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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 4 of the Provisional Agenda

INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Eighth Session

Rome, 26-28 November 2014

Detailed FAO Progress Report on the implementation of the *Global Plan of Action for Animal Genetic Resources*

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I. Introduction

The Commission on Genetic Resources for Food and Agriculture (Commission), at its Fourteenth Regular Session, requested FAO to continue providing support for the implementation of the *Global Plan of Action for Animal Genetic Resources*[1] (*Global Plan of Action*). The document *FAO progress report on the implementation of the Global Plan of Action for Animal Genetic Resources and the Interlaken Declaration*[2] provides an overview of activities undertaken between the Thirteenth and Fourteenth Sessions of the Commission. This document provides a more detailed report on FAO activities since the Seventh Session of the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture (Working Group). The activities are grouped according to their relevance to the four strategic priority areas of the Global Plan of Action.

II. Reporting and Awareness Raising on the *Global Plan of Action*

The Global Focal Point for Animal Genetic Resources (Global Focal Point) continued to distribute printed versions of the *Global Plan of Action*, *The State of the World's Animal Genetic Resources for Food and Agriculture* (*State of the World*) and related products and guidelines. Annex 4 provides a list of documents published since the Seventh Session of the Working Group. National Coordinators for the Management of Animal Genetic Resources (National Coordinators) were encouraged to prepare national language versions of the *State of the World* and its "in brief" version, the *Global Plan of Action* and other information products under local-language agreements with FAO. Since the Seventh Working Group session, the *Global Plan of Action* was published in Korean and Slovak and is now available in 20 languages[3]. *The State of the World's Animal Genetic Resources for Food and Agriculture – in brief* is available in 10 languages[4]. No additional language version has been published during the last two years.

In mid-2013, the website on "Implementing the *Global Plan of Action for Animal Genetic Resources*"[5] was restructured and enriched. It provides information under the following headings: information resources, intergovernmental process, national implementation, regional collaboration, activities of international organizations, support to countries, funding strategy, call for support, reporting system and global assessments; and was published in English, French and Spanish.

A publication catalogue[6] including all publications and information products and services related to the implementation of the *Global Plan of Action* has been produced and is being distributed at events to encourage requests for these products. The catalogue is among the documents made available for this meeting of the Working Group under "other documents".

III. Capacity-building and technical support to the implementation of the *Global Plan of Action* at national level

The *Global Plan of Action*[7] describes the essential role of the FAO in supporting country-driven efforts to implement the *Global Plan of Action*, in particular, in facilitating global and regional collaboration and networks; supporting the convening of intergovernmental meetings; maintaining and further developing the Domestic Animal Diversity Information System (DAD-IS[8]); developing

[1] CGRFA-14/13/Report, paragraph 58.
[2] CGRFA-14/13/13.
[3] http://www.fao.org/docrep/010/a1404e/a1404e00.htm (Arabic, Chinese, Czech, Danish, English, French, German, Greek, Hungarian, Indonesian, Korean, Nepalese, Norwegian, Polish, Portuguese, Russian, Serbian, Slovak, Spanish, Thai).
[4] http://www.fao.org/docrep/010/a1260e/a1260e00.htm (Arabic, Chinese, French, German, Japanese, Polish, Portuguese, Russian, Spanish, Thai).
[5] http://www.fao.org/Ag/AGAInfo/programmes/en/A5.html.
[6] http://www.fao.org/Ag/AGAInfo/programmes/documents/genetics/AnimalGeneticResources_Publications_catalogue.pdf
[7] Global Plan of Action for Animal Genetic Resources, paragraph 58–61.
[8] http://www.fao.org/dad-is/.

communication products; providing technical guidelines and assistance, and coordinated training programmes; promoting the transfer of technologies relating to sustainable use, development and conservation of animal genetic resources; and coordinating future preparation of global status and trends reports on animal genetic resources.[9] The following paragraphs provide a detailed description of FAO activities in each strategic priority area of the *Global Plan of Action*.

A. Strategic Priority Area 1. Characterization, inventory and monitoring of trends and risks

Institutional and technical support

At its Thirteenth Session[10], the Commission endorsed the guidelines *Phenotypic characterization of animal genetic resources*.[11] A French version of this document was produced in 2013 with support of FAO's special language fund and has been made available electronically[12].

FAO continued to contribute to the 2010 Biodiversity Indicators Partnership (BIP),[13] specifically updating the fact sheet *Genetic diversity of terrestrial domesticated animals*[14] and contributing to a forthcoming publication entitled *Global Biodiversity Outlook 4*.

The Global Focal Point at FAO has continued to maintain and develop DAD-IS, with extra-budgetary funding from the Government of Sweden and Switzerland. FAO incorporated the new breed classification system as requested by the Commission at its Fourteenth Regular Session allowing the entry of data related to the new locally adapted versus exotic breed classification set out in the document, *Report of a consultation on the definition of breed categories*[15] and the option of indicating that a given locally adapted breed is native to the respective country.

In 2010, the European Regional Focal Point for the Management of Animal Genetic Resources (ERFP) set up a working group on documentation and information.[16] The Global Focal Point participated in the annual meetings of this working group held in Italy in July 2013.

In view of the need to prepare a new status and trends report (see document *Status and trends report of animal genetic resources – 2014*[17]), the Global Focal Point invited National Coordinators to update their national breed-related data in DAD-IS. As of August 2014, 96 (out of 173) National Coordinators have updated national data since DAD-IS:3 was launched in 2007. In addition, 17 countries have set up national nodes as partners in the European Farm Animal Biodiversity Information System (EFABIS) network and can update their data via these nodes.

The Commission invited countries to provide information on how their breeds recorded in DAD-IS should be assigned to the categories "exotic" and "locally adapted" for the purpose of calculating the resource indicators.[18] To date, National Coordinators have made this information available for 2,356 out of 14,869 national breed populations.

For 78 percent of national breed populations no data on population size have been reported for any of the last four years (2011 to 2014). Relative to past years, countries have increased their updating activities, however, with 27 countries having updated their national data in 2013 and 53 countries in 2014. Since 2012, the percentage of avian breeds for which any population data are available has improved significantly, from 48 to 56 percent, while in the case of mammals there has been an improvement from 57 to 60 percent. A total of 1 458 breeds (17 percent) are currently classified as

[9] Global Plan of Action for Animal Genetic Resources, paragraph 22–23, Strategic Priority 14.
[10] CGRFA-13/11/Report, paragraph 79.
[11] http://www.fao.org/docrep/015/i2686e/i2686e00.htm.
[12] http://www.fao.org/docrep/019/i2686f/i2686f.pdf.
[13] http://www.bipindicators.net/about.
[14] http://www.bipindicators.net/LinkClick.aspx?fileticket=DQTYJuJ7rUo%3d&tabid=74.
[15] CGRFA/WG-AnGR-7/12/Inf.7.
[16] http://www.rfp-europe.org/index.php?id=527.
[17] CGRFA/WG-AnGR-7/12/Inf.4.
[18] CGRFA-14/13/Report, paragraph 32.

being at risk; 18 percent are classified as not at risk; 58 percent have unknown risk status and 7 percent are reported to be extinct.[19]

Research and capacity-building

FAO was involved in two capacity-building workshops on characterization of animal genetic resources in the Near East region. Details on all capacity building workshops can be found in Annex 3 of this document. This involved the contributions of various partners. The first workshop was a collaboration of the Global Focal Point and FAO's Regional and Sub-regional offices for the Near East, North Africa and the Gulf Region, and the Moroccan National Association for Sheep and Goat Breeders (ANOC) and other local partners and was held in Morocco in late 2012. The second workshop was presented by the FAO/International Atomic Energy Agency (IAEA) Joint Division on Nuclear Techniques in Food and Agriculture (AGE) in August 2013, as part of a regional Technical Cooperation Project (TCP) on characterization of indigenous livestock breeds. In total, these workshops were attended by more than 60 persons from 21 FAO members[20].

FAO is collaborating with the Animal Genomics and Improvement Laboratory of the United States Department of Agriculture (USDA) as part of the African Goat Improvement Network project, sponsored by the United States Agency for International Development (USAID) which undertakes characterization of African goat breeds. With the financial support of Sweden (FMM/GLO/006/MUL), FAO supported the characterization of 22 goat populations and their production environments in four countries.[21] The entire network project involves more than 60 populations from 16 countries. As part of the project, a training workshop was held in Ethiopia in June 2014. The International Livestock Research Institute (ILRI) hosted the workshop, which was attended by 30 persons from 15 countries.[22]

The Swedish project (FMM/GLO/006/MUL) has also been utilized to support Brazil and Kenya in characterization of the production environments of their animal genetic resources. These countries tested an off-line module for recording of production environment descriptors (PEDs) of their local populations.

To facilitate global analysis of breed diversity through molecular genetic characterization, FAO has continued to promote the international use of standard microsatellite marker sets for the various species of livestock. This work is done in partnership with the International Society for Animal Genetics (ISAG)/FAO Advisory Group on Animal Genetic Diversity. The Advisory Group held a workshop in China in July 2014 and decided to prepare and co-author a technical review describing the rapid changes and new challenges associated to the use of genomics and high-throughput methods to investigate the genetic diversity of domestic animal species.

FAO participated in the final conference of the Genomic Resources[23] project of the European Science Foundation. This project evaluated the state of the art and provided training in the application of genomic tools in characterization of animal genetic resources.

FAO continues to participate in the Rabbit Genome Biology Network (RGB-Net)[24], a European Union-sponsored COST Action designed to improve collaboration among stakeholders in rabbit research and production. The Global Focal Point is a member of the working group on "Genetics in meat, fur and pet rabbits and biodiversity resources" and has contributed to a chapter on rabbit breeding and genetic resources in a book that the RGB-Net is preparing. Project participants are currently employing a crowd-sourcing approach to gather data on rabbit breeds from around the world. Data will be collected on DAD-IS data sheets and provided to National Coordinators for approval and

[19] CGRFA/WG-AnGR-8/14/Inf.4.
[20] Algeria, Egypt, France, Greece, Islamic Republic of Iran, Italy, Jordan, Lebanon, Libya, Mauritania, Morocco, Oman, Palestinian Territories, Saudi Arabia, Spain, Sudan, Syrian Arab Republic, Tunisia, European Union, United Arab Emirates, Yemen.
[21] Egypt, Madagascar, Mali, United Republic of Tanzania.
[22] Austria, Australia, Brazil, Egypt, Ethiopia, Kenya, Madagascar, Malawi, Mali, Nigeria, South Africa, Uganda, United States of America, United Republic of Tanzania and Zimbabwe.
[23] http://genomic-resources.epfl.ch/.
[24] http://www.biocomp.unibo.it/rabbit/.

entry into DAD-IS. Project meetings were held in March 2013 and May 2014 in Sweden and Croatia, respectively, and the project is slated to continue through 2015.

AGE has continued its Coordinated Research Project entitled "Genetic Variation on the Control of Resistance to Infectious Diseases in Small Ruminants for Improving Animal Productivity", in which 12 countries are participating.[25] AGE has also characterized a large group of breeds at candidate genes for traits of economic importance, including parasite resistance.[26] In addition, AGE is supporting a national Technical Cooperation Project (TCP) involving the characterization of animal genetic resources in Angola.[27]

B. Strategic Priority Area 2. Sustainable use and development

Institutional and technical support

In response to the need for technical assistance to ensure the better use, development and conservation of animal genetic resources, FAO further invested in providing assistance in these fields, both directly and through cooperation with other organizations.

FAO, as a member of the board of the International Committee for Animal Recording (ICAR), continued to lead the ICAR Developing Countries Working Group. The working group combines e-mail discussions and physical meetings. It is currently working on the organization of a joint FAO-ICAR Symposium on animal identification, traceability and performance recording in Africa, which will take place on 13-15 April 2015, in Pretoria, South Africa.

Animal identification and recording have traditionally been practiced for herd management and genetic improvement purposes. More recently, because of outbreaks of transboundary and food-borne diseases, traceability has also become an important motivation for animal identification and recording. Hence, animal identification, and traceability have been addressed by various international agreements and standards. To comply with such standards, a number of countries have requested FAO's technical and financial assistance to develop their livestock identification and traceability systems. In Africa, two countries have received FAO support through the Technical Cooperation Programme – the United Republic of Tanzania (TCP/URT/3303) and Swaziland (TCP/SWA/3301(D)). In Asia, FAO provided technical assistance to the Government of India to develop a strategy and an action plan for an animal identification and traceability system for India that focussed on cattle and buffaloes (TCP/IND/3302(D) – UTF/IND/185). In Central Asia and in the Near East region, FAO is supporting the Kyrgyz Republic (TCP/KYR/3404) and the West Bank and Gaza Strip (ORSO/GAZ/201/EC) in the development of an animal identification and traceability system, including an animal health information component. These projects benefit from the development of the technical guidelines on animal identification, traceability and health and performance recording (see Section IV), but also contribute to the improvement of the guidelines. The synergy between use and development of the guidelines illustrates the complementarity between FAO's normative and field work.

Perhaps as a result of climate change and expected increasing value of animal genetic resources adapted to hot, dry climates, two countries have established national research centres for camel production. The Kingdom of Saudi Arabia (UTF/SAU/044/SAU) and Mauritania (UTF/MAU/026/MAU) have created unilateral trust funds to finance projects involving technical support from FAO in the operation of the research centres. The government of Turkey supports a Government Cooperation Project (GCP) (GCP/SEC/001/TUR) that provides technical assistance in cattle production to Azerbaijan, Kyrgyzstan, Tajikistan and Uzbekistan. A unilateral trust fund (UTF) in Mongolia (UTF/MON/009/MON) has assisted in the adoption of improved breeding practices for small ruminants, as well as the preparation of a national law on livestock breeding and management of animal genetic resources. A TCP in Cuba (TCP/CUB/3402) is working to establish semen processing centres for swine, thus supporting genetic improvement. Finally, Nepal is using a UTF

[25] Argentina, Bangladesh, Brazil, Burkina Faso, Ethiopia, Indonesia, Islamic Republic of Iran, Nigeria, Pakistan, Saudi Arabia and Sri Lanka.
[26] http://www-naweb.iaea.org/nafa/aph/a-production/small-ruminants.pdf.
[27] Burkina Faso, Bulgaria, Côte d'Ivoire, Peru, Sri Lanka and Zambia.

(UTF/NEP/073/NEP) to obtain technical assisting from FAO in the informed management of local and exotic goat and chicken genetic resources, with the goal of increasing food security.

AGE is providing technical support to ten countries[28] through IAEA TCPs involving sustainable management of animal genetic resources. The projects emphasize technology transfer and in particular support establishment and maintenance of artificial insemination centres and the use of molecular technologies as components of a holistic approach to increase livestock productivity.

FAO has continued its work in support of small-scale livestock keepers. Specifically, with the extra-budgetary support of Germany, FAO will establish a pastoralist knowledge hub to improve the capacity of pastoralist livestock keepers and facilitate communication among them. With the financial and technical assistance of the United States of America, FAO has provided training in the establishment of community-based breeding programmes.

Research and capacity-building

FAO organized a regional workshop on "Animal identification and traceability: tools for the enhancement and utilization of genetic resources, the fight against animal diseases and food security" for the Near East region, which was held back-to-back with the previously described workshop on characterization. Approximately 50 persons from 17 countries[29] participated.

The Global Focal Point participates as a technical advisor in the project "In situ conservation of endemic ruminant livestock in West Africa" (PROGEBE), jointly financed by the Global Environment Facility (GEF) and the African Development Bank. The objective of the project is to ensure sustainable use and in situ conservation of targeted endemic ruminant livestock breeds – N'dama cattle, Djallonke sheep and the West African Dwarf goat – in Gambia, Guinea, Mali and Senegal. PROGEBE has revitalized genetic improvement programmes in these countries through the reconstitution of foundation nuclei with the identification and monitoring of multiplier herds and dissemination of selected bulls, along with the establishment of joint management mechanisms involving agro-breeders associations, improved access to health services and capacity building targeting all stakeholders along livestock values chain, including Master's degrees in animal genetics. PROGEBE also conducted major regional studies on marketing of endemic rural livestock and competitiveness and legal, policy and institutional frameworks for the management of animal genetic resources and natural resources, constructed or rehabilitated civil engineering infrastructure to facilitate the commercialization and use of livestock and its products and established 17 community land use and allocation plans with emphasis on natural resource and transhumance management and bushfire control.

The Global Focal Point serves on the steering committee of the GEF-funded project "Development and application of decision support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives" and is providing an in-kind contribution. The project is managed by ILRI and monitored by the United Nations Environment Programme (UNEP) and involves promoting the sustainable use of animal genetic resources in Asia. The participating countries are Bangladesh, Pakistan, Sri Lanka and Viet Nam. Poultry, pigs and goats are the targeted species. The Global Focal Point provided technical support at the fifth and sixth meetings of the project steering committee, which were held, respectively, in Viet Nam (2013) and Sri Lanka (2014).

The Global Focal Point has a long history of cooperation with the ILRI–Swedish University of Agricultural Sciences (SLU) project (funded by the Government of Sweden) on capacity-building for sustainable use of animal genetic resources in developing countries, which has organized a series of training workshops held in Africa and Asia. In November 2013, ILRI and SLU, with the technical assistance of FAO, organized a series of three capacity-building workshops, for West (Ouagadougou, Burkina Faso), East (Kigali, Rwanda) and Southern (Gaborone, Botswana) Africa. The African Union Interafrican Bureau for Animal Resources (AU-IBAR) also collaborated in these workshops, by

[28] Algeria, Burkina Faso, Iraq, Jordan, Madagascar, Myanmar, Oman, Syrian Arab Republic, Yemen, Zambia.
[29] Algeria, Denmark, Egypt, France, Islamic Republic of Iran, Italy, Jordan, Lebanon, Libya, Mauritania, Morocco, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen.

supporting participants from its member states. In total, 141 persons from 44 countries[30] and 16 organizations[31] participated in this series of workshops.

The extra-budgetary funding from Sweden (FMM/GLO/006/MUL) was used to organize an expert meeting on "Crop and livestock diversity for climate change adaptation: review of evidence base and identification of research priorities and potential uptake pathways" in cooperation with Bioversity International and the Basque Centre for Climate Change. The meeting was used to establish research priorities and a paper is being developed. Members of the Global Focal Point also contributed to the organization of and participated in the "Expert workshop on drafting guidelines to support the integration of genetic diversity into national climate change adaptation planning" hosted by the Commission Secretariat in April 2014.

In 2013, in collaboration with the European Regional Focal Point for Animal Genetic Resources, the European Federation of Animal Science's Working Group on Animal Genetic Resources and the Universities of Wageningen and Milan, FAO organized a survey, targeting the Europe region, on the environmental benefits of the grazing activities of livestock breeds' (European Survey). Twenty-nine responses were received. The European Survey provided an opportunity to test the methodology for a global survey on the ecosystem services provided by grazing livestock in grazing systems, which was undertaken in 2014 (Global Survey). The Global Survey attracted 120 responses, with respondents distributed across all regions of the world. Responses of the surveys are presented in Background Study Paper 66 *Ecosystem services provided by livestock species and breeds, with special consideration to the contributions of small-scale livestock keepers and pastoralists.*

FAO is a contributor to the European Union sponsored COST Action METHAGENE[32], on "Large-scale methane measurements on individual ruminants for genetic evaluations". The objectives of METHAGENE are to discuss and identify the best approaches to measure methane emission from dairy cattle and incorporate methane emissions into national breeding strategies. The project was launched in May 2014 with a meeting in the Netherlands. FAO provided lectures at a training workshop held in Germany in September 2014.

Awareness raising and information

Members of the Global Focal Point served as invited speakers at a number of conferences regarding the interaction among animal genetic resources and climate change, including the 13th World Holstein Conference (November 2012 in Toronto, Canada), the Greenhouse Gases and Animal Agriculture Conference (June 2013 in Dublin, Ireland) and the workshop on "Genetic resources for food and agriculture in a changing climate" (January 2014 in Lillehammer, Norway).

FAO is a member of the Global Food Security Consortium (GFSC) of the Iowa State University. The GFSC is an initiative to improve networking among scientists and donor organizations and facilitate multidisciplinary research on increasing food security in developing countries. The GFSC provides a platform for members to prioritize research topics and apply for joint funding. FAO participated in the GFSC inception workshop in September 2013 and the international symposium on "Closing the Yield Gap" in April 2014 and highlighted the importance of maintaining diverse animal genetic resources and managing them properly.

[30] OUGADOUGOU: Benin, Burkina Faso, Cameroun, Central African Republic, Chad, Congo, Cote d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo; KIGALI: Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, United Republic of Tanzania and Uganda; GABORONE: Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Zambia and Zimbabwe.

[31] ASARECA, AU-IBAR, EU, FAO, CCARDESA, CIRDES, COMESA, CORAF, IGAD, ILRI, PROGEBE, RUFORUM, SADC, SLU, Team Africa and WALIC (ITC).

[32] http://www.methagene.eu.

C. Strategic Priority Area 3. Conservation

Institutional and technical support

At its Fourteenth Session,[33] the Commission endorsed the guidelines *In vivo conservation of animal genetic resources*.[34] With extra-budgetary funding from Germany, the book[35] was printed and distributed. To date, 2100 copies have been disseminated around the world.

FAO is providing technical support to the Kingdom of Saudi Arabia by means of a UTF on "The genetic conservation and improvement of the Arabian horse in its homeland" (UTF/SAU/045/SAU. This project will particularly target conservation of the pure desert-bred population of Arabian horse, of which fewer than 300 are believed to exist.

Research and capacity-building

As part of a mission to China under the cooperative project with Sweden (FMM/GLO/006/MUL), the FAO presented lectures at a national training course on "Conservation and sustainable utilization of poultry genetic resources". The training course was attended by 112 participants from conservation farms and provincial extension technical offices.

Awareness raising and information

Through its Regional Office for Latin America and the Caribbean, FAO participated in the XIV Simposio Iberoamericano de Conservación y Utilización de Recursos Zoogenéticos in Chile in November 2012.

D. Strategic Priority Area 4. Policies, institutions and capacity-building

Institutional and technical support

Strategic Priority 17 of the *Global Plan of Action* is to "Establish Regional Focal Points and strengthen international networks". Since 2012, FAO has undertaken a number of activities in this regard, particularly for Sub-regional Focal Points (SRFP) in Africa with the cooperation of AU-IBAR. AU-IBAR is the beneficiary organization of a Regional TCP on "Assistance for a regional initiative on animal genetic resources in Africa" (TCP/RAF/3403), which has provided support to the existing SRFP for West and Central Africa and the establishment of SRFP for East and Southern Africa. FAO collaborated with AU-IBAR to organize a workshop to establish a SRFP in East Africa, which was held in Kampala, Uganda in March 2014. FAO provided technical support for a second workshop for Southern Africa, organized by AU-IBAR in Harare, Zimbabwe in April 2014. AU-IBAR also organized a workshop for a North African SRFP, which was held in Algiers, Algeria in June 2014. At each of these workshops, an interim steering committee was elected, the membership of the formal steering committee was proposed, host organizations for the respective SRFP were identified and priorities for sub-regional action were agreed upon. In August 2014, FAO and AU-IBAR co-organized a SRFP meeting for West and Central Africa, held in N'Djamena, Chad, which led to the separation of the two sub-regions and the establishment of two SRFP anchored to the respective regional economic communities.

With regard to other regions, the National Coordinator of Thailand has led efforts to re-establish a Regional Focal Point in Asia. In doing so, Thailand organized and hosted a meeting of National Coordinators in Thailand in September 2013. The Global Focal Point provided technical support via video conferencing. Six countries[36] were represented. A second meeting was held in Yogyakarta in November 2013. A project funded by Turkey (GCP/SEC/003/TUR) aims to prepare for the establishment of SRFP for Central Asia, Turkey and Azerbaijan and to strengthen National Focal Points and develop national strategies and action plans in each participating country.

[33] CGRFA-14/13/Report, paragraph 60.
[33] http://www.au-ibar.org/index.php?option=com_flexicontent.
[34] http://www.fao.org/docrep/018/i3327e/i3327e00.htm.
[35] http://www.fao.org/docrep/018/i3327e.pdf.
[36] Bhutan, Japan, Nepal, Malaysia, Thailand, Vietnam.

With regard to support at national level, the project "Élaboration d'un plan d'action national pour la gestion et l'amélioration des ressources génétiques animales au Burundi" (TCP/BDI/3402) supports the development of a national strategy for the management of animal genetic resources and includes a five-year investment plan, in line with the recommendations of the livestock development strategy document. A similar project in Liberia, "Survey and characterization of livestock breeds and their production systems in Liberia for the development of a national strategy and action plan for animal genetic resources" (TCP/LIB/3502) was approved in late 2014.

Research and capacity-building

In collaboration with the Regional Office for Europe, the Global Focal Point is preparing a Russian version of the guidelines *Developing the institutional framework for the management of animal genetic resources*.[37]

Elements of the *Global Plan of Action* have been incorporated into various regional strategies. For example, the African Union Interafrican Bureau for Animal Resources (AU-IBAR) Strategic Plan 2010–2014,[38] contains a programme on enhancing Africa's capacity to conserve and sustainably use its animal resources and their natural resource base. To facilitate the implementation of this programme, the European Union has provided AU-IBAR with support of approximately US$ 15 million for the project "Strengthening the capacity of African countries to conservation and sustainable utilisation of African animal genetic resources". Collaborators of AU-IBAR, such as FAO, ILRI and various regional stakeholders have been invited to provide technical assistance in project implementation. The project will run for five years and will address multiple strategic priorities in the *Global Plan of Action*. The collaboration began with three regional workshops for National Coordinators held in conjunction with the ILRI-SLU-FAO-AU-IBAR capacity-building workshops in November 2013 and the SRFP meetings in 2014. AU-IBAR supported the participation of National Coordinators in the workshop. In addition, countries have nominated persons to serve as "Focal Points" for the AU-IBAR project, many of whom are National Coordinators, and AU-IBAR also supported their participation in the workshops. FAO informed the participants on the work of the Commission and this Working Group and provided initial training on the preparation of Country Reports contributing to *The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture*. In January 2014, AU-IBAR organized an all-Africa workshop supporting the finalization of Country Reports, which helped ensure a high rate of delivery within the African Region.

Awareness raising and information

FAO, ERFP and the EAAP Working Group on Animal Genetic Resources and the Genetics Commission of EAAP organized a joint session on "The role of imported genetics for sustainable breeding programmes" at the 64th Annual Conference of EAAP. The session consisted of eight scientific papers and one poster. About 80 participants attended the session, including about 15 National Coordinators.

For the past five years, FAO has collaborated with groups of students from Iowa State University in the United States of America, to conduct research on issues related to animal genetic resources and to publish the results in a variety of formats. In 2013, six students undertook an extensive literature review of value-addition by animal genetic resources and compiled an annotated bibliography.[39] In 2014, nine students participated in the programme and undertook two projects. For the first project, four students gathered information from National Coordinators and other stakeholders to compile 30 "success stories" on animal genetic resources. The stories will be used on DAD-IS and distributed through various FAO social networks. The second group undertook a review of the literature on relationships between genetic diversity and other factors and variability in the nutritional composition of pork. The latter research was done in collaboration with the Nutrition Division of FAO and

[37] http://www.fao.org/docrep/014/ba0054e/ba0054e00.pdf.
[38] http://www.au-ibar.org/index.php?option=com_flexicontent&view=items&cid=85&id=170.
[39] Ayala, J., M. Bobb, A. De Leon, M. Foley, T. Mogler, J. Swanson 2013. Conserving local breeds. An annotated bibliography. FAO 2013. Available under the documents of the meeting.

expanded the content of the FAO INFOODS Food Composition Database for Biodiversity.[40] A scientific paper is in preparation.

The Global Focal Point continues to maintain DAD-Net and regional sub-groups as an informal forum for the discussion of issues relevant to the management of animal genetic resources at national, regional and international levels. In August 2014, 2 500 persons from more than 185 countries were subscribed to the network. Over the last two years of operation, more than 1 800 messages have been exchanged. Both the number of subscribers and the number of messages that have been exchanged have increased massively over time. DAD-Net continued to prove to be an effective means for sharing experiences, enabling participants to request information and facilitating informal discussions among individuals involved in various aspects of the management of animal genetic resources, in particular for individuals from countries where such means do not otherwise exist.

The Global Focal Point has continued to produce the journal Animal Genetic Resources. Issues 51,[41] 52[42], 53,[43] including a special issue on "adding value" (in collaboration with the EAAP Working Group on Animal Genetic Resources), and 54[44]were published during the reporting period. Issues 51 to 53 were produced as hardcopies, whereas for 54 only an online version was made available. The journal is published in collaboration with Cambridge University Press.[45]

FAO has collaborated with the World Intellectual Property Organization (WIPO) on a patent landscape study for animal genetic resources. The final report from this study is available in the documentation for this meeting.[46]

Global Focal Point officers have participated as invited speakers at a number of international conferences and meetings of organizations with programmes related to the management of animal genetic resources. These meetings were held in locations spread throughout the world, including China, Brazil, Canada, Italy, Germany and Denmark.

IV. Draft technical guidelines for animal identification, traceability and health and performance recording

At its Fourteenth Regular Session, the Commission requested that FAO continue developing the technical guidelines on animal identification, traceability and performance recording.[47]

The guidelines were developed with the participation of the ICAR Developing Countries Working Group. Four workshops, held in Botswana, (November 2009), Tunisia (April 2011), Chile (December 2011), and Morocco (November 2012), attended by a total of 236 participants, from 57 countries, contributed directly or indirectly to the elaboration of the guidelines.

The proper preparation of the guidelines began with an expert meeting held in October 2011 to discuss the outline. However, due to heavy workload and competing priorities, the preparation was delayed. A second expert meeting was held in June 2013 to review the draft, which was further discussed and evaluated at a third expert meeting, held in Italy in June 2014. In total, 13 experts from 10 countries contributed to the preparation of the guidelines. In addition to the Global Focal Point, other units at FAO headquarters, such as the Animal Health Service (AGAH) and the Development Law Service (LEGN), along with the Regional Offices for Latin America and the Caribbean, and the Near East and the Sub-regional Office for North Africa are involved in the preparation of the guidelines.

[40] http://www.fao.org/docrep/019/i3560e/i3560e.pdf
[41] http://www.fao.org/docrep/017/i3035t/i3035t.pdf
[42] http://www.fao.org/docrep/018/i3219t/i3219t.pdf
[43] http://www.fao.org/docs/eims/upload//314794/I3445Tri.pdf
[44] http://www.fao.org/3/a-i3701t.pdf
[45] http://journals.cambridge.org/action/displayJournal?jid=AGR.
[46] WIPO 2014. Patent Landscape Report on Animal Genetic Resources. WIPO Publication No. 947/3E, http://www.wipo.int/patentscope/en/programs/patent_landscapes/reports/animal_genetic_resources.html.
[47] CGRFA-14/13/Report, paragraph 60.

Animal identification and recording serve multiple purposes in a country's livestock sector. The identification of animals is the basis for authentication and prevention of animal theft, provision of subsidy payments and insurance schemes, and operation of artificial insemination and pedigree certification schemes. The growth in importance of animal identification and recording in recent years can be attributed to its roles in animal traceability and health and in performance recording. Animal traceability is the basis for food safety and quality control. It facilitates disease prevention and control, and is becoming an important requisite for export and certification. Animal health recording is an essential tool in the prevention and control of diseases and for improving veterinary health management systems. It enables the assessment of the health status of animal populations, which is a prerequisite for planning any surveillance and control strategy and for the application of zoning or compartmentalization policies. Performance recording also serves a variety of purposes. The data collected through performance recording help to build a knowledge base in areas such as baseline animal performance, best production practices in different environments, best breeding strategies and monetary valuation of breeding stock. An integrated multipurpose approach, combining animal identification, traceability and health and performance recording, would therefore constitute a powerful tool for livestock development and for addressing global demands for food security and poverty alleviation. However, for this tool to be effective, appropriate public and private policy, legal and institutional frameworks are required. The document *Draft guidelines for the development of integrated multipurpose animal recording system*,[48] which is available for review by the Working Group, provides guidance on how to translate this approach into an integrated multipurpose animal recording system, and describes the step-by-step process that needs to be followed in order to develop and implement such a system.

[48] CGRFA/WG-AnGR-8/14/Inf.6.

Annex 1

Expert meetings contributing to the development of guidelines and manuals

Meeting	SPA	Date	Location	Countries of participating experts
Expert meeting to discuss the draft guidelines on animal identification, traceability and performance recording	2	June 2013	HQ, Rome	Germany, India, South Africa, Uruguay, Italy (HQ), Egypt (RNE), Hungary (REU)
Expert workshop on 'Crop and Livestock Diversity for Climate Change Adaptation: Review of Evidence Base and Identification of Research Priorities and Potential Uptake Pathways'	2,4	October 2013	Maccarese, Italy	Brazil, Italy, Norway, UK, Bioversity International, the Basque Centre for Climate Change and FAO
Biodiversity Indicator Partnership (BIP) Technical Partner Meeting	1	December 2013	Cambridge, UK	The Biodiversity Indicators Partnership (BIP) is a global initiative, more than 15 partner organisations participated
Expert workshop on drafting guidelines to support the integration of genetic diversity into national climate change adaptation planning	4	April 2014	HQ, Rome	Brazil, Kenya, Mongolia, UK
Expert meeting to discuss the draft guidelines on animal identification, traceability and performance recording	2	June 2014	HQ, Rome	France, Germany, India, South Africa, Uruguay, Italy (HQ)

Annex 2

Regional workshops for National Coordinators for the Management of Animal Genetic Resources

Title of workshop	SPA	Dates	Location	List of countries participating
European Regional Focal Point Meeting (organized by ERFP)	4	August 2013	Nantes, France	Austria, Albania, Bulgaria, Croatia, Czech Repbulic, France, Germany, Greece, Netherlands, Poland, Slovenia, Spain, Switzerland, Turkey, UK
First Workshop of Asian National Coordinators for Animal Genetic Resources (organized by Thailand)	4	September 2013	Bangkok, Thailand	Bhutan, Japan, Nepal, Malaysia, Thailand, Vietnam
First Sub-Regional Meeting on the Management and Conservation of Animal Genetic Resources in 5 SEC Countries	3,4	September 2013	Izmir, Turkey	Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkey
AU-IBAR/FAO Training Workshop on Reporting for the Second State of the World – West and Central Africa	4	November 2013	Ouagadougou, Burkina Faso	Co-Funding by AU-IBAR, SLU and ILRI: Benin, Burkina Faso, Cameroun, Central African Republic, Chad, Congo, Cote d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo
AU-IBAR/FAO Training Workshop on Reporting for the Second State of the World – East Africa	4	November 2013	Kigali, Rwanda	Co-Funding by AU-IBAR, SLU and ILRI: Burundi, Djbouti, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, United Republic of Tanzania, Uganda
AU-IBAR/FAO Training Workshop on Reporting for the Second State of the World – Southern Africa	4	November 2013	Gaborone, Botswana	Co-Funding by AU-IBAR, SLU and ILRI: Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, Swaziland, Zambia, Zimbabwe

Title of workshop	SPA	Dates	Location	List of countries participating
Sub-Regional Focal Point Workshop for East Africa (co-organized by AU-IBAR)	4	March 2014	Kampala, Uganda	Burundi, Djibouti, Ethiopia, Eritrea, Kenya, Rwanda, Sudan, South Sudan, Tanzania, Uganda, AU-IBAR, ASARECA, CIRDES, CORAF, FAO, ILRI, ITC/WALIC, RUFORUM
Sub-Regional Focal Point Workshop for Southern Africa (co-organized by AU-IBAR)	4	April 2014	Harare, Zimbabwe	Kenya, Madagascar, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Zambia, Zimbabwe, AU-IBAR, ILRI, CCARDESA, FAO
National Conferences to raise awareness on the value of animal genetic resources and the development of National Strategy and Action Plans	4	April 2014	Baku, Azerbaijan Bishkek, Kyrgyzstan Dushanbe, Tajikistan	Azerbaijan, Kyrgyzstan, Tajikistan
Sub-Regional Focal Point Workshop for Northern Africa (organized by AU-IBAR)	4	June 2014	Algiers, Algeria	Algeria, Egypt, Libya, Mauritania, Tunisia
European Regional Focal Point Meeting (organized by ERFP)	4	August 2014	Copenhagen, Denmark	Albania, Austria, Bulgaria, Bosnia & Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Montenegro, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, UK

Title of workshop	SPA	Dates	Location	List of countries participating
Sub-Regional Focal Point Workshop for West and Central Africa (Co-organized by AU-IBAR)	4	August 2014	Ndjamena, Tchad	Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Gabon, Ghana, Guinea-Bissau, Mali, Niger, Senegal, The Gambia, Togo, CEBEVIRHA, ECCAS, CIRDES, FAO, AU-IBAR CORAF/WECARD, ITC/WALIC
Sub-Regional Focal Point Workshop for Southern Africa (Co-organized by AU-IBAR)	4	October 2014	Johannesburg, South Africa	Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Zambia, Zimbabwe, AU-IBAR, CCARDESA, FAO
2nd Workshop of Asian National Coordinators for Animal Genetic Resources (organized by Thailand)	4	November 2014	Bangkok, Thailand	Bangladesh, Indonesia, Nepal, Philippines, Republic of Korea, Thailand and Viet Nam

Annex 3

Technical training

Training	Date	Location	List of countries participating
Regional workshop on "Characterization and value addition to local breeds and their products in the Near East and North Africa region"	November 2012	Rabat, Morocco	Algeria, Egypt, France, Greece, Islamic Republic of Iran, Italy, Jordan, Lebanon, Libya, Mauritania, Morocco, Palestinian Territories, Saudi Arabia, Spain, Sudan, Syrian Arab Republic, Tunisia, European Union, United Arab Emirates, Yemen
Regional workshop on "Animal identification and traceability: tools for the enhancement and utilization of genetic resources, the fight against animal diseases and food security"	November 2012	Rabat, Morocco	Algeria, Denmark, Egypt, France, Islamic Republic of Iran, Italy, Jordan, Lebanon, Libya, Mauritania, Morocco, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen
ILRI-SLU-FAO-AU-IBAR capacity building workshop on animal genetic resources (AnGR) in West and Central Africa	November 2013	Ouagadougou, Burkina Faso	Benin, Burkina Faso, Cameroun, Central African Republic, Chad, Congo, Cote d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo, AU-IBAR, ILRI, FAO, CIRDES, CORAF, PROGEBE, SLU, ITC/WALIC, Team Africa
ILRI-SLU-FAO-AU-IBAR capacity building workshop on animal genetic resources (AnGR) in Eastern Africa	November 2013	Kigali, Rwanda	Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, United Republic of Tanzania and Uganda, ASARECA, AU-IBAR, FAO, ILRI, IGAD, RUFORUM, SLU
ILRI-SLU-FAO-AU-IBAR capacity building workshop on animal genetic resources (AnGR) in Southern Africa	November 2013	Gaborone, Botswana	Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Zambia, Zimbabwe, AU-IBAR, FAO, CCARDESA, COMESA, EU, ILRI, SADC, SLU
FAO regional workshop on development of good identification and milk recording systems	November 2013	Tartu, Estonia	Armenia, Belarus, Estonia, Georgia, Moldova, Montenegro, Russian Federation, Serbia, The Former Yugoslav Republic of Macedonia and Ukraine

Training	Date	Location	List of countries participating
FAO workshop on goat breeding within the European Regional Conference on Goats of the International Goat Association	April 2014	Debrecen, Hungary	Albania, Armenia, Belarus, The Former Yugoslav Republic of Macedonia Georgia, Moldova, Montenegro, Russian Federation, Serbia and the Ukraine
National training course on Conservation and Sustainable Utilization of Poultry Genetic Resources	May 2014	Yangzhou, China	China
3rd African Goat Improvement Network Workshop	June 2014	Addis Ababa, Ethiopia	(Co-funding by USDA and ILRI) Austria, Australia, Brazil, Egypt, Ethiopia, Kenya, Madagascar, Malawi, Mali, Nigeria, South Africa, Uganda, United States of America, United Republic of Tanzania and Zimbabwe
IAEA Asian Regional training course on characterization of indigenous Livestock breeds using DNA markers	August 2014	Seibersdorf, Austria	Iraq, Jordan, Oman, Syrian Arab Republic, Yemen
METHAGENE Training School on “Methane Physiology & Modelling for Geneticists”	September 2014	Dummerstorf, Germany	Belgium, Denmark, Finland, Germany, Italy, Netherlands, Poland, Slovenia, Turkey, United Kingdom

Annex 4

Publications since the seventh session of the Working Group

FAO documents[49]

FAO. 2013. In vivo conservation of animal genetic resources. FAO Animal Production and Health Guidelines. No. 14. Rome (available in English at http://www.fao.org/docrep/018/i3327e/i3327e00.htm).

ICAR. 2013. Animal identification and recording systems for traceability and livestock development in countries of Latin America and the Caribbean. Proceedings of the ICAR/FAO Workshop held in Santiago, Chile, 5-7 December 2011, edited by B. Besbes & B. Molina-Flores. ICAR Technical Series no. 15. ICAR, Rome.

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FAO. 2014. Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources - Revised edition. Rome (available in Arabic, Chinese, English, French, Russian and Spanish at http://www.fao.org/3/a-i3975e/index.html).

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[49] http://www.fao.org/ag/againfo/resources/en/pubs_gen.html

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Boettcher, P. 2013. The importance of animal genetic diversity in disease resistance: the FAO perspective. Workshop on "Resistenza genetica alle malattie negli animali da reddito: presente e futuro", Turin, Italy. 16 May 2013.

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Hoffmann, I. 2013. Biodiversity for the livestock sector: Status, trends, drivers, gaps and opportunities. Special CGRFA event: Biodiversity for food and agriculture: Taking stock for the future, 13 April 2013, FAO, Rome.

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