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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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ASSESSMENT OF THE ROLE OF GENETIC RESOURCES FOR FOOD AND AGRICULTURE FOR CLIMATE CHANGE ADAPTATION AND MITIGATION

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CGRFA 17

I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its last session, welcomed the progress made in the implementation of the Programme of Work on Climate Change and Genetic Resources for Food and Agriculture¹ and agreed to integrate the Commission's work on climate change into its Multi-Year Programme of Work. It requested FAO to ensure that the Commission's work² on genetic resources for food and agriculture (GRFA) and climate change be fully integrated into the Organization's Strategic Framework and its Climate Change Strategy.
2. The Commission invited countries to integrate diversity of GRFA into national climate change planning, to implement the Commission's *Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning* (Guidelines)³ and provide feedback in this regard to the Secretary.⁴
3. The Commission also requested a proposal for the preparation of a country-driven global assessment of the role of GRFA in adaptation to and mitigation of climate change, for its consideration at this session.
4. This document provides background information on the role of GRFA in the international climate change policy context, provides information on selected activities of FAO related to GRFA and biodiversity for food and agriculture and climate change and proposes next steps with regard to the country-driven global assessment.

II. BACKGROUND

5. The 2015 Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) recognizes in its Preamble "the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse effects of climate change." At national level, Member Nations are guided by their Nationally Determined Contributions (NDCs), which Parties submitted ahead of the twenty-first session of the Conference of the Parties (COP) of the UNFCCC as Intended Nationally Determined Contributions (INDCs), an expression of their goals and priorities.
6. An analysis of the INDCs that 189 countries had submitted as at 29 July 2016 shows that 98 percent of all INDCs include priority areas for adaptation and/or adaptation actions in the agriculture sectors. Of these countries, 97 percent refer to crops and livestock, while 88 percent refer to forests and 64 percent refer to fisheries and aquaculture.
7. 34 countries refer to the use of plant genetic resources. Most of these countries mention crops tolerant to stress, in particular drought, flood, salt, pest and diseases as well as short cycle crops. Measures refer not only to the sustainable use of varieties, but also to the development, conservation and creation of germplasm banks. The importance to preserve traditional knowledge of breeding, R&D in crop varieties and the adoption of climate-resilient crops from other regions are often referred to by countries.
8. 71 countries mention livestock and pastoral systems, with actions ranging from rehabilitation of degraded rangeland to improved management of transhumance and agro-pastoralism, to animal health (e.g. pests and disease monitoring), breeding (e.g. diversity of livestock and improved species) and feed management. On forestry, 27 percent of countries refer exclusively to management and restoration of forest ecosystems, 9 percent refer exclusively to mangroves. Plans and projects regarding afforestation, reforestation and avoiding deforestation are mentioned by 34 percent as strategies for adapting to climate change.⁵

¹ CGRFA-14/13/Report, *Appendix D*.

² CGRFA-16/17/Report Rev 1, paragraph 27.

³ <http://www.fao.org/3/a-i4940e.pdf>

⁴ CGRFA-16/17/Report Rev 1, paragraph 29.

⁵ FAO, 2016. The agriculture sectors in the Intended Nationally Determined Contributions: Analysis, by Strohmaier, R., Rioux, J., Seggel, A., Meybeck, A., Bernoux, M., Salvatore, M., Miranda, J. and Agostini, A. Environment and Natural Resources Management Working Paper No. 62. Rome ; World Bank, 2014. Joint

9. Decision 4/CP.23⁶ on the *Koronivia joint work on agriculture*, adopted by the UNFCCC COP, at its twenty-third session, requests the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation “to jointly address issues related to agriculture, [...] working with constituted bodies under the Convention and taking into consideration the vulnerabilities of agriculture to climate change and approaches to addressing food security.” The decision also identifies “elements” on which Parties and observers were asked to submit views by 31 March 2018. Among these elements are: improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management; improved nutrient use and manure management towards sustainable and resilient agricultural systems; and improved livestock management systems.

10. The recent special report on *Global Warming of 1.5°C*⁷ of the Intergovernmental Panel on Climate Change (IPCC) projects that impacts of climate change on terrestrial, marine, freshwater and coastal biodiversity and ecosystems, including species loss and extinction, will increase in case global warming will not be limited to 1.5°C, and that their functions and services to humans will be reduced. The report addresses biodiversity at the species and ecosystem levels rather than the genetic level. There are a wide range of adaptation options that can reduce the risks of climate change to natural and managed ecosystems (e.g. ecosystem based adaptation, ecosystem restoration, avoided degradation and deforestation, biodiversity management, sustainable aquaculture, and local knowledge and indigenous knowledge). Options to limit global warming to 1.5°C, such as afforestation and using agricultural land for energy crops, and other large-scale land use transitions for mitigation purposes pose profound challenges for the sustainable management of land for human settlements, food, livestock feed, fibre, bioenergy, carbon storage, biodiversity and other ecosystem services. On the other hand, restoration of natural ecosystems and soil carbon sequestration could provide co-benefits such as improved biodiversity, soil quality, and local food security.

11. The IPCC is in the process of preparing a special report on *Climate Change and Land*, which includes desertification, land degradation effects on ecosystems and livelihoods, sustainable land management, greenhouse gas fluxes in terrestrial ecosystems and food security, to be released in August 2019. Another special report on *The ocean and cryosphere in a changing climate* that will cover changing oceans, marine ecosystems and dependent communities as well as high mountain areas is expected for September 2019.⁸

III. COUNTRY AND FAO ACTIVITIES

12. The Commission, at its last session invited the Secretariat to continue raising awareness on the importance and potential role of GRFA in the context of climate change and promote the mainstreaming of these resources into climate change-related programmes and policies, including at national and regional levels and requested FAO to ensure that the Commission’s work on GRFA and climate change be fully integrated into the Organization’s Strategic Framework and its Climate Change Strategy.⁹

13. Through Circular State Letter C/CBD-7 of 22 May 2017, the Secretary invited Members and observers to provide inputs and feedback on the implementation of the Guidelines to the Secretariat. All inputs received are compiled in the document, *Submissions by countries on the implementation of*

Report on Multilateral Development Banks’ Climate Finance.

<http://www.worldbank.org/content/dam/Worldbank/document/Climate/mdb-climate-finance-2014-joint-report-061615.pdf>

⁶ FCCC/CP/2017/11/Add.1, Decision 4/CP.23

⁷ IPCC, 2018: Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.

⁸ <https://www.ipcc.ch/reports/>

⁹ CGRFA-16/17/Report Rev 1, paragraph 28, 27

*the Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning.*¹⁰

14. In 2017, the FAO Strategy on Climate Change¹¹ was adopted¹². The strategy makes ample reference to biodiversity and, more specifically, to genetic resources for food and agriculture. The FAO Conference, at its 40th Session, called on FAO and countries to mainstream biodiversity in agriculture, including livestock, and to promote its contribution to ecosystem services and to climate change adaptation and mitigation.¹³

15. In 2017, FAO also updated the *Climate-smart agriculture sourcebook* which is now available as digital version¹⁴. The Sourcebook consists of three main sections: Concept; Production and Resources; and Enabling Frameworks. The Commission Secretariat coordinated module B8 on Genetic resources for Climate-Smart Agriculture Production that complements the sectoral chapters in Section B: Production and resources.

16. FAO, together with the Government of Quebec, Canada, organized in 2017 an international symposium on *Food security and nutrition in the age of climate change*, two sessions of which addressed genetic diversity.¹⁵

17. The Commission's book '*Coping with climate change – The roles of genetic resources for food and agriculture*' is being published in Chinese.

18. The UNFCCC *Guidelines for National Adaptation Plans (NAPs)*¹⁶ provide advice on establishing a national planning process, identifying and addressing capacity gaps, preparing NAPs, and establishing a monitoring and evaluation system. Because the UNFCCC NAP Technical Guidelines are not specific to any sector, the UNFCCC invited agencies and partners to submit sector-specific supplementary technical guidelines to support developing countries in preparing their NAPs. Following the approval by the FAO Conference of the *Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning*, FAO launched the publication *Addressing agriculture, forestry and fisheries in national adaptation plans. Supplementary guidelines.*¹⁷

19. With the establishment of FAO's new Department on Climate, Biodiversity, Land and Water, the themes of the three Rio Conventions have been integrated more visibly in FAO's work. FAO's Regional Conferences and Technical Committee Sessions during the biennium addressed both, climate change and biodiversity. The Committee on Agriculture requested FAO to develop a strategy on biodiversity mainstreaming across agricultural sectors, ensuring consistency with other FAO strategies including the one on climate change¹⁸.

20. In 2018, FAO provided extensive technical support to countries on REDD+, including on aspects of measuring and monitoring forest biodiversity and of safeguarding that implementation of REDD+ actions would be consistent with the conservation of natural forests and biological diversity.

21. A comprehensive FAO technical review of *Impacts of climate change on fisheries and aquaculture: synthesis of current knowledge, adaptation and mitigation options* highlights the

¹⁰ CGRFA-17/19/5/Inf.1.

¹¹ <http://www.fao.org/3/a-i7175e.pdf>

¹² CL 158/5, paragraph 5; CL 158/REP, paragraph 11;

¹³ C 2017/REP, paragraph 43b.

¹⁴ <http://www.fao.org/climate-smart-agriculture-sourcebook/en/>, <http://www.fao.org/climate-smart-agriculture/en/>

¹⁵ <http://www.fao.org/3/ca1334en/CA1334EN.pdf>

¹⁶ https://unfccc.int/files/adaptation/cancun_adaptation_framework/application/pdf/naptechguidelines_eng_high_res.pdf

¹⁷ <http://www.fao.org/3/a-i6714e.pdf>

¹⁸ C 2019/21 Rev.1, paragraph 47.

multifaceted and interconnected complexity of fisheries and aquaculture, through which direct and indirect impacts of climate change will materialize.¹⁹

IV. PREPARATION OF A GLOBAL ASSESSMENT OF THE ROLE OF GENETIC RESOURCES FOR FOOD AND AGRICULTURE IN ADAPTATION TO AND MITIGATION OF CLIMATE CHANGE

22. At its last Session, the Commission requested the Secretariat to prepare a proposal for a country-driven global assessment of the role of GRFA in adaptation to and mitigation of climate change, for consideration of the Commission at its next Session. It stressed that any reporting process should be voluntary, undertaken in collaboration, and be based preferably on a simple questionnaire that is usable at national level.²⁰ According to the MYPOW adopted by the Commission at its last Session, the review of the country-driven global assessment of the role of GRFA in adaptation to and mitigation of climate change is foreseen for the Nineteenth Session.

23. However, given the on-going work of the IPCC and the increasing attention agriculture receives in climate change forums and research, the Commission may wish to await the publication of the forthcoming IPCC special reports on terrestrial and marine systems that will address ecosystem services, food security and livelihoods of dependent communities before taking a decision on the country-driven global assessment of the role of GRFA. The Commission may also wish to request FAO to prepare a scoping study of the current knowledge of the role of GRFA for adaptation to and mitigation of climate change. Such a study could also help to focus the global assessment on areas where no or little information is available.

24. Following a review of the scoping study, a global assessment could be considered by the Commission, at its Eighteenth Regular Session. During the intersessional period, the Commission's intergovernmental technical working groups (Working Groups), could review the scoping study and, if the assessment is still considered pertinent, provide guidance on its preparation. On this occasion, the Working Groups could also review a first draft country questionnaire.

V. GUIDANCE SOUGHT

25. The Commission may wish to

- i. Request FAO to prepare, based on the forthcoming IPCC special reports on terrestrial and marine systems, and other available sources, a scoping study on the role of GRFA in adaptation to and mitigation of climate change;
- ii. Invite its Working Groups to review the study and, if a global assessment of the role of GRFA is considered pertinent, to provide guidance to the Commission on its preparation.

¹⁹ Barange, M., Bahri, T., Beveridge, M.C.M., Cochrane, K.L., Funge-Smith, S. & Poulain, F., eds. 2018. Impacts of climate change on fisheries and aquaculture: synthesis of current knowledge, adaptation and mitigation options. FAO Fisheries and Aquaculture Technical Paper No. 627. Rome, FAO. 628 pp

²⁰ CGRFA-16/17/Report Rev 1, paragraph 31.