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DRAFT REPORT ON STRATEGIC PRIORITIES FOR ACTION

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DRAFT REPORT ON STRATEGIC PRIORITIES FOR ACTION

I. INTRODUCTION

1. In agreeing to the process for preparing the first Report on the State of the World's Animal Genetic Resources (first Report), the Commission asked that a Report on Strategic Priorities for Action should be prepared for their consideration in 2004, and that the basis for this report would be priorities identified in Country Reports. The need for the Report on Strategic Priorities for Action was based on the experience gained from the preparation of the first Report on the State of the World's Plant Genetic Resources. This experience suggested that priority actions would emerge from the Country Report process and that immediate action to advance some of these priorities prior to completing the overall State of the World process would be extremely advantageous. FAO has received 133 Country Reports by June 2004, many of which contain clear priorities for national, regional and global action to be taken to maintain and enhance the contribution of animal genetic resources to food and agriculture, providing a basis for immediate action.
2. This document is an attempt to synthesize the priorities for action that are contained in the 133 Country Reports submitted to FAO and contributions from two non-governmental organizations. A full list of submitted Country Reports is found in document CGRFA-10/04/9. A preliminary analysis of priorities for the utilization and conservation and for international co-operation is the main focus of the document, which in each section includes a brief description of the problems, identification of gaps and assessment of factors limiting the optimum utilization, development and conservation of animal genetic resources; and the need for and possible modalities for follow-up action, including financial and technical assistance, policy development and awareness and education building. The Commission should note that this document has been prepared by the FAO Secretariat based on an internal review of the Country Reports that were submitted by 30 June 2004. This document has not yet been peer reviewed, nor was there sufficient time to permit members of the Intergovernmental Technical Working Group on Animal Genetic Resources to review and comment on it prior to the Tenth Regular Session of the Commission.

II. BACKGROUND

3. Genetic resources are among the most valuable assets that a country holds. Farmers and breeders have successfully selected animals for a variety of traits and production situations, making it possible for humans to survive in a wide range of environments, from the hot-humid tropics to arid deserts, extremely cold arctic and mountainous regions. Domestic animals contribute to food and agriculture in many ways, providing meat, milk products, eggs, fibre, and fertilizer for crops, manure for fuel, and essential draught power. They are extremely important economic resources that reduce farmers' risk exposure, generate employment, and even-out seasonal farm labour demands. It is estimated that directly and indirectly, domestic animals supply 30 to 40 percent of the total value of food and agriculture production.
4. Country Reports have reaffirmed the essential contribution of livestock to food security, economic development and cultural diversity. In many instances, countries noted the important inter-relationships between livestock production and crop production, and between livestock production and rangelands.

Sustainable Development

5. The challenge to achieve food security for all is greater now than it has ever been. Options for increasing food production for the approximately 800 million people suffering from hunger and malnutrition are limited. Most lands suitable for food production are already utilized, and thus increased agricultural output will not be achieved, in most countries, by expanding the agricultural land base. Increasing outputs through increased inputs is possible for some countries, but is generally not an option for many developing countries, especially the least developed ones.

6. Country Reports indicate that improved use and development of animal genetic resources is a viable option in many countries for enhancing the contribution of farms animals and their products to both food security and rural economic development. To realize this potential, use and development of animal genetic resources must be effectively planned, which is currently not the case in many countries. Information contained in Country Reports notes that both locally adapted breeds and exotic breeds have a role to play in further contributing to efforts to achieve food security and sustainable development. However, Country Reports also stress that capacity building is required to ensure breed use and development is strategically planned to ensure that development objectives are consistent with local needs and conditions. This is essential to achieve long-term sustainability, especially in low-input and medium-input production environments that often characterize conditions in developing countries.

Conserving Animal Genetic Resources

7. Despite the essential contribution of farm animals to agriculture, animal genetic diversity is rapidly eroding. Surveys undertaken by the Food and Agriculture Organization of the United Nations (FAO) have determined that many breeds of livestock have become extinct, and that 35% of all remaining mammalian breeds and 63% of avian breeds included in the survey are currently at risk of extinction, as documented in the World Watch List.

8. Conservation of animal genetic resources is essential to enable farmers to adapt to changing environmental conditions and consumer demands. Variation in environmental conditions such as disease outbreaks, drought, floods and climatic anomalies, as well as changes in consumer preferences is inevitable. It is therefore in the best interest of societies to ensure that farmers and breeders have access to the widest possible range of animal genetic resources so that they can effectively respond to change. It is impossible to predict the nature of the change, but change is certain, and the livestock sector must not be left without its animal genetic diversity which represents an insurance policy.

Critical Challenges

9. In many ways, sustainable development of animal genetic resources is at an important crossroads. Countries must decide on how best to use both locally adapted and exotic animal genetic resources; how best to achieve sustainable use of their production systems; what genetic resources need to be conserved; and what are critical capacity building needs for their animal genetic resources sector. Decisions regarding the use of animal genetic resources taken over the next decade will have profound implications over a much longer period of time.

10. A solid foundation of data and information on animal genetic resources is essential to guide development efforts in the livestock sector. Institutional development is also important so that countries can better plan and use information and technologies. Training is required to increase understanding of the available animal genetic diversity, of the potential to use and develop these resources within sustainable production systems, and of best management practices integrating traditional practices with new approaches and technologies. Meeting these challenges will require significant investments in human resource development and infrastructure, a solid

data and information base to support decision-making, and enhanced global awareness of the multiple roles and values of farm animals.

Establishing the foundation for the better management of animal genetic resources

11. FAO has been leading efforts to sustainably use, develop, and conserve animal genetic resources, and since 1993 has been engaged in the preparation of the Global Strategy for the Management of Farm Animal Genetic Resources (Global Strategy). The Global Strategy is intended to serve as a strategic framework to guide international efforts in the animal genetic resources sector.

12. In 1997, the Commission on Genetic Resources for Food and Agriculture (the Commission) established a subsidiary Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture. The Working Group was given a mandate to provide recommendations to the Commission on the further development of the Global Strategy. It met for the first time on 8-10 September 1998, and recommended that *FAO co-ordinate the development of a country-driven Report on the State of the World's Animal Genetic Resources, to provide an assessment of countries animal genetic resources programmes and the state of domestic animal resources*. In 1999, the Commission, noting that the erosion of animal genetic resources was occurring and was a threat to global food security, endorsed the recommendation of the Working Group, and preparation of the first *Report on the State of the World's Animal Genetic Resources* (first Report) was initiated by FAO.

Country Reports

13. The first critical step in the process for developing the first *Report* has been the preparation of Country Reports. Through Country Reports, countries have:

- Reported on the status and trends of animal genetic resources, and their current and potential contributions to food, agriculture and rural development.
- Provided an assessment of the state of the country's capacity to manage animal genetic resources in order to determine priorities for future capacity building.
- Identified national, regional and global priorities for action in the field of sustainable utilization and conservation of animal genetic resources and related requirements for international cooperation.

14. Section III attempts to summarize the main "Strategic Priorities" that have emerged from the analysis of the Country Reports.

Organization of the Report on Strategic Priorities for Action

15. The syntheses of priorities from Country Reports in this document are presented under the following four main subject areas.

- i. Improved understanding of animal genetic diversity;
- ii. Sustainable use and development of animal genetic resources;
- iii. *In situ* and *ex situ* conservation;
- iv. Improving capacity to use, develop and conserve animal genetic resources.

16. Each section contains a set of Strategic Priorities for Action to provide the Commission with an overview of priority needs as identified by countries. The strategic priorities for action

are a response to the common needs to advance sustainable utilization and conservation of animal genetic resources. They should not be seen, however, as necessarily relevant to all countries. Countries will need to consider them in the context of the development of their national policies and their national needs.

III. STRATEGIC PRIORITIES FOR ACTION

i. Improved understanding of Animal Genetic Diversity

17. Research is essential to improve basic understanding of animal genetic resources and to determine opportunities to better use these resources. Some priorities for research that were identified as being common to several local breeds from many countries include the estimation of actual population sizes (including the adoption or development of appropriate methodologies), the characterization of the native environment, identification of adaptive traits, determination of the products provided by each breed, quantitative estimation of productive and reproductive parameters, description of putative tolerance to major diseases and environmental stress, and prediction of potential gains in productive or reproductive levels under improved husbandry conditions.

18. Many Country Reports, especially from developing and transition countries, underlined the need to obtain accurate descriptions of indigenous breeds as part of national livestock improvement programmes in order to guarantee that the breeds with the most promising characteristics are given priority in conservation programmes and are available for future utilization. Some Country Reports referred to the need to update the existing preliminary information and description of all types of livestock as a basis for future breeding efforts. Traits like adaptability, body conformation, utility maintenance and the effect of different environmental conditions on productive and reproductive performance of many breeds need to be collected.

19. Characterization of animal genetic resources in developed countries also present gaps but these are generally of a more sophisticated nature. Basic field survey and phenotypic description activities have mostly been accomplished. The focus is presently shifting to molecular characterization of breeds with a dual purpose: establish breed standards (and correspondingly determine if some groups of animals have enough degree of kinship to be considered different breeds and to be worthy of distinct conservation efforts), and searches for quantitative trait loci in order to determine associations between specific genetic markers and corresponding differences in production or reproduction levels. There is also a longstanding need to provide a definite characterization of important traits in endangered breeds which may be accomplished if priorities are set that are based on the future importance of each breed.

20. Country Reports indicated few studies on the economic evaluation of animal genetic resources. Several Reports noted the desire to improve prediction of breeding values and assessment of the genetic potential of local breeds to evaluate possible requirements for animal genetic resources in commercial production systems (e.g., health, disease resistance, longevity, rusticity, adaptability).

21. Many Country Reports stressed the need for further inventories and research to establish and maintain a complete inventory of their animal genetic resources. Information is required on the number of breeds, population sizes, risk levels and development trends and must be updated periodically in all countries. Many Country Reports indicated that monitoring systems for breeds considered endangered or at risk are not in place, and that data and information system are not yet fully developed to effectively store the results of inventories and research and enable access to the available data and information.

Strategic Priorities:

- i.i Enhanced research in key areas including inter alia; to improve criteria, standards and protocols for the evaluation of breed performance and breeding system performance, phenotypic and molecular characterization of local breeds and their production environments, quantitative estimation of productive and reproductive parameters, description of putative tolerance to major diseases and environmental stress, and prediction of potential gains in productive or reproductive levels under improved husbandry conditions.
- i.ii Enhanced inventories to determine actual population sizes and provide accurate descriptions of indigenous breeds as part of national livestock improvement programmes, to determine the products provided by each breed, to identify populations of rare or endangered breeds, and to determine which breeds should receive priority for conservation.
- i.iii Enhanced characterization of important traits in breeds, including endangered breeds to optimize use and development of animal genetic resources.
- i.iv Enhanced economic evaluation of animal genetic resources to improve understanding of animal genetic resources in economic terms to support improved policy development.

ii. Sustainable Use and Development of Animal Genetic Resources

22. Country Reports emphasized the critical need for priority action to enhance the use and development of available animal genetic resources in all types of production systems to attain the production required to supply internal and external markets. Many Reports clearly identified the need for formal recognition by governments of the need to incorporate animal production strategies in food security policy decisions at all levels.

23. Most of the national animal production strategies described in the Country Reports were oriented towards an increase in output of animal products for improved food security, stable market supplies, and to achieve favorable changes in foreign trade volumes. When feasible, most animal production strategies in developing countries rely on large scale production units based on imported technology and exotic genetic material. In many cases, it was noted that this is not a sustainable option and that in many countries the challenge is to create breeding programmes for the improvement of local breeds that do not compromise their adaptive advantages while attaining higher production levels.

24. In many Country Reports from developing countries, particularly from Asia, the superior quality of products from local breeds, and the high consumer preference for those products, were mentioned as major driving forces. It was noted that the exploitation of existing market demand impacts positively on the conservation of local breeds, and that the development of markets for products from local breeds increased the likelihood of sustainability of subsistence production systems; small-holders in marginal economic areas would have the opportunity to increase production and market animal products.

25. Some countries, notably from the European Community, emphasized the multiple values of animal production in rural areas, including important roles in protecting and managing the environment and biodiversity, which provide a rationale basis for *in situ* conservation strategies.

26. In developed countries, modern reproductive biotechnologies are used in almost all breed development operations in all animal industries. Advanced technologies are currently applied in the high-input swine and poultry industries. Risk management associated with loss of genetic diversity is less understood and less widely implemented in the public sector. Problems of rapid inbreeding and of access to information (e.g., reliance on large-scale industry data) were areas some developed countries considered as needing to be addressed.

27. There were several key factors identified in Country Reports as constraints on the enhanced use and development of animal genetic resources, primarily in developing and transition countries, including weak or nonexistent policies. In the public sector, breeding systems and the production of breeding stock were singled out as being poorly organized and not pursued as part of large, organized breeding programmes.

Strategic Priorities:

- ii.i Improved national management frameworks for farm animal production to ensure the rational use and development of native breeds under local production conditions, and the appropriate use of imported genetic resources with an understanding of long-term sustainability, local needs, prudent use of natural resources, and environmental protection.
- ii.ii Increased awareness of the multiple roles and values of animal genetic resources as a contribution to the development of sound public policy and legislation, and the full integration of animal genetic resources considerations in national agricultural planning strategies.
- ii.iii Management strategies for animal genetic resources that encourage and support the active involvement of farmers in breed improvement programmes, recognize and respect indigenous and local knowledge, and take account of consumer demand for food safety, animal welfare and environmental stewardship.
- ii.iv Improved organization of breeding programmes, including the establishment or further development of breed associations.
- ii.v Improved policies and legislation aimed at maintaining genetic variation. This might include a re-examination of policies on the introduction of exotic breeds to determine, in particular, the economic effects of crossbreeding and of the elimination of local breeds through absorption by repeated backcrossing to exotic breeds.
- ii.vi Possible use of incentives to support farmers that use and develop less utilized breeds, to maintain such breeds in certain countries, regions, or production areas. In many countries, conserving local breeds will require government assistance to develop markets for products from local breeds or to develop creative approaches to ensure their conservation such as establishing them as experimental populations associated with research institutions until they can be integrated into production systems.
- ii.vii Capacity building for the better use, development and conservation of animal genetic resources and, in particular, to promote enhanced use and development of livestock in low-input and medium-input production systems.
- ii.viii Establishment and maintenance of regional and global cooperation networks for animal genetic resources to share experience, data and information, to establish priorities and cost-effective capacity building programmes, and to enable regional management schemes for animal genetic resources.
- ii.ix Development of national and regional data and information systems for animal genetic resources to underpin improved management practices, including identification and registration systems and breed statistics.
- ii.x Improved veterinary services and other extension services to complement the effectiveness of breeding programmes, particularly in developing countries.

iii. *In situ* and *ex situ* Conservation

28. Most countries reported that they have no formal animal genetic resource conservation strategies or policies in place, and the conservation of animal genetic resources is, therefore, an

area of high priority for action. Native breeds and imported breeds that had been successfully integrated into local production systems and cultures were often identified as the breeds that should receive priority in conservation efforts.

29. Many developing countries stressed in their Country Reports that creative utilization of indigenous animal genetic resources, respecting the local social structures and production systems, is the only way for conservation. When linked to the utilization of animals, conservation has a much stronger appeal to policy makers. Countries reported that some breeds would see their numbers significantly increased to safe levels if they could be associated with a product for which there was market demand. Some Country Reports indicated that breeds could be conserved *in situ* by improving husbandry techniques that would make some local breeds competitive in terms of net output and product quality, especially under extensive production systems.

30. A number of Country Reports indicated the need for both *in situ* and *ex situ* conservation, usually emphasizing the use of advance biotechnology techniques. Most Country Reports mentioned the need to establish central data banks¹ for endangered breeds. Some Western European countries currently have a specific strategy for *in situ* and *ex situ* conservation programmes. The implementation was entrusted to breed associations, research institutions, national parks and conservation areas. Government agencies and non-governmental organizations provide financial resources and exercised either direct control over or monitoring of these programmes. Several developing countries indicated the need for capacity building for both *in situ* and *ex situ* conservation.

31. Many developed countries reported relatively high levels of awareness of the need to conserve native breeds at risk citing that the primary benefits are a form of insurance for future generations, the ability to react rapidly to changing environments or production conditions and the maintenance of local culture. They indicated that conservation efforts are being undertaken by breed associations (cattle, horses, and sheep) or private companies (swine, poultry, and cattle). Management policies to protect genetic diversity are also being applied through conservation grazing and ecological projects. The use of parks for collection and conservation of animal genetic resources was mentioned in several reports from developed countries and from other countries where such facilities already exist. In the latter case, formalization of these facilities was recommended. Other *in situ* conservation approaches included the use of subsidized farms or providing universities or research institutions custody of the populations to be conserved.

32. Some countries reported that conservation programmes were dependent on the intervention of non-governmental organizations. European non-governmental organizations were identified as playing a decisive role in the conservation of traditional and rare breeds of poultry and other species. In other countries, the importance of non-governmental organizations was recognized in conservation efforts or promoting conservation by farmers and industries.

33. Suggestions for *ex situ* conservation were restricted to the establishment of gene banks, mostly in each country and, to a lesser extent, international gene banks where synergy existed. Gene banks were also envisioned as repositories for genetic materials of commercial breeds. Gene banks that were successfully implemented in developed countries and in transition countries could serve as models for new initiatives.

34. Developed countries indicated that they were relatively satisfied with existing gene banks. Their present needs included further development in cryoconservation technology, risk assessment for the protection of conserved materials, and standardization of protocols for collection of specimens worldwide.

¹ In some developed countries, there are data banks managed by breed associations, but not a central one covering all breeds in the country.

35. Many developing countries indicated the need for improved conservation policies and for long-term financial commitments from governments or donors, emphasizing that *ex situ* conservation required large investment in infrastructure and may be difficult to implement given low levels of capacity. Proposals for the establishment of gene banks in developing countries were often linked to the need for external donors to provide financial and technical assistance.

36. Country Reports indicated that emergency situations for farm animals were caused by a variety of factors: diseases, natural disasters, armed conflicts and poor management practices. There was significant variation in the preparedness of countries to respond to emergency situations. Financial constraints were a major deterrent for the establishment and implementation of monitoring and emergency response mechanisms.

37. Numerous countries indicated the need to enhance veterinary services to reduce outbreaks and spread of disease. Several countries indicated the need to establish harmonized veterinary policies with farm animal genetic resources conservation policies, especially where disease management strategies could result in the elimination of breeds that were already at risk of being lost. Recommended measures included: basic vaccination programmes, decentralization of data collection, tracking population sizes in breeds or species undergoing active conservation efforts, and measures for protecting gene banks and data banks.

Strategic Priorities:

- iii.i Empowerment of non-governmental organizations, breed associations and indigenous and local communities in conservation initiatives by: identifying and respecting their roles and values, providing financial support; facilitating links with professional and scientific institutions; and providing support for international cooperation among associations with similar interests.
- iii.ii Establishment of niche markets for products of local breeds and enhanced understanding of the competitive advantages of local breeds to support their conservation.
- iii.iii Improved risk analysis capability to enable countries to better determine and prepare for emergencies, including measures for disease control.
- iii.iv International collaboration to strengthen or establish national centres for conservation; to assist in the preparation of conservation policies, legislation and action plans; to provide training courses for both *in situ* and *ex situ* conservation; to facilitate technology transfer; and ensure development and employment of modern conservation methods and technologies.
- iii.v International collaboration to better assess, at all levels, the status of breeds, to establish protocols for determining conservation priorities, and to enhance data and information systems on breed status and trends. In the cases of rare or endangered breeds, international collaboration is needed to prepare conservation plans. Countries that have endured, or are prone to conflicts and/or natural disasters require international assistance to develop plans for rehabilitation of institutions and services related to animal genetic resources.
- iii.vi International financial support to ensure sustainability of current conservation programmes in developing countries and to establish or maintain national or regional *ex situ* facilities for animal genetic resources.
- iii.vii International collaboration to determine the feasibility of establishing monitoring and emergency response mechanisms for animal genetic resources, including improved regional or international interagency planning aimed at developing plans for emergency collection of germplasm to capture genetic resources that are at risk of being lost.

iv. Improved Capacity to use, develop and conserve Animal Genetic Resources

38. Country Reports stressed the need for continued efforts to advance overall management capacity to enhance the use, development and conservation of animal genetic resources to increase their contribution to food security and rural development. Improved national management capacity was recognized as a high priority in almost all countries. Country Reports from developing and transition countries gave the highest priority to institutional development and capacity building. Some problems identified include the severe shortage of qualified human resources (scientists and extension workers); weak coordination between educational and research systems and production units; scarcity of breed associations or organizations to help disseminate information and organize conservation efforts of animal genetic resources; poor extension services, mostly due to the remoteness of some production sites; and low institutional capacity to handle the broader problems related to animal genetics and their relationship to animal production.

39. Limitations were identified in governmental institutions, in research institutions including universities, in non-governmental organizations and breed associations, in local communities, and international institutions. In some developed countries and in a number of transition and developing countries, established programmes are not open to change and thus lose contact with some of the problems and interests of farmers. Breeding programmes are an example of such situations. In a number of developing countries, governments have adopted a policy of non-intervention in the livestock sector, except for animal health. Privatization of services in many cases has led to the establishment of local monopolies or uncontrolled importation of exotic genetic material.

Development of policy and legislation

40. All Country Reports contained information on the existence or absence of current policies, legislation, regulations and procedures regarding animal genetic resources or animal production. Some European countries expressed satisfaction with existing policies dealing with the use and conservation of animal genetic resources. Many transition countries were only moderately satisfied with existing legislation and expressed the need for policy and/or legislative change to reflect increasing demands for animal products, the growth of importance of the private sector in animal breeding, and the transfer of support services from the state to private institutions and breeders associations.

41. In developed countries, current policy stimulates and supports technical progress and its implementation, enabling farmers to exploit animal genetic resources economically while respecting market demand for quality products and animal welfare. Sustainable production systems that include protection of the environment and ensure rural employment are also essential components of policy.

42. Country Reports indicated a variety of means are used to achieve policy objectives, including subsidies, public funding of support services, financial assistance for genetic improvement and conservation, soft loans and adjustment of trade barriers. Many countries stressed the need for the development or improvement of such policies. There were cases where the legal framework was inadequate and not in accordance with the implementing capacity of governmental institutions and with the financial resources allotted to them. In some countries, existing laws could not be implemented because of the lack of appropriate regulation.

Strategic Priorities:

- iv.i Improved policies and legislation for animal genetic resources through enhanced information exchange among governments and nongovernmental organizations and better integration of national policy and legislative development.
- iv.ii Capacity building to assist developing countries establish or enhance national policies and legislation that have a direct or indirect impact on the use, development and conservation of animal genetic resources.
- iv.iii Development of national and regional mechanisms for monitoring policy changes affecting animal genetic resources to ensure they are supportive of management objectives in many developing countries.

Strengthening of research institutions

43. The development or strengthening of research institutions was identified as a critical priority in almost all Country Reports. Developing countries emphasized the need for modernization of existing research institutions or the establishment of new facilities and research programmes to better reflect the needs for sustainable use of animal genetic resources, including investigating the use of traditional indigenous knowledge, the rationalization of resource utilization, technology development, economic evaluation of breeds, and the availability of finance to allow for exchanges among scientists. The establishment of “Centers of Excellence” was mentioned in some Country Reports, with developing countries stressing the need for external financial assistance and the need to draw on existing successful examples to support development of such centres.

Strategic Priorities:

- iv.iv Strengthened research programmes that are directly related to use, development and conservation of animal genetic resources through enhanced investment by both public and private sector interests.
- iv.v Modernization of existing research institutions or establishment of new facilities, particularly in developing countries.
- iv.vi Establishment of Centers of Excellence for animal genetic resources, particularly in developing countries.

Involvement of non-governmental organizations and breed associations

44. Many Country Reports noted the need for non-governmental organizations and breed associations to be actively involved in the use, development and conservation of animal genetic resources. The importance of the participation of these groups was stressed more in developing than in developed countries. Non-governmental organizations and breed associations undertake many important functions, providing financial resources and expertise for breed development and conservation programmes, including performance recording services, assisting in the marketing of animals and animal products and initiating policy discussions of issues affecting animal genetic resources.

Maintenance of traditional knowledge

45. The relevance of traditional knowledge in small-scale subsistence production systems was identified in several Country Reports, primarily in developing countries. Several breeds are still in use because accumulated knowledge enables local and indigenous communities to conserve and rationally exploit these animals. In many countries, local communities are actively

involved in the conservation and management of local animal genetic resources, including promotion of local products.

46. Country Reports indicated that a large proportion of breeds in developing countries are the product of the specific preferences of small communities using their indigenous knowledge, with animal breeding and management being developed for locally desired traits, especially morphological traits such as size, shape, coat color or behaviour (the breeding goals). In recognition of the essential roles of local and indigenous communities, many Country Reports indicated the need for the body of traditional knowledge to be maintained and respected and, where appropriate, integrated with modern husbandry practices.

Strategic Priorities:

- iv.vii Development and implementation of national policies and programmes for animal genetic resources to provide for meaningful involvement of local and indigenous communities, breed associations and non-governmental organizations, working with responsible government agencies.
- iv.viii Strengthened capacities of local and indigenous communities, breed associations and non-governmental organizations to further enable their contribution to efforts to use, develop and conserve animal genetic resources.
- iv.ix Enhanced efforts to maintain and use indigenous and local knowledge related to animal genetic resources by *inter alia*: establishing demonstration sites; incorporating traditional indigenous knowledge into education systems; promoting exchanges among communities that use traditional knowledge; enhancing interaction among scientists and the holders of traditional knowledge; and supporting efforts by non-governmental organizations to study, document and disseminate traditional knowledge. Efforts to collect and document traditional knowledge should take place with the full involvement of the holders of such knowledge.

Increasing the role of international Organizations including FAO

47. Many Country Reports emphasized the need to broaden and strengthen the role of international institutions in supporting national and regional efforts to use, develop and conserve animal genetic resources. Organizations such as FAO, the international agricultural research organizations (e.g., CGIAR centers) or international NGOs (e.g., International Committee for Animal Recording, ICAR, World Association for Animal Production, WAAP) were encouraged to increase their efforts to provide guidance and assistance to governments.

48. A specific proposal for developing capacity within FAO to enhance national and regional support to advance the use, development and conservation of animal genetic resources is presented to the Commission in Document CGRFA-10/04/9 Add.1 Initiation of the Follow-Up Mechanism for Strategic Priorities For Action in Animal Genetic Resources. The document stresses the need for international collaboration in four key areas, which are presented below as strategic priorities. Strengthening of international institutions with expertise in animal genetic resources will be essential to support national and regional efforts.

Strategic Priorities:

- iv.x Enhanced international efforts to mobilize financial resources to support developing country efforts to better use, develop and conserve animal genetic resources.
- iv.xi Enhanced technical assistance from FAO and other organizations at the country and regional levels to advance and implement priority actions identified in Country Reports.

- iv.xii Enhanced capacity within FAO and other international organizations for improved communication to increase understanding of the roles, values and functions of animal genetic resources.
- iv.xiii Enhanced international support to establish and maintain Regional Focal Points for animal genetic resources, in regions where this is an identified priority need.

Development of human resources

49. Most Country Reports indicated the need for the development of human resources in many aspects of the management of animal genetic resources. This need was emphasized by developing countries as a high priority. There was a clear understanding expressed in many Country Reports that the development of human resources must be closely related to institutional development. In some countries, the lack of local qualified trainers was identified as an area that needed to be addressed.

50. Country Reports indicated a need for training of personnel in the following areas:

- Quantitative genetics and statistics: statistical sampling, survey techniques, performance recording and analysis, animal breeding and statistical genetic evaluation.
- Molecular genetics and biotechnology: molecular characterization of breeds, cryoconservation methods, artificial insemination and embryo transfer techniques.
- Recording and conservation genetics: organization and management of breed associations, animal identification schemes, database management, monitoring of animal populations, characterization and setting of breed standards, conservation strategies including gene bank management, and management of conservation projects.
- Breeding plans: planning, implementation and improvement of animal breeding plans.
- Policy, extension and education: development of legislation for the conservation and development of animal genetic resources, organization and operation of support services (e.g., extension services, artificial insemination units, animal health monitoring), farmer education including women and youth, and raising public awareness.

Strategic Priorities:

- iv.xiv Enhanced national efforts and investments to increase opportunities for education and training in the use, development and conservation of animal genetic resources.
- iv.xv Enhanced international collaboration to determine opportunities for international training and education where this is not available within countries.
- iv.xvi Collaboration among international institutions to establish networks of training courses, workshops and symposia, with FAO playing a key role in this regard.
- iv.xvii Enhanced donor assistance to secure support for training and education purposes.

Strengthening of cooperative research

51. Many Country Reports indicated the need for cooperative research initiatives to support national efforts to better use, develop and conserve animal genetic resources. Many regions or

countries mentioned that there may be common problems or interests that could be addressed by joint research efforts (e.g., breeds that are native to neighboring countries and that play important economic and social roles in all of them). The importance of international cooperation was noted as crucial for many developing countries as the number of experts in these countries is often low.

52. Several areas for cooperative research were identified in Country Reports. Research to enhance understanding of the state of diversity was emphasized through surveys and breed characterization programmes to enhance the use and development of the available genetic resources. Cooperative research to determine the distinctiveness and status of some breeds of livestock was noted as extremely important to assist in determining conservation priorities. Molecular genetics techniques would assist this effort, and cooperative research was considered necessary to consolidate research results. Countries indicated that production levels of indigenous animal genetic resources have been poorly investigated, and cooperative research is needed to address this. Many Country Reports noted the need to better coordinate existing research and improve the distribution of the results of research.

Strategic Priorities:

- iv.xviii International cooperative research programmes and networks to address priority research needs identified in Country Reports and to better integrate existing research with animal genetic resources management needs.
- iv.xix Enhanced international support for advanced training in molecular genetics.
- iv.xx Creation or improvement of networks to better disseminate data and information resulting from research.

Increasing awareness of the roles and values of animal genetic resources

53. Enhanced awareness of the many roles and values of animal genetic resources by members of the public and policy makers was identified in many Country Reports as a priority. Public awareness was seen as necessary to increase public funding for the conservation of local breeds. In many developed countries, there is a relatively high level of institutional awareness of the contribution of animal genetic resources to food and agriculture, including their cultural values. However, in some developing and in most transition countries, awareness at the institutional level, in government and the academic community, was considered a major problem.

54. Several Country Reports indicated that regional or global efforts to raise the profile of animal genetic resources would provide benefits through increasing the level of priority attributed to them, leading to increased government support. Development of human resources was also mentioned as an effective way to raise awareness. Countries indicated a number of methods to raise the level of public awareness including: media campaigns, engaging non-governmental organizations, better flow of information from professional sources to the public and to the media, agricultural fairs, presentation and promotion of products from local animal genetic resources, conservation of local breeds in public parks and through formal education programmes.

Strategic Priorities:

- iv.xxi Inclusion of awareness raising of the roles, values and functions of animal genetics resources in school programs, support for non-governmental organizations efforts to increase awareness, and the involvement of the private sector in such activities.
- iv.xxii Enhanced communication capacity within the Global Focal Point for animal genetic resources (FAO) to assist in national, regional and global efforts to improve understanding of the roles, values and functions of animal genetic resources.

- iv.xxiii Enhanced sharing of experiences and communication materials among countries.
- iv.xxiv Engagement of the media in strategies to raise awareness of the roles, values and functions of animal genetic resources.

IV. SUMMARY OF REQUIRED ACTION

55. This draft *Report on Strategic Priorities for Action* attempts to identify the main requirements for the enhanced use, development and conservation of animal genetic resources as identified in the 133 Country Reports that were submitted to FAO by June 2004. Collectively, the Country Reports provide numerous suggestions for actions at national, regional and global levels. The suggested priorities for action were grouped under four major headings, with a strong focus on the improvement of capacity to use, develop and conserve animal genetic resources. A summary of the suggested priority actions is presented below.

56. At the national level, limitations on institutional development and capacity building, particularly in developing countries, must be addressed through establishment and implementation of comprehensive national strategies and programmes for animal genetic resources. Significant and strategic investments are also required at the international level to support national and regional efforts to better manage animal genetic resources. This will require significant efforts:

- **To enhance characterization and valuation of animal genetic resources;**
- **To establish, maintain or improve strategies to use and develop animal genetic resources** especially in low-input and medium-input production systems that are common in developing countries;
- **To establish animal breeding programmes** to enhance the contribution of animal genetic resources to efforts to achieve food security and sustainable development;
- **To implement cost-effective conservation strategies** to prevent further erosion of animal genetic resources, employing both *in situ* and *ex situ* measures;
- **To develop and implement conservation strategies, recovery plans and long-term monitoring programmes** to prevent the further erosion of animal genetic resources;
- **To develop or reform policy, legislation and regulations** to underpin the use, development and conservation of animal genetic resources; and to develop national management frameworks;
- **To invest strategically in human resource development** in a wide range of management areas including: quantitative genetics and statistics, molecular genetics and biotechnology, recording and conservation genetics, planning and implementation of breeding plans, policy development and extension services;
- **To establish collaborative research and capacity building initiatives**, to build capacity in developing countries on all aspects of animal genetic resources management.
- **To improve communication, information and data exchange** between countries and regions, and at global level, to allow for coordinated action in animal genetic resources characterisation, development and conservation.

57. Enhanced international effort is also required to establish a **monitoring and emergency response mechanism** for animal genetic resources at risk.

58. Increased effort by FAO was recommended in many Country Reports to assist national and regional initiatives on animal genetic resources. This included providing technical and legal assistance, facilitating and organizing training, education, communication and research, mobilization of funds, networking, and data and information management. Establishment of the proposed Follow-Up Mechanism for Animal Genetic Resources with FAO would significantly enhance the capacity of the Organization to assist developing countries and may assist in the establishment of regional focal points.

V. NEXT STEPS IN THE DEVELOPMENT OF THE REPORT ON STRATEGIC PRIORITIES FOR ACTION

59. As indicated above, this draft report has been prepared by FAO on the basis of the 133 Country Reports submitted to FAO by June 2004, and contributions from two non-governmental organizations. The intent is to further develop and refine this report so that it can serve as a basis for regional consultations. The following steps are proposed:

- This first draft of the Strategic Priorities for Action Report will be revised based on comments provided by the Commission during its Tenth Regular Session;
- The draft will be further refined through the final analysis of all Country Reports submitted to FAO by December 2004, and any further submissions by non-governmental organizations or international organizations;
- The revised draft will be sent to members of the Intergovernmental Technical Working Group on Animal Genetic Resources for review and comment, and will be amended in the light of any comments received;
- The revised draft Report on Strategic Priorities for Action will then be used as a basis for regional consultations during 2005;
- The results of the regional consultation will be used to finalise the Report on Strategic Priorities for Action which will become an integral part of the first Report on the State of the World's Animal Genetic Resources;
- The Commission will receive the first Report on the State of the World's Animal Genetic Resources during its Eleventh Regular Session in 2006, and if the Commission agrees, the first Report will be considered at a first international technical conference on animal genetic resources in 2007.