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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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

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REVIEW AND POSSIBLE UPDATE OF THE GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES

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I. INTRODUCTION

1. The Global Plan of Action for Animal Genetic Resources (Global Plan of Action) is intended as a rolling plan, with an initial time horizon of ten years.¹ It is based on the strategic priorities for action identified during the preparation of the first report on *The State of the World's Animal Genetic Resources for Food and Agriculture*.²

2. During the preparation of *The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture* (Second Report) countries had the opportunity to review the analysis of gaps, new trends and emerging issues in the management of animal genetic resources, as reflected by the Global Plan of Action. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Fifteenth Regular Session, agreed to review the Global Plan of Action through to a two-step approach. Commission Members and observers were given the opportunity to recommend, in the light of the Second Report and other relevant information, improvements to the Strategic Priorities or Actions of the Global Plan of Action and suggest additional priorities or actions, for inclusion in the Global Plan of Action. In a second step, the Working Group is now invited to consider the recommendations by Members and observers as well as options for their implementation, as consolidated by the Secretariat.

3. The current document gives an overview of the consultations held by FAO to facilitate the review of the Global Plan of Action and presents the inputs and recommendations submitted by Members and observers, as consolidated by the Secretariat, for consideration by the Working Group. The Working Group may wish to recommend that the Commission, at its Sixteenth Regular Session, review and revise the recommendations submitted by Members and observers, as revised by the Working Group, and invite the Director-General to bring the recommendations to the attention of the Conference, for endorsement or adoption.

II. INPUTS CONSIDERED

4. The preparation by the Secretariat of the review process of the Global Plan of Action was guided by two leading questions:

- To what extent do the Strategic Priorities and Actions of the current Global Plan of Action continue to be relevant?
- Are there gaps, new trends and emerging issues in the management of animal genetic resources that may require a revision of existing Strategic Priorities and Actions, the addition of new priorities/ actions or other new measures supporting the implementation of the Global Plan of Action?

5. In a first step, the Secretariat considered the findings of the Second Report and inputs received from Members, observers and other stakeholders in the course of the preparation of the Second Report. In particular, it considered countries' responses to Question 77 of the *Questionnaire for collecting national data to support the preparation of The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture*.³ Question 77 invited countries to indicate aspects of animal genetic resources management that are not addressed by the current Global Plan of Action and should be addressed within the next ten years. In addition, the Secretariat reviewed the executive summaries of Country Reports prepared for the Second Report to identify issues raised that were not reflected in the answers to Question 77.

6. In a second step, the Secretariat identified international policy developments since the adoption of the Global Plan of Action in 2007 with potential implications for the Global Plan of Action that the

¹ Global Plan of Action for Animal Genetic Resources, Part 1, paragraph 14.

² <ftp://ftp.fao.org/docrep/fao/010/a1250e/a1250e.pdf>.

³ "In view of the possibility that at some point countries may wish to update the Global Plan of Action, please list any aspects of animal genetic resources management that are not addressed in the current Global Plan of Action but will be important to address in the future (approximately the next ten years). Please also describe why these issues are important and indicate what needs to be done to address them."

Commission may wish to consider in its review. These include developments in parallel and cross-sectoral - areas of work of the Commission as well as developments in other international bodies.

7. In a third step, the Secretariat analysed the above inputs and identified five major new and emerging issues in the management of animal genetic resources, as follows:⁴

- Climate change and animal genetic resources management
- Impacts of the shrinking natural resource base for animal production and of natural resource degradation on animal genetic resources
- Contribution of animal genetic resources to the delivery of ecosystem services
- International developments with regard to access and benefit-sharing (ABS)
- New technologies in animal genetic resources management

8. In fourth step, the Secretariat conducted in April 2016 through the Domestic Animal Diversity Network (DAD-Net) an informal survey on new and emerging issues and trends in animal genetic resources management which requested inputs on the five major new and emerging issues for the review and possible update of the Global Plan of Action. The DAD-Net survey generated 69 responses. The respondents included 27 national government institutions, 3 international organizations, 1 sub-regional organization, 32 research or academic institutions and 6 non-governmental or civil society organizations.

III. RESULTS AND ANALYSIS

Key issues remaining relevant

9. The Second Report confirms that not a single Strategic Priority of the Global Plan of Action has been fully addressed and globally implemented. Four key messages might be of particular relevance for the review of the Global Plan of Action.

- Characterization, surveying and monitoring of animal genetic resources (Strategic Priority 1) at the national level, especially in developing countries, do not yet happen at satisfactory level, quality and scale. This deficiency hinders effective prioritization and planning of breeding and conservation efforts in many countries. The low level of breed population surveying and monitoring is another cause of concern.
- There continues to be an urgent need for capacity building for the management of animal genetic resources amongst government personnel and other stakeholders as described in Strategic Priority 14. Gaps exist in all relevant areas of expertise, including methods and the use of technologies for characterization, breeding and conservation; planning and policy formulation skills; as well as monitoring and evaluation.
- Many countries still lack institutional, policy, planning and regulatory frameworks for the management of animal genetic resources (Strategic Priorities 13 and 20). The absence of such frameworks hinders effective implementation of the Global Plan of Action and the communication and collaboration among relevant government agencies institutions, donors and other partners.
- Lack of funding continues to be a major obstacle for the implementation of the Global Plan of Action. Strategic Priority 23 of the Global Plan of Action recognizes this constraint.

Emerging issues and trends

10. Table 1 lists the five major new and emerging issues identified by Members and observers for the management of animal genetic resources and provides the number of inputs/ submissions referring to these issues in the different consultation phases.

⁴ Additionally, there were contributions on animal welfare, the taxonomic scope of the Global Plan of Action (the inclusion of bees, fish and wildlife), the establishment of global and regional in vitro collections and conservation measures in times of disease outbreaks.

Table 1. Most frequently mentioned emerging issues and trends

Emerging issues and trends	<i>Questionnaire for collecting national data to support the preparation of The Second Report on the State of the World's Animal Genetic Resources for Food and Agriculture</i>		DAD-Net survey	Reference in the Global Plan of Action
	Q77	Executive summary		
Climate Change ⁵	7	28	37	long-term goal of Strategic Priority Area 2
The impacts of the shrinking natural resource base for animal production on animal genetic resources	1	23	35	Strategic Priority 6
The contributions of animal genetic resources to the delivery of ecosystem services	4	18, with 7 answers highlighting the importance of breed diversity in relation to nature conservation	36	Strategic Priority 5
International developments in access and benefit sharing	4	1	32	Strategic Priorities 3, 4, 9, 21
New technologies in animal genetic resources management	2	...	33	Strategic Priorities 13, 14, 15, 16

Climate Change

11. The Global Plan of Action refers to climate change in the long-term goal of Strategic Priority Area 2: Sustainable Use and Development. Climate change intersects with animal genetic resources management in two main ways. On the one hand, climate change impacts genetic resources diversity and may act as a driver of genetic erosion by, for example, causing natural resource degradation and drought in pastoral areas, changing patterns of animal diseases or redirecting natural selection patterns. On the other hand, genetic diversity is a cornerstone resource for adapting our global food system to the effects of climate, and for climate change mitigation.

12. The Commission has made substantive progress under its work programme on climate change since the adoption of the Global Plan of Action in 2007. It considered a whole series of background study papers addressing the issue of climate change and genetic resources for food and agriculture, including the background study paper on *Climate Change and Animal Genetic Resources for Food and Agriculture: State of Knowledge, Risks and Opportunities*⁶. The publication, *Coping with climate change – the roles of genetic resources for food and agriculture*⁷ summarizes the sectoral background study paper. In addition, at its Fifteenth Regular Session, the Commission endorsed⁸ the *Voluntary*

⁵ One country raised the issue both under Question 77 and in the Executive Summary of their Country Report.

⁶ <http://www.fao.org/docrep/meeting/022/mb386e.pdf>.

⁷ <http://www.fao.org/publications/card/en/c/0099d145-f240-4e61-b30e-3d210972ceb8>.

⁸ CGRFA-15/15/Report, paragraph 34.

Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning,⁹ which were approved by the FAO Conference, at its last session.¹⁰

13. Submissions by Members and observers confirm the increased awareness of climate change in relation to animal genetic resources since the adoption of the Global Plan of Action. Suggestions include:

- Facilitating research to better understand the relation between climate change and animal genetic resources;
- Including data on production environments in relation to adaptive traits of animal breeds in characterization efforts, prioritizing locally adapted breeds;
- Developing effective breeding strategies to adapt livestock populations to the impacts of climate change;
- Strengthening *in situ* and *ex situ* efforts to conserve animal genetic diversity in general, and locally adapted breeds with valuable adaptive traits for climate change adaptation, such as drought and disease resistance, in particular;
- Integrating climate change considerations into national policies or strategies and action plans for the management of animal genetic resources, or animal genetic resources management into National Adaptation Plans of Action;
- Encouraging cooperation and coordinated responses between neighbouring countries, given that climate change impacts transgress national boundaries; and
- Protecting the natural resource base available for locally adapted production systems harbouring locally adapted breeds, as well as providing better services to livestock keeping populations operating such systems, including in times of emergencies.

The impacts of the shrinking natural resource base for animal production on animal genetic resources

14. Submissions and inputs received from Members and stakeholder identify the shrinking natural resource base for animal production as a major driver of erosion of animal genetic resources. The shrinking natural resource base may be the result of either the loss or the reduction of secure access to land and other natural resources, especially in the case of pastoralists and small-scale livestock keepers managing locally adapted breeds. It can also be the result of natural resources degradation caused by factors such as overpopulation, mismanagement and/or climate change. Competition with other uses of land, including cropping, protected areas, tourism, and mining, is an issue of concern in all regions. Delivery of appropriate access to natural resources and resolution of land tenure issues are referred to in Strategic Priority 6 of the Global Plan of Action.

15. Since the adoption of the Global Plan of Action, two policy tools have been developed by FAO with relevance to the access of livestock keepers to the natural resources their production depends upon. Firstly, in 2012, FAO's Committee on Food Security endorsed the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*,¹¹ (VGGT) and, in 2014, the *Principles for Responsible Investment in Agriculture and Food Systems*.¹² The VGGT were supported in 2016 by implementation guidelines on Improving Governance of Pastoral Lands. Secondly, based on the *UN Declaration on the Rights of Indigenous Peoples* (UNDRIP)¹³ adopted by the UN General Assembly in 2007, FAO developed the *FAO Policy on Indigenous and Tribal Peoples*,¹⁴ in 2010. This policy tool, relevant to livestock-keeping populations that are identified as indigenous or tribal peoples, includes principles on natural resources,

⁹ <http://www.fao.org/documents/card/en/c/290cd085-98f3-43df-99a9-250cec270867>.

¹⁰ C 2015/REP, paragraph 52.

¹¹ <http://www.fao.org/nr/tenure/voluntary-guidelines/en/>.

¹² http://www.fao.org/fileadmin/templates/cfs/Docs1314/rai/CFS_Principles_Oct_2014_EN.pdf.

¹³ http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf.

¹⁴ <http://www.fao.org/docrep/013/i1857e/i1857e00.htm>.

environment and genetic resources; lands and territories; and the links between cultural and biological diversity.

16. Although the shrinkage of the natural resource base available to animal production in relation to animal genetic resources management is not a new issue *per se*, the responses appear to reflect an increased concern about the issue and the willingness to address it. Suggestions by Members and observers include:

- Strengthening the rights of indigenous peoples' and pastoralist livestock keeping communities over territories, lands and natural resources, including through the implementation of *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (FAO), the *Principles for Responsible Investment in Agriculture and Food Systems* (FAO), and the *UN Declaration on the Rights of Indigenous Peoples* (UNDRIP);
- Improving land-use planning by considering the interactions of animal production with other activities, including, as appropriate, through the establishment of grazing reserves for production systems harbouring local and locally adapted breeds, as well as corridors to ensure livestock mobility;
- Raising awareness of the roles and values of local production systems harbouring locally adapted breeds within landscapes, including in relation to wildlife;
- Promoting collaboration between stakeholders involved in the management of animal genetic resources and nature conservation organizations; and
- Better articulating and enhancing the economic value of livestock production systems harbouring locally adapted breeds, including through the establishment of niche markets.

The contributions of animal genetic resources to the delivery of ecosystem services

17. The Global Plan of Action indirectly refers to ecosystem services under Strategic Priority 5, which addresses the promotion of agro-ecosystems approaches to the management of animal genetic resources. The concept of ecosystem services serves today as a vital link for understanding of the interactions between ecosystems and human well-being and provides a useful tool for improving the management of animal genetic resources.

18. The diversity of livestock species and breeds, as key components of agro-ecosystems, plays a vital role in the delivery of ecosystem services. The adaptive traits of specific breeds help ecosystems regulate their internal processes and sustain future production, through critical contributions to nutrient cycling and other ecological processes. Their specific roles in landscapes and social life sustain and inspire cultures, knowledge and art, while their ecological roles, such as in managing the species composition of pastures, may contribute to wildlife conservation. Additionally, building blocks such as genes and chemical compounds provide us with tools for innovation and science. This relationship is explored in detail in the document *Ecosystem services of livestock species and breeds, with special consideration to the contributions of small-scale livestock keepers and pastoralists*.¹⁵ Suggestions by Members and observers include:

- Promoting research to better understand the adaptive traits of livestock breeds in relation to ecosystem services;
- Promoting research on and raising awareness of the contributions of livestock diversity to ecosystem services;
- Strengthening the roles of animal genetic resources in combating land degradation and in mitigating the effects of climate change;

¹⁵ <http://www.fao.org/3/a-at598e.pdf>, see also *Contributions of livestock species and breeds to the provision of ecosystem services*, CGRFA/WG-AnGR-9/16/2.3.

- Recognizing and promoting the linkages between adapted livestock breeds and nature conservation; and
- Promoting landscape approaches to the management of animal genetic resources.

International developments in access and benefit-sharing

19. The Global Plan of Action contains references to the issue of access and benefit sharing (ABS) in Strategic Priorities 3, 4, 9, and 21. Strategic Priority 21 of the Global Plan of Action recommends a review of the implications and impacts of international agreements and developments relevant to access to animal genetic resources and sharing the benefits of their use upon animal genetic resources stakeholders, especially livestock keepers. At the time of the adoption of the Global Plan of Action, in 2007, the main international instruments addressing ABS were the Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture. Since the adoption of the Global Plan of Action, the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity*¹⁶ (Nagoya Protocol) was adopted in 2010 by the Conference of the Parties to the CBD.

20. FAO and its Commission have a longstanding history of dealing with issues related to ABS. More recently, in 2011, the Commission established an *Ad Hoc* Technical Working Group on Access and Benefit-sharing for Genetic Resources for Food and Agriculture, which considered the distinctive features of genetic resources for food and agriculture and options to guide and assist countries in developing legislative, administrative and policy measures for access and benefit-sharing, including for animal genetic resources for food and agriculture. In 2013, the Commission established the Team of Technical and Legal Experts on Access and Benefit-sharing, which prepared, at the Commission's request *Elements to Facilitate Domestic Implementation of Access and Benefit-Sharing for Different Subsectors of Genetic Resources for Food and Agriculture* (ABS Elements).¹⁷ The ABS Elements were welcomed by the Commission, at its Fifteenth Regular Session, and, at the Commission's invitation, by the Conference, at its Thirty-ninth Session.¹⁸ The Working Group will consider, at this session, the document *Elaboration of subsector-specific elements for access and benefit-sharing for genetic resources for food and agriculture*.¹⁹

21. Although animal genetic resources fall within the scope of the CBD and its Nagoya Protocol, Members and observers raised concerns as to whether the special needs of the animal genetic resources sub-sector have been adequately addressed and with regard to the potential direct or indirect effects ABS frameworks could have on the use of animal genetic resources. Member and observer suggestions included:

- Monitoring the implications of the Nagoya Protocol for the management of animal genetic resources and ensure that the needs of the subsector are adequately addressed;
- Encouraging human capacity building efforts on the international ABS in countries where such gaps exist;
- Developing a Standard Material Transfer Agreement (SMTA) for genetic material stored in *ex situ* gene banks.

New technologies in animal genetic resources management

22. New technologies in animal genetic resources management may help to make advances in the characterization and monitoring, sustainable use and development, and in the conservation of animal genetic resources. They may offer cost-savings, improve practicality and/or increase the effectiveness

¹⁶ <https://www.cbd.int/abs>.

¹⁷ <http://www.fao.org/3/a-i5033e.pdf>.

¹⁸ C 2015/REP, paragraph 52.

¹⁹ CGRFA/WG-AnGR-9/16/4.

of breeding programmes. At the same time, new technologies can pose new challenges. They may alter the balance of relations between stakeholders, require adjustments of existing legal frameworks, raise environmental or health concerns, or pose ethical questions, for example related to animal welfare. Strategic Priorities 13, 14, 15 and 16 of the Global Plan of Action refer to the need to strengthen capacity for the management of animal genetic resources, including by exchange of experience, by enhancing research and educational activities, and by providing training opportunities and technology transfer. The application of breeding technologies, including their impacts on diversity, are noted under Strategic Priorities 3 and 4 of the Global Plan of Action. The Second Report provides an overview of available technologies and addresses opportunities and challenges of technological developments in the management of animal genetic resources.²⁰ The document, *Biotechnologies for the management of genetic resources for food and agriculture*²¹ provides an overview of relevant biotechnologies, including for animal genetic resources. Suggestions from Members and observers include:

- Improving understanding of the implications of new technologies for genetic diversity, such as genomic selection, genome editing and other forms of genetic modification and cloning;
- Monitoring and reviewing emerging technologies and their economic, social and environmental implications, especially those technologies that can advance the implementation of the Global Plan of Action, especially low cost innovations for characterization, breeding and conservation, of relevance to developing countries;
- Facilitating technology transfer and capacity building to close the technology and knowledge gaps between countries.
-

Other new and emerging issues

23. While the majority of submissions received from Members and observers related to the issues discussed above, other submissions raised other issues, such as: the need to address the (trans-generational) impacts of chemical pollution and emerging diseases on animal genetic resources; the impacts of new technologies on animal welfare; the need to increase the taxonomic scope of the Global Plan of Action (the inclusion of bees, fish and wildlife); and , as well as the establishment of global and regional *in vitro* collections and conservation measures in times of disease outbreaks.

IV. GUIDANCE SOUGHT

24. The Second Report, Country Reports prepared for the Second Report, and the replies to the DAD-Net survey demonstrate the continuing relevance of the Global Plan of Action. The Global Plan of Action appears to address the emerging challenges identified within its existing framework of strategic priorities. Nevertheless, it may be useful to reiterate the continuing relevance and importance of the Global Plan of Action in the context of today's global challenges and new developments.

25. The Working Group may wish to consider different options to bring the outcome of its review of the Global Plan of Action to the attention of the Commission and the Conference. It may wish to:

- i. Leave the Global Plan of Action as it is, and take no further action; or
- ii. Leave the Global Plan of Action as it is, review and revise, as appropriate, the draft Resolution given in *Appendix I*, for consideration by the Commission and recommend that the Commission submit the draft Resolution to the Director-General and invite him to bring the draft Resolution to the attention of the Conference, for its consideration.
- iii. Recommend a process for revising the Global Plan of Action itself.

²⁰ See p. 170-171 for a general overview; p. 452-457 on reproductive technologies; and p. 511-521 on cryoconservation technologies.

²¹ <http://www.fao.org/docrep/meeting/022/mb387e.pdf>.

APPENDIX I

Reaffirming the World's Commitment to the Global Plan of Action for Animal Genetic Resources

Draft Resolution

THE CONFERENCE,

Recalling Resolution 12/2007 on the International Technical Conference on Animal Genetic Resources for Food and Agriculture (Interlaken, Switzerland, 3-7 September 2007) and the Eleventh Regular Session of the Commission on Genetic Resources for Food and Agriculture (Rome, 11-15 June 2007);²²

Having considered the Commission on Genetic Resources for Food and Agriculture's review and possible update of the Global Plan of Action for Animal Genetic Resources (Global Plan of Action);²³

Recognizing that animal genetic resources, as an irreplaceable component of the world's biodiversity, are a vital resource in the everyday lives of all human beings, providing for food security and nutrition and other life-sustaining goods and services; and allowing for adapting our global food system to present and future challenges, including climate change and changing food consumption patterns;

Recognizing that the diversity of animal genetic resources, as key components of agro-ecosystems, plays a vital role in the delivery of ecosystem services, providing food, clean water, shelter and raw materials for our basic needs;

Acknowledging the tremendous contributions made by livestock keepers and breeders worldwide to the historical and on-going development of animal genetic resources, and of the distinct roles of men and women therein;

Recognizing that the threats to animal genetic resources continue to be severe and manifold, and that the erosion of animal genetic diversity remains of serious global concern, and **noting** that the impacts of climate change have grown in severity in the last ten years, and will become a major threat to animal genetic resources worldwide for the foreseeable decades, even as other drivers of erosion continue to pertain;

Recognizing the role of FAO as the lead intergovernmental agency with the mandate to improve agriculture, forestry, fisheries and management of natural resources and to achieve global food security and nutrition, and the role of FAO's Commission on Genetic Resources for Food and Agriculture as the only permanent forum for governments to discuss and negotiate matters specifically relevant to biological diversity for food and agriculture;

Noting the important linkages between biodiversity for food and agriculture and relevant and globally agreed instruments and frameworks, such as the 2030 Agenda for Sustainable Development and the Addis Ababa Action Agenda, the Convention on Biological Diversity and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, the Paris Agreement on Climate Change, and the guidance and tools developed under these instruments;

Recalling the Global Plan of Action and the Interlaken Declaration as key milestones in international efforts to manage and conserve animal genetic resources and ensure their fair and wise use in order to achieve global food security and sustainable development,

Acknowledging the substantial progress in the implementation of the Global Plan of Action that has been achieved over the past decade and commend all stakeholders for this achievement, **confirming** that the Global Plan of Action, and all the strategic priorities and actions it contains, remain fully

²² C 2007/REP.

²³ CGRFA-16/17/Report.

relevant; and **re-emphasizing** the critical role of the Global Plan of Action in achieving global food security and nutrition and sustainable development.

Further **acknowledging** that major gaps and weaknesses continue to exist in national capacities and international collaboration for the implementation of the Global Plan of Action;

Recognizing that the impacts of climate change have grown both in strength and frequency since the adoption of the Global Plan of Action, and that climate change impacts genetic resources diversity and acts as a driver of genetic erosion while genetic diversity is key for adapting our global food system to the effects of climate, and for climate change mitigation;

Acknowledging that a shrinking natural resource base available for animal production has become a critical driver of the erosion of animal genetic resources, especially in land-based production systems, and that resolving competition with other land uses, including cropping, protected areas, tourism, and mining, is an issue of concern in all regions;

Recognizing the potential of technological developments in all areas of animal genetic resources management and the social, environmental or regulatory challenges they may pose; and

Reaffirms that:

The Global Plan of Action continues to be the key international instrument to guide the management of animal genetic resources for food and agriculture at national, regional and international levels.

Invites Governments to:

- i. develop or strengthen national policies, strategies and actions plans for the management of animal genetic resources, furthering the implementation of the Global Plan of Action;
- ii. continue or strengthen characterization, surveying and monitoring of animal genetic resources for the annual reporting of SDG 2.5;
- iii. integrate animal genetic diversity into national climate change adaptation planning, addressing both their potential for adaptation to and mitigation of the effects of climate change;
- iv. address the challenge of a shrinking natural resource base available for animal production by undertaking a range of measures, including, as appropriate, improving land-use planning and reducing habitat loss for locally adapted breeds; strengthening the rights of indigenous peoples⁷ and pastoralist livestock keeping communities over territories, lands and natural resources; strengthen the roles of locally adapted breeds in sustainable land management and promoting collaboration between stakeholders involved in the management of animal genetic resources and nature conservation organizations;
- v. support the continued provision of ecosystem services by livestock producers, with special consideration to small-scale livestock keepers and pastoralists and their locally adapted breeds, through better articulating and enhancing the economic value of livestock production systems harbouring locally adapted breeds, including through enhancing value-added opportunities with programmes and private initiatives, and developing results-based incentive systems;
- vi. take note of and apply, as appropriate, the *Elements to Facilitate Domestic Implementation of Access and Benefit-Sharing for Different Subsectors of Genetic Resources for Food and Agriculture*,²⁴ and consider the distinctive features of the animal subsector of genetic resources for food and agriculture in the development and implementation of domestic access and benefit-sharing measures; and
- vii. support the capacity development, specifically for developing countries, and collaboration in all areas required for the integrated implementation of the Global Plan of Action, particularly in new technologies.

²⁴ Food and Agriculture Organization of the United Nations, Commission on Genetic Resources for Food and Agriculture, Rome, 2016 (<http://www.fao.org/3/a-i5033e.pdf>).

Requests the Organization to:

- i. continue to monitor the continuous, as well as new and emerging challenges in the management of animal genetic resources, and to facilitate the reporting process on such issues under the Global Plan of Action;
- ii. review the progress in the Global Plan of Action's implementation and its relevance and orientation in light of new and emerging challenges and opportunities in the management of animal genetic resources;
- iii. continue the development of guidelines, tools and standards required to achieve the full implementation of the Global Plan of Action, including on emerging issues;
- iv. ensure that all relevant parts of the Organization, at Headquarters, regional and country levels, are actively engaged and coordinated in promoting work on animal genetic diversity, within the parameters of the FAO Strategic Objectives;²⁵ and
- v. further support the development and implementation of measures, guidance and tools to promote the mainstreaming of biodiversity in the livestock sector, with a view to supporting member countries in the transition to sustainable food and agricultural systems.²⁶

Calls on all partners and stakeholders, including donors, academic and research institutions, indigenous peoples, pastoralists and other livestock keeping communities, non-governmental and civil society organizations, animal breeders, private sector entities and other relevant stakeholders, to join us in our efforts.

²⁵ PC 119/5 Sup.1, Evaluation of FAO's contribution to the conservation and sustainable use of genetic resources for food and agriculture – Management Response.

²⁶ UNEP/CBD/SBI/REC/1/4.