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### Status of Biodiversity in Europe and Central Asia – Challenges and Opportunities for Dynamic Conservation of Biodiversity

#### Executive Summary

Biodiversity is essential for the productivity, adaptability and sustainability of agriculture and food systems. Without biodiversity and ecosystem services, agriculture, food and nutritional security could be jeopardized and poverty could rise. Although it is of vital importance, biodiversity is in continuous decline; according to a report from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 42 percent of terrestrial animal and plant species (with known trends) have declined in population size in the past decade. Biodiversity is declining partly due to intensive agriculture to increase the provision of food and forest management practices emphasizing wood production.

To mainstream biodiversity in the agriculture sectors, it is crucial to conduct cross-sectoral and policy dialogues, to prepare regional priority actions for the development of the Action Plan for the implementation of the FAO Strategy on Mainstreaming Biodiversity Across Agricultural Sectors, and to promote biodiversity-friendly practices, approaches and digital technologies, including data monitoring and reporting systems.

This document aims to raise awareness on the status of biodiversity in Europe and Central Asia, based on the latest available analysis. It provides information on the actions of FAO to support biodiversity conservation in the region and outlines further challenges and opportunities in the framework of the 2030 Agenda for Sustainable Development.

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## I. Introduction

1. The Sustainable Development Goals (SDGs) provide renewed impetus for focusing on conserving and using biodiversity for food and nutrition and linking that to the sustainability of food systems. Mainstreaming biodiversity across the agriculture sectors and food systems is critical to achieving those goals by 2030.

2. Biodiversity is the variety of life at genetic, species and ecosystem levels. Biodiversity for food and agriculture is, in turn, the subset of biodiversity that contributes in one way or another to agriculture and food production.<sup>1</sup>

3. Earth's biodiversity is being lost at an alarming rate, putting the sustainability of agriculture and ecosystem services and their ability to adapt to climate change in jeopardy and threatening food and livelihood security. Biodiversity is in continuous decline in Europe and Central Asia; based on a report from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES),<sup>2</sup> 42 percent of the monitored terrestrial animal and plant species (with known trends) have declined in population size in the past decade. The extents of natural ecosystems and species also have declined. Compared with other regions, Europe and Central Asia (or more specifically Europe) has a particularly high level of knowledge on the status and trends of associated biodiversity and wild food resources. The population trends of many species are well documented and monitored, and there are a significant number of ongoing research projects on, *inter alia*, functional biodiversity in food production systems, biodiversity and climate change, and invasive alien species.<sup>3</sup>

4. The loss of biodiversity can reduce the productivity of ecosystems, also reducing the availability of goods and services they provide. Biodiversity loss also weakens the ability of ecosystems to cope with natural disasters, such as droughts, floods and storms, thus threatening the sustainability of agriculture and food systems. While agricultural sectors can contribute significantly to the conservation and sustainable use of biodiversity, it is also considered a major driver of biodiversity loss.

5. Climate change increases the pressure on natural resources, impacts ecosystem services and threatens food production. Climate change modelling presents a range of different scenarios, but most analyses indicate intense impact on the agricultural sectors' goal of more resilient food systems.<sup>4</sup> Extreme weather events, combined with temperature increases and earlier snowmelt, have caused substantial biodiversity loss and degradation. Considering the contribution of biodiversity to human life and sustainable agricultural production, the maintenance of biological diversity must be regarded as a priority; it is a non-renewable resource that most of the times could not be reproduced through modern technologies.

6. FAO has developed a number of different instruments, guidelines and tools to address biodiversity concerns in harmony with the Convention on Biological Diversity (CBD) and its protocols, including for example the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). In December 2019, the 163rd session of the FAO Council, mandated by the

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<sup>1</sup> The State of the World's Biodiversity for Food and Agriculture:

<http://www.fao.org/3/CA3129EN/CA3129EN.pdf>

<sup>2</sup> The regional assessment report on biodiversity and ecosystem services for Europe and Central Asia:

[https://ipbes.net/sites/default/files/2018\\_eca\\_full\\_report\\_book\\_v5\\_pages\\_0.pdf](https://ipbes.net/sites/default/files/2018_eca_full_report_book_v5_pages_0.pdf)

<sup>3</sup> Europe and Central Asia Regional Synthesis for The State of the World's Biodiversity for Food and Agriculture:

<http://www.fao.org/3/ca6995en/ca6995en.pdf>

<sup>4</sup> Impacts of climate change on the future of biodiversity: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1461-0248.2011.01736.x>

FAO Conference, adopted the Strategy on Mainstreaming Biodiversity across Agricultural Sectors,<sup>5</sup> which aims to mainstream biodiversity across agricultural sectors at national, regional and international levels in a structured and coherent manner, taking into account national priorities, needs, regulations and policies and Country Programming Frameworks (CPFs).

7. In Europe and Central Asia, FAO Regional Initiative 3 on sustainable natural resource management under a changing climate is the programmatic umbrella for translating global instruments and specific regional challenges into actions at the country level, linking support to policy processes in the region to better answer climate change and biodiversity loss, since they are two major environmental threats of the twenty-first century.

## **II. Biodiversity in the ECA-region in the context of climate change<sup>6</sup>**

8. The Europe and Central Asia region (ECA-region) is characterized by a great variety of climates, landscapes, aquatic environments, soil types and cultures, and hence also biodiversity. The region includes four officially identified biodiversity hotspots, namely the Caucasus, Irano-Anatolian, Mediterranean Basin and Mountains of Central Asia hotspots. These locations are known to be particularly rich in endemic plant species and are home to a range of unique bird, mammal, amphibian and reptile species. With respect to biodiversity for food and agriculture in particular, the region experienced substantial losses; according to the IPBES report, 42 percent of the monitored terrestrial animal and plant species (with known trends) have declined in population size in the past decade.

9. The intensive use of land and waterways is considered among the main threats to biodiversity in the ECA-region. The narrowing of the genetic resource base affects the conservation and use of genetic resources for food and agriculture, even if the trend towards the use of only a limited number of livestock breeds and crop varieties seems to have levelled off in recent years. Human activities are causing significant damage to marine and freshwater habitats and species, both through the discharge and runoff of nutrients and other chemicals and through direct physical contact or disturbance. Climate change and the proliferation of invasive alien species are also considered among the main threats to biodiversity in the ECA-region for food and agriculture. To date, only limited information is available on the potential use of biodiversity for food and agriculture to adapt to and mitigate climate change.

10. Forest loss also represents a major global threat to biodiversity and the supply of ecosystem services, such as habitat provisioning, clean water, soil conservation and protection, and carbon sequestration.<sup>7</sup> It is also a severe threat in the region. In the Caucasus, a variety of ecosystems are found in a relatively small area. Nearly half of the lands in the Caucasus Biodiversity Hotspot have been transformed by human activities, and only 2–3 percent of original riparian forests remain in the southern Caucasus.<sup>8</sup> Therefore, the management of plant and forest genetic resources is important to develop in the region, in addition to the maintenance of native breeds.

11. Biodiversity supports the cycling of water and nutrients, helping to control land erosion and regulate water quality. The proper management of biodiversity is crucial for a healthy water cycle. In the Central Asian countries, the combination of heavy water use and limited water resources puts considerable stress on the water supply. Thus, the relationship between biodiversity, ecosystem services and the water cycle is even more important in this region. Furthermore, in Central Asia, the total area of

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<sup>5</sup> Strategy on Mainstreaming Biodiversity across Agricultural Sectors: <http://www.fao.org/3/nb349en/nb349en.pdf>

<sup>6</sup> Europe and Central Asia Regional Synthesis for The State of the World's Biodiversity for Food and Agriculture: <http://www.fao.org/3/ca6995en/ca6995en.pdf>

<sup>7</sup> The State of the World's Biodiversity for Food and Agriculture: <http://www.fao.org/3/CA3129EN/CA3129EN.pdf>

<sup>8</sup> Ecosystem Partnership Fund: <https://www.cepf.net/our-work/biodiversity-hotspots/caucasus/threats>

land used for the production of crops has increased significantly. The scale of the change of land use, along with the changing climate, have serious effects on biodiversity.

12. Among the common issues for countries in the ECA-region is the proper management of plant genetic resources and the avoidance of genetic erosion. Genetic erosion is caused by different actions, including the replacement of local varieties with modern varieties and the loss of traditional knowledge associated with local agrobiodiversity, leading to a reduction of the varieties utilized.<sup>9</sup> Furthermore, information about genetic resources is insufficiently accessible, and most farmers do not have access to characterization and evaluation data relevant to breeding research.

13. Countries in Europe and Central Asia have put in place a range of national policies and programmes relevant to the conservation and sustainable use of biodiversity for food and agriculture, many of which are linked to regional policies and programmes. In European Union Member States, measures at national level are aligned with relevant European Union regulations, directives and payment schemes. Most European Union Member States have mentioned the importance of direct support schemes under the Common Agricultural Policy, such as payments for climate-friendly agricultural practices that benefit the environment and payments that support sustainable forest management practices.<sup>10</sup>

14. The European Union has made progress towards healthy ecosystems, but further efforts have to be made in improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity.<sup>11</sup> Increasing conservation efforts have started to reduce the loss of biodiversity and ecosystem services and help stop global biodiversity loss. Innovative biodiversity-based or biodiversity-friendly practices are being implemented in European countries, and attempts are being made to establish increasingly integrated approaches for the management of landscapes and ecosystems.

15. Countries in the region that are not members of the European Union are not covered by these measures and may therefore have different needs and priorities in terms of policy and programme development for the conservation and use of biodiversity for food and agriculture. However, insufficient monitoring and reporting systems and a lack of sufficient data lead to inadequate evidence to guide the decision-making process.

### **III. Opportunities for the dynamic conservation of biodiversity and FAO's work**

16. Biodiversity and ecosystem services contribute to the implementation of many of SDGs and associated targets.<sup>12</sup> Biodiversity is vital to ensuring the resilience and adaptation of agricultural systems, especially under a changing climate. Many SDGs, such as SDG 2 regarding “zero hunger,” can be fully achieved only if biodiversity is available; therefore, it is essential to integrate biodiversity into sustainable development actions, promoting the dynamic conservation of biodiversity.

17. In addition, the Koronivia Joint Work on Agriculture<sup>13</sup> – a landmark decision recognizing the role of agriculture in tackling climate change approved during the Twenty-third Conference of the

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<sup>9</sup> Indicators of Genetic Diversity, Genetic Erosion and Genetic Vulnerability for Plant Genetic Resources for Food and Agriculture: <http://www.fao.org/3/i1500e/i1500e20.pdf>

<sup>10</sup> Europe And Central Asia Regional Synthesis for The State of the World's Biodiversity for Food and Agriculture: <http://www.fao.org/3/ca6995en/ca6995en.pdf>

<sup>11</sup> European Council – Preparation of the post-2020 global biodiversity framework Convention on Biological Diversity (CBD): <https://www.consilium.europa.eu/media/41924/st15272-en19.pdf>

<sup>12</sup> Biodiversity and the 2030 Agenda for Sustainable Development: <https://www.cbd.int/development/doc/biodiversity-2030-agenda-technical-note-en.pdf>

<sup>13</sup> FAO and the Koronivia Joint Work on Agriculture: <http://www.fao.org/climate-change/our-work/what-we-do/koronivia/en/>

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in 2017 – establishes a basis for strengthening food security in the face of climate change, which can be supported in the agriculture sector by enhancing biodiversity provided potential trade-offs between climate and biodiversity objectives are well understood and managed.

18. To address the increasing challenges of the conservation and sustainable use of biodiversity in the ECA-region, it is important to build a bridge between the environment and agriculture sectors to enhance collaboration and establish or strengthen relevant research, education, capacity-building and multi-stakeholder cooperation programmes at national, regional and international levels.

19. Digital technologies are transforming food systems<sup>14</sup> in the region, affecting the ecosystems in which the agricultural production happens. Innovative technologies can enhance biodiversity conservation and the maintenance of ecosystem services. These technologies allow for developing new methods, building new tools and transforming the monitoring and collecting of data about biodiversity. In the long term, innovative solutions can contribute to improving data collection and analysis, helping ensure the acquisition of the best possible information and the enhancement of evidence-based decision-making to aid in halting biodiversity loss.

20. With this in mind, FAO is contributing to and promoting several actions and strategies at the country level and promoting regional cooperation. FAO has been supporting the implementation of the CBD at the global level, providing support to countries. The most notable area of support is related to mainstreaming biodiversity in agriculture, fisheries and forestry for improved food security and better nutrition; in this regard, FAO has launched the Biodiversity Mainstreaming Platform<sup>15</sup> to support countries in the inclusion of biodiversity in national agricultural plans and in the implementation of global policy instruments for mainstreaming biodiversity at the national level.

21. Moreover, as mentioned in Point 4, FAO has developed a Strategy on Mainstreaming Biodiversity across Agricultural Sectors,<sup>16</sup> which aims to mainstream biodiversity across agricultural sectors at national, regional and international levels in a structured and coherent manner, taking into account national priorities, needs, regulations and policies. The expected result of the application of the Strategy is to reduce the negative impacts of agricultural practices on biodiversity, to promote sustainable agricultural practices, and to conserve, enhance, preserve and restore biodiversity as a whole.

22. The FAO Regional Office for Europe and Central Asia (REU) is an important player in the region, providing support for countries, accelerating their capacities for the conservation and sustainable use of biodiversity, and sharing best practices among countries. Contributing to these efforts, REU has incorporated agroecology as part of its agenda, conducted events to raise awareness, and published a report on the status of agroecology in the region.

23. Similarly, FAO's initiative on Globally Important Agricultural Heritage Systems (GIAHS)<sup>17</sup> aims to identify, support and safeguard traditional agricultural systems that sustain and conserve biodiversity and genetic resources for food and agriculture. FAO is providing support to countries by enhancing awareness of the values and associated benefits of such agricultural systems and highlighting the importance of sites that have withstood climate variability for centuries and that show a remarkable

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<sup>14</sup> Sustainable Food Systems and Healthy Diets in Europe and Central Asia (ERC/20/2) available at: <http://www.fao.org/3/nc226en/nc226en.pdf>

<sup>15</sup> FAO Biodiversity Mainstreaming Platform: <http://www.fao.org/biodiversity/mainstreaming-platform/en/>

<sup>16</sup> Strategy on Mainstreaming Biodiversity across Agricultural Sectors: <http://www.fao.org/3/nb349en/nb349en.pdf>

<sup>17</sup> Globally Important Agricultural Heritage Systems: <http://www.fao.org/giahs/en/>

ability to reduce the impacts of climate change by building resilient ecosystems that preserve agricultural biodiversity.

24. Organic agriculture continues to expand with support from governments and non-governmental organizations. A wide variety of agroecological practices are increasingly being used to preserve and enhance soil biodiversity. Conservation agriculture is already practiced on 180 million ha – more than 12 percent of global arable land – and has been increasing at a rate of 10 million ha per year for the past decade. Awareness of the benefits of integrated pest management also is promoted by FAO among farmers, governments and international agencies.

25. Moreover, to promote evidence-based decision-making processes for the conservation of aquatic biodiversity, several publications were developed, including the journal articles “The updated list of the non-native freshwater fishes in Slovenia with a note of their potential impact in inland waters,” “A global review and meta-analysis of applications of the freshwater Fish Invasiveness Screening Kit,” “Long-term variation in numbers and biomass of silver eels being produced in two European river systems,” and “The impact of Cormorant predation on Atlantic salmon and Sea trout smolt survival” and the FAO publication Biodiversity of Turkey: Contribution of Genetic Resources to Sustainable Agriculture and Food Systems.

#### **IV. The work ahead**

26. In response to country needs, FAO will work in the 2020–21 biennium with Members in a collective effort to address challenges related to the conservation and sustainable use of biodiversity, considering the critical roles of biodiversity, ecosystem functions and services for the sustainability of food systems and human well-being in the region.<sup>18</sup> The work is focusing on:

- Mainstreaming biodiversity and ecosystem services in the agriculture sector, conducting cross-sectoral and policy dialogues, preparing regional priority actions for the development of the Action Plan for the implementation of the FAO Strategy on Mainstreaming Biodiversity Across Agricultural Sectors, and implementing the regional strategy on GIAHS.
- Promoting the sustainable management of plant genetic resources and resilient seed systems in the region, developing a regional strategy and roadmap for seed systems, and conducting regional dialogues.
- Establishing regional technical networks to promote nature-based solutions as an umbrella concept for ecosystem-related approaches that can be enhanced by combining elements of different technologies and engineering solutions inspired by the processes and functions of nature aimed at the sustainable management of natural resources and the protection of biodiversity.
- Supporting countries in gathering and managing data and information on biodiversity, including pollinator diversity and distribution maps of native tree species to identify seed stands, to facilitate evidence-based decision-making processes for the conservation and sustainable use of biodiversity.
- Providing a regional mechanism to improve the capacities of Members with regard to biodiversity-friendly practices and approaches in the context of a changing climate, considering that climate change is a significant and growing driver of biodiversity loss and that biodiversity

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<sup>18</sup> Results and Priorities for FAO in the Region (ERC/20/5) available at: <http://www.fao.org/3/nc229en/nc229en.pdf>

and ecosystem functions and services contribute to climate change adaptation, mitigation and disaster risk reduction.

- Strengthening multi-stakeholder national platforms for networking, alliances and partnerships on mainstreaming biodiversity. In particular, FAO country offices may act as facilitators for national mainstreaming biodiversity dialogues across agricultural sectors, including crops and livestock, forestry, fisheries and aquaculture, and other sectors such as environment, private sector (including finance), education, or culture among others. These dialogues should include representatives from national and local levels and build alliances between women, youth, farmers, pastoralists, forest users and producers, traditional leaders, private sector, academia, research, etc.
- Promoting strong regional collaboration and knowledge sharing among policy-makers, producer organizations, academia, the private sector, civil society organizations and local communities in an effort to transform the current status of biodiversity in the region for the achievement of sustainable food systems in the context of the FAO Hand-in-Hand Initiative<sup>19</sup>.

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<sup>19</sup> FAO's Hand-in-Hand Initiative: a New Approach (ERC/20/12) available at: <http://www.fao.org/3/nc347en/nc347en.pdf>