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# COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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| <b>Item 4.2 of the Provisional Agenda</b>                                                                                 |
| <b>Fourteenth Regular Session</b>                                                                                         |
| <b>Rome, 15-19 April 2013</b>                                                                                             |
| <b>ROLES OF SMALL-SCALE LIVESTOCK KEEPERS IN THE<br/>CONSERVATION AND SUSTAINABLE USE OF ANIMAL GENETIC<br/>RESOURCES</b> |

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## I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission) and the FAO Conference have continuously stressed the important role of small-scale livestock keepers and pastoralists in the development, use and conservation of animal genetic resources.<sup>1</sup> The *Global Plan of Action for Animal Genetic Resources (Global Plan of Action)* acknowledges the contribution of livestock keepers and pastoralists in indigenous and local production systems to the domestication, development, maintenance and conservation of animal genetic diversity.<sup>2</sup> In reaffirming its commitment to the *Interlaken Declaration on Animal Genetic Resources* and emphasizing the urgent need for the implementation of the *Global Plan of Action for Animal Genetic Resources*, the FAO Conference, in 2009, stressed the importance of addressing the particular needs of small-scale livestock keepers and pastoralists and encouraged their full and effective participation in the implementation of the *Global Plan of Action*.<sup>3</sup>

2. At its Thirteenth Regular Session, the Commission requested FAO to ensure in its capacity-building activities on the management of animal genetic resources that emphasis is given to the important roles of small-scale livestock keepers and pastoralists, the impacts of climate change, and the roles of well-adapted species, such as camels.<sup>4</sup>

3. This document reports on FAO's activities, recent events and developments related to the roles of small-scale livestock keepers in the development, use and conservation of animal genetic resources.

## II. THE CHANGING ROLE OF SMALL-SCALE LIVESTOCK KEEPERS

4. As livestock production systems and the social structures that underpin them are highly dynamic, the roles of small-scale livestock keepers and pastoralists as guardians of diversity are evolving. However, the most fundamental roles of small-scale livestock keepers in the development, use and conservation of livestock genetic resources may be summarized, as follows:<sup>5</sup>

- **Provision of products and services:** As they seek to improve their livelihoods and well-being, small-scale livestock keepers and pastoralists use the provisioning services provided by livestock, such as production of meat, milk and eggs, but also draw on the cultural, supporting and regulating services provided by their animals. The sustainable use of marginal areas and the provision of agro-ecosystem services, such as maintaining soil fertility through manure and nutrient recycling, are important features. Provisioning services involve private goods and contribute directly to an individual's livelihood, whereas cultural, supporting and regulating services have both public and private good characteristics, to varying degree.
- **Development and sustainable use of local breeds:** small-scale livestock keepers and pastoralists structure animal genetic resources into breeds through social breeding mechanisms. They apply indigenous knowledge about animal breeding and breeds when developing breeding goals and objectives.
- **Conservation:** Small-scale livestock keepers and pastoralists contribute to breed conservation and the preservation of option values, especially for traits furthering survival in harsh environments. Genetic diversity conservation is a global public good, for which individual livestock keepers are generally not compensated.

<sup>1</sup> CGRFA-12/09/Report, paragraph 44-45; CGRFA-13/11/Report, paragraph 77; C 2007/REP, paragraph 146; C 2009/REP, paragraph 67; C 2011/REP, paragraph 70.

<sup>2</sup> *Global Plan of Action*, Strategic Priorities 5 and 6.

<sup>3</sup> C 2009/REP, paragraph 67.

<sup>4</sup> CGRFA-13/11/Report, paragraph 77.

<sup>5</sup> CGRFA-12/09/Inf.12.

5. Small-scale livestock keepers are the *de facto* custodians of a significant proportion of the diversity of the world's animal genetic resources, but economic analysis suggests that this role is often undertaken by default rather than by deliberate choice. An ad hoc Expert Group on Biodiversity for Poverty Eradication and Development of the Convention of Biological Diversity recently concluded that although all people depend on ecosystems and their biodiversity for their livelihoods, the poor depend disproportionately on biodiversity for their subsistence needs – both in terms of income and insurance against risk.<sup>6</sup> Small-scale livestock keepers and locally adapted breeds tend to be more commonly found in marginal areas with stressful environments and high poverty rates. In such conditions, high-output transboundary breeds are not well-enough adapted to deliver high-outputs, whereas locally adapted breeds can still provide their provisioning services, and their non-provisioning services. Therefore, in marginal areas there is little mismatch between private and public goods because livestock keepers pursuing their private interests also provide the public good of maintaining diversity. Conversely, in highly productive areas there may be a mismatch because livestock keepers in pursuing their private interests will start keeping high-output breeds and conservation measures for local breeds at risk may not be in place.

6. Currently, economic mechanisms tend to primarily value the provisioning services of livestock such as production of meat, milk and eggs, while largely undervaluing or ignoring the cultural, supporting and regulating ecosystem services such as social functions and maintenance of genetic diversity. Prevailing economic conditions in many geographic areas tend to favour the intensification of production, including utilization of high-output breeds and increases in holding size. In addition, incentives such as subsidized inputs are often provided to help countries reach food security goals. Under most circumstances, these economic drivers and incentives favour the adoption of high-output transboundary breeds. Application of technologies and increasingly demanding health and sanitary standards are also not scale neutral and favour large-scale over small-scale production.

7. Left exposed to the vagaries of markets for provisioning services in favourable areas undergoing fast structural change, there is a risk that small-scale livestock keepers will eventually abandon agriculture and livestock production as a livelihood; this could result in the loss of local breeds. In favourable production areas, the maintenance of genetic diversity by small-scale livestock keepers may be unsustainable in the long-term without targeted interventions, such as payments for environmental services for biodiversity conservation or rangeland management.

8. Loss of biodiversity appears unavoidable where economic needs favour the use of high-output breeds. However, it can be mitigated by adopting more sustainable production and consumption systems. A situation should be avoided where mostly small-scale livestock keepers in marginal areas continue as sole custodians of animal genetic diversity. Poor and vulnerable groups must not be saddled with the costs associated with protecting biodiversity. Instead, compensation should be offered for any opportunity costs associated with maintaining biodiversity at the expense of adopting other productive technologies.

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<sup>6</sup> UNEP/CBD/WG-RI/4/INF/11.

### III. ACTIVITIES BY FAO AND PARTNERS

9. According to the *Global Plan of Action*, indigenous and local livestock systems of importance to animal genetic resources shall be supported, for example, through delivery of microcredit for women in rural areas, appropriate access to natural resources and to the market, resolving land tenure issues, recognition of cultural practices and values, and adding value to their specialist products.<sup>7</sup>

#### A. Access of small-scale livestock keepers to natural resources and land tenure

10. In May 2012, FAO launched the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (Voluntary Guidelines)*.<sup>8</sup> These guidelines are an important component of improving resource access for livestock keepers. They aim to promote secure tenure rights and equitable access to land and forests as a means of eradicating hunger and poverty, supporting sustainable development and enhancing the environment. They make specific references to pastoralists, who maintain a wide range of highly adapted breeds but whose breeds are most threatened by lack of functioning institutions, socio-political instability and poor livestock sector policies<sup>9</sup>. According to the *Voluntary Guidelines*, states and other parties should contribute to the understanding of transboundary tenure issues affecting communities, such as with rangelands or seasonal migration routes of pastoralists, which lie across international boundaries.<sup>10</sup>

#### B. Adding value to local breeds, their products and services

11. FAO developed a module in DAD-IS that allows National Coordinators for the Management of Animal Genetic Resources to enter descriptions on the production environment of breed populations, as well as breed's specific traits, products and services. Spatial distributions of breeds have been geo-referenced. Such mapping will allow for the better analysis of links between breeds and socio-economic or environmental indicators, and allow for future modeling.

#### Working animals

12. Working animals are critically important in many countries. Throughout the developing world they are an essential source of power in agriculture and for transport of goods and people. Globally, there is increasing evidence of their economic contributions to human livelihoods through their direct and indirect roles in income generation and household food security. Yet, working animals remain largely invisible in the eyes of decision- and policy-makers, civil society, and development agencies. Calls for renewed emphasis on smallholders and for building resilience and strengthening livelihoods have so far disregarded the importance of working animals. The invisibility of working animals and of the role they play is increased by a lack of specific data and research and technical information. Although it can be assumed that most working animals belong to locally adapted breeds, almost no information is available on the genetic make-up of many working animals in developing countries and little consideration is given to breeding and/or biodiversity conservation strategies. An FAO report that explores some of the critical challenges, gaps and opportunities in the management of working animals and their welfare is in preparation.

<sup>7</sup> *Global Plan of Action*, Strategic Priority 6.

<sup>8</sup> [http://www.fao.org/fileadmin/user\\_upload/nr/land\\_tenure/pdf/VG\\_Final\\_May\\_2012.pdf](http://www.fao.org/fileadmin/user_upload/nr/land_tenure/pdf/VG_Final_May_2012.pdf)

<sup>9</sup> CGRFA Background Study 50: *Threats to animal genetic resources – their relevance, importance and opportunities to decrease their impact*.

<sup>10</sup> *Voluntary Guidelines*, paragraph 22.2 (<http://www.fao.org/docrep/016/i2801e/i2801e.pdf>).

## Product marketing

13. The low production of provisioning services by locally adapted breeds, if compared to high-output transboundary breeds can be compensated for by developing market chains that increase return per unit of product sold. In collaboration with the League for Pastoral Peoples and Endogenous Livestock Development (LPP), LIFE Network and the International Union for Conservation of Nature–World Initiative for Sustainable Pastoralism (IUCN-WISP) FAO published the book *Adding value to livestock diversity – marketing to promote local breeds and improve livelihoods* and distributed it in English, French and Spanish.<sup>11</sup> In November 2011, the Global Focal Point and the FAO Sub-regional Office for North Africa conducted a workshop in Tunisia on the characterization and promotion of local animal breeds and their products. FAO also organized a consultative expert meeting on the valorization of animal genetic resources in West and Central Africa, which was held in Togo in December 2011.

## Environmental values

14. The restoration of degraded grasslands through sustainable grazing management practices, including reductions in grazing pressure on overstocked sites and better pasture management, can lock more carbon in soils and biomass, and reduce CH<sub>4</sub> emissions per unit product and increase herder incomes by increasing livestock productivity. FAO, in collaboration with the Chinese Academy of Agricultural Science, the Chinese Academy of Sciences and the World Agroforestry Centre are in the process of developing a grassland carbon accounting methodology<sup>12</sup> which aims to significantly reduce the costs associated with measurement and verification and to facilitate access of small-scale herders to carbon markets.<sup>13</sup> The methodology is currently under validation by the internationally recognized Verified Carbon Standard.

15. In August 2011, the symposium, “Environmental value of animal genetic resources,” was organized by FAO, the European Regional Focal Point for Animal Genetic Resources (ERFP) and the European Federation of Animal Science (EAAP) Working Group on Animal Genetic Resources on the occasion of the 62<sup>nd</sup> Annual Meeting of the EAAP. A global survey is being prepared on the environmental value and ecosystem services provided by local breeds. The ERFP also established a Task Force on agri-environmental measures.

## C. Participation of small-scale livestock keepers

16. In 2009, the FAO Conference encouraged the full and effective participation of small-scale livestock keepers and pastoralists, custodians of much of the world’s animal genetic resources in the implementation of the *Global Plan of Action*.<sup>14</sup>

17. As regards the participation of small-scale livestock keepers in the implementation of the *Global Plan of Action*, 45 countries, stated in their progress reports on the implementation of the *Global Plan of Action* that mechanisms were in place already before the adoption of the *Global Plan of Action* to facilitate interactions among all stakeholders, scientific disciplines and sectors as part of sustainable use development planning, while 19 countries stated that they have been put in place following the adoption of the *Global Plan of Action*.

18. In its report on the implementation of the *Global Plan of Action*, LPP announced that it will continue supporting bio-cultural community protocols (BCPs), which are tools that facilitate culturally rooted, participatory decision-making processes within communities with the aim of asserting rights over their communally managed lands, genetic resources and traditional knowledge. BCPs are based

<sup>11</sup> [http://www.fao.org/ag/againfo/resources/en/pubs\\_gen.html](http://www.fao.org/ag/againfo/resources/en/pubs_gen.html)

<sup>12</sup> <http://v-c-s.org/methodologies/methodology-sustainable-grassland-management-sgm>

<sup>13</sup> [www.fao.org/news/story/en/item/90042/icode/](http://www.fao.org/news/story/en/item/90042/icode/)

<sup>14</sup> C 2009/REP, paragraph 67.

on customary norms and laws of communities and set out clear terms and conditions to governments, the private and research sectors for accessing community resources and engaging communities. BCPs facilitate conservation and sustainable use of biodiversity by ensuring that decisions regarding communally managed resources rest firmly with the communities who have served as stewards of these resources over many generations.

## **D. FAO policies relevant to small-scale livestock keepers**

### **Gender equity**

19. In 2012, FAO launched its *Policy on Gender Equality: Attaining Food Security Goals in Agriculture and Rural Development*. The purpose of this policy is to provide FAO with a framework to guide its efforts to achieve gender equality in its technical work and to assess results.<sup>15</sup> A study, *Invisible guardians – women manage livestock diversity*<sup>16</sup>, published by FAO in 2012 on the role of women in the management of animal genetic resources concludes that in a global scenario in which the livestock sector is undergoing rapid and dramatic change due to sky-rocketing demand for meat, milk, and eggs – involving rapid expansion of high-input and large-scale industrial production – it is mainly women that act as guardians of the remaining locally adapted livestock breeds. This is due to women's responsibility for shouldering the reproductive economy, deeply ingrained gender roles that restrict women's range of activities to the domestic domain, and women's tendency to favour risk-avoiding livelihood strategies. However, this role may be transitional – if families manage to provide their children with education, often with income earned from local livestock, they are on a trajectory that takes them towards greater affluence and the abandonment of livestock keeping.

### **Indigenous and Tribal Peoples**

20. The *FAO Policy on Indigenous and Tribal Peoples*,<sup>17</sup> launched in 2010, aims to provide guidance to the agency's various technical units and encourage staff in headquarters and in the regions to engage more systematically and responsibly with indigenous peoples and their organizations. It stresses that the right to, and sustainable management of, natural resources (land, water, fisheries, forests, genetic resources, biodiversity etc.) is crucial for the benefit of present and future generations, particularly those who rely on the environment for their daily survival. The policy mentions the *Global Plan of Action* as an "important standard-setting instrument recognizing the human rights of all people".

### **Environmental impact assessment**

21. Anecdotal evidence suggests that high-output transboundary breeds are not economically viable outside a radius of approximately 30 km from centres where inputs can be obtained and products marketed; this varies with the infrastructure and the perishable nature of the inputs and the livestock products. The FAO document, *Environmental impact assessment: guidelines for FAO projects*,<sup>18</sup> stresses the need to ensure that any animal genetic resources imported into countries through FAO projects are neither harmful to local biodiversity, including local breeds, nor economically harmful to the recipient farmers because of increased health and other costs associated with managing poorly adapted animals.

## **E. Adaptation to and mitigation of climate change**

22. Small-scale livestock keepers, especially pastoralists, are most at risk from the impacts of climate change. A document, *Actions to adapt to and mitigate climate change impacts on natural*

<sup>15</sup> [http://typo3.fao.org/fileadmin/templates/gender/docs/FAO\\_FinalGender\\_Policy\\_2012.pdf](http://typo3.fao.org/fileadmin/templates/gender/docs/FAO_FinalGender_Policy_2012.pdf)

<sup>16</sup> <http://www.fao.org/docrep/016/i3018e/i3018e00.pdf>

<sup>17</sup> <http://www.fao.org/docrep/013/i1857e/i1857e00.pdf>

<sup>18</sup> <http://www.fao.org/docrep/014/am862e/am862e00.pdf>

*resources: the case of fisheries and aquaculture, forestry, and livestock in the Near East*<sup>19</sup> was presented to the Thirty-first Session of the FAO Regional Conference for the Near East and a publication *Livestock and climate change in the Near East: Measures to adapt to and mitigate climate change* prepared.<sup>20</sup> A FAO sourcebook on climate-smart agriculture, including animal genetic resources, is in preparation.

23. Camelids are very adapted to harsh conditions and support the livelihoods of many people, particularly in desert areas. FAO supports the Kingdom of Saudi Arabia on a project for establishing a camel breeding, protection and improvement centre. The center shall (i) serve as an international centre of excellence with a focus on conducting research, studies and technological development in the fields of camel breeding, nutrition, genetics and selection, theriogenology, reproduction, milk and meat technologies with specific attention on improving production, quality and processing and disease control, including epidemiological surveys and disease eradication strategies; and (ii) serve as a host for scholars, researchers, trainees and visitors engaged in the field of camel science and to serve camel breeders.

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<sup>19</sup> NERC/12/5.

<sup>20</sup> [http://www.fao.org/ag/againfo/resources/newsletter/docs/2012\\_1007\\_Tibbo.pdf](http://www.fao.org/ag/againfo/resources/newsletter/docs/2012_1007_Tibbo.pdf)