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y la
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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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**PROGRESS IN THE IMPLEMENTATION OF THE GLOBAL
STRATEGY FOR THE MANAGEMENT OF FARM ANIMAL
GENETIC RESOURCES**

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PROGRESS IN THE IMPLEMENTATION OF THE GLOBAL STRATEGY FOR THE MANAGEMENT OF FARM ANIMAL GENETIC RESOURCES¹

I. INTRODUCTION

1. The Food and Agriculture Organization of the United Nations (FAO) initiated the development of the Global Strategy for the Management of Farm Animal Genetic Resources (Global Strategy) in 1993. The Global Strategy consists of four main components: an Intergovernmental Mechanism, namely the guidance of the Commission on Genetic Resources for Food and Agriculture, assisted by its Intergovernmental Technical Working Group; a Country-based Planning and Implementation Infrastructure; a Technical Programme of Work; and a Reporting and Evaluation component, as well as a number of interrelated cross-cutting elements. These provide a strategic framework to advance work on animal genetic resources.
2. During its Tenth Regular Session, the Commission reaffirmed the need to enhance progress in the implementation of the Global Strategy, noting that the erosion of animal genetic resources was continuing at an unacceptable rate. The current document reports on progress made in the implementation and further development of the Global Strategy since the Tenth Regular Session of the Commission. Progress is reported on the components and elements of the Global Strategy.

II. PROGRESS IN THE IMPLEMENTATION OF VARIOUS COMPONENTS OF THE GLOBAL STRATEGY

A. INTERGOVERNMENTAL MECHANISM

3. Since the Tenth Regular Session of the Commission, the main relevant activity of the Global Focal Point was the preparation for the Fourth Session of the Intergovernmental Technical Working Group on Animal Genetic Resources (Working Group). A number of documents were prepared to assist the Working Group to make recommendations to the Commission on the finalization of *The State of the World's Animal Genetic Resources for Food and Agriculture*, development of the *Strategic Priorities for Action*, the preparation of the International Technical Conference on Animal Genetic Resources, and the further development of the Global Strategy.
4. The Commission underlined the need to better inform and involve policy-makers in order to enhance political commitment for the implementation of priorities identified in Country Reports for Animal Genetic Resources. The Global Focal Point presented a progress report on the development of the Global Strategy to two meetings of donor and implementing agencies related to Livestock Production and Animal Health² (France, March 2004, and United Kingdom, May 2006). A side event, jointly organized by FAO and the Government of Switzerland, was held during the first meeting of the Governing Body of the International Treaty on Plant Genetic Resources in Spain (June 2006).
5. The Convention on Biological Diversity (CBD) has been informed about progress in the implementation of the Global Strategy. A side event, jointly organized by FAO and the Government of Switzerland, was held during COP-8 in Brazil. The further development of the Global Strategy will be informed by and contribute to the programme of work on agricultural

¹ This document updates the document, *Progress in the implementation and the further development of the Global Strategy for the Management of Farm Animal Genetic Resources. Report on activities* (CGRFA/CGRFA/WG-AnGR-4/06/7 Add 1), which was presented to the fourth session of the Intergovernmental Technical Working Group on Animal Genetic Resources. See <http://www.fao.org/ag/againfo/programmes/en/genetics/angrvent-docs.html>.

² <http://lri.virtualcentre.org/>.

biodiversity of the CBD. The COP-8 of the CBD, in decision VIII/23 welcomed the progress on the preparation of the *State of the World's Animal Genetic Resources*. The Parties welcomed the timely inputs of *The State of the World's Animal Genetic Resources* for the review of the Programme of Work on Agricultural Biodiversity and as a contribution to the Cross-cutting Initiative on Biodiversity for Food and Nutrition.

B. COUNTRY-BASED PLANNING AND IMPLEMENTATION INFRASTRUCTURE

National Focal Points

6. During its Tenth Session, the Commission stressed the need to strengthen National Focal Points for Animal Genetic Resources, as a crucial structure to further implement the Global Strategy. As of March 2007, 148 countries have officially nominated their National Coordinators for animal genetic resources. However, a number of National Coordinators reported that their Focal Point was not fully operational, as available financial resources are inadequate to enable them to conduct all necessary activities. Several countries reported that advisory committees, often established as part of the Country Report process, continue to make significant contributions.

Regional Focal Points and Networking

7. The Commission indicated the importance of improving networks for animal genetic resources and further encouraged establishment of Regional Focal Points, where appropriate.

8. The European Regional Focal Point (ERFP) is fully operational since 2000. The ERFP provides important opportunities for National Coordinators to share experiences, to raise awareness about the roles and values of animal genetic resources, to consider policies and to develop proposals for European Community funded projects that focus on characterization, documentation, conservation and sustainable use of animal genetic resources. A key feature of its operation is the convening of a National Coordinators' workshop, which occurs in association with the annual meeting of the European Association for Animal Production,³ and the publication of an annual report on country activities.⁴ In January 2006, the ERFP, with the support of the European Commission, organized a two-day workshop to exchange views on legal and strategic aspects related to animal genetic resources, and to further harmonize animal genetic resources policies with core livestock policies.⁵

9. Although the Commission had stressed the importance of Regional Focal Points, mobilizing financial resources to enable their establishment remains difficult. However, some progress has been made. In September 2005, FAO conducted a workshop for National Coordinators in Arusha, Tanzania titled "FAO Workshop for National Coordinators of Eastern and Southern African countries: Capacity building for functional Regional Focal Points for Animal Genetic Resources", to examine the feasibility of establishing a regional focal point for animal genetic resources and to discuss regional priorities related to the *Strategic Priorities for Action*. The

³ 2005: Algeria, Austria, Belgium, Brazil, Czech Republic, Denmark, Ethiopia, Estonia, Georgia, Germany, Greece, Hungary, India, Iran, Italy, Kenya, Laos, Lithuania, Norway, Poland, Republic of Korea Spain, Slovenia, Sweden, Thailand, Togo, Turkey, United Kingdom, Vietnam, Zimbabwe.

2006: Albania, Belarus, Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, The former Yugoslav Republic of Macedonia, Norway, Poland, Romania, Serbia, Slovakia, Slovenia, South Africa, Spain, Switzerland, Turkey, United Kingdom.

⁴ www.rfp-europe.org.

⁵ Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

workshop involved participants from 21 countries from Eastern and Southern Africa.⁶ Following the workshop, the University of Nairobi offered to host the East Africa Regional Focal Point and nominated a staff member to coordinate activities. FAO provided seed funding for this purpose.

10. In March – April 2005, in Minsk, Belarus, a workshop was convened involving animal genetic resources specialists and *AgroWeb*⁷ managers from six countries.⁸ A Memorandum of Understanding was prepared that provides for a coordination group for Eastern European countries.

11. In November 2005, a sub-regional workshop was held in Aleppo, Syria to examine priorities for animal genetic resources management and regional collaboration. The workshop, which involved the participation of nine countries,⁹ was organized by FAO and ICARDA. Following the meeting, ICARDA offered to host the Regional Focal Point for West Asia and the Near East, and made available staff and facilities to operate it.

12. In December 2005, a subregional policy workshop on animal genetic resources in Mesoamerica was jointly organized by GTZ, InWENT (Capacity Building International, Germany) and FAO in Nicaragua. A back-to-back workshop on regional priorities for animal genetic resources management in Mesoamerica was organized by FAO. The 13 participating country representatives¹⁰ expressed the view that the establishment of a Regional Focal Point would require support from FAO. Discussions about hosting a Regional Focal Point are ongoing with various countries and the Inter-American Institute for Cooperation on Agriculture.

13. In February 2006, an East Asia regional meeting on strategic priorities for action in animal genetic resources was organized by China involving three countries.¹¹ Participants agreed on the need for regional cooperation on the management of animal genetic resources, including research and capacity building.

14. In May 2006, a South West Pacific regional workshop on animal genetic resources, funded by the Government of Australia and supported by the Secretariat of the Pacific Community, was held in Nadi, Fiji. Representatives from 16 countries¹² adopted workshop resolutions identifying priority actions, and agreed on the need for regional cooperation in the management of animal genetic resources, including furthering the establishment of animal genetic resources networks. This was endorsed by a meeting of the Pacific Heads of Veterinary and Animal Production Services.

15. In June 2006, a 3-day Central Asia-Caucasian Workshop: “Sustainable Management of Animal Genetic Resources: Priorities, Policies, Capacity Building and Conservation”, was held in Almaty, Kazakhstan with the participation of 12 countries.¹³ The main objectives of the meeting were to prepare for the establishment of a regional focal point and to discuss strategic priorities for regional cooperation in the management of animal genetic resources. Kazakhstan considered

⁶ Burundi, Comoros, Djibouti, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Mauritius, Mozambique, Namibia, Nigeria, Senegal, Seychelles, Somalia, South Africa, Sudan, Swaziland, Tanzania, Zambia and Zimbabwe.

⁷ <http://www.agroweb.com/>.

⁸ Belarus, Georgia, Lithuania, Moldova, the Russian Federation and Ukraine.

⁹ Algeria, Egypt, Iran, Jordan, Mauritania, Tunisia, Syria, Turkey, Yemen.

¹⁰ Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guyana, Haiti, Honduras, Mexico, Nicaragua, Peru, Venezuela.

¹¹ China, Japan, the Republic of Korea.

¹² American Samoa, Australia, Cook Islands, Fiji Islands, Guam, Kiribati, Malaysia, Marshall Islands, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu.

¹³ Azerbaijan, Uzbekistan, Kazakhstan, Turkmenistan, Russian Federation, Ukraine, Islamic Republic of Iran, Afghanistan, Tajikistan, Kyrgyzstan, Mongolia, China .

offering to host a Regional Focal Point for Central Asia. All countries present expressed appreciation for this offer and signed a Memorandum of Understanding for regional cooperation.

16. In order to support the establishment of Regional Focal Points and benefit from the experience gained in Europe, the Global Focal Point developed guidelines on the establishment of Regional Focal Points. Guidelines were distributed at various regional meetings and were presented to the Working Group in the information document “Guidelines for the development of Regional Focal Points.”¹⁴

17. In spite of countries agreeing in sub-regional meetings to create networks or sub-regional focal points, follow-up from countries within each of the subregions is weak due to a lack of critical mass in financial and human resources, and political support at national and regional levels. The extra-budgetary resources required for (sub-) regional focal point development were neither made available to FAO nor directly to sub-regions or countries. The strengthening of the role of National Focal Points, together with mainstreaming animal genetic resources in national policies and strategies, will be essential to effectively set-up Regional Focal Points.

The Domestic Animal Diversity Information System

18. During its Tenth Regular Session, the Commission stressed the crucial importance of data and information-sharing, as a key means to further efforts to achieve the sustainable use, development, and conservation of animal genetic resources, and to address common challenges.¹⁵ It agreed that the Domestic Animal Diversity Information System (DAD-IS)¹⁶ should be further developed, taking into account the needs of Member States, and that donor support for this purpose should be encouraged. Further development of DAD-IS should be user-driven.

19. An auto-evaluation of DAD-IS was conducted in late 2004 including a survey addressing nearly 7,000 users subscribed to the system.¹⁷ In addition to requests for improved user-friendliness, improved data quality and better access to quality images, one of the main recommendations resulting from the evaluation was to establish a well-documented and automated mechanism for updating databases in the System.

20. The improvement of DAD-IS built on and was facilitated by FAO’s participation in the project called “European Farm Animal Biodiversity Information System” (EFABIS). This project was funded by the European Commission and coordinated by the European Association for Animal Production, with technical leadership provided by the Institute for Animal Breeding of the Federal Agricultural Research Centre (Mariensee, Germany).

21. The objective of the EFABIS project was to establish an internet-based system that allows direct and automatic transmission of updated data from the national level to the regional and global levels. The system allows countries and regions to define specificities in addition to the core data structure. A specific tool has been developed to support translation of national and regional systems into languages other than FAO languages. Poland set up a national node within

¹⁴ CGRFA/WG-AnGR-4/06/Inf. 8.

¹⁵ CGRFA-10/04/REP, paragraph 46.

¹⁶ <http://dad.fao.org/>.

¹⁷ A total of 284 responses were received. Of these, 45% had found out about the product through a web search, 26% through a colleague and 15% through a DAD-IS moderator. Thirty-eight percent of respondents work for a university, 25% for a research institute, 22% for government and 9% as private consultants. Eighty percent of respondents used the online version of DAD-IS. Seventeen percent use the product at least monthly, and 53% reported occasional use. Fifty-eight percent use DAD-IS for browsing, 48% conduct targeted information retrieval, and 32% use it as a teaching tool. Thirty-five percent consider it to be of high, 49% of moderate and 5% of little usefulness to them. The need for updating of the information provided was specifically mentioned by 9% of respondents. Twelve percent had problems with the usage and navigation of the product, whereas 67% had no problems. Eight percent had difficulties understanding the outputs, whereas 60% had none.

the system in both Polish and English. The regional EFABIS node was launched in April 2006 and training was provided to European National Coordinators of 24 countries in a two-day workshop.

22. While the primary aim of EFABIS was the development of a comprehensive database system, a follow-up project called EFABIS-net, which is also being funded by the European Commission, will support the establishment of national databases. At present, 13 countries have signed EFABIS-net agreements and others have indicated interest in participating. The experience gained through the EFABIS-net project is likely to help animal genetic resources data and information system development in other regions – especially in establishing national databases with direct links to the global database contained in DAD-IS.

23. The new open-source software and tools developed in the EFABIS project have been the basis for the development of DAD-IS:3. The web-based interface has been designed according to comments and proposals made by users of DAD-IS:2. DAD-IS:3 gives full responsibility for data quality to National Coordinators. The tools support National Coordinators in updating, managing and reporting of national AnGR related data. The National Coordinators are able to update their national databases in DAD-IS, including uploading high quality images and references through the internet. A number of output options have been developed for analysis of data, including an early warning tool to project the population size and structure of breeds in future.

24. In December 2006, a 2-day workshop Global Workshop for National Coordinators was organized by the Global Focal Point. The workshop included practical computer training session and introduced DAD-IS for use by National Coordinators. DAD-IS:3 was launched in March 2007 and the system is currently available in three languages (English, French, and Spanish). Currently, the Global Focal Point is arranging for the translation and preparation of DAD-IS:3 into Chinese and Arabic. China provides for the translation into Chinese.

The Domestic Animal Diversity Network

25. In February 2005, the Domestic Animal Diversity Network (DAD-Net) was established at the Global Focal Point to enhance communication. The network has proven to be an effective means for sharing experiences, enabling network participants to request information, and in facilitating informal discussions among individuals involved in various aspects of the management of animal genetic resources. Network registration is provided free-of-charge. Initial invitations for subscription were sent to the persons registered in DAD-IS. To date, more than 1000 subscribers participate in the network.

C. THE TECHNICAL PROGRAMME OF WORK

Inventory

26. Significant effort was made to improve the information base on the status of animal genetic resources for food and agriculture. A major initiative undertaken by the Global Focal Point was updating the Global Databank for Farm Animal Genetic Resources (Global Databank) with information contained in the 169 Country Reports for Animal Genetic Resources that were received by FAO by December 2005, followed by a request for further updating and correction to all National Coordinators.

27. This update resulted in a significant increase of the total number of breed records in the Global Databank. As of March 2007, the Global Databank contained 14,017 records (10,512 for mammalian and 3,505 for avian breed populations). Population data for many breeds are still weak or missing, as many Country Reports contained information on the breeds being used, but often lacked data on the population size of each breed. Such information is still not readily available to National Coordinators. Geographically, the Global Databank currently covers 182 countries.

28. To improve understanding of the total number of breeds worldwide, a desk study was undertaken, and the results were sent to all National Coordinators for verification. A new breed classification system was developed using the following categories: Transboundary breeds are those that are kept in more than one country. It is estimated that there are 1,080 transboundary breeds. These breeds were subdivided into transboundary regional breeds (breeds that occur only in one of seven regions)¹⁸ totalling 523 breeds; and transboundary international breeds (breeds that occur in more than one region) of which 557 breeds were identified. A total of 6,536 local breeds (breeds that occur only in one country) were classified. Using the new classification system, it is estimated that in total, 7,616 breeds of livestock are used worldwide, with 86 percent of these being local breeds.

29. The image database of DAD-IS has been upgraded significantly. All images received by FAO from National Coordinators and collected through a project funded by the Government of Japan have been scanned, inserted into the database and linked to breed information. To date, the system contains 5,500 images illustrating more than 1,700 breeds.

30. Within the framework of the 2010 Biodiversity Indicator Development Plan under the Convention on Biological Diversity (CBD), the Global Environment Facility (GEF) accepted the cross-sectoral “2010 Biodiversity Indicators Partnership” project, which includes a component on animal genetic resources. The project will further develop the indicators selected by the CBD for monitoring progress towards the 2010 biodiversity target. The CBD headline indicator is “trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance”. The project begins in 2007. In order to report on the indicator, countries need to ensure appropriate data quality of their national data bases in DAD-IS.

Characterization

31. Work on characterization continues to be an important element of the technical programme. To complement the guidelines developed for the Measurement of Domestic Animal Diversity (MoDAD), the Global Focal Point has initiated preparation of guidelines for phenotypic traits characterization.

32. The work of the International Society of Animal Genetics (ISAG)/FAO Advisory Group on Animal Genetic Diversity progressed during the current reporting period. The ISAG/FAO Advisory Group revised and expanded the marker lists to cover cattle, sheep, goat, yak, buffalo, horse, ass, pig, camelids, chicken, and ducks. The Advisory Group met in Japan in September 2004. It recommended the establishment of a bank of standardized micro-satellite primers for small ruminants and agreed to assist with their application in genetic diversity studies. For better standardization, standard samples from animals of a wide allele range can be sent on request. ILRI and the ECONOGENE project, which was funded by the European Commission, can also provide such standard samples for small ruminants. A session on “Biodiversity research: understanding the past, designing the future” was held during the 30th ISAG conference in August 2006 in Brazil, where also another meeting of the ISAG/FAO Advisory Group took place.

33. The FAO/International Atomic Energy Agency (IAEA) Joint Division for Nuclear Techniques in Food and Agriculture (AGE) undertook, with the participation of ILRI, a coordinated research project entitled, “Gene-based Technologies in Livestock Breeding: Characterization of Small Ruminant Genetic Resources in Asia”. The project involves phenotypic and genetic characterization of nearly 100 sheep and goat breeds in 8 Asian and Near East countries.¹⁹ Molecular markers for characterization include micro-satellites, single nucleotide polymorphisms in expressed genes, and sites of polymorphism in mitochondrial DNA.

¹⁸ Seven regions: Africa, Asia, Europe, Latin America and the Caribbean, Near and Middle East, North America, Southwest Pacific.

¹⁹ Bangladesh, China, Indonesia, Iran, Pakistan, Sri Lanka, Saudi Arabia, Vietnam.

Equipment and training for participating scientists were provided by the project. It was planned to expand this activity, and establish banks of standard primers for other major livestock species and make them available to all interested parties. However, the funds to support the elaboration of the primers have still to be secured.

34. The FAO workshop “The Role of Biotechnology for the Characterization and Conservation of Crop, Forestry, Animal and Fishery Genetic Resources” was held March 2005, in Italy. The book “The role of biotechnology in exploring and protecting agricultural genetic resources” resulting from this workshop has been published.²⁰ The workshop was attended by participants from 38 countries.²¹

Sustainable Utilisation

35. The Commission, at its Tenth Regular Session, recognized the importance of the need for training in sustainable utilisation and stressed the need to mobilize additional financial resources for training.²² However, FAO was not able to secure matching extra-budgetary sources to conduct the required levels of training. Nevertheless, several initiatives have been undertaken in the current reporting period.

36. The FAO Regional Office for Asia and Pacific contributed to training courses organized by ILRI and Swedish University of Agricultural Sciences. The workshop “Goats, an undervalued asset in Asia?”, which focussed on production, breeding and marketing of goat genetic resources, was held during the Animal Production and Health Commission for Asia and the South Pacific (APHCA) annual meeting in Laos, with participants from 18 countries.

37. In July, 2006, the Global Focal Point, in association with the World Association on Animal Production, organized an expert meeting on sustainable utilization of animal genetic resources in Terni, Italy. Seven experts representing four regions participated in the meeting.²³ The aim was to define the concept of sustainable utilization of animal genetic resources in line with the Addis Ababa Principles and Guidelines developed under the CBD. The conceptual framework and guiding principles developed during the meeting will provide a key input for developing guidelines on sustainable utilization of animal genetic resources. The report of the meeting was presented to the Working Group as the information document *Report on the Expert Meeting on Sustainable Utilization, as a support to the further development of the Global Strategy for the Management of Animal Genetic Resources, Ferentillo, Italy, 1-4 July 2006*.²⁴

38. A number of projects on the sustainable utilization of animal genetic resources were initiated. FAO is a partner in an ILRI led project: “Development and Application of Decision-Support Tools for Conservation and Sustainable Use of Genetic Diversity in Indigenous Livestock and Wild Relatives in Asia”,²⁵ which was submitted to the GEF for funding. The project on “In-situ conservation of endemic ruminant livestock in West Africa”,²⁶ which was initiated by ILRI, has been approved for funding by the GEF and is co-funded by the African Development Bank.

²⁰ [ftp.fao.org/docrep/fao/009/a0399e/a0399e00.pdf](ftp://ftp.fao.org/docrep/fao/009/a0399e/a0399e00.pdf).

²¹ Australia, Bangladesh, Benin, Bosnia and Herzegovina, Brazil, Cameroon, Canada, Colombia, Denmark, Egypt, France, Gambia, Germany, Guyana, India, Indonesia, Italy, Kenya, Madagascar, Malaysia, Mexico, Namibia, Netherlands, Nigeria, Pakistan, Panama, Peru, Philippines, South Africa, Spain, Sri Lanka, Switzerland, Tanzania, Thailand, United Kingdom, United States of America, Venezuela, Zambia.

²² CGRFA-10/04/REP, paragraph 48.

²³ Argentina, Canada, Germany, Japan, Sri Lanka and The Netherlands. The expert invited to represent Africa was unable to obtain a visa but contributed remotely.

²⁴ CGRFA/WG-AnGR-4/06/Inf. 5.

²⁵ Bangladesh, Pakistan, Sri Lanka, Vietnam.

²⁶ Gambia, Guinea, Mali, Senegal.

39. FAO, with extra-budgetary funding from the Government of Norway, continued the development of guidelines and simple support tools to assist in planning of breeding programmes, particularly in low- to medium-input production systems. This covers the design and development of the decision-support tools, their field testing, the subsequent refining of the guidelines, and regional training workshops.

40. In 2006, two workshops were convened in France and India on the development of guidelines for assisting countries to formulate policies and strategies for the sustainable use and development of animal genetic resources, and to assist in the implementation of breeding programmes in low- and medium-input production systems. The main objectives of these workshops were to discuss and review the existing draft guidelines with stakeholders that are involved in breeding programmes. Workshop participants provided suggestions that led to the reshaping of the guidelines. In 2007, a three-day workshop jointly organized by FAO and ILRI was held in Kenya to test and validate the revised guidelines. The Government of Kenya is planning to draft a livestock breeding policy, and has established a task force for this purpose. The establishment of the task force provided an excellent opportunity to test the draft guidelines.

41. FAO has also been invited to partner in projects on characterization, network development and capacity building, which were approved by the European Commission.

Conservation

42. The Commission stressed at its Tenth Regular Session that further action is required to prevent the continuing erosion of animal genetic resources. According to the latest analysis, many breeds continue to be at risk of being lost. *The State of the World's Animal Genetic Resources* process has helped to improve understanding of the number of breeds being used and their risk status. The Global Databank indicates that of the total known number of breeds (7,616 breeds) 1,491 breeds or 20 percent are at risk. However, this figure is likely to be an underestimation of the total number of breeds at risk, as population data for many breeds are still inadequate.

43. A number of initiatives were undertaken to consider conservation options for animal genetic resources. The Commission requested FAO to elaborate a conceptual approach to the conservation of animal genetic resources, considering complementary *in situ* and *ex situ* measures, taking into account recent advances in relevant technologies and methodologies.²⁷ In response, FAO prepared an information document *A strategic approach to the Conservation of Animal Genetic Resources*,²⁸ which was provided to the Working Group.

44. An international conference on "Options and Strategies for the Conservation of Farm Animal Genetic Resources," organized by IPGRI and FAO, was held in Montpellier, France in November 2005. The aim of the conference was to identify strategic priorities for action and to contribute to the development of a global framework for animal genetic resources conservation. The conference also served to assist the CGIAR System-wide Genetic Resources Programme and the Future Harvest Centres to further define their roles and potential contributions. Participants recommended 13 priority areas of action for conserving the world's farm animal genetic resources.

45. In 2005, the CGIAR Science Council commissioned a report on the Conservation of Livestock and Fish Genetic Resources. The report and the Science Council commentary were published in November 2005.²⁹ Following the finalization of the report, a meeting with representatives of the CGIAR Centers and FAO was convened in May 2006, to discuss

²⁷ CGRFA-10/04/REP, paragraph 50.

²⁸ CGRFA/WG-AnGR-4/06/4 Inf.6.

²⁹ <http://www.sciencecouncil.cgiar.org/activities/spps/pubs/AnFiGR%20study%20report.pdf>.

implementation of priority actions identified in the report, including preparation of plans for the conservation of indigenous livestock breeds.

Technical Assistance

46. Technical assistance, especially in the area of capacity building, was identified in Country Reports as a major priority. The Commission, at its Tenth Regular Session,³⁰ stressed the need to take immediate steps to implement national priorities. National Coordinators for animal genetic resources have requested training and support to develop their technical capacity.

47. In response to the need for technical assistance to ensure the better use, development and conservation of animal genetic resources, the Global Focal Point has further invested in providing assistance, directly and through cooperation with other organizations. Several of the technical assistance initiatives for the current reporting period, including FAO Technical Cooperation Projects (TCP), are listed below:

- Development of local goat production and change of regulation related to environmental impact assessment (EIA) to include agrobiodiversity in Laos, supported through the FAO/Netherlands Partnership Programme.
- A Technical Cooperation Project on genetic improvement of dairy goats in Democratic Peoples Republic of Korea has been finalized in 2005.
- A strategy for active conservation of the dual-purpose Pinzgau cattle breed is being developed in the Slovak Republic and in Romania.
- A capacity building project has being initiated to support *in situ* conservation and use of animal genetic resources in Albania.
- Technical Cooperation Project proposals are under development on dairy cattle improvement for Bangladesh, Myanmar, Sri Lanka and to upgrade the national Animal Breeding Programme in Mongolia. In Mongolia this would be supplementing and expanding a current project funded by the Government of Japan. Technical Cooperation Projects on buffalo improvement in Pakistan and on dairy cattle improvement in Nepal are under preparation.

48. The FAO/IAEA Joint Division for Nuclear Techniques in Food and Agriculture (AGE) supported Regional Technical Cooperation projects on animal breeding in Asia and Africa. Participants from 18 African countries and 13 Asian countries received technical support for the establishment and management of artificial insemination (AI) centres, including monitoring of female reproductive performance. Guidelines for establishing AI centres in each of the regions were developed.

49. Other ongoing AGE projects are addressing the conservation and sustainable management of animal genetic resources. An expert meeting on selection criteria for breeding heifers was held in Bangladesh, in February, 2006. A training course on selective breeding and gene technologies was held in the Republic of Korea in April 2006.

50. The AGE is supporting a National Technical Cooperation project on the genomics of Alpacas in Peru. DNA analysis equipment has been provided and a training workshop on strategies for genetic improvement of South American camelids was held in June, 2006.³¹ Other projects deal with improving selection methods in goats in Sri Lanka, and characterization and improvement of small ruminants in Morocco.

³⁰ CGRFA-10/04/REP, paragraph 45.

³¹ Argentina, Bolivia, Chile, Ecuador, Peru.

51. The AGE has financially supported activities within the scope of the “BovHapMap Project” and a gene mapping project for helminth resistance in sheep in collaboration with ILRI and USDA. The AGE also has supported two training courses on molecular genetic methods convened at ILRI, in Kenya in 2004 and 2005/2006.³²

52. The Global Focal Point, together with the International Committee for Animal Recording (ICAR), organized two technical workshops in Tunisia in 2004, with approximately 60 participants attending from 46 countries.³³ The first workshop addressed the development of animal identification and recording systems for developing countries. The workshop proceedings were translated into Arabic and distributed. The second workshop addressed the status of genetic resources, recording and production systems in African, Asian and American Camelids.

53. The recent outbreaks of highly pathogenic avian influenza (HPAI) have increased awareness about the risk of losing valuable genetic material through the disease itself or through disease control measures. On two international HPAI conferences, the Global Focal Point presented papers on the importance of including poultry genetic resources management in disease preparedness and contingency planning. The Global Focal Point has included the assessment of poultry genetic resources in several country projects on HPAI. A project funded by Germany for the development of HPAI control measures in Egypt, Cambodia and, Uganda, includes inventory and characterization of local breeds, to prevent losses of valuable poultry populations. This project is implemented in collaboration with ILRI.

Communication

54. Communication with stakeholders remains an important function of the Global Focal Point, in order to increase awareness of the roles, values and functions of animal genetic resources and to keep stakeholders informed of progress made in relation to various initiatives. The Global Focal Point published a number of technical studies and materials, contributed to publications produced by other organizations and set-up and continued to maintain DAD-Net. The major publications are listed in the *Appendix* to this document.

55. The Global Focal Point developed and published the following communication products both in hard copy and in electronic format within the DAD-IS library:

- Communication newsletters #4 and #5, which were sent to National Coordinators, Permanent Representatives and FAO Representatives.
- A third brochure on *The State of the World's Animal Genetic Resources* process “*Protecting animal genetic diversity for food and agriculture – Time for Action*”, which was produced in 6 languages (Arabic, Chinese, English, French, Spanish and Russian) and widely distributed to Permanent Representatives, FAO Representatives and through the global animal genetic resources network (National Coordinators, National Consultative Committees and NGOs).
- A brochure on the International Technical Conference on Animal Genetic Resources, which was produced in 5 languages. Other brochures (on Poultry Biodiversity; and Options and Strategies for the Conservation of Farm Animal Genetic Resources) were produced in English only.
- A CD containing all workshop documents and other materials prepared for the National Coordinators’ Workshop that was held prior to the third session of the Working Group. The Poster Book continues to be disseminated.

³² Bangladesh, China, Indonesia, Italy, Iran, Kenya, Pakistan, Saudi Arabia, Sri Lanka, Vietnam.

³³ Australia, Austria, Belgium, Bolivia, Brazil, Canada, Chile, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mongolia, Morocco, Namibia, Netherlands, New Zealand, Oman, Pakistan, Peru, Poland, Portugal, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Syria, Thailand, Tunisia, United Kingdom, United States of America.

D REPORTING AND EVALUATION

The State of the World's Animal Genetic Resources' Process

56. Progress made in the preparation of Country Reports and *The State of the World's Animal Genetic Resources for Food and Agriculture* was provided to the Working Group in working document *Progress report on the preparation of The State of the World's Animal Genetic Resources and the Strategic Priorities for Action*.³⁴ During its fourth session, the Working Group requested FAO to revise the document on the basis of comments provided by countries. The revised version of *The State of the World's Animal Genetic Resources for Food and Agriculture* is available to the Commission as information document "*The State of the World's Animal Genetic Resources*".³⁵

Country Initiatives

57. A large number of country and regional initiatives were undertaken to achieve the use, development and conservation of animal genetic resources over the past two-years. Some of these initiatives, which have been reported to FAO using the DAD-Net network, are described as follows:

- **Tanzania** has prepared a National Breeding Policy. Upon approval, an implementation strategy and action plan will be prepared. The Government has also made specific provisions to support indigenous breeds. *In situ* conservation programmes will be developed involving farmer groups in selected areas of the country.
- **Malawi** reported activities for improving their institutional framework for animal genetic resources since the preparation of their Country Report. This includes: policy and legal frameworks for biodiversity, preparation of a biodiversity strategy and action plan, and national guidance for the conservation and sustainable use of biodiversity.
- **Ethiopia** and **Malawi** reported on the development of policy and legislation governing access and benefit sharing for genetic resources.
- In **China**, a new Animal Husbandry Law became effective on 1 July 2006. To implement provisions of the law, the Ministry of Agriculture has developed a series of regulations and actions for the conservation and management of animal genetic resources. The Ministry of Agriculture launched a nation-wide survey on animal genetic resources using recently developed guidelines, and a list of key indigenous breeds for conservation was announced. China implemented a number of awareness raising measures, such as the production of a stamp collection displaying indigenous breeds, and the China National Commission for the Management of Farm Animal Genetic Resources prepared a calendar.
- **Albania** and **Indonesia** are in the process of preparing breeding laws that address the conservation of animal genetic resources. In **Albania**, the new breeding law will provide for the establishment of an Albanian genebank.
- In **Slovenia**, the "Regulation on Conservation of Farm Animal Genetic Resources" was adopted, as a key element of the Livestock Breeding Act.
- In **Poland** and in the **Czech Republic**, animal breeding laws were amended to include separate chapters on animal genetic resources.
- In **South Africa**, the collection of wildlife and indigenous livestock biomaterials established in the Wildlife Biological Resource Centre has been recently recognised by the Government as a national asset. A consortium, Biobank SA, was established to

³⁴ CGRFA/WG-AnGR-4/06/2.

³⁵ CGRFA-11/07/Inf.6.

involve stakeholders in addressing issues such as access and benefit sharing, policy and legislation, research and innovation in biomaterial banking.

- In **Czech Republic**, negotiations are underway to set rules for access to biological material in gene banks.
- The European Commission prepared new legislation for 2007-2013 on rural development, which provides measures to support the conservation of genetic resources for food and agriculture within the **European Union**.
- In **Bulgaria**, the Association of Indigenous Breeds initiated a project for preserving four native breeds. This involved detailed breed descriptions and genetic analysis.
- Since 2004, with financial support from the Government of the United States, **Bangladesh** has operated a project on characterization, conservation and development of the Red Chittagong indigenous cattle breed.
- In cooperation with FAO, **Turkey** has prepared a GEF project proposal on the conservation of farm animal genetic resources.
- **The United Kingdom** produced a film called “Managing the UK’s farm animal genetic resources – planning for the future.” The film raises key questions regarding the development of a national action plans for animal genetic resources and presents views of various stakeholders.
- **Japan**, in cooperation with FAO, has published a World Farm Animal Breed Encyclopaedia (in Japanese).

The Early Warning System for Animal Genetic Resources

58. The Commission on Genetic Resources for Food and Agriculture (CGRFA) at its Tenth Regular Session requested FAO to prepare a proposal in collaboration with other relevant organizations, for a monitoring system for animal genetic resources, with options for establishing a country-based early warning and response mechanism.³⁶ This proposal should link directly to the development and revision of indicators enabling monitoring of endangerment status and trends, taking into account regional specificities. However, this recommendation has not been implemented to date, as a result of the high priority given to the preparation of *The State of the World’s Animal Genetic Resources for Food and Agriculture*. Additional extra-budgetary resources need to be mobilized, in order to develop and establish a global monitoring and early warning system for animal genetic resources.

³⁶ CGRFA-10/04/REP, paragraph 49.

*Appendix***RECENT PUBLICATIONS ON ANIMAL GENETIC RESOURCES**

- FAO. 2007. The use of reproductive and molecular biotechnology in Animal Genetic Resources management – a global overview. *AGRI* 40.
- FAO. 2007. From the World Watch List to The State of the World: Status and documentation of animal genetic resources and their conservation. International conference "Conservation of animal genetic resources in Poland and in Europe - achievements and dilemmas", Balice, Poland, 31 May -2 June 2007– will be published in the "Annals of Animal Science Supplement".
- FAO. 2007. Vaccination as a tool to preserve poultry genetic resources? Presentation at the OIE/FAO Conference on “Vaccination as a tool for the control of avian influenza”, Verona, Italy, 20-22 March 2007³⁷,
- FAO. 2007. Management of livestock genetic resources: change and interaction. *In* D. Jarvis, C. Padoch & D. Cooper, eds. *Managing biodiversity in Agricultural Ecosystem*, Columbia University Press. (in print)
- FAO. 2007. People and animals. Traditional livestock keepers: guardians of domestic animal diversity, by K.A. Tempelman & R.A. Cardellino, eds. FAO Interdepartmental Working Group on Biological Diversity for Food and Agriculture. Rome. (in print)
- FAO. 2007, 2006, 2005, 2004. Animal Genetic Resources Information, Nos. 39, 38, 37, 36. Rome.
- Boa-Amponsem, K. & Minozzi, G. 2006. The state of development of biotechnologies as they relate to the management of animal genetic resources and their potential application in developing countries. Background Study Paper No. 33. Rome. FAO.³⁸
- FAO. 2006. Animal genetic resources – time to worry? by I. Hoffmann & B. Scherf, *In* Livestock report 2006. Rome.³⁹
- FAO. 2006. HPAI and its link to genetic resources. Presented at the International Workshop Policies Against Hunger V: “Food Security and Poultry Production – How to Cope with Avian Influenza”, October 2006, Berlin, Germany.⁴⁰
- FAO. 2006. Insights from FAO’s State of the World’s Animal Genetic Resources reporting process. Paper presented at the conference on international research on food security, natural resource management and rural development, October 2006, Bonn, Germany.⁴¹
- FAO. 2006. Issues and options for the livestock sector in responding to droughts. Paper presented at the International Scientific Conference on “The Future of Drylands”, June 2006, Tunis, Tunisia.
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³⁷ <http://www.oie.int/verone/21%20Mercoledì/19%20Hoffmann.pdf>.

³⁸ <ftp://ftp.fao.org/ag/cgrfa/BSP/bsp33e.pdf>.

³⁹ <http://www.fao.org/docrep/009/a0255e/a0255e08.htm#bm08>.

⁴⁰ http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/Endbericht_PAH_IV_eng.pdf.

⁴¹ http://www.tropentag.de/2006/abstracts/links/Rischkowsky_TVNCYqmn.php.

- FAO. 2006. Protecting animal genetic diversity for food and agriculture – time for action. Brochure, Rome.⁴²
- FAO. 2006. Report of the fourth session of the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture. Rome.⁴³
- FAO. 2006. Status of the world's livestock genetic resources: preparation of the first report on the state of the world's animal genetic resources, by R.A. Cardellino, *In The Role of biotechnology in exploring and protecting agricultural genetic resources*. Rome.⁴⁴
- FAO. 2006. The global status of animal genetic resources and the First International Technical Conference on Animal Genetic Resources. Paper presented at International Workshop on the Future of Animal Genetic Resources. October 2006, Bonn, Germany.
- FAO. 2006. The state of the world's animal genetic resources. Paper presented at the 8th World Congress on genetics applied to livestock production, August 2006, Belo Horizonte, Brasil.
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⁴² <http://www.fao.org/ag/againfo/programmes/en/genetics/documents/DAD-IS-Brochure-en.pdf>.

⁴³ http://www.fao.org/ag/againfo/programmes/en/genetics/documents/ITWG_Report4.pdf.

⁴⁴ <http://www.fao.org/docrep/009/a0399e/A0399E05.htm#ch1.1>.

⁴⁵ <ftp://ftp.fao.org/ag/cgrfa/BSP/bsp32e.pdf>.

⁴⁶ <http://documents.plant.wur.nl/cgn/literature/reports/Exchange,%20use%20and%20conservation%20of%20AnGR.pdf>.

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⁴⁷ http://www.icar.org/Documents/technical_series/tec_series_11_sousse.pdf.

⁴⁸ <http://www.fao.org/Legal/legstud/ls89/ls89e.pdf>.

⁴⁹ http://www-naweb.iaea.org/nafa/aph/public/te_1437_web.pdf.

⁵⁰ http://www-pub.iaea.org/MTCD/publications/PDF/TE_1480_web.pdf.

⁵¹ <http://www.pastoralpeoples.org/docs/ikab.pdf>.

⁵² <http://www-naweb.iaea.org/nafa/aph/public/d3-gene-based.html>.

⁵³ <ftp://ftp.fao.org/ag/cgrfa/BSP/bsp21e.pdf>.

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⁵⁴ <ftp://ftp.fao.org/ag/cgrfa/BSP/bsp21e.pdf>.

⁵⁵ <http://www.fao.org/docrep/008/y5667f/y5667f00.htm>.

⁵⁶ <http://lprdad.fao.org/cgi-bin/getblob.cgi?sid=f474e901ab241f7a9c07d7d1ffe66815,50005947>.

⁵⁷ <ftp://ftp.fao.org/ag/cgrfa/BSP/bsp24e.pdf>.

⁵⁸ http://www2.gtz.de/agrobiodiv/download/SADC_WS_total.pdf.

⁵⁹ <ftp://ftp.fao.org/ag/cgrfa/BSP/bsp22e.pdf>.

⁶⁰ http://www.icar.org/Documents/technical_series/tec_series_09_sousse.pdf.