

March 2007



منظمة الأغذية
والزراعة
للأمم المتحدة

联合国
粮食及
农业组织

Food
and
Agriculture
Organization
of
the
United
Nations

Organisation
des
Nations
Unies
pour
l'alimentation
et
l'agriculture

Organización
de las
Naciones
Unidas
para la
Agricultura
y la
Alimentación

Item 3.1 of the Draft Provisional Agenda

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Eleventh Regular Session

Rome, 11-15 June 2007

DRAFT STRATEGIC PRIORITIES FOR ACTION FOR THE SUSTAINABLE USE, DEVELOPMENT AND CONSERVATION OF ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

TABLE OF CONTENTS

	<i>Paras.</i>
I. Introduction	1 - 4
II. Preparatory process	5 - 18
III. Finalization of the <i>Strategic Priorities for Action</i>	19
IV. Guidance sought from the Commission	20

Appendix 1: Draft Strategic Priorities for Action for the Sustainable Use, Development and Conservation of Animal Genetic Resources for Food and Agriculture

**DRAFT STRATEGIC PRIORITIES FOR ACTION FOR THE SUSTAINABLE USE,
DEVELOPMENT AND CONSERVATION OF ANIMAL GENETIC RESOURCES FOR
FOOD AND AGRICULTURE**

I. INTRODUCTION

1. The Commission, at its Ninth Regular Session, agreed that the preparation of *Strategic Priorities for Action* should be a crucial part of the overall process of the preparation of *The State of the World's Animal Genetic Resources for Food and Agriculture*. At its Tenth Regular Session, it requested the Working Group to review the first draft of *The State of the World's Animal Genetic Resources for Food and Agriculture*, which included the draft of the *Strategic Priorities for Action*.¹

2. The Working Group did so at its fourth session, in December 2006. The draft text of the *Strategic Priorities for Action*, as reviewed by the Working Group, is contained in *Appendix 1*. It recommended that the International Technical Conference on Animal Genetic Resources, in Interlaken in September 2007, adopt a *Global Plan of Action for Animal Genetic Resources*, and that the *Strategic Priorities for Action* provide the agenda for action within the *Global Plan of Action*.²

3. The present document describes the process that was followed to prepare the *Strategic Priorities for Action* and outlines the next steps for its finalization and adoption at the International Technical Conference on Animal Genetic Resources, as a major element of a *Global Plan of Action for Animal Genetic Resources*.

4. The Working Group welcomed the establishment of a regionally balanced Friends of the Chair group, and the generous offer of the Government of Switzerland to host this meeting before the Commission met. The Chair of the Working Group hoped that the group might be able to explore how to structure the *Strategic Priorities for Action*, suggest wording to achieve agreement on outstanding matters, and ways and means to reduce duplication. The product of that meeting will be provided to the Commission in the document, *Draft Strategic Priorities for Action – Chair's text*.³

II. PREPARATORY PROCESS

5. The development of the *Strategic Priorities for Action* resulted from the country-driven preparation of *The State of the World's Animal Genetic Resources*, coordinated by the Global Focal Point for Animal Genetic Resources. Several preparatory activities were organised to provide specific inputs for the *Strategic Priorities for Action*.

6. The revised draft *Strategic Priorities for Action*, as presented to the Working Group, at its fourth session⁴, draws on the findings of *The State of the World's Animal Genetic Resources*; on national strategic priorities contained in Country Reports; on regional consultations held; and on

¹ CGRFA-10/04/REP, paragraph 55.

² CGRFA-11/07/3, paragraphs 22 and 26.

³ CGRFA-11/07/Inf.8.

⁴ See *Review of the draft Strategic Priorities for Action for the Sustainable Use, Development and Conservation of Animal Genetic Resources for Food and Agriculture*, CGRFA/WG-AnGR-4/06/4.

various technical inputs, including expert studies and meetings⁵ and the thematic studies prepared for *The State of the World's Animal Genetic Resources*, listed in *Appendix 3* of the document, *Progress in the preparation of the State of the World's Animal Genetic Resources*.⁶ The current draft of the *Strategic Priorities for Action*, as presented to the Commission, took into consideration the comments provided by the Working Group, at its fourth session.

Development and Review of the *Strategic Priorities for Action*

7. In January 2004, the Global Focal Point initiated the analysis of available Country Reports as a basis to prepare a first draft of the *Strategic Priorities for Action*.⁷ In 2004, the Commission considered the first draft of the *Strategic Priorities for Action*, which had been prepared on the basis of the available 133 Country Reports. It noted that it would need to be further developed and structured to include additional inputs, as additional Country Reports were received, and as reports from international organizations were submitted. The Commission stressed the need for a high quality strategic document that would set the stage for policy discussion, while also generating public awareness of the roles and values of animal genetic resources.⁸

8. The Global Focal Point further developed the *Strategic Priorities for Action* using all inputs that were submitted by 31 March 2005. This included 141 Country Reports and 9 reports from international organizations. The main priorities, conclusions and recommendations from Country Reports and reports of international organizations were compiled into a second draft of the *Strategic Priorities for Action*. The second draft provided the first comprehensive global overview of national priorities for the sustainable use, development and conservation of animal genetic resources.

External Review of the *Strategic Priorities for Action*

9. A regionally balanced group of fifteen technical and policy experts undertook an external review of the second draft of the *Strategic Priorities for Action*. The group included international experts and FAO staff from various departments. The Global Focal Point provided the group with questions related to technical and policy aspects of the *Strategic Priorities for Action* to facilitate the review.

Regional Consultations

10. The Commission had recommended during its Tenth Regular Session that FAO undertake regional consultations in 2005 on the second draft of the *Strategic Priorities for Action*.⁹ The objective of the consultations was to review the second draft to determine region-specific priorities, identify funding options and expose gaps where international assistance is required.

11. As financial resources were not available to enable regional meetings specifically dedicated to the review of the *Strategic Priorities for Action*, the Global Focal Point invited nine regional facilitators and National Coordinators in August 2005, to develop a concept for conducting regional consultations using the Internet. They prepared a structure for the consultation (e-mail conferences), and reviewed the assignment of countries to regions and

⁵ See documents, *Report on an expert meeting on sustainable utilization*, CGRFA/WG-AnGR-4/06/Inf. 5; *A strategic approach for conservation and continued use of animal genetic resources*, CGRFA/WG-AnGR-4/06/Inf. 6; and *Breed diversity in dryland ecosystems*, CGRFA/WG-AnGR-4/06/Inf. 9.

⁶ CGRFA-11/07/5.

⁷ CGRFA-10/04/Inf. 9.

⁸ CGRFA-10/04/REP, paragraph 58.

⁹ CGRFA-10/04/REP, paragraph 58.

subregions for the analysis of the *State of the World's Animal Genetic Resources*. The specific regional classification was aimed at facilitating regional reviews of the second draft of the *Strategic Priorities for Action*.

12. The assignment of countries to regions and sub-regions was based on a number of factors, including the production environments, cultural specificities and the distribution of shared animal genetic resources. Future collaboration in the establishment of Regional Focal Points was also considered, as was the experience that had been gained resulting from the convening of *State of the World's Animal Genetic Resources* follow-up sub-regional workshops in 2003 and 2004.

13. The resulting classification distinguishes seven regions with three of them being sub-divided as follows: Africa (East Africa, North and West Africa, and Southern Africa); Asia (Central Asia, East Asia, South Asia, and Southeast Asia); Latin America and the Caribbean (Caribbean, Central America, and South America); Near and Middle East; North America; Southwest Pacific; and Europe and the Caucasus. The e-mail regional consultations were conducted from September 2005 to January 2006. A total of 290 contributions were received from individuals in 61 countries.

14. Reviews of the second draft of the *Strategic Priorities for Action* were also undertaken as part of a number of scheduled international meetings between November 2005 and June 2006. Although these meetings were not specifically organized to review the *Strategic Priorities for Action*, time was made available to obtain the views of meeting participants. At its fourth session, the Working Group was provided with a revised draft for its consideration, based on all the inputs received. It was also provided with separate detailed reports on the national priorities contained in country reports¹⁰, and on the outcomes of regional consultations.¹¹

Review of the Strategic Priorities for Action by the Intergovernmental Technical Working Group on Animal Genetic Resources

15. The Working Group, at its fourth session, undertook a detailed review of the revised draft of the *Strategic Priorities for Action*. It provided a large number of suggestions for consideration by the Commission on both the content and structure of the *Strategic Priorities for Action*, as indicated in *Appendix I* of the current document. Additionally, regional priorities have been included in *Appendix E* of the report of the Working Group. Commission.¹²

16. The Working Group discussed the matter of including the need for financial resources within the *Strategic Priorities for Action*. It agreed that it was appropriate to reflect the need for financial resources at the national level in the *Strategic Priorities for Action*. The Working Group recommended that the Commission and the International Technical Conference on Animal Genetic Resources consider the need for additional financial support.¹³

17. The Working Group welcomed the establishment of a regionally balanced Friends of the Chair group, and the generous offer of the Government of Switzerland to host this meeting before the Commission met. The Chairman of the Working Group indicated that it was his intention to prepare a Chair's Report, which would be provided to the Eleventh Session of the Commission. He hoped that the Friends of the Chair might be able to explore how to structure the *Strategic Priorities for Action*, suggest wording to achieve agreement on outstanding matters, and ways and means to reduce duplication, based on comments provided by the Working Group at its fourth session. The Working Group agreed that its Members be encouraged to provide additional

¹⁰ See *Compendium of priorities from country reports*, CGRFA/WG-AnGR-4/06/Inf. 2.

¹¹ See *Compendium of priorities from regional consultations*, CGRFA/WG-AnGR-4/06/Inf. 4.

¹² CGRFA/WG-AnGR-4/06/7, Appendix E.

¹³ CGRFA/WG-AnGR-4/06/7, paragraph 16.

views on the preparation of the *Strategic Priority for Action* to the Secretariat, to be shared with the Friends of the Chair, prior to their meeting.¹⁴

18. The product of the Friends of the Chair meeting will be provided to the Commission in the document, *Draft Strategic Priorities for Action – Chair’s text*.¹⁵

III. FINALIZATION OF THE STRATEGIC PRIORITIES FOR ACTION

19. The following steps are required to finalize the Strategic Priorities for Action:

- Review of the *Strategic Priorities for Action* by the Commission at its Eleventh Regular Session, and recommendations for its finalization at the International Technical Conference on Animal Genetic Resources.
- Finalization and adoption of the *Strategic Priorities for Action* at the International Technical Conference on Animal Genetic Resources as the agenda for action within the *Global Plan of Action for Animal Genetic Resources*.

IV. GUIDANCE SOUGHT FROM THE COMMISSION

20. The Commission may wish to review and revise, as necessary, the *Strategic Priorities for Action*, and forward them for adoption at the International Technical Conference on Animal Genetic Resources, as the core element of the *Global Plan of Action for Animal Genetic Resources*.

¹⁴ CGRFA-11/07/3, paragraph 19.

¹⁵ CGRFA-11/07/Inf.8.

Appendix 1

**DRAFT STRATEGIC PRIORITIES FOR ACTION
FOR THE SUSTAINABLE USE, DEVELOPMENT AND CONSERVATION
OF ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE**

I. INTRODUCTION

1. [Animal genetic resources for food and agriculture¹⁶ are an essential part of the biological basis for world food security, and contribute to the livelihoods of over a thousand million people. A diverse resource base is critical for human survival and well-being, and the elimination of hunger: animal genetic resources are crucial in adapting to changing socio-economic and environmental conditions, including climate change. They are the animal breeder's raw material and amongst the farmer's most essential inputs. They are essential for sustainable agricultural production. Properly managed, they need never be depleted, for there is no inherent incompatibility between utilization and conservation. The conservation, sustainable use, and the fair and equitable sharing of the benefits from their use, are an international concern and the *Strategic Priorities for Action* provide, for the first time, an agreed international framework for the sector. Promoting the broader use of animal biodiversity will contribute to improved human health and nutrition, and expand opportunities for livelihood diversification and income generation.

**The Global Strategy for the Management of Farm Animal Genetic Resources and the
*Strategic Priorities for Action***

2. In 1990, the FAO initiated the preparation of a comprehensive programme for the sustainable management of animal genetic resources at the global level. In 1993, FAO launched the Global Strategy for the Management of Farm Animal Genetic Resources to guide national, regional and global efforts to strengthen the contribution of domesticated animals and their products to food security and rural development, and to prevent the erosion of animal genetic resources.

3. From 1997, the FAO's inter-governmental Commission on Genetic Resources for Food and Agriculture has guided a country-driven process for the preparation of *The State of the World's Animal Genetic Resources*. In 2001, FAO invited all countries to submit a Country Report on the status and trends of their animal genetic resources; the current and potential contributions of farm animals to food, agriculture and rural development; and the state of national capacity to manage these resources.

4. The Country Reports demonstrate the significant and irreplaceable contribution that the diversity of farm animals makes to the food security and economic development of nations. They show that the full potential of animal genetic resources is far from being realized and confirm the serious erosion of genetic diversity in both developed and developing countries.

5. This erosion has many causes, including changes in production systems, intensive selection, mechanization, the loss of rangeland grazing resources, natural calamities, disease outbreaks, inappropriate breeding policies and practices, the introduction of exotic breeds, loss of animal keepers' security of tenure on land and access to other natural resources, changing cultural practices, the erosion of customary institutions and social relations, the influence of population growth and urbanization, and the failure to assess the impact of practices in terms of sustainability, and develop adequate policies and economic measures. Erosion of animal genetic

¹⁶ Throughout the *Strategic Priorities for Action* the term animal genetic resources refers specifically to animal genetic resources used in or potentially useful for food and agriculture.

resources threatens the ability of farmers to respond to environmental and socio-economic changes, including changing diets and consumer preferences.

6. The *Strategic Priorities for Action* proposes key measures to reverse the ongoing trends of erosion and underutilization of animal genetic resources. The implementation of the *Strategic Priorities for Action* will make a significant contribution to international efforts to promote food security and sustainable development, alleviate poverty, in line with the Millennium Development Goals and other international commitments.

The rationale for *Strategic Priorities for Action* for the sustainable use, development and conservation of animal genetic resources for food and agriculture

7. For the first time ever, *The State of the World's Animal Genetic Resources* provides a comprehensive global assessment of the roles, values and status of animal genetic resources, which highlights the importance of the livestock sector within agriculture. Specific *Strategic Priorities for Action* for the sustainable use, development and conservation of animal genetic resources for food and agriculture are warranted because of their great importance for global food security, and because of the specific features of domestic animal biodiversity as an integral part of agricultural ecosystems.

8. Livestock genetic diversity and options for its utilization are usually discussed in terms of breeds. "Breeds" are rather cultural concepts than physical entities, and the concept differs from country to country. This is a fact that makes characterization at the genetic level very difficult. For sustainable management, diversity needs to be considered and understood at species level, between breeds, and within breeds themselves.

9. Key features of animal genetic resources include:

- The diversity of animal genetic resources is essential to satisfy basic human needs for food and livelihood security. They contribute to human needs by providing meat, milk and dairy produce, eggs, fibre, clothes, resources for temporary and permanent shelter, manure for fertiliser and fuel, draught power, hunting assistance and marketable assets. Genetic diversity defines not only animal breeds' production and functional traits, but also their ability to adapt to local conditions, including food and water availability, climate, pests and diseases. Diverse animal genetic resources – particularly in the developing world – are a key to economic development. Approximately 70% of the world's rural poor depend on livestock as an important component of their livelihoods. The diversity of these resources, and the consequent adaptability of species and breeds to extreme conditions of drought, humidity, cold and heat, makes possible human livelihoods in some of the most inhospitable areas on Earth, from the Arctic and mountain regions to extreme hot and dry areas, where crop production cannot be exclusively depended upon.
- More than 7,000 domestic animal breed populations have been developed by farmers and pastoralists in diverse environments in the 12,000 years since the first livestock species were domesticated. These breeds now represent unique combinations of genes. Thus all animal genetic resources for food and agriculture are the result of human intervention: they have been consciously selected and improved by pastoralists and farmers since the origins of agriculture, and have co-evolved with economies, cultures, knowledge systems and societies. Unlike most wild biodiversity, domestic animal resources require continuous active human management, sensitive to their unique nature.
- In terms of their enormous potential contribution to reducing hunger and poverty, and to sustainable development, animal genetic resources for food and agriculture are under-conserved and under-utilized.
- Countries are highly interdependent, with respect to animal genetic resources. Animal genes, genotypes and populations have spread all over the planet since ancient times,

through the diffusion of agriculture and the prominent role of livestock in human migrations. Animals – horse and camels particularly – were the main tools for raiders and conquerors in many regions, spreading cultures and religions. Animal genetic resources have continued without interruption to be developed and improved by pastoralists and farmers, both inside and outside the historic centres of domestication. Moreover, animal genetic resources have been systematically exchanged for the last 500 years, deepening this interdependence. In global terms, most food and agricultural production systems worldwide depend on livestock originally domesticated elsewhere, and breeds developed in other countries and regions. These unique features of domestic animals need to be taken into account in ensuring the fair and equitable sharing of benefits deriving from them, and in tailoring the development of future policy and regulatory measures.

- Most animal genetic resources are currently maintained *in situ*, by farmers, pastoralist and their communities, as integral components of their agricultural ecosystems, economies and cultures. Domestic animals often play key roles in myths, cultures, religions, traditions and social practices. In addition to the animals themselves, foods of animal origin have strong socio-economic and cultural functions in many societies, in addition to playing important roles in nutrition and diets.
- Livestock resources continue to have this important social, cultural and structural role in indigenous and local communities today: the cultural importance of animals is frequently a key factor in *in situ* conservation.
- Domestic animal breeds provide key agro-ecosystem functions, such as nutrient cycling, seed dispersal and habitat maintenance. Animal genetic resources and animal management systems are an integral part of ecosystems and productive landscapes throughout the world. By moving their herd seasonally, pastoralists connect different ecosystems. Land-based production systems that have both plant and animal components need co-management of the various components of biological diversity, including soils, crops, rangelands and pastures, fodder crops and wildlife.
- The extent and rate of animal genetic resource loss is still difficult to estimate, despite the clearer picture of animal genetic resources that has emerged in the country-driven preparation of *The State of the World's Animal Genetic Resources*. The lack of information hinders decision-making with regard to what to conserve and develop, and how to best use limited funds available for conservation. The base lines from which to measure change are still unclear, and methodologies for characterization, inventory and monitoring have not been standardized. Nonetheless, there are indications that numerous breeds have become extinct, and many more will be lost if countries do not rapidly implement conservation measures. While some nations recognize the need to conserve their national animal genetic resources, the global response has so far been sporadic and inadequate. In particular, many local breeds, particularly those held by poor farmers in harsh environments in developing countries, have not yet been sufficiently characterized. These animal populations probably contain many valuable adaptive traits, and with their extinction before they are well understood, considerable value may be lost for ever.
- Traditional production systems required multi-purpose animals, which, although less productive than high output breeds, may contain valuable functional traits. Modern agriculture has developed specialized breeds, optimizing specific production traits. Modern animal breeders have achieved striking productivity increases in high-external input production systems. Livestock currently contribute about 30% of agricultural gross domestic production in developing countries, with a projected increase to 39% in 2030. Only 14 of the more than 30 domesticated mammalian and bird species provide 90% of human food supply from animals. The five species: cattle, sheep, goats, pigs and chickens, provide the majority of food production, and among these, a small number of

international transboundary breeds¹⁷ account for an ever increasing share of total production. This process leads to a narrowing genetic base, as breeds and indeed species are discarded in response to market forces. In commercial breeds, high selection pressure leads to a narrowing genetic base.

- Policy-makers in many countries, and internationally, are seldom aware of the diverse and significant contributions of animal genetic resources to food and agriculture. The sustainable use and conservation of animal genetic resources has been, and generally continues to be, a low priority in developing agricultural, environmental, trade, and human and animal health policies. The effect has been a failure to invest adequately in essential institutional development and capacity-building.
- Managing animal genetic resources is a complex task because it is necessary to deal both with questions specific to the resources (such as breeding, or the extinction of breeds) and with cross-sectorial matters affecting animal genetic resources, such as animal health measures, economic development and trade standards, and environmental management. Moreover, responsibilities are shared across sectors and institutions, nationally and internationally.

10. Strategic planned conservation, use and development of these resources is essential, but countries face complex challenges in considering how best to formulate relevant national and international policies. Enhancing capacity at all levels is a key element of the *Strategic Priorities for Action*. The *Strategic Priorities for Action* aims to promote a pragmatic, systematic and efficient overall approach, which harmoniously addresses the development of institutions, human resources, cooperative frameworks, and resource mobilization.

11. Activities related to *in situ* conservation, to *ex situ* conservation, and to the utilization of animal genetic resources for food and agriculture, have to date been largely pursued without adequate linkages and coordination: the *Strategic Priorities for Action* aim at improving this situation. A certain loss of local breeds is inevitable, given ongoing changes in livestock production systems in developed and developing countries, and the limited availability of resources for conservation. However, to allow this to be a totally random and unsupervised process means accepting an unevaluated but potentially important risk of the loss of resources of major long-term value. Countries, and the international community, should be conscious of the losses that are likely to happen, and should debate and agree on which losses they are prepared to accept, and what investment is needed to maintain and conserve crucial animal genetic diversity. The international research community should provide scientific guidance for strategic decisions, under conditions of imperfect information.

12. The financial and human resource base for this work is poor, and there are many gaps and inefficiencies. In addition, the capacities and activities of countries and regions to address animal genetic resources are at very different stages of development. The *Strategic Priorities for Action* will provide a basis for a long-term strategy, agreed by the international community, to support and increase the overall effectiveness of national, regional and global efforts for the sustainable use, development and conservation of animal genetic resources, and to mobilize resources, including financial resources, sustainably.

Aims and strategies of the *Strategic Priorities for Action*

13. The *Strategic Priorities for Action* are intended to be a rolling plan, with an initial time horizon of ten years, with provisions for the sustainable use, development and conservation of animal genetic resources, at national, regional and global levels.

¹⁷ FAO has linked breed populations that may belong to a common genepool and may therefore be considered the same breed. These breeds have been termed “transboundary breeds”. Regional transboundary breeds are reported in several countries of one region, and international transboundary breeds are reported in more than one region.

14. The main aims of the *Strategic Priorities for Action* are:
- to promote the sustainable use and development of animal genetic resources, for food security, sustainable agriculture, and human well-being in all countries;
 - to ensure the conservation of the important animal genetic resource diversity, for present and future generations, and to halt the random loss of these crucial resources;
 - to promote a fair and equitable sharing of the benefits arising from the use of animal genetic resources for food and agriculture, and recognize the role of traditional knowledge, innovations and practices relevant to the conservation of animal genetic resources and their sustainable use, and, where appropriate, put in place effective policies and legislative measures;
 - to meet the needs of pastoralists and farmers, individually and collectively, within the framework of national law, to have non-discriminatory access to the genetic material, information, technologies, financial resources, research results, marketing systems, and natural resources, so that they may continue to manage and improve animal genetic resources, and benefit from economic development;
 - to promote agro-ecosystems approaches for the sustainable use, development and conservation of animal genetic resources;
 - to assist countries and institutions responsible for the management of animal genetic resources to establish, implement and regularly review national priorities for the sustainable use, development and conservation of animal genetic resources;
 - to strengthen national programmes and enhance institutional capacity – in particular, in developing countries and countries with economies in transition – and develop relevant regional and international programmes; such programmes should include education, research and training to address the characterization, inventory, monitoring, conservation, development and sustainable use of animal genetic resources.
15. The *Strategic Priorities for Action* are based on the assumption that countries are fundamentally interdependent with respect to animal genetic resources for food and agriculture, and that substantial international cooperation is necessary. In this context, the *Strategic Priorities for Action* were developed on the basis of the following principles:
- A diversity of animal genetic resources will ensure the ability of the livestock sector to meet changing market demand and environmental circumstances, including climate change and emerging diseases. Small-scale farmers and pastoralists require animal breeds that meet local needs and provide employment within rural communities, which are resilient to a variety of biotic and abiotic factors, including extreme climatic conditions, feed availability, parasites and other disease factors. Furthermore, animal genetic resources provide a direct food source in times of crop failure.
 - Because of interdependence, and the growing need of resources from abroad that climate change implies, the conservation of a diverse range of animal genetic resources in countries throughout the world reduces risks on a global basis and strengthens global food security.
 - The base-line characterization and inventory of animal genetic resources, and routine monitoring of populations, are the precondition for breed improvement strategies and programmes and for conservation programmes, and for contingency planning to protect valuable resources at risk.
 - Animal identification and performance recording are essential for the continued improvement of animal genetic resources. Public and private breeders and breeding organizations, and market demand, play a crucial role in this endeavour. In many countries, very little has yet been done in this regard, except for international transboundary breeds.

- The conservation and use of animal genetic resources requires a mixed approach, and both *in situ* and *ex situ* efforts. There is an increasing recognition that, because of the rapid current erosion of animal genetic resources, efficient and cost-effective *ex situ* conservation strategies need to be put in place in the near future, to complement *in situ* conservation. A holistic planning approach to conservation and utilization strategies must seek strategic priorities at the farm, community, breeding organization, national, regional and international levels, to achieve maximum effect, and be sustainable.
- Pastoralists and farmers, individually and collectively, and indigenous and local communities, play a crucial role in *in situ* conservation and development of animal genetic resources. It is important to better understand and support their role in a context of rapid economic and social change, so that they can play an effective function in *in situ* management, and share equitably in the benefits arising from the utilization of these resources. A number of actors and stakeholders can assist livestock keepers and their communities in playing this role: research, extension agencies, the private sector, NGOs and local cooperatives.
- A wide variety of animal breeds supply important ecosystems services in specific landscapes, in particular grazed ecosystems, which is often a strong motivation for their maintenance *in situ*. Such productive links between breeds and landscapes need to be maintained and better managed, through appropriate land use policies and strategies. The few remaining wild relatives of domestic animal species, and feral breeds, also require better protection through improved land-use practices.
- The effective management of animal genetic resources, at all levels, depends on the inclusion and willing participation of all relevant stakeholders. Appropriate participatory processes, that ensure that the interests of various stakeholders are respected and balanced, are required.

Structure and organization of the *Strategic Priorities for Action*

16. The *Strategic Priorities for Action* are often closely related and interlinked. Many of the actions foreseen relate are relevant to more than one priority, in four *Priority Areas*:

1. *Inventory, monitoring and characterization* comprises actions that provide a consistent, efficient and effective approach to the classification of animal genetic resources, which a crucial precondition to conservation and sustainable use.
2. *Sustainable use and development* comprises actions designed to ensure sustainability in animal production systems, with a focus on food security and rural development.
3. *Conservation of animal genetic resources* focuses on the actions needed to preserve the genetic diversity and integrity, for the benefit of current and future generations.
4. *Policies, institutions, capacity building and emerging issues* directly addresses the key questions of practical implementation, through coherent and synergistic development of the necessary institutions and capacities.

17. The relative weight of each Strategic Priority and associated actions may differ significantly for countries and regions. It will depend on the resources themselves (species and breeds), the production systems and environments involved, current management capacities, and programmes underway for the management of animal genetic resources.

18. In each *Priority Area*, the *Strategic Priorities* are broken into *National Level* and *International level* priorities, which, of course, are interlinked. There is a uniform presentation:

- The *Introduction* outlines the needs, on the basis of Country Reports and other information generated in the preparatory process.

- The *Long-term goal* states the final objective to be reached by actions that are proposed. In implementing the *Strategic Priority for Action*, measurable and time-bound goals may be developed, to help the international community to judge success.
19. Each Priority Area contains a set of Strategic Priorities. For each Strategic Priority:
- The *Rationale* draws upon the findings of the preparatory process, and summarizes the reasons why this is a priority.
 - The individual *Actions* follow from the needs, to address the *Strategic Priority*.
20. Some of the *Actions* foreseen will clearly need to involve specific institutions or constituencies. These are not always mentioned by name in the text. The lack of reference to such key partners does not imply their exclusion.]

II. THE STRATEGIC PRIORITIES FOR ACTION

PRIORITY AREA 1: CHARACTERISATION, INVENTORY AND [RISK] MONITORING [OF RISKS AND TRENDS]

Introduction

21. [The state of animal genetic resource inventory, [risk] monitoring [of risks and trends] and characterization activities varies significantly among countries. Some countries do not have data and information systems for animal genetic resources, and others have systems that require significant improvement. This complicates global [risk] monitoring of the status and trends of the resources.
22. Understanding the diversity, distribution, basic characteristics, comparative performance and the current status of each country's animal genetic resources is essential for their efficient and sustainable use, development and conservation. Complete national inventories, supported by periodic [risk] monitoring [of risks and trends] are a basic requirement for the effective management of animal genetic resources. Without such information, some breed populations and unique characteristics they contain may decline significantly, or be lost, before their value is recognized and measures taken to protect them.
23. A good understanding of breed characteristics is necessary to guide decision-making in livestock development and breeding programmes. Information from inventories, [risk] monitoring [of risks and trends] and characterization enables farmers to determine which breed to use under prevailing production conditions. Comparative analysis of the performance of indigenous and exotic breeds – for both production and functional traits – is needed to inform strategic planning. In the absence of such analysis, local breed development may be ignored in favour of the introduction of exotic germplasm, or indiscriminate cross-breeding that will result in the erosion of local breeds.
24. A major difficulty in completing the world inventory of farm animal breeds results from the fact that most populations are not pure breeds with identifiable and stable characteristics, but are the result of multiple crosses of diverse origins. Further research is needed to assess the optimum approaches to dealing with these mixed non-descript populations in inventories.
25. There is a clear need for inter-operative data and information systems, standards and protocols, to facilitate the sharing of data and information on the status of breeds among countries and regions. This is required to globally rationalize the status of breeds, and assist in setting conservation priorities beyond the national level. In many regions, gaps in data and information on the status of breeds, or obstacles to the effective sharing of data and information within and between countries, frustrate joint development of transboundary breeds.

Long term goal

Improved understanding of the status, trends and characteristics of all aspects and components of animal genetic resources, to facilitate and enable decision-making for their sustainable use, development and conservation./

[National Level]**Strategic Priority 1**

[Identify the breeds as necessary and complete,] [Complete] national inventories and establish [risk] monitoring systems [of risks and trends]

Rationale: National data and information systems for animal genetic resources are relatively weakly developed, and lag far behind comparative systems for plant genetic resources. To set and regularly review conservation priorities, as well as to develop sensible breeding programmes, a baseline of regularly updated information on breed status, trends and characteristics, is required for strategic decision-making.

Action:

1. Promote [an integrated approach to] [reliable methods of] characterization, inventory, and [risk] monitoring of [risks to and trends in] animal genetic resources. [Immediate priority should be given to inventory, which is a prerequisite for monitoring]
2. Conduct or complete inventories on the location, population status, trends and characteristics of all breeds, [where necessary].
3. Expand breed [risk] monitoring [of risks and trends] and characterisation, by developing participatory approaches that promote collaboration between livestock keepers and researchers.
4. Establish institutional responsibilities and infrastructure for [risk] monitoring of [risks to and trends in] animal genetic resources.
5. Establish or improve breed registration and [risk] monitoring systems [of risks and trends].
6. [When establishing or developing inventory and [risk] monitoring, [of risks and trends] make use of existing herd books, as well as of registration and identification systems for livestock.]

Strategic Priority 2

Strengthen national human, institutional and research capacity for characterization, inventory, and [risk] monitoring [of risks and trends]

Rationale: Many countries lack the human and institutional capacity to undertake systematic characterisation, inventory, and [risk] monitoring activities [of risks and trends] to underpin policy decisions. Training, as well as exchange of information and experience within and between [regions] [countries] is required.

Action:

1. Establish [and] [or] strengthen research and training programmes in inventory, [risk] monitoring [of risks and trends]

and characterisation, particularly in developing countries and countries with economies in transition.

2. Develop collaborative networks of research institutions, breeding associations, and other public, civil and private actors, within [and between] countries. [FAO and regional focal points should act as catalyst.]

[Merge all capacity-building elements into one priority under priority area 4]

[Combine SP 2 + 5]

[Combine SP 2 + 5 under new title *Strengthen human, institutional and research capacity for characterization, inventory and monitoring*]

[Merge SP 1 + 4]

[Merge SP 1 + 6]

[International Level]

Strategic Priority 3

Develop international technical standards and protocols for characterisation, inventory, and [risk] monitoring [of risks and trends]

Rationale: Cross-national inter-comparability of data is essential to be able to monitor [risks to] [risks to and trends in] animal genetic resources at regional and global levels, in particular transboundary populations, and to set and revise conservation priorities, as well as identify key genetic resources for strategic breeding of such populations. This requires the development and use of standardized methods and protocols for characterisation, inventory, and [risk] monitoring [of risks and trends]. This will facilitate coordinated national reporting in relevant international forums. There is also a need to collaborate in characterization research, to enhance coordination of existing research, and to improve the distribution of the results of characterization studies.

Action:

1. Develop global criteria and indicators for animal genetic diversity, including means for assessing endangerment status, and methods to assess environmental, socio-economic and cultural factors related to animal genetic resources management.
2. Develop technical standards and protocols for phenotypical and molecular characterisation, including methods for the assessment of quantitative and qualitative production traits, nutrition aspects, functional traits and economic valuation. This makes possible the assessment of comparative breed performance in different production environments.
3. Develop protocols for participatory [risk] monitoring [of risks and trends] and characterization of local breeds managed by indigenous and local communities.
4. Strengthen research and development of methods for characterisation, and breed valuation and comparison. [Develop] [FAO should prepare draft] inter-operability protocols for information systems.

5. [It is the national responsibility to decide on breeds being endangered or to be supported and this must not be touched by international standards or protocols.]
6. [International standardization should be based upon ongoing processes, such as the European indicator development process, *Streamlining 2010 Biodiversity Indicators* (SEBI2010) or *Global Biodiversity Information Facility* (GBIF).]

Strategic Priority 4

Strengthen regional and global inventory, [risk] monitoring [of risks and trends] and characterisation

Rationale: For the first time ever, *The State of the World's Animal Genetic Resources* provides a global overview of the diversity, status and trends of animal genetic resources, and of national, regional and global capacity to manage these. Institutional capacity for inventory, [risk] monitoring [of risks and trends] and characterisation should be maintained and strengthened, in order to set and review conservation priorities, particularly for transboundary breeds and breeds at risk, as well as to support strategic breeding programmes at global and regional levels. Global [risk] monitoring [of risks and trends] will also greatly assist in setting up international early warning and response systems (Strategic Priority 6).

Action:

1. Strengthen global and regional information systems for inventory, monitoring and characterisation, in particular for breeds at risk, *inter alia*, through the deployment, maintenance and strengthened use of the *Global Databank for Animal Genetic Resources for Food and Agriculture* held in DAD-IS.¹⁸
2. Undertake cooperative [risk] monitoring [of risks and trends], inventory and characterization activities among countries sharing transboundary breeds and similar productions systems.
3. Strengthen institutional capacity for supra-national activities in this area, establish institutional responsibilities, and develop regional and global networks.

Strategic Priority 5

Strengthen international cooperation to build capacities for inventory, [risk] monitoring [of risks and trends] and characterisation in developing countries and countries with economies in transition /and promote regional [and international] financial and technical responsibilities for the characterization of transboundary and endemic breeds/

[Move Strategic Priorities 5, 12 and 17 to Priority Area 4]

Rationale: There are significant differences within and between regions in national human, institutional, technological and research capacities for inventory, [risk] monitoring [of risks and trends] and characterisation. Developing countries and countries with economies in transition will greatly benefit from information exchange and collaboration with countries with comparative advantages in this area, as well as through multilateral and bilateral [financial] support.

¹⁸ Domestic Animal Diversity Information System DAD-IS, <http://www.fao.org/dad-is/index.asp>.

Action:

1. Strengthen technical cooperation, establish facilities for technology transfer, and enhance educational and other training opportunities, to assist developing countries and countries with economies in transition.
2. [Exchange experiences between developed and developing countries.]

Strategic priority 6**Establish a country-based [global] early warning and response system**

Rationale: Genetic erosion is a problem of national and international concern, and a number of animal breeds are at risk of extinction. In certain cases — such as in armed conflicts, epidemics, droughts and other environmental emergencies — threats to livestock breeds may be sudden and require a short response time. There is a need for a system that will allow the rapid detection of animal genetic resources at risk and an internationally [and nationally] supported response mechanism to avoid losses of animal genetic resources.

Action:

1. [Improve the monitoring of breeds at risk and] enhance emergency response systems to breed endangerment, through the further development of existing national, regional and global [risk] monitoring mechanisms [of risks and trends], the inclusion of early warning criteria in existing databases/, and through the development of response facilities [and insurance mechanisms], at [national,] regional [or global] level, with adequate financial resources [or a global fund] to respond with conservation measures/.
2. [Develop global early warning standards.]
3. [DAD-IS should be strengthened in its resources to gain information from the national databases and monitoring systems to evaluate, condense and distribute this information towards highlighting threats and needs.]

PRIORITY AREA 2: SUSTAINABLE USE AND DEVELOPMENT**Introduction**

26. [The challenge to achieve food security for all is greater now than it has ever been. More efficient use of available resources, along with advanced technologies and improved management offer great scope for raising production and improving the producer's income, while avoiding the depletion of natural resources (including genetic resources) and reducing wastes and environmental pollution.

27. In most developed countries, and some developing countries, there has been extremely rapid progress in the development of breeding and production techniques for major food-supplying livestock species and breeds, over the past 50 years. Intense selection, and husbandry improvement, have resulted in increased meat, milk or egg output in production systems where ample quantities of high-quality feeds and other inputs are provided to specialized breeds, and where production stressors (such as unfavourable climate and disease) are mitigated by capital investment. The rapid progress made — with an average of two percent production increase annually — is proof of the potential of animal genetic resources to further contribute to food security and rural development. However, current development efforts focus primarily on short-

term production, without a strategic assessment of the long-term and collateral consequences. The wider environmental impact of intensive production systems, and the within- and between-breed reduction of genetic diversity, are often ignored.

28. In many cases, developing countries, facing immediate needs to feed their populations, have focused investments and policies on high external input production systems using exotic breeds, rather than on establishing long-term genetic improvement schemes for local breeds. The use of exotic breeds is justified under proper management conditions in high external input production systems, especially near urban areas, where there is growing demand for animal products, and where input supply and services can be sustained. However, in rural contexts, farmers often face difficulties in securing the additional feed and other inputs that exotic breeds require. Moreover, imported breeds have often not reproduced or survived as well as local breeds. Increased attention must therefore be given to the sustainable use and development of local breeds in low and medium external input production systems. The option of maintaining or developing production systems in marginal environments, based on multiple-use animal genetic resources, needs to be addressed in depth.

29. Investment in developing local breeds of livestock will benefit small-scale, resource-poor pastoralists and farmers, and will often contribute to the development of the poorest regions of a country. However, a major obstacle to the further development of indigenous breeds is the lack of national strategies, programmes, and institutional infrastructure, to facilitate genetic and husbandry improvement programmes in low external input systems. Farmers' associations and breed societies do not exist in many developing countries, and pastoralists' and farmers' knowledge of modern breeding methods is often poor. National institutions and research facilities are needed to make animal husbandry and animal health care services, facilities and techniques available to all livestock keepers.

Long term goal

Enhanced use and development of animal genetic resources in all relevant production systems, as a key contribution to achieving food security and alleviating poverty./

[National Level]

Strategic Priority 7

Establish and strengthen national sustainable use policies

Rationale: Most countries lack comprehensive policies to support the maintenance and development of animal genetic resources held within their territories. [Genetic improvement strategies are mostly based on the importation of high-output breeds and on cross-breeding with local breeds. Unless properly managed, this has negative repercussions for the maintenance of diverse animal genetic resources.] Sustainable use policies should balance food security goals and economic development with long-term sustainability and adaptation objectives. Policies are needed to recognize the contributions of livestock keepers, professional breeders and other actors to animal genetic diversity, and to balance the interests, rights and obligations of these stakeholders, in the context of exchange, access, and the fair and equitable sharing of the benefits from animal genetic resources. /It is widely accepted that a broad genetic variability between and within breeds is essential for the present and future need of livestock production. Therefore this broad variability has to be maintained with adequate means. The most realistic approach to maintain diversity in a long term perspective should be to keep a broad diversity of breeds in economic production. This should be the key approach regarding the use of animal genetic resources. Nevertheless, conservation is a necessary and useful

element of action plans. The animal production should be built to satisfy the consumption needs and to utilise the existing feed production in the country. The structure of the production has an influence on the type of animals needed, e.g. hardy, low-input vs. highly specialised, high-input animals. There are countries which are not only satisfying the domestic consumption, but where the animal production is a significant source of export income. These different issues should be recognised when a sustainable genetic improvement programme is founded and evaluated. Crossbreeding may be a cost-efficient way of utilising animal genetic resources and the alternative strategies related to it should be compared. The genetic improvement should be accompanied with changes in production opportunities and technology.]

Action:

1. Review existing national policies, and their impacts on animal genetic resource management.
2. Develop [comprehensive] national policies [, as appropriate] [that incorporate the contribution of animal genetic resources to] [for] sustainable use, [which may include] [including] setting strategic objectives for breeding and sustainable use, [particularly of local breeds]; conducting economic and cultural valuation of animal genetic resources; providing [non-trade-distorting] incentives [and] [, including] developing products of and markets for local and indigenous breeds, as well as [removing incentives that lead to the erosion of animal genetic resources] [reanalyzing existing incentives for their impact on the erosion of animal genetic resources]; and developing approaches to support wide access to, and the fair and equitable sharing of benefits arising from the use of animal genetic resources.
3. [Give absolute priority to all means which lead to the sustainable use of a broad diversity of breeds in situ without need for support from public funds or extra funding.]

Strategic Priority 8

Establish national [long-term] species and breed development strategies and programmes

Rationale: Environmental and socio-economic changes, including demographic changes, changes in consumer demands and preferences, climate change and desertification, require adaptive medium- and long-term strategies for the management of animal genetic resources, to meet the needs of growing rural and urban populations. Breeding programmes should assess impacts on food security and sustainable development under various change scenarios. [The implementation of breed development strategies and programmes towards the present and foreseeable economic needs and markets and consumers are most crucial also for local breeds to be competitive. The organisational structure of breeding programmes play, especially breeders' organizations, breeding schemes, including recording schemes, are crucial for breed development strategies. Long-term breeding goals should take into account the side-effect of selection, which should be reflected in collection of information and setting the breeding goal.]

Action:

1. Assess environmental and socio-economic trends that may require a medium- and long-term revision in animal genetic resource management.
2. Develop realistic scenarios for long-term planning and strategic breeding programmes. Specific elements of such programmes [may] include the enhancement of efforts to improve under-utilised breeds, especially within low to medium external input production systems; assessments of the impact of exotic animal breeds and the development of measures [for producers to develop positive impacts and] to prevent negative impacts; training and technical support for the breeding activities of pastoralist and farming communities; and the integration of improved husbandry [strategies] [practices] in animal genetic resource development programmes.
3. [Strengthen breed development programmes towards the present and foreseeable economic needs of markets and consumption.]
4. [Establish and develop organisational structures of breeding programmes, especially breeders' organisations, breeding schemes including recording systems.]
5. [Implement elements in the breeding programmes for the maintenance of genetic variation within breeds.]
6. [Collect information on other than production traits (health, welfare) to monitor the changes and assess unintentional changes.]
7. [Include back-up storage of genetic variation as frozen semen or embryos in regular breeding schemes.]

Strategic Priority 9**Promote agro-ecosystems approaches to the management of animal genetic resources**

Rationale: The management of animal genetic resources, particularly by indigenous and local communities, takes place in close relationship with the management of crop, pasture and other biological resources, and land and water management in productive landscapes. [Over-utilization can lead to soil and vegetation degradation.] [In extensive systems.] Rapid intensification of production [is driven by a number of factors and] can lead to negative ecological impacts, such as water [and marine] pollution, and the conversion of rangeland to intensive fodder production for high input breeds that need [special feeds] [high feed inputs]. Moreover, agro-ecosystems depend on human management practices, knowledge systems, cultural norms, values and beliefs, as well as social relationships and livelihood strategies. Management decisions and policies on the sustainable use of animal genetic resources should be based on an understanding of human environments and livelihoods, and balance food security and [environmental sustainability] [sustainable use of the environment].

Action:

1. Integration of agro-ecosystem approaches in national agricultural and environmental policies and programmes of relevance to animal genetic resources, [where appropriate,] particularly those

geared towards pastoralist and rural small-holder communities, and fragile environments.

2. Establishment of [technology transfer and] networks to enhance interaction among all the main stakeholders, scientific disciplines and sectors involved.
3. In intensive commercial productions systems, the full environmental costs should be evaluated, and [, where appropriate,] policies adopted to internalize such costs in the production systems.
4. [Where needed, encourage breeders to adopt agro-ecosystem approaches that potentially mitigate negative environmental impacts.]

Strategic Priority 10

Support indigenous and local production systems and associated knowledge systems, of importance to the maintenance and sustainable use of animal genetic resources

Rationale: Over millennia, animal species and breeds have been domesticated, developed and maintained for human use. These resources have co-evolved with the social, economic and cultural knowledge and management practices. The historic contribution of indigenous and local communities to animal genetic diversity, and the knowledge systems that manage these precious resources, need to be recognised, and their continuity supported. Today, the adaptive animal genetic resources management strategies of these communities continue to have economic, social and cultural significance, and be highly relevant to food security in many rural subsistence societies, particularly, though not exclusively, in dry lands and mountainous regions. Measures to support such systems should take their specific ecological and socio-economic and cultural features into consideration.

Action:

1. Assess the value and importance of indigenous and local production systems, and identify trends and drivers of change that may affect the genetic base, and the resilience and sustainability of the production systems.
2. Support indigenous and local livestock systems of importance to animal genetic resources, including through the removal of factors contributing to genetic erosion, and the provision of services and incentives. [Non-trade-distorting incentives] [Incentives] may [be regulatory and or market based, and may] include [micro-credit for women in rural areas,] appropriate access to natural resources [and to the market], resolving land tenure issues, the recognition of cultural practices and values, and adding value to their specialist products.
3. [/[Where appropriate, establish] [Establish] facilities to promote]/ [Promote and enable] exchange and dialogue between relevant indigenous and rural communities and scientists and government officials, in order to integrate traditional knowledge with scientific approaches.

Strategic Priority 11**Strengthen human, institutional and research capacity for sustainable use and development of animal genetic resources**

Rationale: Many countries [lack the] [have a weak] human and institutional capacity to strategically plan, develop and implement policies and programmes for the sustainable use and development of animal genetic resources. Training, as well as exchange of information and experience within and between regions is required.

Action:

1. Establish [and] [or] strengthen information systems, [extension services, education] and training and research programmes on sustainable use and development, particularly in developing countries and countries with economies in transition.
2. Establish [and] [or] strengthen collaborative networks of research institutions, breeding associations, and other public, civil and private actors, within countries.
3. Establish [and] [or] strengthen breeding organisations and foster community based breeding networks and initiatives; set up networks and information systems for research and knowledge exchange for breeding and use.
4. [Urgent establishment of national and Regional Focal Points to back-up this strategy.]

[International Level]**Strategic Priority 12****Strengthen international cooperation [to build capacities] for sustainable use and development [in developing countries and countries with economies in transition] [between countries]**

Rationale: There are significant differences within and between regions in national human, institutional, technological and research capacities for the sustainable use and development of animal genetic resources. Developing countries and countries with economies in transition will greatly benefit from exchange and collaboration with countries with comparative advantages in this area, as well as through multilateral [, regional] and bilateral [financial and] technical support.

Action:

1. Establish [and] [or] strengthen regional [and international] collaboration in the use and development of transboundary breeds, which now often depend on a narrow genetic base, because of advanced reproductive biotechnologies.
2. Strengthen technical cooperation for technology transfer and enhance educational and other training opportunities to assist developing countries and countries with economies in transition to better use and develop animal genetic resources, particularly transboundary breeds.

PRIORITY AREA 3: CONSERVATION

Introduction

30. [The erosion of animal genetic resources is a long-term threat to ensuring food security and rural development. According to *The State of the World's Animal Genetic Resources*, 20 percent of all breeds with reported population data are at risk of extinction, however, the population status of many breeds is still unknown, and the problem may thus be underestimated. Most developing countries and some developed countries do not currently have animal genetic resources conservation strategies or policies in place. Without strategically planned interventions, using both *in situ* and *ex situ* conservation, erosion will continue and may accelerate.

31. The main underlying factors that result in the loss of animal genetic resources are:

- In developed countries: the focus is on a few high-output breeds.
- In developing countries: the transformation of traditional systems into external input-oriented systems, often by using exotic animal genetic resources that displace local breeds. The indiscriminate cross-breeding with exotic breeds is also rapidly compromising the genetic integrity of local populations.

32. Loss of local breeds will cause cultural erosion and diminish the ability of communities to maintain their cultures and livelihoods. Structural changes in the livestock sector may result in a situation where the previous keepers of a breed are no longer in a position to maintain it: in such circumstances, other ways need to be identified to preserve the breed, as part of the global heritage of animal genetic resources.

33. Loss of animal genetic resources reduces opportunities to develop rural economies in all countries. It may also have negative social and cultural impacts, given the long history of domestication and the resulting incorporation of domestic animals into community culture. Replacement of indigenous breeds could result in the loss of products and services preferred by local people, and the conservation of local breeds must therefore be considered within the broader context of sustaining rural communities and their existing economic foundations. Moreover, such losses now may limit future development options, based on animal products and services from specific breeds, that otherwise could have added considerable economic value, as consumer demands become more varied.

34. The loss of local breeds may have negative environmental impacts in some production environments, especially in dry lands and mountainous areas. Many Country Reports indicated the importance of local breeds in contributing to landscape management, vegetation control, and rangeland ecosystem sustainability, preventing the erosion of associated biodiversity.

35. Many breeds at risk are in developing countries, which have limited capacity and resources for designing and implementing conservation programmes. These breeds often possess unique genetic traits that enable their survival in a diverse range of production environments with intense stresses, such as disease and drought.

36. Appropriate conservation measures should ensure that farmers and researchers have access to a diverse gene pool for further breeding. This genetic diversity provides an essential resource to cope with the impacts of climate change, pest and disease outbreaks, and new and growing consumer demands. Strategic and considered investment in the conservation of animal genetic resources is of critical importance and international collaboration is essential to halt the serious decline of these resources.

37. The capacity for *ex situ* conservation varies significantly among countries, but *ex situ* conservation efforts generally for animal genetic resources lag far behind similar efforts for plant genetic resources. The storage of genetic material for breeding purposes is common for

commercial breeds. However, for local animal breeds in developing countries, the collection and storage of animal genetic material has not been adequate. In such cases, it is important to support planned and targeted collecting of animal genetic resources, and to expand *ex situ* conservation activities.

38. Emergency situations for farm animals are caused by a variety of factors such as disease, natural disaster, armed conflict and economic crises. There is significant variation in the preparedness of countries to respond to emergency situations. A lack of financial resources is the main constraint to establishing effective and consistent monitoring and emergency response mechanisms, and in assisting farmers after disaster situations to restore agricultural systems.

Long term goal

Secure the diversity and integrity of the genetic base of animal genetic resources by better implementing and harmonising measures to conserve these resources, both *ex situ* and *in situ*, including in the context of emergencies and disasters./

[National Level]

Strategic Priority 13

Establish national conservation policies

Rationale: Most countries lack comprehensive policies for the conservation of animal genetic resources. Such policies should serve to ensure the maintenance of animal genetic resources with direct values for human use, including production, ecological, social and cultural values, as well as option values for future use and adaptation. Both production and functional traits should be taken into consideration in setting conservation priorities [, so that the long term goal of conservation schemes should be the profitable use of a breed]. [Indiscriminate cross-breeding, changes in production systems and consumer demands, environmental change and, to an increasing extent, emergency responses to epidemics, are some of the drivers of the] [The] erosion of animal genetic resources [has complex drivers and cannot be halted by one simple solution]. A combination of [linked] *in situ* and *ex situ* measures is necessary. [And the limited financial resources could lead the countries to have to define conservation priorities.]

Action:

1. Set and regularly review conservation priorities and goals.
2. Assess factors leading to the erosion of animal genetic resources and formulate [adapted] policy responses /, including for the control of indiscriminate cross-breeding of [valuable] local breeds [of present or potential value] /. [Establish an information system on indiscriminate cross-breeding as well as different gene banks to allow countries to make an appropriate choice in their improvement programmes]
3. Establish institutional structures [, gene banks] and policies, [as appropriate,] [including at regional level,] including specific measures to conserve breeds at risk of extinction, and to prevent breeds from becoming at risk. A combination of [linked] *in situ* and *ex situ* measures is necessary.
4. Provide and catalyze [non-trade-distorting] incentives for producers and consumers to support conservation of animal genetic resources.

Strategic Priority 14**/Establish [and] [or] strengthen/ [Promote and encourage] *in situ* conservation programmes [and strategies]**

Rationale: *In situ* conservation measures allow for the maintenance and adaptive management of animal genetic resources in productive landscapes. *In situ* measures facilitate continued co-evolution in diverse environments, and avoid stagnation of the genetic stock. *In situ* conservation measures are best based on agro-ecosystem approaches and, ideally, should be established through economically and socially profitable sustainable use. However, in some instances this can only be achieved after initial investments in creating markets and in product development. In cases where this is not possible, direct support, including direct payment for the *in situ* conservation of animal genetic resources, [as well as agro-environmental services,] may be necessary.

Action:

1. Set and regularly review *in situ* conservation priorities and goals.
2. [Develop and implement] [Encourage the development and implementation of] national [, and regional] *in situ* conservation [strategies and] programmes for breeds and populations that are at risk. [Such measures] [This] may include [support, either directly for breeders of threatened breeds, or] [non-trade-distorting] measures to support agricultural production systems [and] [that manage] areas of importance to breeds at risk, the encouragement of breed organizations, community-based conservation organisations, non-governmental organizations and other actors to participate in conservation efforts.

Strategic Priority 15**[Establish and strengthen] [Promote and encourage] *ex situ* conservation programmes [and strategies]**

Rationale: *Ex situ* conservation measures provide back-up insurance against losses of animal genetic resources in the field, either through erosion or as a result of emergencies. *Ex situ* measures are complementary to [, and should be linked to,] *in situ* measures. *Ex situ* collections can also play an active role in strategic breeding programmes.

Action:

1. Set and regularly review *ex situ* conservation priorities and goals.
- 1 *bis*. Establish or strengthen [national and regional] facilities for *ex situ* cryogenic storage.
2. Establish modalities to facilitate use of genetic material stored in *ex situ* gene banks [, confirming intellectual property rights of original owners].
3. [Develop and implement measures to back up and protect gene banks from disease outbreaks and other threats by filling gaps in *ex situ* collections, and establishing backup samples.]

OR

[3 *bis* – Identify and fill gaps in *ex situ* collections.]

AND

[3 *ter* - Develop and implement measures to protect gene banks from disease outbreaks and other threats, including by establishing back-up samples.]

4. Develop procedures for replenishment of genetic material taken from gene banks, by systematically developing links with live populations, or establishing *in vivo* populations of breeds at risk at off-farm locations, such as zoos and parks.

Strategic Priority 16

Strengthen human, institutional and research capacity for the conservation of animal genetic resources

Rationale: Many countries [lack] [have a weak] human and institutional capacity to strategically plan, develop and implement policies and programmes for the *in situ* and *ex situ* conservation of animal genetic resources. Training, [technology transfer] as well as exchange of information and experience within and between regions is required.

Action:

1. Establish [and] [or] strengthen information systems, training [, technology transfer] and research programmes, particularly in developing countries and countries with economies in transition.
2. Establish [and] [or] strengthen collaborative networks of research institutions, conservation organisations, and other public, civil and private actors, within countries.

[International Level]

Strategic Priority 17

Strengthen international cooperation to build capacities for conservation in developing countries and countries with economies in transition

Rationale: There are significant differences within and between regions in national human, institutional, technological and research capacities for the conservation of animal genetic resources, both *in situ* and *ex situ*. Developing countries and countries with economies in transition will greatly benefit from exchange and collaboration with countries with comparative advantages in this area, as well as through multilateral [, regional] and bilateral [financial] and technical support. International action is particularly required for endangered breeds.

Action:

1. Strengthen technical [and financial] cooperation for technology transfer and enhance educational and other training opportunities to assist developing countries and countries with economies in transition to better conserve animal genetic resources.
2. [Mobilize resources and obtain financial commitments to support] [Help put in place to support] *ex situ* backup systems to protect against the risk of emergency or disaster scenarios.

/Strategic Priority 18

Develop and implement regional and global long term conservation strategies

Rationale: There are considerable numbers of regional and international transboundary breeds. Collaboration for *in situ*

conservation is desirable for regional transboundary breeds and for transhumant livestock populations held by pastoralist communities that cross national boundaries. To ensure the highest efficiency and cost-saving in implementing *ex situ* conservation measures, regional and global strategies and facilities may be preferred over the duplication of national efforts, providing that modalities are developed for sharing facilities among countries [and that the conservation policy remain part of national sovereignty]. In the medium- and long-term, and taking into account likely environmental and socio-economic change, as well as disasters and emergencies, it is likely that international interdependence with regard to animal genetic resources will increase. This provides further cause to the international community to collaborate on conservation measures, for local, regional and international transboundary breeds, under fair and equitable arrangements for storage, access and use of animal genetic resources. [Regional and global cooperation should be based on national efforts, but should not replace them.]

Action:

1. [Help countries to develop] [Develop] and implement conservation plans for [trans-boundary] breeds and populations, combining *in situ* and *ex situ* measures.
2. Establish integrated support arrangements to protect breeds and populations at risk from emergency or other disaster scenarios, and to enable restocking after emergencies [, in line with the national policy].
3. Establish [regional and] global network[s] of gene banks for animal genetic resources and [streamline] [harmonize] approaches to conservation in gene banks and to facilitate exchange.
4. [Establish] [Facilitate the establishment of] core collections of genetic diversity for each species [between countries].
5. [Encourage the establishment of regional gene banks for developing countries that don't have sufficient means] /

Strategic Priority 19

Develop approaches and technical standards for conservation

Rationale: *In situ* and *ex situ* conservation methods for animal genetic resources are still under development. Particularly in the area of *ex situ* conservation, there is a considerable need for standardised methods and technologies.

Action:

1. Undertake research to develop [, or standardize when necessary,] [in situ and ex situ methods and technologies [, including for conservation breeding].
2. Disseminate knowledge, technologies and best practices.
3. [Base conservation decisions increasingly upon genetic indicators, in addition to phenotypic aspects.]
4. [Review sanitary standards as to their impact on accessibility of the conserved genetic resources.]

PRIORITY AREA 4: POLICIES, INSTITUTIONS AND CAPACITY BUILDING

Introduction

39. /In many cases, national policies and regulatory frameworks for animal genetic resources are still partial and ineffective. Policy and legislative development is required to address the dynamics that are shaping the sector, and deal with increasingly complex emerging issues, such as an increasing focus on consumer affairs, food safety and food standards, response to diseases (animal diseases proper and animal diseases that can pass to humans), the humane treatment of animals, increasingly sophisticated biotechnology, as well as the assessment and mitigation of the environmental impact of livestock operations. A further area that requires development is the framework for the exchange of animal genetic resources among countries, including the trade and animal health regulations that affect such exchange. Policy development should take into account the increasing role of intellectual property rights in the sector, and the need to secure fair and equitable benefit-sharing, the rights of indigenous and local communities, particularly pastoralists, and the role of their knowledge systems.

40. In developing countries an increasing demand for animal production is driving rapid structural change in the livestock sector. Without proper management, including spatial and physical planning aspects as cities expand into previously agricultural lands, there will be major risks for human health and the sustainability of production. Social and economic policies need to aim at ensuring equity for rural populations in the process of change, so that they are enabled to build up, in a sustainable way, their productive capacity to supply goods and services of increasing quantity and quality to expanding national economies, and meet growing consumer demands. In a time of rapid change and growing privatization, national planning will also need to ensure the long-term supply of public goods, such as public health, biodiversity maintenance, and clean air and secure water supplies. There will inevitably be trade-offs between different national policy goals. The management of animal genetic resources will need to be balanced with the other goals, and short- and long-term policies are required for the sector, in the larger cross-sectorial planning framework.

41. In developing countries, in particular a lack of trained personnel – both in terms of numbers and in terms of skills to address animal genetic resource management in a time of rapid social and economic change – is a major impediment to developing and implementing animal genetic resource policies, strategies, programmes and projects. Education and training in order to build sustainable capacity in all priority areas is required.

42. Research at national and international level in all aspects of animal genetic resources management needs to be strengthened. The role of the National Agricultural Research Systems (NARS) and their support by the CGIAR system is crucial in this context.

43. Facing these major challenges, will require the development of a strong and diverse skills base. In many developing countries, in particular, a lack of human capacity and financial resources is a major obstacle to developing the necessary institutions, and planning and implementing a strategic approach to using, developing and conserving animal genetic resources. For this reason, and in order to achieve sustainable use, development and conservation of their animal genetic resources, many countries will need to devote particular attention to establishing and building up the relevant institutions, to adopting and implementing appropriate policies and effective regulatory frameworks, and to building the human capacity they need.

44. National Focal Points for animal genetic resources – established in the context of the Global Strategy – are a key institutional element through which to build and maintain networks for the management of animal genetic resources. Most countries have established a National Focal Point for animal genetic resources. Serious human and financial resources constraints have made their establishment difficult, and threatened their continuity. Cooperation between countries is needed to set up Regional Focal Points and develop regional networks.

45. Networks are important in linking stakeholders, and in supporting institutional development and capacity-building. In some countries, where they are well developed, they draw upon the support of active non-governmental organizations, such as breeders' associations, which design, plan and implement animal genetic resource programmes and action plans.

46. In addition to developing national planning capacity, popular awareness of the importance of animal genetic resources needs to be developed, in order to promote investments in developing national animal genetic resources. In many instances to date, livestock development has focused on deployment of exotic breeds, rather than the development and conservation of local breeds. Consumers will need to understand and support efforts to conserve and use the local breeds, rather than over-reliance on transboundary breeds. In many developed countries, the share of high-value products, linking back to specific breeds, is contributing to the maintenance of animal diversity. Cultural identity in developing countries, often expressed in food preferences, can be the basis for a growing awareness of the value of diverse breeds, and underwrite long-term economic development, including for small farmers and currently marginal communities.

47. Awareness-building at the international level will also be a key factor in mobilizing popular support and international collaboration for the implementation of the *Strategic Priorities for Action*.

Long term goal

Established cross-cutting policies and legal frameworks, and strong institutional and human capacities to achieve the successful medium- and long-term planning for livestock sector development, and the implementation of national programmes for the long-term sustainable use, development and conservation of animal genetic resources./

[National Level]

Strategic Priority 20

[Continued review] [Review] and develop policy and legal frameworks for animal genetic resources

Rationale: A range of policies and legal instruments have direct or indirect effects on the use, development and conservation of animal genetic resources. These often pursue, in an uncoordinated manner, different objectives, such as economic development, environmental protection, animal health, food safety, consumer protection, intellectual property rights, genetic resource conservation, and access to and equitable sharing of benefits arising from the use of animal genetic resources. Coherence between these instruments and policies is needed, without compromising their objectives, or the key objective of food security, and taking into account the distinctive features of animal genetic resources that need distinctive solutions. Trade and health regulations, intellectual property considerations, and [means for access and benefit-sharing] [access and benefit-sharing regulations], all need to be taken into account. Legal instruments and policies may also provide for measures and [non-trade-distorting] incentives that actively support the use, development and conservation of animal genetic resources.

Action:

1. Review existing national policies and regulatory frameworks, with a view to identifying any possible [negative] effects they may have for the use [, especially with regard to the rights of local communities keeping livestock], development and conservation of animal genetic resources.

2. [Develop] [Consider] measures to limit [such] [any negative] effects, through policy or legislative changes, or adjustments at the level of implementation, taking into account the need to balance the goals and objectives of the relevant legal instruments and policies, and the interests of different stakeholders.
3. [Help countries develop] [Develop] [Consider] policies and legal measures, as appropriate, to actively support the use, development and conservation of animal genetic resources, and the harmonisation of national laws in this field with [international instruments] and internationally agreed policies.

Strategic Priority 21

Establish [and] [or] strengthen [national institutions] [National Focal Points] for planning and implementing animal genetic resources measures, for livestock sector development

Rationale: Increasingly complex issues are emerging within the livestock sector that require balancing of the interests of a variety of stakeholders, and the active promotion of the generation of public goods that may otherwise cease to be produced in a time of rapid and unregulated change. Consumer affairs, human health matters and the management of new biotechnologies, as well as physical and spatial planning of animal production in the context of urban expansion and protected areas, need to be integrated into national planning in a holistic manner.

Action:

1. Analyse national capacity (human skills and institutions) [for animal genetic resources for food and agriculture] [to support] [in support of] holistic planning of the livestock sector, [taking into account consumer concerns].
2. Develop [intervention] tools [, as appropriate,] for national planners to shape the future development of the livestock sector in accordance with national priorities, including in relation to the deployment of animal genetic resources, and the effects of animal production systems on the environment.
3. Promote coordination and synergy between the different authorities dealing with various aspects of planning, within and across ministries, as well as with other actors, including research and education, civil society and private stakeholders, and ensure participation of key stakeholders in the process.
4. Establish [gene banks] [and] [or] strengthen fully functional National Focal Points for animal genetic resources.
5. Develop strong national co-ordination [between national focal points, breeding industry, administration, NGO's, etc.] networks [and advisory committees].

Strategic Priority 22

Establish [and] [or] strengthen educational and research facilities

Rationale: Research and education needs strengthening in all areas of management of animal genetic resources [in most countries, in particular in developing countries and countries with economies and transition]. Establishing, strengthening and maintaining research and education institutions is key to building national capacities to plan

and implement priority activities for the sustainable use, development and conservation of animal genetic resources.

Action:

1. Identify the [short-,] medium- and long-term needs for human resources, and promote the formation of the relevant cadres, nationally, or through international training.
2. Review national training capacities, in relevant fields, and establish targets for training to build the national skill base.
3. Establish [and] [or] strengthen [, in partnership with other countries, as appropriate,] relevant research [, training] and extension institutions, including national [and regional] agricultural research systems, to support efforts to use, develop and conserve animal genetic resources.

Strategic Priority 23

Raise national awareness of the roles and values of animal genetic resources

Rationale: Both within the livestock sector and in other sectors affecting the livestock sector, including environmental and broader agricultural and development policies and practice, there is a considerable need to raise awareness of the important roles and values of animal genetic resources, the specific characteristics and products and services deriving from local breeds, and the factors impacting on their maintenance and use. Such national awareness building should draw attention to the specific features of the livestock sector, and should seek to mobilize support for public and private initiatives for the sustainable use, development and conservation of animal genetic resources.

Action:

1. Raise awareness among [government policy makers and] all major stakeholders, within the livestock sector and in related sectors, of the important roles and values of animal genetic resources, their specific characteristics and the subsequent special policy needs for their sustainable use, development and conservation, [including the rights of livestock keeping communities,] through the provision of targeted, effective information through media, public events and other means.

[International Level]

Strategic Priority 24

Review and develop international policies and regulatory frameworks

Rationale: International policies and regulatory agreements may directly or indirectly affect the use of animal genetic resources for food and agriculture. The dominant policies and frameworks that affect the development of the animal genetic resources sector are often general, and deal with such matters as economic development, trade standards, environmental protection, food safety, access and benefit-sharing and intellectual property. Sector-specific international agreements include animal health standards and food standards for animal products. It is important to ensure coherence of national policies and frameworks with international instruments to which countries are parties, which impact upon their ability to

exchange, use and conserve animal genetic resources, and trade in animal products.

Action:

1. Review existing [and inform countries on] international agreements that impact upon the use, development and conservation of animal genetic resources, with a view to ensuring that the international policies and regulatory frameworks take into account the special importance of animal genetic resources for food and agriculture for food security, and the distinctive features of these resources needing distinctive solutions [, especially with respect to patenting], and the needs to balance the goals and objectives of the various agreements, as well as the interests of regions, countries and stakeholders.
2. [Consider the need for and modalities of new initiatives, or internationally agreed policies to actively support the use, development and conservation of animal genetic resources.]
3. [Consider and keep, including through livestock keepers' rights, the intellectual property rights of original owners of animal genetic resources in all aspects.]

Strategic Priority 25

Coordinate the Commission's efforts on Animal Genetic Resources with other International Forums

Rationale: The Commission on Genetic Resources for Food and Agriculture is FAO's standing inter-governmental forum where countries discuss policies and sectorial and cross-sectorial matters related to the conservation and sustainable use of genetic resources for food and agriculture. Other international organisations and forums regularly discuss issues and develop policy and regulatory measures that directly or indirectly affect the management of animal genetic resources and the roles and interests of the various stakeholders in the livestock sector. Such forums include the CBD, WIPO, WTO, OIE, and *Codex Alimentarius*. There is a need to [ensure] [enhance] synergy and harmony between such processes.

Action:

1. Through the work of the Commission on Genetic Resources for Food and Agriculture, develop cooperation and strengthen the involvement and contributions of international organizations and forums in supporting the conservation, sustainable use and development of animal genetic resources.
2. [Ensure coordination at national and regional level among donors on animal genetic resources]

Strategic Priority 26

Establish [and] [or] strengthen international [and regional] information sharing, research and education

Rationale: Established international [and regional] research and education institutions, including in the CGIAR system, provide major public goods through research and capacity-building, as well as through information systems, of relevance to animal genetic resources. FAO, through its technical programmes, also contributes actively to this work.

Action:

1. Establish [and] [or] strengthen international [and regional] research and capacity-building, in particular to assist developing countries and countries with economies in transition to better use and develop animal genetic resources.
2. Continue to develop the FAO Domestic Animal Diversity Information System (DAD-IS), as a global communication tool and clearing-house mechanism for animal genetic resources.
3. Develop standards for reporting on the status of national animal genetic resources within the *Strategic Priorities for Action* that may also assist governments in relevant reporting in other international forums, to reduce the overall reporting burden.
4. [Encourage the development of national databases.]

Strategic Priority 27**Establish Regional Focal Points and strengthen international networks**

Rationale: The management of transboundary breeds and populations, as well as specific regional socio-economic, cultural and environmental characteristics, provide a rationale for co-ordination and collaboration at the regional level. Investment in joint activities (such as gene banking) may often be more efficient and cost-effective than the multiplication of overlapping national activities.

Action:

1. [Establish and maintain] [Support the establishment of country driven] Regional Focal Points for animal genetic resources.
2. Establish [and] [or] strengthen and maintain regional networks for the use, development and conservation of animal genetic resources.
3. Link regional activities on animal genetic resources to regional [economic] organisations.
4. Maintain and strengthen the Global Focal Point, to promote international networking and collaboration.

Strategic Priority 28**Raise [national, regional and] international awareness of the roles and values of animal genetic resources**

Rationale: There is a need to raise awareness – including within environmental and broader agricultural and development institutions and forums, and among other stakeholders, such as donors and civil society – of the important roles and values of animal genetic resources, their specific characteristics and the consequent needs for sustainable use, development and conservation.

Action:

1. Support [national, regional and] international campaigns to raise awareness of the status of animal genetic resources for food and agriculture, and seek to develop wide support at government and institutional level, as well as among the general public.

[Strategic Priority 29**Strengthen efforts to mobilize resources, [including financing], for the conservation, sustainable use and development of animal genetic resources**

Rationale: Global efforts to mobilize resources for the conservation, sustainable use and development of animal genetic resources, both nationally and internationally, fall far short of the needs [, and of the level of resources devoted to general biodiversity conservation, or to plant genetic resources for food and agriculture]. The success of the *Strategic Priorities for Action* will depend on the [increased] mobilization of resources, in line with needs identified [, in balance with other priorities].

Action:

1. Enhance efforts to assist stakeholders [and government] in the design of programmes and policies for the conservation, sustainable use and development of animal genetic resources, [able to secure adequate] [with the aim of securing adequate] funding, particularly for developing countries and countries with economies in transition.
2. [Ensure sustained commitments to the relevant international institutions.]
3. Develop a Follow-up Mechanism or Follow-up Mechanisms for the implementation of the *Strategic Priorities for Action* [, within the existing structure provided by the Global Strategy] [, within the existing structure provided by the Global Focal Point].

/