



# COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

## Item 2 of the Provisional Agenda

### Twentieth Regular Session

Rome, 24–28 March 2025

## CLIMATE CHANGE AND GENETIC RESOURCES FOR FOOD AND AGRICULTURE

### TABLE OF CONTENTS

	Paragraphs
I. Introduction .....	1–4
II. Background .....	5–11
III. Baseline review of GRFA and climate change .....	12–14
V. Revision of the <i>Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning</i> .....	15–16
VI. Guidance sought.....	17

## I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Nineteenth Regular Session, reviewed and simplified the voluntary draft questionnaire on genetic resources for food and agriculture (GRFA) and climate change.<sup>1</sup> It requested the Secretariat to finalize the questionnaire by September 2023 and subsequently circulate it to all National Focal Points to the Commission to coordinate national consultations and submissions, with a view to establishing a baseline of national responses for all sectors. The Commission further requested the Secretariat to prepare a summary of responses to the questionnaire for consideration by the Intergovernmental Technical Working Groups (Working Groups).<sup>2</sup>
2. The Commission also requested the Secretariat to convene, after the completion of the questionnaire, a global multistakeholder workshop on climate change and GRFA, subject to the availability of the necessary funds. The workshop should aim to exchange information and experiences, including on pre-breeding and breeding programmes directed towards adaptation, resilience and mitigation traits, share views and priorities, taking into account the responses to the questionnaire, and discuss possible changes to the *Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning* (Voluntary Guidelines)<sup>3</sup> for consideration by the Commission at its Twenty-first Regular Session.
3. This document responds to these requests of the Commission. It provides an initial baseline report collated from a limited number of responses to the climate change questionnaire.<sup>4</sup> In addition to providing information at country level on activities related to the impacts of climate change on GRFA and to the role of GRFA in climate change adaptation and mitigation, the draft baseline report may also serve as a source of reference during the development of future State of the World's reports.
4. Furthermore, it follows up on the Commission's inputs regarding the revision of the Voluntary Guidelines and the organization of a global multistakeholder workshop on climate change and GRFA, both taking into consideration the guidance received from the Working Groups. More information on FAO's work is contained in the document *FAO's work on climate change*.<sup>5</sup>

## II. BACKGROUND

5. Climate change significantly impacts agriculture, and agriculture, in turn, contributes to climate change, creating a cycle of influence. Rising temperatures, shifting precipitation patterns, and the increased frequency of extreme weather events such as droughts, floods, and storms directly affect crop yields, forestry, fisheries and livestock productivity, with consequences on livelihoods, food security, and nutrition. Warmer conditions can lead to pest and disease proliferation, further challenging agricultural systems. Conversely, agriculture is a major driver of climate change, contributing to greenhouse gas emissions through activities such as deforestation and methane emissions from livestock.
6. Climate change exacerbates food insecurity and poverty and threatens sustainable development. According to the *2023 Global Report on Food Crises*,<sup>6</sup> 258 million people in 58 countries are facing high levels of acute food insecurity, with over two-thirds or 174 million people falling under this category because of climate and conflict. Observed and projected impacts of climate change on crops, livestock, fisheries, forestry and aquaculture include extreme weather events that may lead to irreversible long-term impacts. Such events are increasing in severity and frequency, causing substantial direct and indirect economic damage, and reducing economic growth, up to

---

<sup>1</sup> CGRFA-19/23/Report, *Appendix B*.

<sup>2</sup> CGRFA-19/23/Report, paragraph 16.

<sup>3</sup> FAO. 2015. *Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning*. Rome. <http://www.fao.org/documents/card/en/c/290cd085-98f3-43df-99a9-250cec270867>

<sup>4</sup> CGRFA-20/25/2/Inf.1.

<sup>5</sup> CGRFA-20/25/2/Inf.2.

<sup>6</sup> FSIN and Global Network Against Food Crises. 2023. *GRFC 2023*. Rome. <https://www.fsinplatform.org/sites/default/files/resources/files/GRFC2023-compressed.pdf>

15 years after the event. According to some predictions, ten percent of currently suitable area for major crops and livestock will be climatically unsuitable by mid-century under some scenarios.<sup>7</sup> Conversely, food systems account for more than one-third of global greenhouse gas emissions.<sup>8</sup>

7. The *Climate Change 2023*<sup>9</sup> report of the Intergovernmental Panel on Climate Change (IPCC) noted that many agriculture, forestry and other land-use options provide adaptation and mitigation benefits that could be upscaled in the near term across most regions. The report also noted the importance of integrated approaches to meet multiple objectives, including food security and nutrition, and underscores that shifting to healthy diets and reducing food waste, along with sustainable agriculture, can reduce impacts on ecosystems and free up land for reforestation and biodiversity restoration.

8. The 29th Conference of the Parties to the UN Framework Convention on Climate Change (COP29) showcased the role that agriculture can play in the fight against climate change, while recognizing the interdependence of diverse genetic resources and sustainable agrifood systems. FAO initiatives, including the newly launched Baku Harmoniya Climate Initiative for Farmers,<sup>10</sup> aim to promote sustainable agriculture that protects biodiversity while ensuring food security and livelihoods.

9. Furthermore, at the Sixteenth Conference of the Parties to the Convention on Biological Diversity (COP16), Parties emphasized the linkages between biodiversity loss and global warming, and the need to align efforts to address these crises under the Kunming-Montreal Global Biodiversity Framework (KMGBF). Target 8<sup>11</sup> of the KMGBF focuses on minimizing the impact of climate change and ocean acidification on biodiversity while enhancing resilience through various mitigation, adaptation, and disaster risk reduction measures. It emphasizes using nature-based and ecosystem-based approaches to build resilience, mitigate the negative impacts of climate change, and capitalize on potential positive effects of climate action.

10. While agrifood systems are acutely vulnerable to climate change, they can also play a central role in providing solutions to the climate crisis and other global challenges. GRFA play a vital role in addressing climate change by contributing to both mitigation and adaptation strategies. They provide the genetic diversity needed to develop resilient crops, livestock and other organisms, such as drought-tolerant plants and disease-resistant animals. GRFA also support mitigation by enabling the cultivation of species that sequester carbon efficiently or require fewer resources, reducing greenhouse gas emissions. Their preservation promotes biodiversity and ecosystem resilience, vital for climate adaptation. Integrating GRFA into climate-smart agriculture strengthens food systems while tackling climate change challenges.

11. Sustainable agrifood systems can help countries and communities to adapt to climate change, build resilience and mitigate emissions, ensuring food security and nutrition while reversing environmental degradation and its impacts. Indeed, over 90 percent of all countries include agrifood system climate solutions in their Nationally Determined Contributions (NDCs) under the Paris Agreement – 94 percent prioritize adaptation and 91 percent prioritize mitigation in agrifood systems in the NDCs. Furthermore, 93 percent of countries promote adaptation of ecosystems and their services (terrestrial, freshwater and ocean and coastal), which includes biodiversity for food and

---

<sup>7</sup> FAO. 2023. *Climate change impacts and adaptation options in the agrifood system*, Brief summary of the Intergovernmental Panel on Climate Change Sixth Assessment Report. Rome. <https://openknowledge.fao.org/handle/20.500.14283/cc5921en>

<sup>8</sup> Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F.N. & Leip, A. 2021. Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*, 2(3):198–209. doi: 10.1038/s43016-021-00225-9.

<sup>9</sup> IPCC. 2023. Summary for Policymakers. In: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, pp. 1–34. Core Writing Team, H. Lee & J. Romero, eds. Geneva, Switzerland, Intergovernmental Panel on Climate Change. doi: 10.59327/IPCC/AR6-9789291691647.001.

<sup>10</sup> <https://enb.iisd.org/baku-harmoniya>

<sup>11</sup> <https://www.cbd.int/gbf/targets/8>

agriculture, in their NDCs.<sup>12</sup> Building a comprehensive and aligned approach is necessary to tackle the interlinked climate, biodiversity and environmental crises.

### III. DRAFT BASELINE REPORT ON GRFA AND CLIMATE CHANGE

12. In response to the Commission's request, the Secretariat finalized the questionnaire aimed at gathering information on country-level activities related to the impacts of climate change on GRFA and on the role of GRFA in climate change adaptation and mitigation, and circulated it to all National Focal Points to the Commission.<sup>13</sup> Forty-four responses to the questionnaire were received by the deadline (Africa 9; Asia 2; Europe 20; Latin America and the Caribbean 4; Near East 6; North America 2; and Southwest Pacific 1).

13. From the responses received, it was evident that countries have recognized that GRFA play an important role in climate change adaptation and mitigation. However, from the countries that responded, policies that have been put in place, for both adaptation and mitigation, do not exclusively address GRFA but do include the sustainable use and/or conservation of GRFA. Furthermore, it was evident that there are still a number of gaps that need to be addressed in relation to GRFA to help countries scale up their climate action. In particular, countries highlighted the need for better technical capacities, infrastructure and access to knowledge and equipment, as well as better collaboration among different offices within their countries.

14. The responses were compiled and synthesized by the Secretariat into a draft baseline report, which was submitted for consideration by the Working Groups.<sup>14</sup> The Working Group on Aquatic Genetic Resources for Food and Agriculture noted that their National Focal Points had not received and were not aware of the questionnaire and, therefore, recommended that the Commission reconsider its decision to circulate the questionnaire only to National Focal Points to the Commission.<sup>15</sup> The recommendation was echoed by the Working Group on Forest Genetic Resources.<sup>16</sup> The Working Group on Animal Genetic Resources for Food and Agriculture highlighted the difficulty for National Focal Points to the Commission to coordinate among the agencies responsible for the different sectors of GRFA a national response to the questionnaire and recommended that in future endeavours the Commission consider consulting the sectoral National Focal Points directly on climate change matters specifically related to their sectors.<sup>17</sup> Therefore, the Commission may wish to consider recommending that FAO initiate targeted GRFA sector-specific surveys on climate change and compile the results for information of the global multistakeholder workshop on climate change and GRFA.

### IV. REVISION OF THE VOLUNTARY GUIDELINES TO SUPPORT THE INTEGRATION OF GENETIC DIVERSITY INTO NATIONAL CLIMATE CHANGE ADAPTATION PLANNING

15. The global multistakeholder workshop on climate change and GRFA is foreseen to take place after the Commission's Twentieth Regular Session. The multistakeholder workshop will serve as a platform for stakeholders to exchange information and experiences and discuss priorities. The workshop will also be invited to an initial dialogue on possible improvements to the Voluntary Guidelines, taking into account the results of the questionnaire.

16. Following the workshop, the Voluntary Guidelines could be further reviewed through regional consultations and, subsequently, by the Working Groups and the Commission at their next sessions.

---

<sup>12</sup> Crumpler, K., Wybieralska, A., Roffredi, L., Tanganelli, E., Angioni, C., Prospero, P., Umulisa, V. *et al.* 2024. *Agrifood systems in nationally determined contributions: Global analysis – Key findings*. Rome, FAO. <https://doi.org/10.4060/cd3210en>

<sup>13</sup> <http://www.fao.org/3/cd0475en/cd0475en.pdf>

<sup>14</sup> CGRFA-20/25/2/Inf.1.

<sup>15</sup> CGRFA-20/25/6.1, paragraph 36.

<sup>16</sup> CGRFA-20/25/10.1, paragraph 25.

<sup>17</sup> CGRFA-20/25/7.1, paragraph 27.

## V. GUIDANCE SOUGHT

17. The Commission may wish to:
- (i) invite Members to make use of the FAO tools and guidance on climate change adaptation and mitigation when developing or updating their National Adaptation Plans and NDCs;
  - (ii) take note of the draft baseline report and provide further guidance with regard to the further development of the report;
  - (iii) recommend that FAO initiate targeted GRFA sector-specific surveys on climate change and compile the results for information of the global multistakeholder workshop on climate change and GRFA; and
  - (iv) recommend that the Voluntary Guidelines be revised in light of the outcome of the global multistakeholder workshop, taking into account the responses received to the questionnaire and possible inclusion of the Voluntary Guidelines in the Climate Toolbox of the NDCs Partnership, for consideration in regional consultations and subsequently by the Working Groups and the Commission.