Draft for consultation

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UPDATED PLAN OF ACTION 2020-2030 FOR THE INTERNATIONAL INITIATIVE FOR THE CONSERVATION AND SUSTAINABLE USE OF SOIL BIODIVERSITY

I. INTRODUCTION

1. New scientific and technical information and knowledge relevant to soils and soil biodiversity has been released since the establishment of the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity. This knowledge has informed an updated Plan of Action to reflect the importance of soil biodiversity across sectors, for sustainable development and in the context of the post-2020 global biodiversity framework.

2. Some of the key functions of soil biodiversity are primarily regulated by three major bio-geochemical cycles on earth: nutrients, carbon and water. Improved management of soil biodiversity in agro-ecosystems offers solutions for sustainable farming and food security, whilst simultaneously increasing carbon storage, improving water cycling and reducing off-farm pollution. The elements of this plan recognize the importance of mainstreaming soil biodiversity across sectors and the need for integrated approaches to better address the complex interactions that come into play as the conservation and sustainable use of soil biodiversity usually involve economic, environmental and social factors. The importance of implementation at the field level with due consideration of local context and specificities is another element reflected in the plan, while awareness- raising, sharing of knowledge, capacity- building and research remain key to ensure a better understanding of the role of soil biodiversity for sustainability.

3. However, soil is one of the world's most vulnerable resources in the face of climate change, land degradation, biodiversity loss, increased demand for water and food production, urbanization and industrial development. Preventing soil biodiversity loss from drivers such as land-use change, crop monoculture, improper and overuse of agrochemicals, soil pollution from other land-use activities, soil sealing, soil compaction, intensive tillage, deforestation and invasive species, are important to safeguard healthy soils and healthy landscapes.

4. The present updated Plan of Action has been prepared jointly by the Food and Agriculture Organization of the United Nations (FAO), the Secretariat of the Global Soil Partnership (GSP) and the Secretariat of the Convention on Biological Diversity, in consultation with other partners and relevant experts, pursuant to COP decision 14/30.

5. The Plan of Action is based on findings of the report "State of knowledge on soil biodiversity: status, challenges and potentialities" prepared by FAO and the Intergovernmental Technical Panel on Soils[1].

[1] The Plan will also be informed by the conclusions of the 2020 Global Symposium on Soil Biodiversity organized by FAO's Global Soil Partnership (10 -12 March 2020, Rome, Italy).

II. PURPOSE AND OBJECTIVES

6. The Status of the World's Soil Resources report[2] has identified ten threats critical to soil functions. The loss of soil biodiversity was identified as one of the five global threats and a respective call for action was strongly recommended. The Voluntary Guidelines for Sustainable Soil Management[3] provides the framework for reverting it through a number of policy, research and field actions.

7. The *purpose* of this updated Plan of Action is to support Parties, other Governments, indigenous peoples and local communities, relevant organizations and initiatives, to accelerate and upscale efforts towards the conservation and sustainable use of soil biodiversity, and to respond to new and emerging challenges that threaten soil biodiversity.

8. The *overall objective* of this Plan of Action is to boost and mainstream soil biodiversity into policies, at all levels, related to agriculture, food security, environment, climate change, land degradation and sustainable development, to ensure that soil biodiversity continues to provide a full range of functions, and to promote sustainable soil management practices in agricultural systems that can enhance soil biodiversity while increasing farm productivity.

9. The *specific objectives* of this updated Plan of Action are to help Parties, relevant organizations and initiatives in:

1) Implementing coherent and comprehensive policies and mainstreaming for the conservation and sustainable use of soil biodiversity at the local, subnational, national, regional and global levels, and promoting their integration into sectoral and cross-sectoral plans, programmes and strategies;

2) Advocating the implementation of the Voluntary Guidelines for Sustainable Soil Management to maintain and promote soil biodiversity, encourage the transfer of knowledge and enable all stakeholders to harness the benefits of soil biodiversity for their livelihoods, taking into account national circumstances and the vulnerability of marginalized communities;

3) Promoting education, raising awareness and developing capacities in the public and private sectors on the multiple benefits of soil biodiversity, sharing knowledge and improving the tools for decision-making, fostering engagement through collaboration and partnerships and providing practical actions to avoid, reduce and reverse soil biodiversity loss;

4) Monitoring and assessing the status and trends of soil biodiversity in all regions and addressing gaps in knowledge and practical tools, including by fostering relevant research.

10. The Plan of Action can also contribute to the achievement of the Sustainable Development Goals, the post-2020 global biodiversity framework, the 2050 Vision for Biodiversity, the FAO Strategy on Mainstreaming Biodiversity across Agricultural Sectors[4], and the objectives and commitments under other conventions and multilateral environmental agreements, including, the three Rio Conventions, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants.

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[2] http://www.fao.org/documents/card/en/c/c6814873-efc3-41db-b7d3-2081a10ede50/

[3] http://www.fao.org/documents/card/en/c/5544358d-f11f-4e9f-90ef-a37c3bf52db7/

[4] http://www.fao.org/3/ca7175en/ca7175en.pdf

III. SCOPE AND PRINCIPLES

11. The *scope* of this updated Plan of Action focusses on soils in agro-ecosystems; it is wide and far-reaching and context dependant to ensure it responds to specific situations and farmer typologies and that it prioritizes actions on the basis of country goals and the needs of direct beneficiaries.

12. The Initiative continues to be implemented as a cross-cutting initiative of the Convention by the Secretariat, FAO and its Global Soil Partnership. It is in partnership with, and builds upon the work of the Intergovernmental Technical Panel on Soils, the Global Soil Biodiversity Initiative, the Science Policy Interface of the UNCCD, academic and research institutes, donors agencies, private sector, as well as relevant organizations, land owners and land managers, farmers, indigenous peoples and local communities and civil society.

13. When linked to the post-2020 Global Biodiversity Framework, the UN Decade on Ecosystem Restoration, the 2030 Agenda and its Sustainable Development Goals, the Paris Agreement and Land Degradation Neutrality targets, the scope of this Plan of Action can achieve multiple co-benefits of soil biodiversity processes for improved and more sustainable land-use systems and practices.

14. The Plan of Action adheres to the *principles* of the ecosystem approach, which aim to provide better biological, physical, economic and human interactions associated with sustainable and productive agro-ecosystems, and the ways and means to better manage those interactions with a view to effectively contribute to all production systems and its relation to conservation, sustainable use and restoration of ecosystems and integrated land and water management. It also follows principles that focus on the improvement of farmers' livelihoods in relation to food security, soil biodiversity and other relevant land-use activities; on integrated holistic solutions and technical adaptation to local contexts; and in developing partnerships and alliances that are multidisciplinary, foster synergies and ensure multi-stakeholder participation.

IV. PRIORITY GLOBAL ACTIONS

15. The report on the "State of knowledge on soil biodiversity: status, challenges and potentialities" identified a number of priorities for global action, these include:

(a) Developing and following standard approaches, methods and tools to ensure more accurate collection of soil biodiversity data around the world;

(b) Including soil biodiversity as an important component of soil description surveys using state of the art methods and tools;

(c) Establishing a monitoring network to assess the abundance and diversity of multiple soil taxa and changes in soil biodiversity and functioning in hot spots. This includes the selection of valid and feasible indicators of soil biodiversity that are related to the provision of key ecosystem services under the framework of the one-health concept[5];

(d) Promoting soil biodiversity as a nature-based solution in relation to soil organic carbon sequestration, soil-borne diseases and enhancing food production; and

(e) Engaging with the Unite Nations International Decade of Ecosystem Restoration, to pursue a soil restoration programme aimed at restoring degraded soils, restoring soil multi-functionality and restoring open soils in sealed areas (such as in cities/infrastructure);

[5] https://www.who.int/features/qa/one-health/en/

16. Furthermore, awareness raising on soil biodiversity continues to be critical and platforms, including those of FAO and the GSP, provide existing channels to be leveraged. The importance of soil biodiversity will be mainstreamed under the one-health concept.

V. KEY ELEMENTS AND ACTIVITIES

17. The plan comprises four main elements that could be undertaken, as a menu of options, on a voluntary basis, by Parties and other Governments, in collaboration with relevant organizations:

1) Policy coherence and mainstreaming;

2) Implementing sustainable soil management practices;

3) Engagement, awareness- raising, sharing of knowledge and capacity- building; and

4) Assessment, targeted research and monitoring.

Element 1: Policy coherence and mainstreaming

Rationale

Soil biodiversity loss is a cross-cutting issue, and policies should be designed to integrate considerations not only into the context of sustainable agriculture, but also across sectors. Appropriate national policies are needed to provide an effective and enabling environment to support activities by farmers, land managers, the private sector, civil society and other relevant stakeholders. Inclusive policies that take soil biodiversity into consideration and promote its conservation and sustainable use could be linked to agricultural and environmental policies so that their implementation provides multiple benefits.

Activities

1.1 Mainstream the conservation, sustainable use and management of soil biodiversity into the agricultural sector and support the development and implementation of coherent and comprehensive policies for the conservation and sustainable use of soil biodiversity at the local, subnational, national, regional and global levels, as appropriate, and promote its integration into sectoral and cross-sectoral plans, programmes and strategies;

1.2 Foster activities to safeguard and promote soil biodiversity, to be integrated into broader policy agendas for food security, climate change adaptation and mitigation and sustainable development, including the post-2020 global biodiversity framework and the Sustainable Development Goals;

1.3 Advocate for the implementation of sustainable soil management[6] as the vehicle to promote integrated and holistic solutions that recognize the key role of aboveground-belowground biodiversity interactions, consider local contexts and the ecosystem approach for the conservation and sustainable use of soil biodiversity, including integrated land-use planning;

1.4 Adopt integrated, ecosystem approaches for the conservation and sustainable use of soil biodiversity and enhancement of agro-ecosystem functions;

[6] http://www.fao.org/3/a-bl813e.pdf

1.5 Develop policies and actions where soil biodiversity is central for managing protected areas, agricultural soils and restoring soil multi-functionality in degraded ecosystems, including urban soils;

1.6 Promote ways and means to overcome obstacles to the adoption of sustainable soil management associated with land tenure, the rights of users, gender, access to financial services and educational programmes;

1.7 Advocate for the use and implementation of existing tools and guidance at the national, regional and global levels, such as the FAO Voluntary Guidelines for Sustainable Soil Management, the FAO's Revised World Soil Charter, the Code of Conduct on Pesticide Management and the International Code of Conduct for the Sustainable Use and Management of Fertilizers.

Element 2: Implementing sustainable soil management practices

Rationale

Management practices and land-use decisions undertaken by farmers, foresters, land managers, local communities and relevant stakeholders influence ecological processes including soil-water-plant interactions. There is increasing recognition that the sustainability of agricultural systems depends on the optimal use of the available natural resources, including soil biodiversity. Improvement in agricultural sustainability requires, together with effective water and crop management, the optimal use and management of soil fertility and soil physical properties, which rely on soil biological processes and soil biodiversity. Direct and indirect drivers of soil biodiversity loss need to be addressed in the field and attention is needed at the farm and forestry level and across entire ecosystems.

Activities

2.1 Promote soil health and soil biodiversity, including through the maintenance of adequate soil organic matter content, provision of sufficient vegetative cover, minimizing soil disturbance and minimizing tillage;

2.2 Ensure that actors, such as farmers, foresters, land managers, local communities and other relevant stakeholders have access to policies, tools and enabling conditions, such as access to technologies and finance, for the conservation and sustainable use of soil biodiversity at the field level;

2.3 Encourage in-field crop rotation, inter-cropping, cover cropping and preservation of perennial plants in field margins and biodiversity refuges;

2.4 Foster the use of agricultural practices such as agroforestry that leverage soil biota to manage nutrient balance and cycles so to ensure the provision of water quality and retention;

2.5 Develop and implement site-specific risk assessment procedures for pollutants, biocides and other contaminants to reduce risks and limit or minimize pollution to ensure the conservation of soil biodiversity, human health and well-being;

2.6 Facilitate site-specific remediation of contaminated soils;

2.7 Prevent the introduction and spreading, and minimize the impact of invasive alien species that present an unacceptable risk to soil biodiversity, and monitor the dispersion risk of those already established;

2.8 Protect and conserve soils that provide significant ecosystem services, particularly those with high amounts of biological diversity or agricultural suitability, including through the implementation of sustainable soil management practices;

2.9 Implement sustainable soil and associated water and land management practices that maintain carbon rich soils (such as peatlands, black soils and permafrost);

2.10 Implement sustainable soil and associated water and land management practices that support the achievement of land degradation neutrality;

2.11 Avoid land-use changes that cause soil erosion, the removal of surface cover and loss of soil moisture and carbon, or implement measures to alleviate degradation and mitigation measures if such land-use change is unavoidable;

2.12 Implement nature-based solutions that conserve, restore and avoid degradation of soil biodiversity in ecosystems with high soil carbon sequestration potential and that restore long term sink capacity and maximize the carbon sequestration potential of other marginal and degraded land;

2.13 Implement nature-based solutions that conserve, restore and avoid degradation of soil biodiversity in ecosystems that contribute to climate change adaptation and disaster risk reduction, such as riparian buffers, watersheds, drainage basins and floodplains, wetlands and coastal regions.

Element 3: Engagement, awareness-raising, sharing of knowledge and capacity-building

Rationale

Engagement and partnerships are critical for the development and promotion of improved practices for the conservation and sustainable use of soil biodiversity and agro-ecosystem management. This requires collaboration that ensures the participation of and feedback from a broad range of stakeholders, and relevant institutions and organizations to ensure effective actions and collaborative mechanisms. Strengthening capacities to promote integrated and multidisciplinary approaches are needed to ensure the conservation, sustainable use and enhancement of soil biodiversity. This will further improve information flows and cooperation among actors to identify best practices and foster sharing of knowledge and information.

Activities

3.1 Engage farmers, foresters, land managers, scientists, indigenous peoples and local communities and vulnerable communities, as appropriate, in designing and implementing sustainable soil management practices;

3.2 Promote partnerships between stakeholders and sectors with respect to sustainable soil management;

3.3 Develop partnerships and alliances that support multi-disciplinarity, foster synergies and ensure multi-stakeholder participation;

3.4 Develop collaborative activities, such as peer-to-peer learning, for the promotion of improved practices for soil biodiversity and ecosystem management for sustainable and productive agriculture and other land management activities;

3.5 Enhance public awareness, education, and knowledge on soil biodiversity, for example through the modernization of soil biology educational institutions and updating of their curricula, the creation and publication of training and information materials on soil biodiversity, and the organization of training programmes for soil microbiology and zoology professionals;

3.6 Promote awareness-raising, knowledge and understanding of key roles, soil-mediated ecosystem services, functional groups and positive impacts of diverse soil management practices, including those performed by indigenous peoples and local communities, in different farming systems and agro-ecological and socio-economic contexts;

3.7 Protect, maintain and promote traditional knowledge, innovations and sustainable practices of indigenous peoples and local communities related to soil biodiversity;

3.8 Build on previous experience and knowledge, combining the skills and wisdom of farmers with modern scientific knowledge;

3.9 Build and strengthen the capacities of farmers, foresters, land owners, land managers, local communities and relevant stakeholders on sustainable soil management practices, especially of developing countries;

3.10 Promote entrepreneurship and strategies for agro-production and food security that incorporate soil biodiversity considerations; and

3.11 Promotion of engagement, awareness raising, sharing of knowledge and capacity building through innovative tools and digital technology.

Element 4: Assessment, targeted research and monitoring

Rationale

Assessment and monitoring of the status and trends of soil biodiversity, of measures for the conservation and sustainable use of soil biodiversity and of the outcomes of such measures, is necessary to inform adaptive management. Academic and research bodies and relevant international organizations and networks should be encouraged to undertake further research, taking into consideration soil biodiversity functions and relevant traditional knowledge, to address gaps in knowledge and to expand research and to support coordinated global, regional, national, subnational and local monitoring efforts.

Activities

4.1 Promote research, information management and dissemination, data collection and processing, transfer of knowledge and technologies, and networking;

4.2 Increase understanding of the role of soil biodiversity in agricultural production, the effect on land management practices and ecosystem and environmental health;

4.3 Strengthen the understanding of the impacts, ownership, and adaptation of all land-use and soil-management practices as an integral part of agricultural and sustainable livelihood strategies, including their economic valuation;

4.4 Identify research gaps, work to facilitate new knowledge acquisition and dissemination;

4.5 Mobilize targeted participatory research and development;

4.6 Promote monitoring and assessment of the status and trends of soil biodiversity in all regions by incorporating cutting-edge approaches and new technologies and address gaps in knowledge, including by fostering relevant research;

4.7 Develop, share and make use of the tools for monitoring and assessment of soil biodiversity and decision-making to implement sustainable land and soil management practices;

4.8 Develop or strengthen information systems and databases to monitor and assess the status and trends of soil biodiversity;

4.9 Create and strengthen networking arrangements with a focus on supporting local initiatives on the ground;

4.10 Promote dissemination and exchange of information and data, in line with Articles 8(j) and 8(h) of the Convention on Biological Diversity;

4.11 Develop, apply and adapt indicators and tools for assessment and monitoring including through incorporating cutting-edge approaches and new technologies, such as DNA technologies for rapid species identification;

4.12 Identify and develop datasets on soil biodiversity at national and regional levels that are important for agriculture;

4.13 Encourage development of baselines and national-level monitoring activities of soil biodiversity;

4.14 Encourage the development of community-based or simplified assessment methodologies and tools for measuring soil biodiversity that are directly accessible to land users and farmers; and

4.15 Compile, synthesize, and evaluate case studies and share lessons learned on implementation of sustainable soil management practices.

VI. SUPPORTING GUIDANCE, TOOLS, ORGANIZATIONS AND INITIATIVES RELATING TO THE CONSERVATION ANS SUSTAINABLE USE OF SOIL BIODIVERSITY

18. Relevant guidance and tools developed under the Convention, and those developed by partner and relevant organizations and initiatives, such as the Voluntary Guidelines for Sustainable Soil Management and the World Soil Charter prepared by FAO, among others, will be made available in the clearing-house mechanism.

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