**Supplementary Table S1.** Highlights of the main activities at the global level and for member countries related to the four main elements (Policy coherence and mainstreaming; Encouraging the use of sustainable soil management practices; Awareness-raising, sharing of knowledge, technology transfer and capacity-building and development; Research, monitoring and assessment) of the updated Plan of Action (2020-2030) for the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity. For the full text of the global actions and activities in each of the key elements, please refer to the Annex of CBD Decision XV/28 (CBD 2022).

| **Global Actions** |
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| • Develop protocols and tools to collect and digitize soil biodiversity data, enhancing mapping capabilities across different soil types.<br>• Integrate soil biodiversity as a key component in soil description surveys using advanced tools and bioindicators.<br>• Establish or strengthen networks to monitor the abundance and diversity of soil taxa in line with national laws.<br>• Develop and implement indicators that connect soil biodiversity with essential ecosystem functions and services.<br>• Enhance education and research to effectively monitor soil microbiodiversity for overall health.<br>• Promote strategies for the conservation and sustainable management of soil biodiversity, addressing challenges like climate change and soil degradation.<br>• Collaborate with the United Nations Decade on Ecosystem Restoration to restore degraded soils and utilize them for food production.<br>• Encourage engagement from civil society, research institutions, and local authorities and communities in implementing the action plan.<br>• Foster awareness about the importance of soil biodiversity through various national, regional and global platforms.<br>• Support in-situ and ex-situ conservation, incorporating traditional knowledge from indigenous communities.<br>• Identify cumulative impacts of various sectors on soil biodiversity quality.<br>• Promote good agricultural practices to mitigate negative impacts on soil biodiversity from fertilizers and pesticides.<br>• Identify funding sources for implementing the action plan. |
| **Policy coherence and mainstreaming activities** |
| • Promote the integration of soil biodiversity conservation and sustainable management into agricultural and related policies at all governance levels.<br>• Foster activities that highlight the importance of soil biodiversity and integrate it into broader policy agendas, including food security, climate change and urban planning.<br>• Encourage the adoption of sustainable soil management practices that recognize the interactions between above-ground and below-ground biodiversity and include traditional knowledge.<br>• Promote integrated ecosystem approaches for the conservation and sustainable use of soil biodiversity, considering traditional agricultural practices.<br>• Advocate for policies that protect or enhance soil biodiversity.<br>• Develop policies recognizing soil biodiversity as essential for sustaining ecosystems and restoring multifunctionality in degraded soils.<br>• Enhance collaboration between scientific research, conservation practices, and indigenous knowledge to support effective policies and actions.<br>• Address the connections between soil biodiversity, human health, nutritious diets, and pollutant exposure. |

- Identify and address obstacles to adopting sustainable soil management practices, especially regarding land tenure and the rights of women, indigenous peoples, peasants and local communities.
- Implement existing guidelines and tools for sustainable soil management at various governance levels.
- Encourage the inclusion of soil biodiversity in national reports and biodiversity strategies to enhance public and private actions.
- Promote coordinated spatial planning to minimize soil loss and biodiversity degradation, including monitoring soil sealing.

**Sustainable soil management activities**

- Improve soil health and increase organism populations and diversity through sustainable agricultural practices such as integrated pest and nutrient management, organic agriculture, and agroecological practices.
- Develop and implement science-based risk assessment procedures to evaluate pollutants' effects on soil biodiversity and ecosystem services.
- Facilitate access to information, tools, technologies, and funding for stakeholders, ensuring the inclusion of indigenous peoples, women, youth, local communities and other stakeholders.
- Promote a variety of sustainable agricultural practices to enhance overall agricultural sustainability.
- Facilitate the remediation of contaminated soils with a focus on methods that minimize risks to biodiversity, and explore bioremediation using native microorganisms.
- Prevent the introduction and spread of invasive alien species and manage those already present to protect soil biodiversity.
- Protect, restore, and conserve soils that provide significant ecosystem services through sustainable management practices.
- Promote practices that maintain and restore carbon-rich soils (e.g., peatlands, black soils, permafrost, mangroves, coastal wetlands).
- Support management practices that contribute to land degradation neutrality.
- Implement ecosystem-based strategies to prevent land-use changes that degrade soils, considering the impacts on local communities.
- Promote conservation and sustainable management of soil biodiversity while considering adaptation, mitigation, and disaster risk reduction in relation to local communities.

**Awareness and capacity building activities**

- Increase understanding of the importance of soil biodiversity and health in various ecosystems and their impact on land management and ecosystem health.
- Raise awareness about the causes and consequences of soil biodiversity decline among key stakeholders, including farmers, foresters, ranchers, and civil society, etc., emphasizing its significance for health and livelihoods.
- Strengthen awareness of the benefits of sustainable land-use and soil management practices for agricultural sustainability and livelihoods.
- Use digital tools and collaborative activities to promote best practices for soil biodiversity assessment, management, and monitoring.
- Update educational curricula across relevant fields and create training materials to improve knowledge of soil biodiversity and ecosystem services.
- Engage stakeholders in conservation, restoration and sustainable use efforts through citizen science campaigns and awareness events like World Soil Day.
- Strengthen the capabilities of farmers, land managers, and local communities in implementing sustainable soil management practices, incorporating traditional knowledge.
- Compile, protect, maintain and promote the traditional knowledge of indigenous peoples related to soil biodiversity, with their consent, and promote integration with scientific knowledge.

- Develop partnerships that support multidisciplinary approaches and ensure participation from various stakeholders in sustainable soil management.
- Facilitate access to advanced technologies and tools for soil biodiversity assessment and monitoring, particularly in developing countries.

**Research, monitoring, and assessment activities**

- Increase national capacities in soil biodiversity taxonomy and address assessment needs by designing targeted strategies to fill existing gaps.
- Promote research on integrating soil biodiversity into farming systems to improve yields and harmonize research, data collection, management and analysis, and sample processing protocols.
- Conduct research to identify risks to soil biodiversity from climate change and hazardous chemicals, and develop adaptation and mitigation strategies to reduce loss of key species and habitats.
- Promote research and practices that enhance the functions and services provided by soil biodiversity through integrated pest management.
- Build capacity and conduct research to quality and quantify soil biodiversity in agriculture and managed ecosystems, developing consistent monitoring protocols.
- Promote research, data collection, community monitoring, and knowledge transfer to improve information management related to soil biodiversity.
- Facilitate fair and equitable sharing of benefits from genetic resources in soil, aligned with the Nagoya Protocol.
- Mobilize participatory research and development and promote gender-responsive approaches to engage women, youth, and indigenous communities in research and development.
- Create and apply tools to assess the status of soil biodiversity across regions, utilizing various methodologies and technologies.
- Collect and generate data on soil biodiversity and degradation to create visual maps and georeferenced databases for informed decision-making.
- Promote the co-creation and exchange of knowledge and data to ensure all stakeholders have access to reliable and up-to-date information.
- Develop standardized definitions, baselines, indicators, and monitoring activities at various levels for soil biodiversity, including a range of soil organisms.
- Foster collaboration to compile and share data and lessons learned from sustainable soil management practices with positive impacts on soil biodiversity.
- Encourage the development of community-based monitoring systems and simplified methodologies and tools for assessing soil biodiversity.
- Promote research and capacity-building in sustainable soil management that conserves and restores soil biodiversity.
- Support the sustainable development of commercial applications for products based on soil biodiversity.