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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 7.3 of the Provisional Agenda

Nineteenth Regular Session

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IMPLEMENTATION AND REVIEW OF THE SECOND GLOBAL PLAN OF ACTION FOR PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Eighteenth Regular Session, considered FAO's activities in support of the implementation of the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (Second GPA).[1] It formulated the following requests.

- The Commission requested FAO to support countries, in particular developing countries, in: (i) the development or revision of their national plans for the conservation and sustainable use of farmers' varieties/landraces, as well as crop wild relatives and wild food plants; (ii) the development of national inventories of crop wild relatives and wild food plants conserved *in situ* and of farmers' varieties/landraces managed on farm; and (iii) efforts to conserve plant genetic resources for food and agriculture (PGRFA) *in situ* and on-farm and to strengthen the links and complementarity between *ex situ* and *in situ* conservation.[2]
- The Commission requested FAO to continue providing support to countries in their efforts to maintain genebanks, including community seed banks, for the continued collection, conservation, characterization, evaluation and distribution of crop germplasm and associated information.[3]
- The Commission requested FAO to continue assisting countries in strengthening national seed systems, including plant breeding, for the delivery of diverse and high-quality seeds and planting materials, in particular to meet the needs and priorities of smallholder farmers.[4]
- The Commission requested FAO to continue supporting countries in building sustainable institutional and human capacities, including capacity in crop improvement and called for extra-budgetary funds to support countries in the implementation of the Second GPA, including through the development and implementation of national strategies for PGRFA, in close coordination with the International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty) and its Funding Strategy.[5]
- The Commission requested FAO to continue reporting on the status of implementation of Sustainable Development Goal (SDG) Target 2.5 and sharing the results with the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (Working Group) and the Commission.[6]

2. Since the last session of the Commission, FAO, in close collaboration with its partners, continued to support countries in the implementation of the Second GPA. This document provides information on action taken by FAO in response to the Commission's requests and on other relevant work initiated or completed since its last session, for consideration by the Commission.

II. BACKGROUND

3. The Second GPA was adopted by the FAO Council at its 143rd Session in November 2011.[7] It provides an internationally agreed framework for the conservation and sustainable use of PGRFA. The Second GPA is a supporting component of the Treaty, as per its Article 14. Its implementation is an essential contribution to efforts to meet the objectives of the Treaty[8] and will also facilitate the implementation of the Convention on Biological Diversity (CBD), including key targets of the Kunming Montreal Global Biodiversity Framework.[9]

[1] FAO. 2011. *Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture*. Rome.
[2] CGRFA-18/21/Report, paragraphs 98–99.
[3] CGRFA-18/21/Report, paragraphs 100–101.
[4] CGRFA-18/21/Report, paragraph 102.
[5] CGRFA-18/21/Report, paragraphs 102–103.
[6] CGRFA-18/21/Report, paragraph 104.
[7] CL 143/REP, paragraph 43.
[8] Second GPA, paragraph 313.
[9] CBD/COP/DEC/15/4.

4. The effects of the COVID-19 pandemic underscore the inter-related global challenges of biodiversity loss, climate change and health crises. The implementation of the 18 Priority Activities (PAs) of the Second GPA helps address this nexus, as it ultimately improves farmers' access to a diverse suite of resilient, well-adapted, productive and nutrient-dense crops and varieties. The implementation of the Second GPA also contributes to the objectives of the FAO Strategy on Climate Change 2022–2031,[10] the Vision and Strategy for FAO's Work in Nutrition,[11] as adopted by the Council in 2021,[12] and the FAO Strategic Framework 2022–31,[13] as endorsed by the Conference in 2021.[14] The FAO Strategic Framework 2022–31 seeks a transition to more efficient, inclusive, resilient and sustainable agrifood systems for better production, better nutrition, a better environment and a better life, leaving no one behind.

III. *IN SITU* CONSERVATION AND ON-FARM MANAGEMENT

A. Proceedings of the First International Multi-stakeholder Symposium on Plant Genetic Resources for Food and Agriculture

5. As requested by the Commission,[15] FAO published the *Proceedings of the First International Multi-stakeholder Symposium on Plant Genetic Resources for Food and Agriculture*.[16] Video recordings of all the presentations made at the symposium, which was held virtually in March 2021, are available online.[17] The outcomes of the event were presented at the Ninth Session of the Treaty's Governing Body.[18]

6. The Commission, at its last session, requested FAO to organize, subject to the availability of the necessary extra-budgetary resources, symposia (potentially held virtually) and webinars on *in situ* conservation and on-farm management of PGRFA, at regular intervals, in collaboration with the Treaty and other relevant international instruments or organizations.[19] In response, a webinar on the role of the conservation and sustainable use of crop wild relatives and wild food plants was organized, in collaboration with the Treaty on 28 February 2023.[20] A webinar on on-farm management of PGRFA is planned for later in 2023.

B. Conservation and sustainable use of crop wild relatives/wild food plants and farmers' varieties/landraces

7. In 2017 and 2019, respectively, the Commission endorsed the *Voluntary Guidelines for the Conservation and Sustainable Use of Crop Wild Relatives and Wild Food Plants*[21] and the *Voluntary Guidelines for the Conservation and Sustainable Use of Farmers' Varieties/Landraces*[22] and encouraged countries to use them.[23] At its last session, the Commission requested FAO to support countries, in particular developing countries, in the development or revision of their national plans for

[10] FAO. 2022. *FAO Strategy on Climate Change 2022–2031*. Rome.
[11] PC 130/5 Rev.1 (English only).
[12] CL 166/REP, paragraph 24(b).
[13] FAO. 2021. *Strategic Framework 2022–31*. Rome.
[14] C 2021/REP, paragraph 64.
[15] CGRFA-18/21/Report, paragraph 98.
[16] FAO. 2022. *Proceedings of the First International Multi-stakeholder Symposium on Plant Genetic Resources for Food and Agriculture: Technical consultation on in situ conservation and on-farm management of plant genetic resources for food and agriculture – 29–30 March 2021, Rome, Italy*. Rome. https://doi.org/10.4060/cc3716en
[17] http://www.fao.org/about/meetings/multi-stakeholder-symposium-on-pgrfa/en/
[18] IT/GB-9/22/12/Inf.3.
[19] CGRFA-18/21/Report, paragraph 98.
[20] https://www.fao.org/cgrfa/news/news-detail/webinar-wild-plant-genetic-resources-for-food-and-agriculture-their-conservation-and-use/en
[21] FAO. 2017. *Voluntary Guidelines for the Conservation and Sustainable Use of Crop Wild Relatives and Wild Food Plants*. Rome. https://www.fao.org/documents/card/en/c/8f366de9-08a8-42ad-aae1-4f8f6822420e/
[22] FAO. 2019. *Voluntary Guidelines for the Conservation and Sustainable Use of Farmers' Varieties/Landraces*. Rome. https://doi.org/10.4060/CA5601EN
[23] CGRFA-16/17/Report Rev.1, paragraph 62; CGRFA-17/19/Report, paragraph 64.

the conservation and sustainable use of farmers' varieties/landraces, crop wild relatives and wild food plants, taking into account the two voluntary guidelines. It further requested FAO to compile examples of the use of the two voluntary guidelines, with a view to improving their relevance and widening their use.[24]

8. The voluntary guidelines have been used in FAO's work on the respective themes and in particular for guiding countries in the development of projects for the Eighth Replenishment Cycle of the Global Environment Facility (GEF).[25] The guidelines have also served as reference resources for the implementation of GEF projects, specifically in China,[26] India,[27] Indonesia,[28] Mexico[29] and Tajikistan,[30] with FAO acting as GEF implementing agency. As requested by the Commission,[31] FAO also supported countries in the development of national inventories of crop wild relatives and wild food plants conserved *in situ* and of farmers' varieties/landraces managed on-farm. Such national inventories are being developed under the auspices of the aforementioned GEF-funded projects in China, India and Indonesia.

C. Direct support to Members

9. During the reporting period, FAO, in collaboration with international and local partners, supported several activities on *in situ* conservation and on-farm management of PGRFA, in particular through the above-mentioned projects and GEF-funded projects in Cuba,[32] Ecuador,[33] Mauritania[34] and Peru,[35] with FAO again acting as the GEF implementing agency.[36] FAO also supported the conservation and use of local crops and varieties in Senegal (maize, horticultural species)[37] and Algeria, (medicinal and aromatic plants), [38] including the elaboration of an action plan to promote the sustainability of the initiatives.

[24] CGRFA-18/21/Report, paragraph 99.
[25] https://www.thegef.org/who-we-are/funding/gef-8-replenishment
[26] GCP /CPR/061/GFF: On-farm Conservation and Sustainable Use of Genetic Diversity of Crops originated in China (FSP).
[27] GCP /IND/183/GFF: Green-Agriculture: Transforming Indian agriculture for global environmental benefits and the conservation of critical biodiversity and forest landscapes (FSP).
[28] GCP /INS/804/GFF: Crop Diversity Conservation for Sustainable Use in Indonesia (PPG).
[29] GCP /MEX/305/GFF: Securing the Future of Global Agriculture in the face of climate change by conserving the Genetic Diversity of the Traditional Agroecosystems of Mexico (FSP).
[30] GCP /TAJ/021/GFF: Facilitating agrobiodiversity (ABD) conservation and sustainable use to promote food and nutritional resilience in Tajikistan.
[31] CGRFA-18/21/Report, paragraph 99.
[32] GCP /CUB/017/GFF: Introduction of new farming methods for the conservation and sustainable use of biodiversity, including plant and animal genetic resources, in production landscapes in selected areas of Cuba (FSP).
[33] GCP /ECU/105P/GFF: Conservación y uso sostenible de parientes silvestres de cultivos (PSC) y especies silvestres comestibles (ESC), bajo un marco institucional y desarrollo de iniciativas comunitarias rurales en Ecuador (PPG).
[34] GCP /MAU/001/GFF: Integrated ecosystem management program for the sustainable human development in Mauritania (FSP).
[35] GCP /PER/045/GFF: Sustainable management of agro-biodiversity and vulnerable ecosystems recuperation in Peruvian Andean regions through Globally Important Agricultural Heritage Systems (GIAHS) approach.
[36] GCP /TAJ/021/GFF: Facilitating agrobiodiversity (ABD) conservation and sustainable use to promote food and nutritional resilience in Tajikistan.
[37] GCP /SEN/803P/GFF: Land Degradation Neutrality for biodiversity conservation, food security and resilient livelihoods in the Peanut Basin and Eastern Senegal (Dékil Souf) (PPG).
[38] TCP/ALG/3802: Gestion durable des zones d`intérêts pour les plantes aromatiques et médicinales (ZIPAMs) dans les zones présahariennes et sahariennes.

IV. *EX SITU* CONSERVATION

A. Application of the Genebank Standards for Plant Genetic Resources for Food and Agriculture

10. In 2013, the Commission endorsed the *Genebank Standards for Plant Genetic Resources for Food and Agriculture*[39] and requested FAO to survey their application and report on their impact, relevance and efficacy.[40] At its Eighteenth Regular Session, the Commission requested FAO to continue providing support, including capacity development, to countries in their efforts to maintain genebanks, including community seed banks, for the continued collection, conservation, characterization, evaluation and distribution of crop germplasm and associated information.[41] At its last session, the Working Group recommended that FAO look into options concerning how and which capacity-building and evaluation mechanisms could be created to help genebanks in reaching the Genebank Standards and explore the possibility of creating an acknowledgement system.[42]

11. As requested by the Commission at its last Session,[43] FAO finalized and published in 2022 three Practical Guides for the Application of the Genebank Standards for Plant Genetic Resources for Food and Agriculture covering: (i) conservation of orthodox seeds in seed genebanks;[44] (II) conservation in field genebanks;[45] and (iii) conservation via *in vitro* culture.[46]

12. The Commission also requested FAO to develop additional practical guides, especially for the conservation in genebanks of species producing recalcitrant seeds, and for cryopreservation, in collaboration with relevant international and national partners, including the CGIAR and the Global Crop Diversity Trust.[47] The Working Group, at its last session, reviewed draft outlines for the practical guides and recommended that FAO consult a virtual expert meeting on the draft practical guides and develop them further, based on feedback received, for review by the Working Group at its next session.[48]

13. FAO contributed to the development of the *Guidance note for CGIAR Genebanks on improving accession management*,[49] which aims to provide guidance for CGIAR centres on harmonizing aspects of their management of international collections of PGRFA, including the vocabulary, form and scheduling of their joint communications concerning the management of those collections, within the context of existing applicable policies. In addition, FAO participated in discussions on future work related to the Global Crop Conservation Strategies.[50]

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[39] FAO. 2014. *Genebank Standards for Plant Genetic Resources for Food and Agriculture*. Rev. ed. Rome.
[40] CGRFA-14/13/Report, paragraphs 102–103.
[41] CGRFA-18/21/Report, paragraph 100.
[42] CGRFA-19/23/7.1, paragraph 22.
[43] CGRFA-18/21/Report, paragraph 100.
[44] FAO. 2022. *Practical guide for the application of the Genebank Standards for Plant Genetic Resources for Food and Agriculture: Conservation of orthodox seeds in seed genebanks. Commission on Genetic Resources for Food and Agriculture*. Rome. https://doi.org/10.4060/cc0021en
[45] FAO. 2022. *Practical guide for the application of the Genebank Standards for Plant Genetic Resources for Food and Agriculture: Conservation in field genebanks. Commission on Genetic Resources for Food and Agriculture*. Rome. https://doi.org/10.4060/cc0023en
[46] FAO. 2022. *Practical guide for the application of the Genebank Standards for Plant Genetic Resources for Food and Agriculture: Conservation via in vitro culture. Commission on Genetic Resources for Food and Agriculture*. Rome. https://doi.org/10.4060/cc0025en
[47] CGRFA-18/23/Report, paragraph 100.
[48] CGRFA-19/23/7.1, paragraph 23.
[49] CGIAR Genebank Platform. 2022. *Guidance note for CGIAR Genebanks on improving accession management*.
[50] Dulloo, E & Khoury, C.K. 2023. *Towards Mainstreaming Global Crop Conservation Strategies*. Global Crop Diversity Trust. Bonn, Germany. DOI: 10.5281/zenodo.7548352

B. Direct support to Members

14. During the reporting period, FAO supported various *ex situ* conservation activities in several countries, including Armenia,[51]Azerbaijan,[52] Malawi, [53] Mongolia,[54] the Philippines,[55] Samoa[56]and Venezuela (Bolivarian Republic of).[57] For instance, in Malawi, 124 germplasm samples of local crops were collected, characterized and multiplied for conservation in the genebank and distribution for use in the appropriate agroecological zones of the country.

15. FAO also assisted in strengthening the operation of community seed banks in Peru[58] and in Southern Africa (Angola, Botswana, Malawi, Namibia, the United Republic of Tanzania and Zimbabwe),[59] the latter under the auspices of GEF's Dryland Sustainable Landscapes Impact Program in Southern Africa. These initiatives aim, *inter alia*, to improve the capacities of stakeholders in managing local crops and varieties, promote market-based incentive mechanisms, identify platforms for scaling up successes and promote the creation of an enabling policy environment.

V. SUSTAINABLE USE

16. The Commission, at is last session, requested FAO to continue assisting countries in strengthening national seed systems, including plant breeding, for the delivery of diverse and quality seeds and planting materials, in particular to meet the needs and priorities of smallholder farmers. It requested FAO to continue supporting countries, at their request, in collaboration with the Treaty, in strengthening their capacity in crop improvement, including prebreeding, in support of the implementation of the Second GPA and Article 6 of the Treaty.[60]

A. Global Conference on Green Development of Seed Industries

17. In November 2021, FAO organized the Global Conference on Green Development of Seed Industries[61] as a virtual event. Over 2 200 participants from 126 countries participated in the event, which was opened by the Director-General of FAO and included a high-level segment in which senior officials of six FAO Members participated. The thematic areas of the conference were: advanced technologies; conservation of PGRFA; crop varietal development and adoption; and seed systems. The proceedings of the conference, which contain ten recommendations identified by the steering committee of the event, are available online.[62] They were launched on the occasion of the First FAO Roundtable Forum on Sustainable Seed Systems Management held in November 2022, which aimed to gather support from all stakeholders for the implementation of the steering committee's recommendations in the following areas: adopting innovations; strengthening institutional and human capacities; safeguarding crop genetic resources, including in their natural habitats; breeding a diverse portfolio of

[51] MDF fund.
[52] UTF/AZE/016/AZE: Catalysing the efficiency and sustainability of Azerbaijan's hazelnut sector.
[53] GCP /MLW/072/EC: KULIMA - Promoting farming in Malawi "Revitalising Agricultural Clusters and Ulimi wa Mdandanda through Farmer Field Schools in Malawi"
[54] TCP/MON/3902: Strengthening food safety and plant health protection systems.
[55] GCP/PHI/062/GFF: Dynamic conservation and sustainable use of agricultural biodiversity to ensure food security and ecosystems services and resiliency.
[56] TCP/SAM/3803: Building capacities on tissue culture to support & sustain biodiversity for food security & nutrition.
[57] TCP/VEN/3702/C2: Fortalecimiento de las potencialidades técnico-científica en producción de semillas de leguminosas vinculadas a la agricultura familiar y campesina.
[58] GCP /PER/045/GFF: Sustainable management of agro-biodiversity and vulnerable ecosystems recuperation in Peruvian Andean regions through Globally Important Agricultural Heritage Systems (GIAHS) approach.
[59] GCP /GLO/980/GFF: Global coordination project for the Dryland Sustainable Landscapes Impact Program.
[60] CGRFA-18/21/Report, paragraph 102.
[61]https://www.fao.org/events/detail/global-conference-on-green-development-of-seed-industries/en. Accessed on 5 December 2022.
[62] Ruane, J., Mba, C. & Xia, J., eds. 2022. *Proceedings of the Global Conference on Green Development of Seed Industries 4–5 November 2021*. Rome, FAO. https://doi.org/10.4060/cc1220en.

well-adapted, progressively superior crop varieties; and developing capacities along the seed value chain.[63]

B. Strengthening seed systems

18. Over the reporting period, FAO continued to support Members in the development of robust seed systems that included variety adoption, quality seed production and establishment of community seed enterprises. The aim was to ensure that farmers, in particular small-scale farmers, have sustained access to affordable quality seeds and planting materials of well-adapted, productive, nutritious crop varieties that are resistant to biotic and abiotic stresses. In this regard, initiatives aimed at strengthening the seed delivery value chain were implemented in 16 countries.[64] These interventions entailed the provision of support for the enhanced adoption of crop varieties, including biofortified ones; community-level seed production and delivery systems; prebasic and basic seed production and supply; capacity development for seed testing laboratories and international accreditation; training and provision of seed processing equipment; and strengthening seed certification systems.

19. In Haiti, FAO supported farmers in accessing clean taro planting materials from the Centre for Pacific Crops and Trees (CePaCT).[65] In Tajikistan, support was provided for the establishment of demonstration plots and for the procurement and distribution of 85 tonnes of potato seeds and 27 tonnes of early-generation seeds of two elite varieties.[66] In Armenia, Kyrgyzstan, North Macedonia and Tajikistan, around 200 farmers were trained in seed multiplication.[67] FAO also supported Azerbaijan in the evaluation of European potato varieties and in the production and storage of pest and disease-free seed potatoes *in vitro* and in greenhouses and fields.[68] *In vitro* potato seed production was also supported in Niger.[69] In Georgia, a National Seed Producers Association was created and support provided to nurseries with the production and export of fruit trees. FAO supported countries in their efforts to increase the production of quality seed – a crucial means of boosting both productivity and revenue – including in Cambodia,[70] Egypt,[71] Ethiopia[72] and Sri Lanka.[73,74]

20. Seed legislation and regulatory frameworks at national and regional levels are essential components of a robust enabling environment for efficient and effective seed sectors. FAO continued to respond to the requests of Members and assisted in the development of national seed policies, legislation and regulations in 12 countries across various regions.[75] For instance, FAO supported Georgia in the development of a legal framework for the certification of fruit tree nursery materials and the establishment of a repository of pest-free propagating materials.[76] In Sierra Leone, FAO assisted the national seed certification agency to review the current seed policy and regulations.[77] In Mozambique, FAO provided ongoing support for the development of a seed law and the fostering of policy dialogue.[78]

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[63] https://www.fao.org/director-general/news/news-article/en/c/1626124/.
[64] Afghanistan, Armenia, Azerbaijan, Cambodia, Cote d'Ivoire, El Salvador, Egypt, Ethiopia, Georgia, Haiti, Kyrgyzstan, Mozambique, North Macedonia, Sierra Leone, Sri Lanka and Tajikistan.
[65] TCP/HAI/3804: Appui au Ministère de l'Agriculture, des Ressources Naturelles et du Développement Rural pour lutter contre le *Phytophthora colocasiae* agent causal du Mildiou du Taro par la production de semences saines en Haïti.
[66] GCP/TAJ/019/JCA: Developing a potato-seed production system in Tajikistan.
[67] TCP/RER/3802: Creating enabling environments for enhanced climate resilience in agriculture.
[68] UTF/AZE/011/AZE: Establishment of disease-free national seed potato production system in Azerbaijan.
[69] TCP/NER/3901: Projet d`Appui à la production de semences certifiées de pomme de terre dans la Région d`Agadez.
[70] TCP/CMB/3804: Support to strengthen the seed management system.
[71] TCP/EGY/3807: Propagation and Promotion of Local Seeds and Hybrids in Egypt.
[72] GCP /ETH/096/GAF: Technical Assistance to the Second Agricultural Growth Program.
[73] TCP/SRL/3901: Streamlining of good quality seed and planting material production, quality assurance and marketing system.
[74] TCP/SRL/3802: Support capacity development of supply chain of maize hybrid seeds.
[75] Armenia, Azerbaijan, Gambia, Georgia, Kyrgyzstan, Mali, Mozambique, Nicaragua, North Macedonia, Rwanda, Sudan and Tajikistan.
[76] UNJP/GEO/013/EC: EU/UN innovative action for private sector competitiveness in Georgia.
[77] TCP/SIL/3807: Strengthening of the Seed Certification and Regulatory Agency in in Sierra Leone.
[78] GCP /MOZ/127/EC: PROMOVE Agribiz.

Similarly, in Nicaragua, FAO supported the development of a seed law, which is awaiting parliamentary approval.[79]

C. Strengthening plant breeding

21. During the reporting period, FAO strengthened capacities for the development of well-adapted crop varieties suited to local agroecosystems and farming systems and facilitated the adoption of improved varieties in 11 countries.[80] In this regard, FAO supported the verification of the genetic identity of grapevine cultivars using molecular tools in Georgia,[81] the improvement of berries in the Republic of Moldova[82] and the strengthening of value chains, including improved access to markets. In Afghanistan, FAO supported the strengthening of soy production through enhanced access to early generation seeds and certified seed production.[83] The production and distribution of certified rice seeds in Côte d'Ivoire was supported and the link between seed producers and research centres for early generation forecasting of seed demand was strengthened.[84] Further, FAO provided ongoing support for enhanced cooperation between Saudi Arabia and the United Arab Emirates on research and development endeavours on the use of advanced molecular biology approaches to improve tolerance of abiotic stress in crops.[85]

22. In Venezuela (Bolivarian Republic of), FAO strengthened the capacities of technical staff and farmers in the production of quality seeds of various legumes.[86] FAO also facilitated the access of farmers in Dominica, Suriname and Trinidad and Tobago to new cassava varieties introduced as disease-free plantlets (three varieties per country).[87]

23. With funding provided by the GEF, FAO supported Sri Lanka in the implementation of its National Biosafety Framework in accordance with the Cartagena Protocol on Biosafety to the CBD.[88] In particular, drafts of the Biosafety Regulation of Sri Lanka for LMOs/GMOs and the National Biosafety Master Plan for Sri Lanka were developed. Guidelines, manuals and strategies were also created, including for the assessment, management and communication of risks. Personnel from the National and Sectoral Competent Authorities were trained in the management of the biosafety workflow, and four laboratories were provided with equipment and supplies for the detection of living modified organisms and their staff provided with training on this topic.

24. The Joint Centre of FAO and the International Atomic Energy Agency (IAEA) for Nuclear Techniques in Food and Agriculture (CJN) supported the design and implementation of 79 crop improvement-related national and regional Technical Cooperation Projects (TCPs) in over 100 countries. The outputs encompassed human capacity building, technology transfer, infrastructure upgrade and technical advice related to the efficient use of mutation breeding in crop improvement. Through the support to countries provided under these TCPs and CJNs, 72 new crop varieties were released during 2021–22. Additionally, through IAEA's Coordinated Research Projects mechanism, CJN fostered collaboration among researchers from more than 50 institutions across 39 different countries through five crop improvement-themed collaborative projects. As of December 2022, the FAO/IAEA Mutant Variety Database held records of 3 400 mutant varieties, of 228 crop species, that had been released for cultivation in 72 countries.

[79] GCP/SLM/001/MexBaby7
[80] Afghanistan, Cote d'Ivoire, Dominica, Georgia, Niger, North Macedonia, Republic of Moldova, Suriname, Trinidad and Tobago, Uzbekistan and Venezuela (Bolivarian Republic of).
[81] GCP/GEO/011/EC: FAO support to the Georgian agricultural sector (ENPARD III).
[82] TCP/MOL/3608: Strengthening the capacity of smallholders in berry production.
[83] OSRO/AFG/009: Strengthening Soya Production and Food Systems in Afghanistan.
[84] TCP/IVC/3801 (21/II/IVC/231): Appui à la revitalisation du système semencier de Côte d`Ivoire (riz).
[85] UTF/UAE/009/UAE –Baby 1: Strengthening Research, Technology and Innovation (RTI).
[86] TCP/VEN/3702/C2: Fortalecimiento de las potencialidades técnico-científica en producción de semillas de leguminosas vinculadas a la agricultura familiar y campesina.
[87] GCP/SLC/010/CDB: Cassava industry development - market assessment and technology validation and dissemination.
[88] GCP/SRL/066/GFF: Implementation of the National Biosafety Framework in accordance with the Cartagena Protocol on Biosafety.

25. The Plant Breeding and Genetics subprogramme (PBG) provided technical leadership for the Global Research Symposium on the Management of Banana Fusarium Wilt TR4,[89] which was held in Ecuador in March 2022. The symposium brought together international researchers who delivered research status updates on different facets of Tropical Race 4 (TR4) management. An inter-regional TCP on strengthening capacities to combat TR4 through early detection was recently approved.[90]

26. During 2022, the PBG also provided irradiation services for 53 requests received from 28 Members and covering 489 crop accessions/varieties. In 2022, the PBG launched a feasibility study on seed irradiation in space, which is being carried out and hosted at the International Space Station in order to increase understanding of induced genetic diversity and plant mutation breeding.

D. Rehabilitation of seed systems

27. FAO supports countries in the rebuilding of agricultural production systems following disasters and strife, including through the provision of emergency seed relief. In collaboration with partners, it carries out seed security assessments in countries that require assistance with resuming crop production after crises.

28. Over the reporting period, FAO, in collaboration with national and international partners, designed and implemented seed security assessments to guide better disaster response and resilience-building activities in five countries (Afghanistan, Burkina Faso, Somalia, Sudan and the Syrian Arab Republic).[91]

29. Compared to previous years, a larger number of farmers from a wide range of countries, including countries in Europe, received assistance with quality seeds and planting materials as emergency relief. FAO provided emergency seed assistance to several countries affected by the Ukraine conflict, including Armenia [92] and Lebanon,[93] where vulnerable farming households were provided with quality seeds of improved varieties of winter wheat, and the Republic of Moldova[94] and Ukraine, where the seeds of improved varieties of cereals and vegetables were distributed.[95]

30. During the reporting period, FAO assisted vulnerable smallholder farmers affected by diverse crises in over 70 Member Nations to access quality seeds and planting materials of food crops. These crises included drought, civil unrest, floods, tropical storms and the COVID-19 pandemic. Farmers in areas affected by a combination of drought and desert locust invasion, such as Afghanistan,[96] the Horn of Africa (Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan and Uganda)[97] and Nigeria, [98] were provided with quality seeds. Displaced people and their host communities in countries hosting refugee

[89] https://www.fao.org/3/cc2154en/cc2154en.pdf
[90] INT5158: Strengthening Member State Capacities to Combat Banana Fusarium Wilt (TR4) through Early Detection, New Resistant Varieties, and Integrated Management.
[91] OSRO/AFG/114/SWE; OSRO/BKF/801/SWE; TCP/SUD/3804/C2; GCP /SYR/023/EC.
[92] TCP/ARM/3901: Emergency agricultural inputs support to the most vulnerable smallholder farmers affected by the Ukraine conflict.
[93] TCP/LEB/3902: Emergency support to vulnerable smallholder farming households affected by the ongoing economic crisis in Lebanon
[94] TCP/MOL/3901: Emergency support to vulnerable smallholder farming households in Moldova caused by the Ukraine conflict.
[95] TCP/UKR/3901: Emergency Food Security and Livelihoods Assistance to Conflict Affected Households in Ukraine; OSRO/UKR/208/CHA Scaling Up Critical Seasonal Support to Agriculture Producers Ukraine; OSRO/UKR/201/BEL Emergency Food Security and Livelihoods Assistance to Conflict Affected People in Ukraine.
[96] GCP/AFG/106/USA: Strengthening rural livelihoods and food security program in Afghanistan.
[97] OSRO/GLO/115/GER: Phase 3: Livelihood response to mitigate impacts of drought on food security and livelihoods, and OSRO/GLO/006/GER: Emergency livelihoods assistance to vulnerable farmers, agropastoralists and pastoralists affected by desert locust in Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan and Uganda.
[98] OSRO/NIR/805/NOR: Building resilient livelihoods in northeast States of Adamawa, Borno and Yobe through climate change.

populations, such as Cameroon,[99] Mozambique,[100] Papua New Guinea[101] and Uganda,[102] were also assisted to resume crop production with seed relief interventions. Seeds and planting materials with a total value of USD 42 million, USD 50 million and USD 83 million were procured in 2020, 2021 and 2022, respectively, which shows the extraordinary increase in scale and scope of emergency seed response.

31. In multiple countries, such as the Democratic Republic of the Congo,[103] Haiti, [104] Madagascar[105] and South Sudan,[106] seed quality assurance systems were strengthened and decentralized farmer-led seed production groups established to rehabilitate crisis-affected national seed systems and improve farmers' access to quality seeds. In Venezuela (Bolivarian Republic of), demonstration plots were set up to enhance variety adoption and seed multiplication as part of the efforts to rehabilitate the national seed system.[107]

VI. BUILDING SUSTAINABLE INSTITUTIONS AND HUMAN CAPACITIES

32. In response to the Commission's request,[108] FAO continued to support the strengthening of human and institutional capacities for the conservation and sustainable use of PGRFA, especially in developing countries. The strengthening of partnerships and linkages was a critical delivery mechanism for FAO's work in this regard. Work in countries was facilitated through collaboration with various partners, including partners within the United Nations system, especially the World Food Programme, the International Fund for Agricultural Development and the World Meteorological Organization, in as well as the CGIAR Centres, the Global Crop Diversity Trust, the West and Central African Council for Agricultural Research and Development, the International Seed Federation and the International Seed Testing Association (ISTA).

33. Networks were also key to effective collaboration among partners to improve efficiency in the implementation of the Second GPA. Over the reporting period, FAO provided support to various networks and bodies, including the Coconut Genetic Resources Network, the Global Food Security Cluster and Standards for Supporting Agricultural Livelihoods in Emergencies.

A. Capacity-building activities

34. FAO implemented several field activities to strengthen capacities in countries. In the United Republic of Tanzania and Zimbabwe, capacity-building initiatives were undertaken to help mainstream biodiversity into the agriculture sector. Activities included the training of agricultural extension officers, the implementation of farmer field schools (FFS) to promote ecosystem-based practices that enable the conservation of biodiversity, increase the overall environmental sustainability and productivity of crop

[99] TCP.CMR/3901: Appui d`urgence pour améliorer la sécurité alimentaire des ménages les plus vulnérables (déplacés, retournés et communautés d`accueil) à Logone-Birni, Cameroun.
[100] TCP/MOZ/3804: Emergency agriculture livelihoods support for displaced people and host communities in the Province of Cabo Delgado, Northern Mozambique.
[101] TCP/PNG/3903: Emergency response to restore food security of conflict- affected population in the highlands of Papua New Guinea.
[102] TCP/UGA/3901: Emergency agricultural and livelihoods support to new arrivals of refugees in Southwestern Uganda.
[103] GCP/DRC/076/GER: Strengthening socio-economic resilience of smallholder farmers and vulnerable populations in the Democratic Republic of the Congo.
[104] GCP /HAI/040/EC: Amélioration de la sécurité alimentaire et nutritionnelle et renforcement de la résilience des populations vulnérables du département du Nord-Est (PROACT 2020-Haïti).
[105] UTF/MAG/102/MAG: Réponse d`urgence face à la crise d'insécurité alimentaire et sécheresse dans le Sud de Madagascar.
[106] UTF/SSD/020/SSD: South Sudan Resilient Agricultural Livelihoods Project- RALP.
[107] TCP/VEN/3801: Apoyo a la rehabilitación del sistema nacional de semilla de maíz para la Seguridad Alimentaria y Nutricional (SAN) en el contexto post COVID-19.
[108] CGRFA-18/21/Report, paragraph 102.

production systems and improve food security and nutrition. In Haiti, FAO strengthened capacities for *in vitro* propagation of disease-free taro germplasm.[109]

35. In CJN, capacity-building activities resumed in 2022 after the COVID-19 pandemic. During the year, 33 training courses were delivered to 704 researchers, of which 317 were women and 387 were men. Moreover, five fellows were given training on plant breeding at the PBG laboratory for various lengths of time in 2022.

36. Azerbaijan and Pakistan were helped to join the OECD seed certification scheme.[110,111] Similarly, ISTA accreditation of seed laboratories was supported in Azerbaijan[112] and Mozambique.[113] In Tajikistan, capacity building was provided for variety maintenance, evaluation and registration,[114] targeting, among others, national experts and 385 farmers. Additionally, through training courses and FFS,[115] farmers were trained on techniques for producing quality potato seeds, integrated pest management and promoting horticulture.[116] In Mauritania, the rice sector was strengthened through the training of experts, trainers and producers, including women producers, on sustainable rice production.[117]

37. The capacity of national experts and farmers in the use of improved varieties was supported through pilot demonstrations and training activities in Georgia,[118] North Macedonia,[119] the Republic of Moldova[120] and Uzbekistan.[121] Building capacity at the national level for varietal maintenance and seed production was undertaken in Venezuela (Bolivarian Republic of),[122] while in Niger, FAO strengthened capacity for *in vitro* potato production at the national laboratory.[123] FAO strengthened the capacities of various institutions and experts in Mali, Mauritania and Niger in quality control, seed testing and seed certification as means of promoting sustainable production of quality seed. Capacities related to the adoption of new crop varieties were also strengthened in Niger.

38. FAO supported the Secretariat of the Southern African Development Community (SADC) in the review of its Regional Biodiversity Strategy. In collaboration with the Secretariats of the CBD and the Treaty, a preparatory webinar was held to prepare SADC member countries for the Fifteenth Meeting of the Conference of the Parties to the CBD.[124]

B. National Focal Points

39. The Commission's National Focal Points on PGRFA continue to play an important role in the work of the Commission, including in capacity development and the building of sustainable institutions.

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[109] TCP/HAI/3804: Appui au Ministère de l'Agriculture, des Ressources Naturelles et du Développement Rural pour lutter contre le *Phytophthora colocasiae* agent causal du Mildiou du Taro par la production de semences saines en Haïti.
[110] UTF /AZE/021/AZE: Improvement of Seed and Agro-Chemical Lab and Certification Services under Agrarian Services Agency.
[111] TCP/PAK/3802/C1: Strengthening of Seed Quality Assurance System.
[112] UTF /AZE/021/AZE: Improvement of Seed and Agro-Chemical Lab and Certification Services under Agrarian Services Agency.
[113] GCP /MOZ/127/EC: PROMOVE Agribiz.
[114] UTF /TAJ/023/TAJ: Strengthening Resilience of the Agriculture Sector.
[115] TCP/TAJ/3804: TCPF: Support to improve sustainable potato production and management.
[116] GCP/TAJ/019/JCA: Developing a potato-seed production system in Tajikistan.
[117] TCP/MAU/3707: Reconstitution des stocks rizicoles et à la lutte contre les ennemies des cultures dans le Sud-RIM.
[118] GCP /GEO/023/SWI: Sustainable management of grape genetic resources in Abkhazia.
[119] TCP/MCD/3705: Increased resilience of agriculture sector through promotion of climate smart agriculture practices.
[120] TCP/MOL/3801: Strengthening the capacity of smallholders in berry production - Phase II of TCP/MOL/3608.
[121] TCP/UZB/3803/C3: TCPF: Rice Crop Production and Management Support.
[122] GCP /VEN/019/EC: Promoción de la SAN para el Desarrollo de la Cadena de Valor de Semillas de Cereales y Leguminosas.
[123] TCP/NER/3901: Projet d`Appui à la production de semences certifiées de pomme de terre dans la Région d`Agadez.
[124] https://www.fao.org/in-action/building-capacity-environmental-agreements/resources-news/news/news-details/en/c/1460014/

To date, 135 countries have nominated National Focal Points. This reflects the high level of commitment to reporting on the state of the conservation and sustainable use of PGRFA. The National Focal Points play a critical role in reporting on the implementation of the Second GPA and on SDG Indicator 2.5.1, which contributes to periodic global assessments.

C. World Information and Early Warning System on Plant Genetic Resources for Food and Agriculture (WIEWS)

40. As requested by the Commission,[125] FAO continued reporting, on an annual basis, on the status of progress towards SDG Target 2.5. In 2022, for the sixth consecutive year, data on SDG Indicator 2.5.1.a,[126] which measures progress in the implementation of the plant component of SDG Target 2.5, were published in WIEWS.[127] The data reported by 846 national, regional and international genebanks in 120 countries included, as of December 2021, detailed records of over 5.8 million accessions belonging to 7 332 genera, conserved *ex situ*. Metadata results and narratives for the 2021 report on all the SDG indicators under FAO custodianship, including Indicator 2.5.1.a, were also made available through the FAO portal.[128]

41. WIEWS data are used to report on the implementation of the Second GPA and for the preparation of reports on the state of the world's PGRFA.[129]

VII. REVIEW OF THE SECOND GLOBAL PLAN OF ACTION FOR PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

42. The Second GPA was developed under the aegis of the Commission in response to *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture*.[130] It is intended to be a framework, guide and catalyst for action at community, national, regional and international levels and seeks to create an efficient system for the conservation and sustainable use of PGRFA, through better cooperation, coordination and planning and through capacity development.

43. The Second GPA is a rolling plan of action.[131] Overall progress in its implementation has been monitored and guided by the Commission. In order to discharge this function, the Commission planned the review of the implementation of the Second GPA, as well as the review of the Second GPA itself, within its Multi-Year Programme of Work, in close cooperation with the Governing Body of the Treaty. As stated in the Second GPA, "[t]he review should deal with the progress made at the national, regional and international levels in the implementation, elaboration, and adjustment, as appropriate, of the Second GPA."[132]

44. The first assessment of the implementation of the Second GPA, which covered the period between January 2012 and June 2014, was presented to the Commission at its Sixteenth Regular Session and included an assessment of achievements and of gaps and needs with respect to implementation.[133] The first assessment and the second assessment, which covered the period July 2014 to December 2019, together with a summative narrative of the progress made in implementation between January 2012 and December 2019, provide the basis for *The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture* (Third Report).

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[125] CGRFA-18/21/Report, paragraph 104.
[126] 2.5.1a is a Tier I indicator, i.e. an indicator with internationally agreed methodology and a global reporting rate equal to or higher than 50 percent, that is part of the SDG Monitoring Framework adopted by UNGA in July 2017.
[127] http://www.fao.org/wiews/data/ex-situ-sdg-251/overview/en/
[128] http://www.fao.org/sustainable-development-goals/indicators/en/
[129] CGRFA-19/23/7.2; CGRFA-19/23/7.2/Inf.1.
[130] FAO 2010. *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture*. Rome. https://www.fao.org/publications/card/en/c/6ac34ffd-7a66-5d42-9573-3d09491ad39a
[131] Second GPA, paragraph 315.
[132] CGRFA-16/17/Inf.17.1; CGRFA-16/17/Inf.17.2.
[133] CGRFA-16/17/Inf.17.2.

45. The Third Report will offer a solid foundation for updating the Second GPA, as appropriate. Table 1 provides a tentative timetable for the proposed process for the review and update of the Second GPA. The process mirrors the process that led to the adoption of the Second GPA in November 2011.

Table 1. Updating the Second GPA: indicative processes and timeline, based on the review of the first GPA

Timeline	Process
2023	**CGRFA-19** Presentation of the draft Third Report **ITPGR/GB-10** Presentation of the draft Third Report
2023/2024	• Regional meetings: review and updating of the Second GPA • Preparation of revised Second GPA • Joint meeting of the Bureaus of the Commission and the Governing Body of the Treaty to review the draft revised Second GPA **ITWG PGR-12** • Review of the draft revised Second GPA
2025	**CGRFA-20** **C-44**

Table 2. Estimate for convening regional two-day consultations in each of the regions, Africa (RAF), Asia (RAP), Europe (REU), Near East and North Africa (RNE), and Latin America and the Caribbean (RLC)

Item	Cost calculation (USD)	Cost estimate (in USD)
Travel costs for 25 participants* to attend each regional consultation (in RAF, RAP, REU, RNE and RLC)	• Airfare @ 1 000 x 25 participants = 25 000 • DSA @ 250 x 3 days x 25 participants = 18 750 Total per regional consultation = 43 750	218 750
Meeting costs	• Venue costs (including equipment rental and catering services) = 6 000 • Interpretation = 2 000 Total per regional consultation = 8 000	40 000
Technical consultancies	• 350 x 20 days = 7 000	7 000
Staff travel	• Airfare @ USD 1 500 x 3 staff = 4 500 • DSA @ USD 250 x 3 days x 3 staff = 2 250 Total per regional consultation = 6 750	33 750
TOTAL		**299 500**

**Participants from 25 countries (with National Focal Points nominated)*

46. The proposed timeline for updating the Second GPA covers the period from the Nineteenth to the Twentieth Regular Sessions of the Commission. It foresees the convening of five regional meetings in 2024 to review the status of PGRFA at regional level and identify gaps, needs and priority activities. Regional consultations would involve the Commission's National Focal Points for PGRFA as well as the National Focal Points of the Treaty. Representatives from international and regional organizations would be invited to attend and contribute to the regional consultations. The details of the estimated budget of USD 314 500 for holding the five regional consultations are provided in Table 2.

47. It is proposed that the first draft revised Second GPA be reviewed at a joint meeting of the Bureaus of the Commission and of the Governing Body of the Treaty prior to the meeting of the Working Group, in 2024. Subsequently, the draft revised Second GPA would be submitted to the Working Group at its Twelfth Session. The document would then be presented to the Commission for consideration at its Twentieth Regular Session.

VIII. GUIDANCE SOUGHT

48. The Commission may wish to:

CONSERVATION AND ON-FARM MANAGEMENT OF PGRFA

(i) welcome the publication of the *Proceedings of the First Multistakeholder Symposium on Plant Genetic Resources* and the organization of webinars on *in situ* and on-farm conservation;

(ii) recommend that FAO, subject to the availability of the necessary extrabudgetary funds, continue to support countries in *in situ* conservation and on-farm management of PGRFA, including through support for community seedbanks, and to strengthen the links and complementarity with *ex situ* conservation, including through the development of national action plans, taking into account the Commission's *Voluntary Guidelines for the Conservation and Sustainable Use of Crop Wild Relatives and Wild Food Plants* and the *Voluntary Guidelines for the Conservation and Sustainable Use of Farmers' Varieties/Landraces*, and through *ex situ* backup of endangered PGRFA, as appropriate;

(iii) welcome the finalization and publication of the three practical guides for the implementation of the *Genebank Standards for Plant Genetic Resources for Food and Agriculture* presented as drafts to the last session of the Commission and recommend that FAO publish them in the official languages of the Organization and disseminate them;

(iv) recommend that FAO convene a virtual expert consultation on the draft practical guides for conservation in genebanks of species producing recalcitrant seeds and for conservation through cryopreservation, and develop them further based on the feedback received, for review by the Working Group at its next session;

SUSTAINABLE USE

(v) recommend that FAO continue assisting countries, upon their requests, in strengthening national seed systems to facilitate the delivery of quality seed and planting materials, in particular to smallholder farmers;

(vi) recommend that FAO continue supporting countries, upon their requests, in the development, revision and implementation of national seed policies and legislation, taking into account the Commission's *Voluntary Guide for National Seed Policy Formulation*, and call upon donors to support countries in this regard;

(vii) recommend that FAO continue supporting countries, upon their requests, and in close coordination with the Treaty, in strengthening their crop breeding systems, including for underutilized crops, as well as their crop improvement capacity, including through the Joint FAO/IAEA Centre;

SUSTAINABLE INSTITUTIONS AND HUMAN CAPACITIES

(viii) recommend that FAO continue to strengthen human and institutional capacities for PGRFA research and development, and call upon donors to make funds available to support countries in the implementation of the Second GPA, including through the development and implementation of national strategies for PGRFA, in close coordination with the Treaty and its Funding Strategy;

(ix) recommend that FAO continue to report annually on the status of implementation of Sustainable Development Goal Target 2.5, further develop WIEWS and strengthen cooperation with GLIS and Genesys, with a view to avoiding duplication of efforts;

UPDATING THE SECOND GPA

(x) recommend that FAO revise the Second GPA, based on the findings of the Third Report and taking into account the gaps, needs and priorities identified through regional consultations and invite the Governing Body of the Treaty to participate in the updating process; and

(xi) take note of the budget provided in Table 2 and recommend that FAO call upon governments and international organizations to make available the financial resources necessary for updating the Second GPA, including for the regional consultations.