

***Agriculture , biodiversity and food security :
From commitments to actions***

**Technical roadmap
(Unedited version)**

Preamble

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The international conference 'Agriculture, biodiversity and food security: from commitments to actions' co-organized by Laval University (UL), the Ministry of International Relations and La Francophonie (MRIF) of Quebec, the United Nations for Food and Agriculture (FAO) and the Secretariat of the Convention on Biological Diversity (SCBD) was held in Quebec, Canada, from April 30 to May 2, 2024.

The recent adoption of the Kunming-Montreal Global Biodiversity Framework ¹(Global Framework) presents an immediate opportunity to accelerate the implementation of solutions to adapt or transform agri-food systems by making them more sustainable and resilient while contributing to efforts to adaptation to climate change, taking into account the instruments developed under the auspices of the FAO.

Implementation of the Global Framework will require the involvement of stakeholders from agricultural sectors (agriculture, aquaculture, fisheries, forests). In order to facilitate the engagement of agricultural sectors in achieving relevant targets for their sectors, the co-chairs of the conference facilitated the development of a technical roadmap to promote the implementation of the Global Framework and more specifically taking into account efforts already undertaken but also opportunities to increase agricultural practices that respect biodiversity. This technical roadmap was developed to facilitate the implementation of the Global Framework and more specifically the consideration of biodiversity in agricultural environments, its conservation and sustainable use. It integrates the contributions obtained during a public consultation extended to numerous stakeholders before the conference ²and by the participants in the conference.

¹ <https://www.cbd.int/gbf> ; <https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-fr.pdf>

² The case studies collected during the expanded consultation are available on the FSN forum website <https://www.fao.org/fsnforum/call-submissions/solutions-integration-biodiversity-agriculture> ; https://assets.fsnforum.fao.org/public/resources/2024-04/PROCEEDINGS%20REPORT_CALL%20BIODIVERSITY_EN.pdf

It aims to present in a clear and concise manner the proposed courses of action regarding the opportunities, constraints and challenges to be addressed as a priority.

Agriculture – biodiversity interactions

Agriculture depends on biodiversity (in its three dimensions of diversity of ecosystems, species, and within species). However, through its use of terrestrial and aquatic ecosystems, agriculture is also the sector which has the greatest impact on biodiversity. These multiple interactions are not always well understood. While the adoption of certain agricultural practices and techniques has negative effects on biodiversity, sustainably managed agri-food systems also constitute an important source of solutions to the challenges linked to the Sustainable Development Goals – food security, nutrition, biodiversity, climate, livelihoods and water.

Actors in the agricultural sectors play a key role in the promotion, conservation and sustainable management of biodiversity. This role is often poorly understood or even neglected in national or international processes, including those relating to biodiversity. It is necessary to improve communication and dissemination of information on this role of actors in the agricultural sectors. It is also important to communicate about the constraints and compromises faced by farmers, breeders, foresters, fish farmers and fishermen in their efforts to produce sustainably and meet the needs of society, while continuing to live from their production. Sectors such as the environment, land use planning, economy, health and education must also be called upon not only to recognize the contribution of the agricultural sectors to the implementation of the Sustainable Development Goals³ and of the Global Framework but also in the formulation of adequate policies and the making of judicious decisions that promote sustainable and resilient agricultural sectors.

Cross-cutting conditions and considerations

The technical roadmap provides a framework for implementation by the agricultural sector and recognizes the importance and role of the different actors in the agricultural sectors in achieving the targets of the Global framework. The priority actions it proposes are guided by cross-cutting conditions and considerations as identified by stakeholders.

The agricultural sectors include a variety of stakeholders with a role to play in achieving the Global Framework targets, such as farmers and farmer groups, including cooperatives and associations, the private sector, indigenous peoples, local communities, women, young people, consumers, research stakeholders, and many others. Given the central role of farmers in the conservation and sustainable use of biodiversity and food security, their concerns and interests must be at the center of policies and instruments in the agricultural

³<https://www.un.org/sustainabledevelopment/en/objectives-de-developpement-durable/>

sector in order to preserve biodiversity while ensuring them the means adequate livelihood. The vast majority of farmers operate small, often family and subsistence farms in a variety of environmental, socio-economic and cultural contexts and specificities, and have their own needs that must be considered. Local, traditional and indigenous knowledge informs the actions to be implemented. The implementation of agricultural practices integrating biodiversity is favored by cooperation, collaboration and good governance.

The challenges facing the agricultural sectors require an ecosystem and holistic approach including the links from agricultural production systems as well as food systems to consumers. Certain issues such as climate change or invasive species require holistic approaches beyond farms and across borders. Implementation actions must take into account spatial and temporal scales, at the farm level, but also of agricultural communities and landscapes up to the national level. These actions must also include the temporal aspect and take into account the need for sustainability and continuity of practices, methodologies, research programs, policies and funding.

Implementation of the Global Framework by the agricultural sectors also contributes to the implementation of the Sustainable Development Goals and commitments under the United Nations Framework Convention on Climate Change. The technical roadmap takes into account the instruments adopted by States in the various intergovernmental forums relevant to achieving the targets of the Global Framework.

The 23 targets of the Global Framework⁴ are interdependent and are all linked, directly or indirectly, to the agricultural sectors. Targets 1, 2, 3, 4, 7, 8, 10, 11, 14, 16 and 18 are particularly explicit with regard to the agricultural sectors. However, their implementation integrates the cross-cutting issues that are addressed in the other targets, in particular targets 20, 21, 22, 23.

Components of the technical roadmap

⁴<https://www.cbd.int/gbf/targets>

A. Efforts to conserve, sustainably use and integrate biodiversity into the agricultural sector

1. Updating knowledge on biodiversity for food and agriculture
2. Adoption of sustainable agricultural practices that respect biodiversity

B. Constraints, opportunities and challenges

3. Constraints, opportunities and challenges

C. National policies and instruments promoting the conservation and sustainable use of biodiversity for food and agriculture

4. Implementation of global instruments and policy tools – for sustainable management of biodiversity – from international to national
5. In-Country Policies, Instruments and Programmes: Tools and Solutions for Implementation and Mainstreaming – Coordinated Actions

A. Efforts committed to the conservation, sustainable use and integration of biodiversity in the agricultural sector

1. Knowledge updates on biodiversity for food and agriculture⁵

The state of biodiversity for food and agriculture is subject to regular updates by countries. For example, it is from national reports that global reports on the State of animal and plant genetic resources, aquatic and forest genetic resources as well as biodiversity for food and agriculture are produced.⁶ produced by the FAO Commission on Genetic Resources for Food and Agriculture. Other forums like IPBES produce reports on the state of biodiversity and ecosystem services important to agriculture.

The participation of all relevant stakeholders is required to increase knowledge of resources and efforts undertaken for the conservation, sustainable use and integration of biodiversity in the agricultural sector. Certain governance structures are put in place to encourage this participation in the form of multidisciplinary committees at the national, regional and even local level. Research, gender and indigenous and traditional knowledge must be taken into account in knowledge development.

Priority actions :

- Produce national reports with better inclusion of stakeholders including farmers and ensure their increased participation in the validation of these reports.
- Promote the addition of variables linked to biodiversity in national agricultural surveys and censuses.
- Develop indicators that are useful and meaningful for farmers, simple and inexpensive, making it possible to understand, know and recognize farmers' actions and their results.
- Facilitate participatory data collection systems on biodiversity in agricultural systems with stakeholders, particularly farmers and scientists, while preserving the anonymity of participants and protecting the data ownership of agricultural communities and control of their usage.
- Generate knowledge by including traditional, indigenous and local knowledge and develop innovative practices and technologies adapted to new modes of production (e.g. IT, satellite, bio-inputs)
- Carry out evaluation and monitoring throughout the knowledge cycle, from knowledge generation to the development of methodologies and practices, to reporting that feeds this knowledge, whether on the theme of biodiversity, genetic resources, services

⁵ This section mainly concerns targets CM 4, 6, 7, 8, 10, 11, 13 and 14

⁶<https://www.fao.org/cgrfa/assessment/en>

ecosystems (e.g. assessment of soil condition, pollinator population, etc.) or on the theme of threats, pests, diseases, invasive species, etc.

- From the data collected, develop information and communication based on evidence to promote informed decision-making.
- More broadly, develop collaborative systems of training, access and exchange of technologies and information for farmers and cyclical knowledge systems with knowledge generation, development of methodologies and practices, implementation, monitoring and feedback coming to nourish knowledge.

2. Adoption of sustainable agricultural practices that respect biodiversity⁷

Target 10 of the Global Framework lists “biodiversity-friendly practices, such as sustainable intensification, agroecology and other innovative approaches, thereby helping to improve the long-term resilience, efficiency and productivity of these production systems, as well as to strengthen food security, conserve and restore biodiversity and preserve nature's contributions to people, including ecosystem functions and services. Target 7 of the Global Framework aims to reduce the risks linked to pollution, in particular by halving the excess nutrients lost in the environment, the overall risks linked to pesticides, in particular through integrated pest control measures, and by preventing, reducing and working to eliminate plastic pollution.

Faced with a production challenge, farmers can adopt and adapt sustainable methods, respectful of biodiversity⁸, often starting from traditional techniques. Biodiversity offers opportunities for promoting sustainable agri-food systems. Sustainable production is characterized by a more systemic and ecosystem approach to the management of natural resources and the strengthening of the contribution of ecosystem services, and is based on scientific principles of an environmental, institutional and social nature.

These practices generally contribute to resilience in the face of climate change and to promote soil health, diversity and fertility. On the ground, there is often no distinction between actions for climate adaptation and those for biodiversity.

The adoption and adaptation of sustainable practices by farmers requires financial, human and organizational resources to establish technical and operational capacities. As an essential player in the application of these practices, committed farmers must be supported in their approach. Other stakeholders in society such as investors, businesses and banks also play an important role in contributing to the financial profitability of these practices. The use of modern and effective tools for measuring and monitoring the impact

⁷This section mainly concerns targets CM 1, 2, 3, 4, 7, 8, 10 and 11

⁸Although the “biodiversity-friendly practices” mentioned in the text of Target 10 are not officially defined, Chapter 5 of The State of the World's Biodiversity for Food and Agriculture describes more than twenty of these practices and approaches ([FAO, 2019](#)).

of agricultural practices on biodiversity makes it possible to give a price and value to good agricultural practices, the preservation of nature, water, to the protection of soils and other ecosystem services

Research must also be leveraged and strengthened to promote sustainable practices. The latter must be done in collaboration with farmers at different scales, including at the level of production systems, also taking into account gender and indigenous and traditional knowledge.

Priority actions :

- Recognize that the farmer is at the heart of these practices.
- Facilitate the adoption and adaptation by farmers of agricultural practices that respect biodiversity by building on successful past experiences (e.g. FFS) and adapting them to current needs and technological innovations.
- Integrate conservation, use and sustainable management of biodiversity into extension programs, advisory services and technical support.
- Train and strengthen extension services and farmers in new knowledge and technologies with an emphasis on the transfer of knowledge between different actors, researchers, technicians, farmers and the sharing of experiences between farmers.
- Increase the budget for the development, with a view to continuity, of research and capacities, the transfer of knowledge, technology and innovation in agricultural practices that respect biodiversity and which promote food and nutritional security, productivity and profitability, in changing and sometimes unpredictable environmental contexts.
- Collect data and develop advocacy, including cost-benefit analysis, to demonstrate the advantages and benefits that stakeholders, particularly farmers, can derive from adopting these practices.
- Evaluate and monitor the adoption of these practices, and their impact at farm level in terms of biodiversity and sustainability (including through the provision of indicators), and thereby contribute to the followed by target 10 of the CM.
- Pay particular attention to soil health, fertility and biodiversity in research and implementation of agricultural practices that respect biodiversity .
- Promote the experimentation of practices and solutions at the local and territorial level to test their effectiveness and viability before scaling them up.
- Promote the sharing of data and information with farmers through coordination, cooperation and collaboration networks , platforms and other collaborative systems and encourage dialogue between the different actors involved . In doing so, also encourage the collaborative generation of solutions adapted to each context.

- Improve access to markets, including local markets, marketing and facilitate access to goods and infrastructure, inputs and technologies that promote reconversion and/or transition to sustainable production systems, particularly agroecological, and support this transition.
- Strengthen the use of participatory guarantee systems for agroecological production.
- Strengthen the inclusion of women and young people in agroecological production processes and the management of biodiversity in agroecosystems.
- Sustain adoption and transformation achieved through economic viability and practices and drive scale through planning, coordination and partnership.

B. Constraints, opportunities and challenges to overcome

3. Constraints , opportunities and challenges to be met⁹

To further integrate biodiversity into the agricultural sectors while also taking into account climate issues, the biotic and abiotic specificities of the environment and land degradation, we must also address the threats and factors of biodiversity loss. The constraints and opportunities are multiple, economic, financial, land, organizational or way of thinking, climatic or even institutional and political (this last point is covered in component C). Priority actions aim to overcome these constraints.

Priority actions :

- Valorize the role of farmers and recognize their expertise and their role in social cohesion and community development.
- Promote the participation of farmers in the development of innovative approaches and technologies allowing the integration of biodiversity and the health of ecosystems while ensuring food production, taking into account nutritional aspects, and allowing them to make a living from their production.
- Enable a review of measures that affect the adoption of sustainable agricultural practices, integrating biodiversity and resilience to climate change.
- Identify and strengthen positive incentives for the conservation and sustainable use of biodiversity, taking into account local contexts and priorities, and promoting the transformation of production systems and associated distribution networks .

⁹ This section concerns all the targets discussed during the conference and in particular targets CM 16 and 18 as well as 14

- Ensuring a fair income for farmers taking into account their good practices and the preservation of biodiversity and ecosystem services
- Analyze support systems for agriculture and food systems, including subsidies and labels, in terms of their impact on biodiversity and the adoption of practices that respect biodiversity.
- Develop short circuits and local agriculture allowing farmers to obtain fair prices for their products.
- Explore innovative micro-credit and financing mechanisms including crowdfunding, the creation of specific funds or co-financing by philanthropists and the private sector.
- Develop strategies and mechanisms (including agricultural insurance mechanisms) for sharing risks for producers associated with the adoption of new practices and approaches
- Develop an ecological economy based on a systemic approach and including an economic, cultural and social evaluation of ecosystem services .
- Increase information and recognition among consumers regarding agricultural practices that respect biodiversity, to facilitate an informed choice, with, among other things, the development of product identification systems (labels, territorial identification, etc.), set up campaigns communication and highlight the role of consumers as levers in production chains.

C. Policies and instruments promoting the conservation and sustainable use of biodiversity for food and agriculture

4. Implementation of global instruments and policy tools - for sustainable management of biodiversity – from international to national¹⁰

Several instruments relevant to global issues, negotiated under the auspices of the FAO, when implemented, contribute to achieving the targets of the Global Framework. Some concern threats to biodiversity such as the International Plant Protection Convention or the Rotterdam Conventions on dangerous chemicals and pesticides. For example, with regard to biodiversity, the Commission on Genetic Resources for Food and Agriculture (CRGAA) adopts strategies, action plans and even voluntary guidelines in order to facilitate the work of countries. in taking into account important issues (eg climate change, nutrition) in connection with national development objectives. These instruments are also shared with other Conventions to be made available to countries.¹¹

¹⁰ This section concerns targets CM 1, 2, 10, 14, 18.

¹¹ <https://www.fao.org/cgrfa/assessment/fr> ; [Global Action Plans \(fao.org\)](#) ; [Codes, Standards and Guidelines \(fao.org\)](#)

Priority actions :

- Promote the integration of biodiversity for food and agriculture into sectoral policies concerning the environment (NBSAP), climate (PNA), health, nutrition and promote the harmonization and coherence of political frameworks and existing legal framework.
- Translate instruments adopted at global, regional or national levels - NBSAPs, action plans, codes of conduct, nationally determined contributions, etc. - in terms adapted to the different stakeholders to facilitate their implementation
- Ensure increased participation of farmers in the design and implementation of comprehensive plans as a stakeholder, and in the definition of national contributions and their implementation, including by supporting the development of farmer organizations and coalitions able to represent the interests of farmers to political decision-makers. Highlight the contributions of farmers who integrate biodiversity, including smallholders, as well as local communities and indigenous peoples.
- Encourage review by stakeholders, particularly producers, of the implementation of comprehensive plans and instruments.
- Strengthen political and institutional support in implementation for these same actors.
- Improve the visibility of programs and funds resulting from these global plans and instruments and facilitate access to these funds by stakeholders, particularly through technical assistance for project development.
- Pay particular attention to coordinated actions to advance the agendas of conventions related to the environment and agricultural sectors in a context of food security.

5. Policies, instruments and programs within countries: Implementation and integration tools and solutions – coordinated actions¹²

Countries adopt and develop their own policies, instruments and programs in order to facilitate the adoption of agricultural practices that respect biodiversity and contribute to resilience to climate change . Coherent policies and coordinated actions also make it possible to support farmers who engage in the development of practices combining economic , social and environmental performance .

¹² This section essentially concerns target 14, which integrates the concerns of the other targets

Priority actions :

- Promote increased participation of farmers and their associations in the development and implementation of policies and regulations concerning agricultural practices that respect biodiversity.
- Promote administrative simplification.
- Promote spatial planning that respects biodiversity, land, soil and water.
- Facilitate the implementation of existing policies, strengthen policy coherence between sectors and between national, regional or global levels, take into account trade-offs and prioritize policies that contribute to the achievement of several objectives.
- Promote collaboration and cooperation between different actors, in particular between farmers, scientists and decision-makers, in the implementation of policies, instruments and programs.
- Strengthen capacities in governance, communications, education, research and data collection.
- Promote the emergence and sustainability of spaces, institutions, structures of multi-sectoral governance, dialogue, prioritization and co-construction of solutions between actors and between generations, including allowing the full promotion of the perspectives and role of women .
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- Use local and national data to support informed decision-making, the formulation of programs and instruments, research, innovation, communication campaigns, educational programs and technical and extension services.
- Support participatory and innovative land tenure models to promote access to and protection of farmers' land. Develop integrated models with a vision of planning and development and land use.
- Align and harmonize various laws and regulations in the same country for a diversity of territories.
- Promote and support collective approaches at the level of landscapes and territories
- Health” approaches integrating human health and the environment.

Implementation

Considerations for Implementing the Technical Roadmap

This sheet is intended for all stakeholders in the agricultural sectors. Its purpose is to facilitate collaborations and collective actions at all levels, territory, sector, local, national and global. Its implementation will be strengthened by human and financial resources, innovative and organizational methods, as well as capacity building. Data, information and knowledge will need to be shared with different audiences. Changes in governance, policies and regulations will also be expected. Scientific research and indigenous and traditional knowledge must be harnessed in order to create synergies in favor of biodiversity. Gender issues must also be taken into account. All processes put in place must be transparent, multidisciplinary, multi-stakeholder, transversal , inclusive. and participatory.

A key aspect of the implementation of the technical roadmap will be to ensure increased participation of farmers and promote the participation of women, youth, Indigenous Peoples and local communities in the development of innovative approaches and to develop an environment favorable to the implementation of actions.

Implementation must take into account the specificities of the sites and contexts, including financial constraints, the profile of producers, the regulatory framework and ensure the involvement of all stakeholders. This implementation must also promote long-term adoption and sustainability by a succession of farmers and young people. Finally, it must include monitoring measures with indicators that are meaningful and useful to farmers and stakeholders.