.

Identification and registration may be organized in different ways depending on the objectives and the availability of resources. Tasks may be implemented by a central state agency, or be delegated to decentralized institutions, such as breeders' organizations or state breeding farms. Elaborate registration systems require a high degree of organization and cooperation. In some countries registration is, therefore, limited to specialized breeding herds or breeding farms (E-mail Consultation Nepal, 2005), to species of particular importance, or to commercially oriented farms and enterprises.

Europe, with its highly organized breeding systems (breeders' organizations in western Europe and state agencies in eastern Europe), has the highest density of measures related to animal registration (Table 90). Elsewhere in the world, some countries mention animal identification and registration as a "big goal" or "urgent need", that they would like to review or improve their current practices, or that they are at present developing a policy. Some also indicate that at present they are unable to monitor the population status of their breeds, and that a lack of registration measures for pure-bred traditional breeds hinders their further development.

Reproductive biotechnology

In this subchapter, an overview of regulations and policies related to the utilization of biotechnology (principally AI and ET) for genetic improvement is presented. Table 90 gives a regional breakdown of the instruments in place. In parallel with the greater use of reproductive biotechnologies in developing countries, Europe and the Caucasus has the highest density of legislation in this field. Many developing countries regard the use of reproductive biotechnologies as an important

Box 56 Hungary's Decree No. 39

Decree 39 of 1994 of the Ministry of Agriculture regarding artificial insemination (AI), embryo transfer (ET) and the production, supply, marketing and utilization of breeding materials, applies to cattle, sheep, goats, horses, pigs and red deer. Articles 2 to 6 deal with AI centres. Such centres require authorization for their operation, issued by the National Agricultural Classification Institute (NACI). Authorization depends on certain conditions specified in Article 2. Centres shall contract with interested breeding organizations, to perform the duties listed in Article 5. Semen may be collected only from animals authorized for AI. Provisions regarding authorization for AI are laid down in Articles 7 and 8. Article 9 deals with the supply of semen, which may be produced only by AI centres. The marketing of semen is regulated by Article 10. Special regulations regarding the marketing of imported semen are set out in Article 11. Inspection of AI centres is performed annually by NACI, which may prolong authorization, specify conditions, or withdraw authorization if standards are not met (Article 14). ET is regulated in Articles 15 to 24, and centres again require authorization to operate. Standards related to all these activities are controlled by NACI. A list of authorized centres, prohibited reproductive material in the case of cattle, and the list of male animals authorized for AI are published in the official gazette of the Ministry.

Source: Legal Questionnaire (2003).

means of improving productivity, particularly in dairy production. Examples include the AI programme in Sri Lanka, which aims to upgrade cattle, buffalo, goat and pigs in order to promote commercial production systems; cattle semen used in the country is mostly of the *Bos taurus* type imported from the EU, North America or Australia (E-mail Consultation Sri Lanka, 2005). Legislation related to technical requirements such

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Box 57 Botswana's Stock Diseases (Semen) Regulations

According to these regulations, a permit is required for introducing semen into the country (to prevent the introduction and spread of disease); for disposing of semen (sale, gift, exchange, or in any other manner); and for using any such semen for artificial insemination of any stock that are not the property of the owner of the semen.

Source: Legal Questionnaire (2003).

as the production and transportation of semen, health controls, and the organization of AI centres and semen banks, is reported by a number of countries. Hungary's Decree No 39 of 1994 serves as an example of such legislation (Box 56).

Control of the health of breeding stock and of genetic material

Several countries, particularly in Europe, indicate that they have regulations related to the health of breeding animals (either in the context of the production of semen for AI or covering animals used for natural service).

Other examples include Malaysia's Animals Ordinance (Box 55), and Japan's requirement⁸⁴ for all breeding animals (cattle, horses and pigs) to have a breeding stock certificate. The certificate is issued after annual inspection, which includes inspection for infectious diseases and genetic disorders. Some countries have rules in place related to the prevention of specific livestock diseases. For example, Norway's BSE-related restrictions⁸⁵ on imports of cattle and beef from the United Kingdom include restrictions on the import of embryos.

⁸⁴ Law for Improvement and Increased Production of Livestock (E-mail Consultation Japan, 2005).

⁸⁵ Decree No. 548 of 2000 relative to protection measures against BSE in relation with importation from the United Kingdom (FAOLEX).

Box 58 Barbados's incentive programme

Because of high prices for fresh pork offered by supermarkets and other wholesale buyers, many producers have been selling underweight animals, including gilts, for slaughter. This could undermine the genetic base of the national pig herd. In response, the government has proposed offering producers an incentive of BDS\$500 (approximately US\$250) not to slaughter, or sell for slaughter, any gilt deemed by the Ministry of Agriculture and Rural Development to be suitable for breeding. The programme is to be carried out in collaboration with the Barbados Agricultural Society and the Barbados Pig Farmers' Cooperative Society Limited.

Source: CR Barbados (2005).

Incentives for genetic improvement

Many countries report incentives that in one way or another influence breeders' activities and may indirectly promote genetic improvement – examples include subsidies for capital investments or subsidized provision of inputs of various kinds. In this subchapter, only subsidies directly connected with livestock breeding are discussed.

There are various types of subsidies which may be granted. Viet Nam⁸⁶, for example, reports a subsidy fund for maintaining and improving livestock and poultry breeding herds/flocks. Kazakhstan subsidizes measures that enhance availability of pedigree breeding materials to farmers (CR Kazakhstan, 2003). Several countries report subsidies supporting breeding infrastructure and technology. In many countries, the public sector is involved in the provision of services such as AI at subsidized rates, or may subsidize private sector providers (see Section D).

Other measures may include enhancing access to credit, granting tax advantages, providing loans at preferential terms, or providing emergency

⁸⁶ Decision 125/CT dated 18/4/1991 (CR Viet Nam, 2003).

funding for breeding activities. Examples include measures put in place in Mexico, which allow a tax break for those involved in raising cattle⁸⁷ and Argentina, which has created a sheep bank and emergency fund⁸⁸.

Institutions dedicated to genetic improvement
This subchapter discusses the various institutions described in the Country Reports that facilitate planned and structured genetic improvement programmes.

A number of countries report specialized institutions dedicated to AnGR development. Such institutions may be mandated to perform activities in various areas of AnGR management, including: the elaboration of programmes and strategies (e.g. Uganda⁸⁹); management of a specific branch of AnGR development and production (e.g. AVICOLA in Mozambique⁹⁰ and Moldova's institutions for pigs and poultry production – see below); research and extension (e.g. Costa Rica⁹¹ and Mauritius⁹²); and research on breed improvement (e.g. Bolivia⁹³ and Canada⁹⁴). The institutions may be specialized governmental agencies, possibly combining experts from different departments (CR Costa Rica, 2004), or consultative groups of experts such as the Commission on Biotechnology in the Netherlands (E-mail Consultation the Netherlands, 2005). Tasks

may be delegated to private or public-private bodies.

Specialized governmental institutions for research, extension and the elaboration of development programmes have been created in Uganda – National Animal Genetic Resources Steering Committee under the Ministry of Agriculture⁹⁵, Costa Rica – Instituto Nacional de Innovación Tecnológica Agropecuaria (INTA)⁹⁶, Chile – Comisión Nacional para el Desarrollo de la Biotecnología⁹⁷, and Bolivia – Centro Nacional de Mejoramiento Genético de Ganado Bovino⁹⁸.

Private organizations and mixed public-private institutions may also be involved in the management of AnGR. Such organizations are reported from Cameroon – Société de Développement et d'Exploitation des Productions Animales (SODEPA)⁹⁹; and Moldova – scientific production institutions for pigs and for poultry (“Progress” and “Moldpitseprom”) (CR Moldova, 2004). Another example is the United Kingdom's Milk Council¹⁰⁰.

As mentioned above, registration of breeding livestock or breeds can either be organized by central or decentralized governmental agencies, or be delegated to private stakeholder groups, frequently to recognized breeders' organizations.

Legislation on centralized breeding registers is reported by Uganda (combined with the National Genetic Resources Databank), Cuba¹⁰¹, the Russian Federation¹⁰², Ukraine¹⁰³ and

⁸⁷ Decree (tax benefits) n 6/2/94, 02 June 1994 (Legal Questionnaire, 2003).

⁸⁸ Resolution (Sheep Bank for Agriculture and Livestock Emergency) No. 143, 25 July 2002 (Legal Questionnaire, 2003).

⁸⁹ The National Animal Genetic Resources Databank, under the Animal Breeding Act (CR Uganda, 2004).

⁹⁰ Decree No. 5/78 creating the National Institution of Poultry Breeding (AVICOLA) under the Ministry of Agriculture. Its range of action covers all types of poultry production (industrial or traditional) (Legal Questionnaire, 2003).

⁹¹ INTA (Instituto Nacional de Innovación Tecnológica Agropecuaria), (Law No 8149, 5 November 2001) (CR Costa Rica, 2004).

⁹² AREU (Agricultural Research and Extension Unit) (CR Mauritius, 2004).

⁹³ Centro Nacional de Mejoramiento Genético de Ganado Bovino created under Ministerial Resolution 080/01 of MACA (CR Bolivia, 2004).

⁹⁴ Experimental Farm Stations Act (CR Canada, 2004).

⁹⁵ Animal Breeding Act, 2001 (CR Uganda, 2003).

⁹⁶ Organic Law of the Ministry of Livestock Law No. 8149, of 5 November 2001 (CR Costa Rica, 2004).

⁹⁷ Decree (Comisión Nacional para el Desarrollo de la Biotecnología) no. 164, 21 June 2002 (Legal Questionnaire, 2003).

⁹⁸ Ministerial Resolution 080/01 (CR Bolivia, 2004).

⁹⁹ Decree No. 81/395 of 9 September 1981 modifying and completing Decree No. 75/182 of 8 March 1975 on the creation of SODEPA (Société de Développement et d'Exploitation des Productions Animales) (Legal Questionnaire, 2003).

¹⁰⁰ Milk Development Council (Amendment) Order 2004 (FAOLEX).

¹⁰¹ Law No. 1.279 – Law of Livestock Registration, 1974 (Legal Questionnaire, 2003).

¹⁰² CR Russian Federation (2003).

¹⁰³ Law “About Animal Breeding” (CR Ukraine, 2004).

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TABLE 91

Instruments related to institutions active in genetic improvement

Institutions	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Research & development institutions incl. scientific councils:							
Government	5			3 (+1 mixed)		3	2
Stakeholder				4			
Breeding infrastructure	2			1	2 [2]	1	1
Registration by government	2			4	3	1	1
Stakeholder associations							
Registration				6?	4	2	1
Improvement				2			
Number of CRs	42	7	11	39	25	22	2

[n] = created by policies.

Estonia¹⁰⁴. Decentralized institutions are reported by Jamaica¹⁰⁵, Guatemala¹⁰⁶, and Canada¹⁰⁷. Nepal has registration schemes for organized farms and governmental farms (E-mail Consultation Nepal, 2005). The EU has a body of legislation

¹⁰⁴ Animal Breeding Act (CR Estonia, 2004).

¹⁰⁵ Recording by breed societies (CR Jamaica, undated).

¹⁰⁶ Governmental Accord 843-92 (CR Guatemala, 2004).

¹⁰⁷ Animal Pedigree Act, 1985 (CR Canada, 2004).

Box 59

Uganda's Animal Breeding Act (2001)

The government has taken steps to support the breeding structure by identifying National Animal Genetic Resources Centre farms and ranches where specific breeding activities can be undertaken. However, securing sufficient funding for operationalizing the infrastructure remains a problem.

Source: CR Uganda (2004).

regulating pedigree certificates, the keeping of herd books, genetic evaluation and performance testing (see Section E: 3.2). Examples of measures for the registration of specific breeds include Slovenia's Law on Conservation of Farm Animal Genetic Resources, which establishes a register of breeds including a zootechnical estimation (see above), and the provisions for breed registration mentioned in CR Russian Federation (2003). In China, the Stockbreeding Law of 2005 provides for the establishment of a national protection list of livestock and poultry genetic resources (FAOLEX).

In some countries, in particular where there is a lack of strong, decentralized breeding organizations, specific institutions, such as governmental farms and controlled nucleus herds play the dominant role in developing and producing breeding material. These institutions may also be involved in conservation programmes. Examples include Indonesia's policy for conservation and utilization of AnGR¹⁰⁸. Mongolia

¹⁰⁸ Law on Animal Husbandry and Veterinary Act No. 6/1967, Article 13 (CR Indonesia, 2003).

has a programme on “improving livestock quality and breeding services¹⁰⁹.” Its major objective is to improve yield and product quality by creating nucleus herds and corresponding livestock breeding services (CR Mongolia, 2004).

Breeders’ associations and, in some cases, private companies may be delegated various functions in

the process of genetic improvement. Breeders’ associations often take responsibility for herd book keeping. Their duties and competences are usually defined in livestock breeding acts. The role of breeders’ associations is particularly prominent in Europe. The EU has a body of legislation in place covering the recognition of breeders’ organizations and regulating their activities (see Section E: 3.2). Few African countries report the existence of breeders’ associations. The fostering of such societies is, however, one of the objectives of Uganda’s National Animal Genetic Resources Centre and Databank established under the Animal Breeding Act of 2001 (CR Uganda, 2004).

¹⁰⁹ Based on the Act on Livestock Gene-Pool and Health Protection 1993; amended 2001 and approved by Resolution 105, 1997.

Box 60 Guatemala – decentralization of the registration of pure-bred animals

Guatemala initially established a centralized register in 1915. A regulation in this field was introduced in 1933. It defined the criteria for inclusion in the register of pure-bred animals. Its goal was to resolve the problem of registering the many pure-bred animals that at the time did not have pedigree documentation. This situation prevented an “open-book” strategy at this time. In 1965, the regulation was adopted by all Central American countries as a basis for registration procedures. In 1992, a law for the decentralization of registration was adopted, and in the following years, the herd books of breeders’ associations were officially recognized in several livestock species.

Source: CR Guatemala (2004).

Instruments related to marketing and trade

This subchapter discusses instruments put in place to promote and regulate the marketing and trade of livestock and livestock products. Such measures include those related to the setting of standards for marketed products, those that promote trade or establish institutions in this field, and those that regulate the movement and exchange of animals both internationally and within countries.

Standard setting

There are two main objectives of legislation related to standard setting: 1) to ensure food safety and to address food-related aspects of human health through setting minimum quality standards; and 2) to provide for the identification of quality products by the consumer in the marketplace.

TABLE 92
Instruments in the field of standard setting

Instruments in place for standard setting	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Food safety	4 [1]	0	1	3 [1]	4	3	0
Consumer information	0	0	0	6	0	1	1
Number of CRs	42	7	11	39	25	22	2

[n] = policies or legal basis unclear.

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Various types of instruments related to ensuring food safety are reported. Examples include the Comoros's Decree No 87-019/PR, which relates to the production, storage, distribution and inspection of food products (CR Comoros, 2005). Other countries report regulations on grading of various animal products. Pakistan, for example, has rules related to the grading of agricultural products in general, and specific rules for milk, animal hair, eggs, ghee and creamy butter (E-mail Consultation Pakistan, 2005). Other regulations cover the production of specific food products, such as meat (including measures related to slaughtering), eggs and milk products (including the sale of raw milk). These various types of measure may be integrated into a general regulatory framework – as is the case in Pakistan (*ibid.*).

Instruments aimed at providing information for the consumer may have various goals: assurance of quality standards; identification of geographical provenance or a specific production method (e.g. organic); or indicating the source of the raw materials to provide reassurance regarding food safety. The most frequently mentioned instruments are those related to organic production. The EU has a body of legislation in this field, covering the production, labelling and inspection of organic products, and establishing rules for the use of geographical indications and similar designations (see Section E: 3.2).

Instruments to foster trade in livestock products

Marketing measures can be used for a variety of purposes. The objective may be to support the incomes of livestock keepers or to promote exports. Measures of this kind may also serve to foster AnGR diversity by helping to make production from a broader range of breeds economically viable. Various instruments can be used to promote trade and marketing, including:

- the establishment of governmental institutions to further marketing in general, such as Malaysia's Federal Marketing

Authority¹¹⁰ or the establishment of the Animal, Animal Products and By-products Marketing Development Authority in Ethiopia¹¹¹;

- the creation of governmental institutions to foster specific products – such as Nicaragua's Corporación Nicaragüense de la Agroindustria Láctea¹¹² and Sri Lanka's National Livestock Development Board¹¹³;
- the creation of public-private partnerships – this occurs mainly in the dairy sector;
- the implementation of policies, strategies

¹¹⁰ Federal Agricultural Marketing Authority Act, 1965 – revised 1974 (CR Malaysia, 2003).

¹¹¹ Animal, Animal Products and By-products Marketing Development Authority Establishment Proclamation (No. 117/1998 (FAOLEX).

¹¹² Decree 364. Law of the Corporación Nicaragüense de la Agroindustria Láctea 31/05/88 (CR Nicaragua, 2004).

¹¹³ State Agriculture Cooperation Act. No. 11 of 1972 by a gazette order dated 4th May 1972 (Legal Questionnaire, 2003).

Box 61 Mongolia's White Revolution Programme

The "White Revolution" Programme, which has been in place since the adoption of Government Resolution 105 of 1999, aims to mobilize local resources in the livestock sector; improve the supply of dairy products, and increase the incomes of herders and rural people by reviving traditional processing of dairy products, developing small and medium-scale enterprises, and creating favourable conditions for marketing.

The Cashmere Programme was adopted by Government Resolution 114 of 2000 with the objectives of improving the competitiveness of cashmere products through improving the processing facilities. The Wool Sub-Programme was approved by Government Resolution 26 of 2001. Its objective is to enhance the capacity of factories involved in wool, skin and hide processing.

Source: CR Mongolia (2004).

Box 62 The Philippine's White Revolution

The approach to dairy development has involved both smallholders and commercial producers. The Philippine Dairy Corporation was created in 1979 to spearhead the development of the dairy industry based on small-scale production to increase rural income. Import of 2 400 head of Holstein-Friesian-Sahiwal cattle started in 1984 under an ADB-IFAD project. These animals were dispersed to various farmers' cooperatives. The National Dairy Authority (NDA) was created under the National Dairy Development Act RA 7884 to accelerate the development of the country's dairy industry.

The "White Revolution" was launched in 1999 under the leadership of the NDA and the Philippine Carabao Center. It aimed to drum up support from all sectors of society – farmers and rural families, the government extension and financing organizations, legislators, private investors, consumers, children and commercial processors.

Source: CR Philippines (2003).

and programmes, either to support animal product marketing in general or the marketing of specific products – such as Mongolia's programmes for milk and wool products (Box 61) and the Philippines' "White Revolution" programme (Box 62);

- development of niche markets – reported examples include efforts in Botswana to promote exports of donkey meat, and ostrich meat and skin, and in Eritrea to market products from rare breeds (CR Botswana, 2003; CR Eritrea, 2003);
- supporting and regulating specific production methods (e.g. by legislation on organic agriculture or labelling);
- the implementation of measures to protect local producers from competition by imports (importation quota, taxes) – examples mentioned in the Country Reports include the Dominican Republic's Tariff Protection

for Chicken Meat¹¹⁴, and several regulations by which Egypt banned the importation of fertilized eggs and chicken meat in order to foster the development of its poultry industry (CR Dominican Republic, 2004; CR Egypt, 2003) (in recent years there has been a tendency to replace these types of measures with other means of supporting local farmers);

- the regulation of specific marketing methods (such as the regulation of public auctions of alpacas and llamas in Peru¹¹⁵): and
- the establishment of networking opportunities for stakeholders in the food-processing and marketing sectors such as Mongolia's Wholesale Network Programme (CR Mongolia, 2004).

Institutional aspects of marketing

Institutions for the marketing of AnGR products, sometimes as public-private partnerships, exist in a number of countries. These measures can either be focused on livestock products in general, as in case of the Livestock Development Council in the Philippines, which has the task of increasing the supply of livestock and livestock products to attain self-sufficiency (CR Philippines, 2004). Alternatively, they target specific markets such as dairy products¹¹⁶, meat¹¹⁷ or poultry¹¹⁸. Several examples of this second type of institution are reported. For instance, Mozambique has established AVICOLA, the National Institution for Poultry Breeding, under the Ministry of

¹¹⁴ Decree Number 505-99, November 1999.

¹¹⁵ RM Number 0424-AG (regulation of public auction of alpacas and llamas) (CR Peru, 2004).

¹¹⁶ Jamaica's Dairy Board; Nepal's National Dairy Development Board Act, the Milk Development Council in the United Kingdom; and Nicaragua's of the Dairy Agroindustry Corporation (CR Jamaica, 2002; CR Nepal, 2004; CR Nicaragua, 2004; FAOLEX).

¹¹⁷ Sri Lanka's National Livestock Development Board (CR Sri Lanka, 2002).

¹¹⁸ Punjab Livestock, Dairy and Poultry Development Board (CR Pakistan, 2003).

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Agriculture¹¹⁹. Egypt has a General Union of Poultry Producers¹²⁰. Cameroon mentions its Société du Développement et de l'Exploitation des Productions Animales¹²¹. Nicaragua reports

associations in various production areas – the dairy agro-industry¹²², bird raising¹²³, and meat¹²⁴.

¹¹⁹ Decree No. 5/78 creating the National Institution of Poultry Breeding (AVICOLA), 1978 (Legal Questionnaire, 2003).

¹²⁰ Ministerial Resolution No. 97 implementing Law No. 96 of 1998 regarding the creation of the General Union of Poultry Producers (FAOLEX).

¹²¹ Decree No. 81/395 of 9 September 1981, modifying and completing Decree No. 75 of 8 March 1976 (CR Cameroon, 2003).

¹²² Decree 364. Law of the Corporación Nicaragüense de la Agroindustria Láctea, 31/05/88; Decree No. 82. Creating a Development Fund for the Dairy Industry, 23/07/66 (CR Nicaragua, 2004).

¹²³ Decree 357, Law creating the Corporación Avícola Nicaragüense, 31/05/88 (CR Nicaragua, 2004).

¹²⁴ Decree 360, Law creating the Corporación Nicaragüense de la Carne, 31/05/88 (CR Nicaragua, 2004).

TABLE 93
Instruments for promoting trade in livestock products

Instruments	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Legislation to foster trade in AnGR products							
Marketing in general	2 [1]			2 [1]	[2]	1	
Specific products	1 [1]				3 [1]	1	
Organic/niche	[2]			3 [3]		1	1
Institutions	3 [1]	1			3	3	
Protective measures, and subsidies	2		1	2	1		
Number of CRs	42	7	11	39	25	22	2

[n] = policies or legal basis unclear.

Note that institutions may promote specific products or marketing of products in general. These cases are indicated under both, "institutions" and "laws to foster trade".

TABLE 94
Instruments regulating import and export of genetic material

Regulations relating to	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Import	7	3	3	26	6	5	
Export	4	2	0	23	1	0	
CBD implementation	1				1	1	
Number of CRs	42	7	11	39	25	22	2

Box 63
Russian Federation – Veterinary and Sanitary Requirements No. 13-8-01/1-8 (1999)

For boar semen to be admitted to the territory of the Russian Federation, it must have been collected at AI centres that are kept under permanent supervision by the state veterinary service of the exporting country. Animals must be kept, and semen must be collected, in compliance with the veterinary and sanitary requirements currently in force. Boars supplying sperm for export must not be vaccinated against classical swine fever. Boars must be kept at the AI centres for six months before collection of sperm, and must not be used for natural insemination during this period. Boars must not have been fed on feedstuffs produced using genetically modified additives or other genetically modified products. Semen must be free of pathogenic and toxic micro-organisms. Compliance with these veterinary and sanitary requirements must be certified by a veterinary certificate, signed by the state veterinary inspector of the exporting country, and drawn up in the language of the country of origin and in Russian. The veterinary certificate must contain the date and the results of diagnostic examinations. Semen destined for export must be packed and transported in special containers (vessels) filled with liquid nitrogen. Dispatch of semen to the Russian Federation is possible only after authorization issued to the importer by the Veterinary Department of the Ministry of Agriculture and Food.

Source: Legal Questionnaire (2003).

Import and export of genetic material

Under this heading, legislation on the import and export of genetic material in the narrow sense (semen and embryos) is presented. Import and export of live animals is discussed below under livestock movement and trade. In several cases it is not clear from the information available whether import/export of semen and embryos is included under regulations covering livestock trade, or on the import/export of livestock products.

Regulations on import and export of genetic material are motivated by a variety of objectives, which vary from country to country. Preventing the introduction of livestock disease is an important motivation. Other objectives may include ensuring that the imported genetic material is adapted to local ecosystems, or increasing the output of national livestock production. There may also be legislation in place implementing the provisions of the CBD related to the need to obtain governments' prior informed consent for the export of genetic resources.

In Europe in particular, there is a high density of regulation related to the import and export of genetic material. Box 63, which describes regulations controlling semen imports to the Russian Federation, provides an illustrative example.

Some Country Reports mention the possibility of preventing the import of semen for ecological reasons. CR Algeria (2003) indicates that in certain cases the government can exercise its regulatory powers to ensure that inappropriate exotic semen is not imported or promoted to the detriment of local breeds that are better adapted to local conditions and the production objectives of small producers. CR Ecuador (2003) mentions that improved seeds, animals, technologies and equipment can be freely imported if they are not deemed harmful to local ecosystems¹²⁵. Colombia has a constitutional regulation¹²⁶ stating that "the state will regulate the entry and exit of genetic resources from the country, and their utilization, in accordance with national interests".

CR Burkina Faso (2003) mentions the country's participation in a number of regional agreements relating to the management, utilization and exchange of genetic material, but indicates that these have not yet been implemented.

¹²⁵ Law of Agricultural Development the codification of which was published in the Official Register No. 55 of 30 April 1997.

¹²⁶ Political Constitution of Colombia, 1991, Article 81 (CR Colombia, 2003).

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**Box 64
India – rules for transportation**

The rules provide for the transportation of poultry and pigs by rail, road or plane. Containers must be properly fitted for transportation – providing shelter from sun, heat, rain or cold, and allowing poultry and pigs to be comfortable during the journey. A table details the rules regarding the containers and the timing of journeys according to the size and age group of the animals. Vaccination and other health requisites are listed.

Source: FAOLEX.

**Box 65
West Africa – pastoralists crossing borders**

Decision A/DEC.5/10/98, taken in Abuja in 1998 by the heads of state and government of the Economic Community of West African States (ECOWAS) relates to the use of transhumance certificates by mobile pastoralists within Member States. In Nigeria, efforts have been made to, *inter alia*, stipulate conditions for movement of nomadic livestock, i.e. their arrival to and departure from Nigeria.

Source: E-mail Consultation Nigeria (2005).

Import and export of live animals

Controls on the international exchange of livestock are of great importance for the control of livestock disease. The introduction of diseases across a country's borders can have severe consequences for the livestock sector. CR Kenya (2004) for example, mentions that cross-border movement of livestock has caused the re-introduction of some previously eradicated notifiable diseases, which has led to the loss of disease-free zones in the country and the loss of external markets. Zoonosanitary regulations are, however, significant

barriers to the international exchange of AnGR. Instruments mentioned in the Country Reports include the definition of health standards for the import of live animals, requirements related to the animal health status of exporting countries, and quarantine requirements for imported animals.

Some countries indicate zoonosanitary regulations for both import and export of live animals in general – for example, Mali¹²⁷, or for specific species – for example, Myanmar¹²⁸ (pigs, horses, sheep, goats, and cattle and buffaloes). Conversely, some countries indicate zoonosanitary requirements and control for the import of live animals only¹²⁹. See Section E: 3.2 for a discussion of EU laws covering health-related restrictions on trade in livestock and livestock products.

Quarantine measures are mentioned by many countries. Provisions for further quarantine measures to be applied in the case of disease epidemics are also often mentioned (see below). Some countries have instruments in place related to the import of animals from countries of regions particularly affected by animal health problems. Botswana's, Diseases of Animals Act 1977, for example, allows the prohibition of the import of animals from areas that are known to be affected by major diseases (CR Botswana, 2003). Other examples include El Salvador's legislation prohibiting the import of animals from countries affected by FMD¹³⁰ and Cape Verde's legislation prohibiting bovine imports from areas infected by BSE¹³¹.

¹²⁷ Decree 372/P-RM regulating sanitary control of animals on the territory of the Republic of Mali (Legal Questionnaire, 2003).

¹²⁸ In the case of pigs: Regulation for importation and exportation of breeding swine into Myanmar, 2003; similar laws for the other species were also passed in 2002 (FAOLEX).

¹²⁹ Kiribati's Importation of Animals Regulation, 1965 (FAOLEX); Palau's Plant and Animal Control – Chapter 20 of Title 25 of the Palau National Code, 1966 (FAOLEX).

¹³⁰ Accord No. 54 – 2001. Prohibiting the import of bovine, ovine, caprine and porcine livestock and other cloven-hoofed species from countries affected by foot-and-mouth disease (FAOLEX).

¹³¹ Order No. 10/2001 (FAOLEX).

TABLE 95

Instruments regulating livestock movements and import and export of live animals and livestock products

Legislation on trade	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Import (health standards)	2	2 (1)	4 (3)	8 (5)	5	6 (4)	(1)
Export	3	1		3	3		
Products	4			2		1	
Number of CRs	42	7	11	39	25	22	2

[n] = policies or legal basis unclear.

There are countries that have regulations regarding import and export of breeding animals. Chad, for example, prohibits the export for slaughter of female animals of breeding age¹³². CR China (2003) notes that the country's Ministry of Agriculture formulated an Administrative Regulation on Exportation of Breeding Animals during the 1980s, which was updated and adjusted in 1993. Examples from Europe include Hungary, which reports regulations covering exports and imports (E-mail Consultation Hungary, 2005), and Germany¹³³ which reports legislation regulating the import of breeding animals. Ecuador's Law on Agricultural Development (1997) enables the import of breeding animals deemed unsuitable for local ecosystems to be restricted (CR Ecuador, 2003).

Livestock movement internal and regional

Livestock movement is one issue usually covered by legislation related to animal health. In countries where risks of disease outbreaks are high, separate laws tend to be adopted setting out strict rules on stock movement within the country and measures to enforce their observation (FAO, 2005).

Several countries indicate specific requirements related to livestock shows. CR Mozambique (2005), for example, reports provisions related

to transportation to and from cattle shows. Similarly, in the United Kingdom, the Animal Gatherings (England) Order of 2003 specifies the zoosanitary measures that have to be included when organizing events such as shows or markets (Legal Questionnaire, 2003). In Japan, a health certificate is required for livestock to cross the border of a province (E-mail Consultation Japan, 2005). In the event of a disease epidemic, stricter regulations are implemented. Several countries have regulations regarding the welfare of transported live animals. One example is India (Box 64).

African countries where pastoralist production systems are widespread have adopted the use of transhumance certificates at both national and regional levels.

Instruments related to animal health

The number of countries that have developed and implemented legislation related to animal health is larger than in any other field (see previous subchapter for further discussion of measures related to animal movement and trade). Animals' health status has enormous impact on individual performance, on the production output and efficiency of the livestock sector, and on trade in products of animal origin. Most countries report some regulation (or at least institutions or programmes) related to animal health. However, some countries explicitly state that they do not yet have adequate regulation in place. Some of

¹³² Decree No. 138 bis /PR/MEHP/88 regulating the unlimited export of and livestock products with the exception of reproductive females (CR Chad, 2003).

¹³³ Animal Breeding Import Ordinance (Legal Questionnaire, 2003).

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TABLE 96

Regulations in the field of animal health

Types of measures	Africa	Near & Middle East	Southwest Pacific	Europe & the Caucasus	Asia	Latin America & the Caribbean	North America
Legislation or policy in place	23 [2]	4 [2]	10	32 [1]	18 [4]	13 [1]	1
Veterinary Services	8 [4]	2	0	10 [9]	7 [6]	0	
Epidemics general	0	1	3	5	3	1	
Epidemics specific	5	0	1	9	5	7	
Number of CRs	42	7	11	39	25	22	2

[n] = policies

these countries mention the difficulties that they face in generating the necessary political will to ensure adequate regulation. Specific reference to the management of AnGR within national-level animal health legislation is rare in most parts of the world.

Legislation in this field may address disease surveillance and reporting, vaccination or vector control programmes, emergency measures to be taken in the event of epidemics, food hygiene and traceability of livestock products, inspection of livestock holdings and food processing establishments, production of livestock feed and veterinary products, and regulation of the qualifications, competences and duties of the veterinary profession. A country may have broad laws that regulate many aspects of animal health (Box 66), or there may be specific legislation related to a particular aspect of animal health or to a specific disease.

It can probably be assumed that nearly every country has some laws on animal health in place. Differences exist with regard to the comprehensiveness of the legal provision, and whether the issue is handled within a regional-level framework.

Measures to be implemented in the event of epidemics

A number of countries report general legislation outlining response measures to be taken in the event of an epidemic. One such example is Denmark's Infectious Animal Diseases Control

Box 66

The Islamic Republic of Iran's Act of National Veterinary System (1971)

The act encompasses overall sanitary regulations, and regulates quarantine measures and transboundary movement of animals. The act also covers the following measures:

- prevention and control of animal diseases;
- hygiene certificates for animals and animal products for export;
- hygienic supervision of pastures, watering places, stables and other breeding establishments;
- monitoring of feed plants, slaughterhouses and processing units; and
- control of the production, import, export and marketing of various biological materials (e.g. drugs, vaccines and serums).

Source: CR Islamic Republic of Iran (2004).

Act¹³⁴ (Legal Questionnaire, 2003). Legislation of this type may specify a list of notifiable diseases. Responses to epidemics may include the declaration and designation of epidemic-

¹³⁴ Other reported examples include Australia, China, Costa Rica, Ecuador, El Salvador, Estonia, Fiji, Germany, Guatemala, Honduras, Iraq, Ireland, Jamaica, the Philippines, the Republic of Korea, Serbia and Montenegro, Switzerland, the United Kingdom and Vanuatu.

free zones and establishments – countries reporting such legislation include Viet Nam¹³⁵ and Zambia¹³⁶. Eradication and control zones may be declared – countries reporting such legislation include El Salvador¹³⁷, Australia¹³⁸ and the United Kingdom¹³⁹. Uruguay, in its efforts to combat scabies in sheep obliges farmers to declare outbreaks or even the suspicion of an outbreak, and to contribute to the control of the disease¹⁴⁰.

Measures may include quarantine – examples include Zambia's Livestock Diseases Act (Legal Questionnaire, 2003). There may also be regulations regarding the disposal of infected animals – countries reporting such measures include Malawi¹⁴¹, Zambia¹⁴², the Netherlands¹⁴³ and Chile¹⁴⁴. There may be payment of compensation for losses – reported, for example, by Estonia¹⁴⁵ and Switzerland¹⁴⁶. Strategies to safeguard valuable AnGR in the event of

eradication measures are rare, but have begun to be put in place in Europe for some diseases (see Section E: 3.2).

Regional cooperation

There tends to be a greater amount of regional or bilateral cooperation in the field of animal health than in other areas of AnGR-related legislation. Reported examples of cooperation agreements between neighbouring states, include those existing between Egypt and Algeria¹⁴⁷, Turkey and Kazakhstan¹⁴⁸, members of the Commonwealth of Independent States¹⁴⁹, and Lusophone countries in Africa¹⁵⁰. There are also examples of bilateral international cooperation agreements between more distant countries – for example between Argentina and Hungary¹⁵¹.

Institutions and animal health services

A number of countries report legislation related to institutional aspects of the delivery of veterinary services. These measures may include licensing requirements for veterinary practice – an example being reported by Kazakhstan¹⁵², or define the duties and powers¹⁵³, or responsibilities and obligations of veterinarians¹⁵⁴. CR India (2004) reports the existence of veterinary councils

¹³⁵ Regulation on animal epidemic-free zones and establishments 2002 (FAOLEX).

¹³⁶ Cattle Cleansing Act of 1930 amended 1994 (Legal Questionnaire, 2003).

¹³⁷ Accord 194, declaring the geographical areas of the departments Usulután, San Miguel, Morazán and La Unión as control and eradication zones for bovine tuberculosis and brucellosis (CR El Salvador, 2003).

¹³⁸ Animal Health Act, 1995 (Legal Questionnaire, 2003).

¹³⁹ Diseases of Poultry (England) Order, 2003 (S.I. No. 1078 of 2003); Disease Control (England) Order, 2003 (S.I. No. 1729 of 2003) (Legal Questionnaire, 2003).

¹⁴⁰ Law No. 16.339 – declaring sheep scab a plague and making efforts to eradicate it compulsory (FAOLEX).

¹⁴¹ Control and Diseases of Animals Act 2000 (Legal Questionnaire, 2003).

¹⁴² Stock Diseases Act 1963 (amended 1994) (Legal Questionnaire, 2003).

¹⁴³ Decree No. 403 of 2001 to amend the Decree implementing provisions of the Animal Destruction Act, 16 July 2001 (Legal Questionnaire, 2003).

¹⁴⁴ Law No. 18.617 – norms for compensation for the slaughter of animals for the control of foot-and-mouth disease (Legal Questionnaire, 2003).

¹⁴⁵ Infectious Animal Disease Control Act, 16 June 1999 (Legal Questionnaire, 2003).

¹⁴⁶ Law on Epizootics, 1966 (amended 2002) (Legal Questionnaire, 2003).

¹⁴⁷ Algeria: Official Gazette No. 14, 5 April 2001 (FAOLEX).

¹⁴⁸ Agreement between the Government of Kazakhstan and the Government of Turkey on cooperation in the sphere of animal health, 1995 (FAOLEX).

¹⁴⁹ Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan; Agreement on cooperation of CIS member-states in the veterinary sphere (FAOLEX).

¹⁵⁰ Angola, Cape Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe; Guinea-Bissau's Decree No 351/73, Boletim Oficial No. 89 (FAOLEX).

¹⁵¹ Governmental Decree No. 4 of 2002 ratifying and publishing the Agreement stipulated on 10 December 1999 in Budapest between Hungary and Argentina on animal health (FAOLEX).

¹⁵² Ministerial Decree No. 1972 of 1997 regarding the validation for the regulation on licensing of veterinary practice, 20 August 1997 (Legal Questionnaire, 2003).

¹⁵³ Georgia's Veterinary Act (CR Georgia, 2004).

¹⁵⁴ Estonia's Veterinary Activities Organization Act, 1999 (Legal Questionnaire, 2003).

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established by a Veterinary Council Act; similar measures are reported from Nepal¹⁵⁵.

A number of countries report legislation defining their animal health systems. Examples include the Act of Veterinary System mentioned in CR Islamic Republic of Iran (2004), and the Russian Federation's Federal Law on Veterinary Service, which involves a scheme for state veterinary inspection of collective farms, state agricultural enterprises, and big livestock farms and complexes (Legal Questionnaire, 2003). Some countries have decentralized institutions – Peru, for example, reports local committees for animal health (CR Peru, 2004). Brazil reports regional Animal Health Inspectorates¹⁵⁶ within the Ministry of Agriculture to carry out control of animal health at regional level.

4.5 Conclusions

The analysis presented above clearly indicates that AnGR management is a complex matter, comprising a wide range of technical, policy and logistical operations. Many policy areas are involved – including agricultural and rural development, animal health, environmental and landscape conservation, culture, trade, research and education. Cooperation between many diverse stakeholders is required.

The decline of traditional livestock production systems is significant threat to many livestock breeds. Legislative and policy measures that, for whatever motivation, seek to support this type of production are potentially of importance to the maintenance of AnGR diversity. Countries in industrialized parts of the world are increasingly concerned about the conservation of rural environments and landscapes. There is a trend towards the introduction of regulations and policies aimed at the promotion of extensive farming practices – which tend to require breeds that are well adapted to local conditions. Conversely, in developing countries, food security

and poverty alleviation are key objectives. Although there is often considerable focus on promoting intensive production, a number of countries, particularly in Africa, report measures to regulate and support the sustainability of extensive grazing systems. Given the unique adaptive traits of many dryland breeds and the many pressures faced by these production systems, effective policy and legislation in this field are of great importance. Nonetheless, devising measures that are appropriate to the needs of pastoral groups, who are often politically marginalized, remains a major challenge. Other reported legislative measures that have been put in place to support small-scale livestock production include those related to the provision of credit and the establishment of producer organizations and cooperative groups.

The implementation of specific measures aimed at the conservation of AnGR is greatly dependent on the economic means of the country in question, and this is reflected in the greater density of legislation and policy in the more developed areas of the world. However, it is also clear that the importance of sustainable use and conservation of AnGR has in many cases not been adequately accommodated in the development of legal and policy frameworks at the national level. Inventory and registration systems, for example, are of great importance for the planning and implementation of conservation measures, but many countries report that policy and legislation in this field remains weak. A further step that can facilitate the administration of conservation schemes is the legal definition of criteria for the inclusion of breeds in such programmes, but measures of this type remain rare.

Where regulations related to conservation exist, they are often isolated, and not integrated into a strategy which takes account of the cross-cutting character of the issue. For example, measures aimed at increasing food security often focus almost exclusively on high-output breeds, without an adequate assessment of the potential contribution of local breeds, and without a strategy for their conservation. Another example

¹⁵⁵ Nepal's Veterinary Council Act, 2055 (1999) (FAOLEX).

¹⁵⁶ Law No. 1.052 creating the Animal Health Inspectorate within the Ministry of Agriculture (1950) (Legal Questionnaire, 2003).

is the field of animal health, which is the most highly regulated aspect of livestock management on a global scale. While effective disease control is essential for the use and development of AnGR, restrictions on movement and trade can present problems for AnGR management. Slaughter policies implemented in the event of epidemics pose a potential threat to rare breed populations. It is a matter of concern that throughout most of the world, very little attention has been paid to this threat in the development of legal frameworks and policies for disease control.

The extent to which legal frameworks for the management of AnGR have been put in place at the national level varies greatly. Many countries in Europe have extensive legislation. Conversely, in other regions, in particular in Africa, countries generally seem to rely on policy measures, which may be backed by legal mandates for the implementing institutions. This contrast raises the question of whether the establishment of elaborate legislative instruments regulating AnGR management is the most appropriate objective in developing countries. In some cases, countries clearly indicate that improved legislation is considered necessary. CR Kenya (2004), for example, states that:

“a suitable legal framework is ... required for operationalization of the [existing] policies. Once the right policies and legislation have been formulated, it will be necessary to review and revise them regularly to make them respond to the changes that occur with time.”

Some countries are increasingly relying on market mechanisms or on private institutions for specific aspects of AnGR management, but have only limited legislation in place to regulate the field. It is possible that this could give rise to problems with regards to public goods aspects of AnGR management, and a close evaluation of the need for improved regulation is likely to be necessary. The decision, as to the appropriate solution for a given situation will depend on the political and legislative culture of the country in question, and on the structures available for implementation. In some circumstances, sound

policy decisions and strategies, complemented by a clear legal definition of the competences and duties of institutions, and a well-organized monitoring and evaluation system, might be more effective than an elaborate legal framework.

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