



Food and Agriculture
Organization of the
United Nations

Globally Important
**AGRICULTURAL
HERITAGE**
Systems



WHAT DO WE MEAN BY NBS AND HOW CAN WE APPLY THEM TO AGRIFOOD SYSTEMS?

PROCEEDINGS OF THE INTERNAL TECHNICAL WORKSHOP
ON NATURE-BASED SOLUTIONS (NBS) IN EUROPE AND
CENTRAL ASIA (ECA)

9 DECEMBER 2021

Contents

Acknowledgements	iv
Executive summary	v
OPENING AND GREETINGS	1
SESSION	1
<hr/>	
1. Tania Santivañez, FAO Agricultural Officer, Delivery Manager of Regional Initiative 3 FAO REU	1
2. Dr. Reuben Sessa, Natural Resources Officer FAO, Office of Climate Change, Biodiversity and Environment (OCB)	2
3. Dr. Appachanda Thimmaiah, International Agriculture Specialist, FAO REU	3
4. Dr. Elisabeth Simelton, Researcher, ICRAF	5
5. Dr. Elisabeth Simelton (ICRAF) and Manar Abdelmagied (Climate Change Specialist, FAO OCB)	6
CLOSING REMARKS	7
Annex 1: Agenda	8

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Executive summary

Climate change is increasing the susceptibility of resource-constrained communities to food insecurity, malnutrition and poverty. In addition, agricultural practices that are applied without respecting the ecosystem-functioning, are hardly harming agroecosystems' natural capital. This leads to biodiversity loss and natural resources deployment, which eventually undermines agroecosystems' resilience and sustainability and increases vulnerability to climate change and natural disasters. This necessitates the implementation and development of sustainable strategies that can support enhanced agricultural productivity and livelihood diversification without jeopardizing environmental health.

The Food and Agriculture Organization of the United Nations (FAO) acknowledges that nature-based solutions (NbS) are *cost-effective interventions that can enhance resilience in agriculture and food production while mitigating climate change and enhancing the environment*.¹ These strategies mimic nature by integrating the ecosystem functioning at a landscape scale to address socio-environmental challenges such as water scarcity, soil erosion, food insecurity, biodiversity loss and climate change adaptation. They are also critical in tackling the overexploitation of natural resources and in assisting countries in adapting to the adverse effects of climate change and its associated impacts. FAO is making considerable progress in the field of NbS and expects to offer more support in advancing the principles and practices embodied in the NbS concept. FAO's work on NbS entails technical support to Member Nations, research and innovation insights for NbS assessment and implementation framework to agrifood systems, public-private engagement to enhance the performance of policies and activities on the ground, and reduce the perceived risks associated with NbS investments.²

The Europe and Central Asia (ECA) region is home to a variety of NbS activities, including a walnut fruit forestry initiative in Kyrgyzstan, peatland conservation and agroforestry in Belarus, and aquaculture and ecotourism in Uzbekistan. Other examples include the Re-leaf Paper Initiative in Türkiye as well as forest restoration practices in Georgia. In this regard, NbS is becoming an important field of activity for FAO, owing to its prominence in international fora, as seen by the formation of the NbS investment platform and the unveiling of the new global map of best practices for NbS. The Regional Office for Europe and Central Asia (REU) has recently joined FAO's commitment to supporting countries in mainstreaming NbS to enhance agrifood system resilience and environmental sustainability.

1 Iseman, T. and Miralles-Wilhelm, F. 2021. Nature-based solutions in agriculture – The case and pathway for adoption. Virginia. FAO and The Nature Conservancy. <https://doi.org/10.4060/cb3141en>

2 FAO. 2020. Submission by the Food and Agriculture Organization of the United Nations (FAO) To the United Nations Framework Convention on Climate Change (UNFCCC) In relation to Inputs for the Standing Committee on Finance relating to the organization of its next Forum FAO

A session on NbS was convened as part of this work session during the 2021 FAO Informal Consultation for Europe and Central. During the Informal Consultation, the first report drafted by REU on NbS approach for ECA countries was launched.³ Moreover, on 1 December 2020, the first virtual technical event on NbS for ECA as part of the series Hand in Hand with Nature: Understanding NbS in Agriculture Through GIAHS was launched.³

To compliment efforts of mainstreaming NbS, REU convened a two-and-a-half-hour internal workshop on 9 December 2021 on Zoom. The main thrust of this workshop was to enhance national capacities on NbS of FAO technical experts working in ECA through the provision of a clear understanding of the NbS concept and approach, as well as a method to identify and apply them in agriculture. It also sought to answer the question: What do we mean by NbS and how can we apply them to agrifood systems? This dialogue created an interactive working environment that would generate up-to-date information on NbS in ECA.

The workshop recognized that NbS is now on the high-level political agendas of the European Commission and the United Nations. Moreover, there is a rise in funding opportunities for NbS such as the Global Environment Facility (GEF), Green Climate Fund, IFAD, and the World Bank, among others. In ECA, however, NbS is constrained by a lack of awareness of NbS practices, budgetary restrictions, inconsistencies in government-supported initiatives, lack of technology and innovation, and market insecurities. To counter these challenges, capacity building, technological and financial interventions and the creation of regional and global marketplaces are all needed. FAO is now holding internal consultations across its operating regions, country offices, and theme streams in an attempt to build an internal framework for NbS. The framework will encompass sustainable practices, green infrastructure, amelioration and conservation. This framework will aim to (1) enhance FAO's position and strategy on NbS, (2) identify entry points, and (3) link to the RIO Conventions and Sustainable Development Goals (SDGs).

³ Arnés García, M., Santivañez, T. 2021. Hand in hand with nature – Nature-based solutions for transformative agriculture. A revision of Nature-based solutions for the Europe and Central Asia region, supported by Globally Important Agricultural Heritage System (GIAHS) examples. Budapest, FAO. <https://doi.org/10.4060/cb4934en>

Opening and greetings

Moderator: Marta Arnés García, International Consultant, FAO NBS and GIAHS, REU

Ms. Marta Arnés García opened the internal technical workshop at 10.00 CET. She welcomed the webinar participants and outlined the structure of the workshop and the agenda. The two and half hour online workshop was organized in two parts that aimed to integrate the continuous participation of the participants between interventions in the first part, and during the workshop activity in the second part. She went on to introduce the organizer of the workshop: REU under its Regional Initiative 3 (Managing natural resources sustainably and preserving biodiversity under a changing climate). The workshop sought to answer two questions: (1) What do we mean by NbS and (2) how can it be applied to agrifood systems? Ms. Marta Arnés García notified the participants that the question and answer (Q&A) chat was open for comments and questions and reminded them to mute their microphones while they were not speaking.

Session

1. Tania Santivañez, FAO Agricultural Officer, Delivery Manager of Regional Initiative 3 FAO REU

Ms. Santivañez gave the opening speech, providing an overview of FAO's efforts in promoting NbS under Regional Initiative 3 in Europe and Central Asia. The presentation placed a strong emphasis on the need to upscale NbS initiatives as well as incorporate the extraordinary knowledge and practices derived from the region's great landscapes, distinctive cultures, and important agrobiodiversity. The internal workshop aims at creating an interactive working environment that fosters capacity development in NbS. It also provides updated information on effective NbS practices and approaches. The workshop also targeted discussing the suitability of agricultural technologies in the NbS framework.

This internal workshop complements NbS work initiated by FAO in 2020 under Regional Initiative 3. The initiative started by creating a platform that responds to the interest shown

by various countries on NbS. These countries recognize NbS as a major entry point in addressing climate change, unsustainable management of natural resources, and biodiversity loss. As part of this work, several activities have been implemented. Regional informative consultations were conducted and a series of webinars dubbed "Hand in hand with nature" has been launched. The first publication on the concept and examples on NbS has been published in both English and Russian.

NbS maintains a key and crucial system that conserves biodiversity and supports ecosystem services for agricultural sustainability. Climate change and the COVID-19 epidemic have exposed the fragility of our current agrifood systems. As a result, it is critical to building sustainable production systems based on NbS principles. NbS is a priority technical area in the ECA region. Ms. Santivañez concluded by informing the participants of the launch of the Green Agriculture Technical Platform with which NbS is a thematic area.

2. Dr. Reuben Sessa, Natural Resources Officer FAO, Office of Climate Change, Biodiversity and Environment (OCB)

Keynote Speech: The current state of FAO's framework on Agricultural NbS

Dr. Reuben Sessa started by highlighting that NbS is very highly mentioned in the international fora and political agenda of the United Nations and European Commission. In October 2021, the Standing Committee on Finance had a Forum "Finance for NbS." The NbS Investment Platform for Sustainable Agriculture, Forests, Land Use, and the Blue Economy was also established. NbS is the third priority theme for the Global Environmental Facility (GEF) 8, with a focus on integrated landscape approaches. We have also witnessed the launch of the Global Map of Best-Practice NbS. In addition, the United Nations System Chief Executives Board for Coordination (CEB) (2020) launched a Common Approach to Integrating Biodiversity and Nature-based Solutions for Sustainable Development into United Nations Policy and Programme Planning and Delivery. Through this initiative, NbS was a theme at the Climate Adaptation Summit (2021) and one of the priorities of the Food Systems Summit (2021).

The European Commission, on the other hand, introduced the Green Infrastructure Strategy (2013), Action Plan on the Sendai Framework (2016), Bioeconomy Strategy (2018), EU Biostrategy for 2030 (2020), A Farm to Fork Strategy (2020), and the EU Strategy on Adaptation to Climate Change (2021). All these strategies are crucial in advancing and mainstreaming NbS efforts in the region. However, there is a need to increase funding opportunities for NbS. At the UNFCCC, the multilateral development banks issued a joint statement: "As appropriate, we commit to supporting countries to secure high ambition for implementing NbS across their relevant plans and strategies, including Long-term Strategies (LTS); Nationally Determined Contributions (NDCs); National Adaptation Plans (NAPs); NBSAPs; and Land Degradation Neutrality (LDN) targets."

In the same spirit, the United Kingdom of Great Britain and Northern Ireland pledged to launch a GBP 65 million Just Rural Transition support programme to help developing countries move towards more sustainable methods of agriculture and food production. The European Commission announced a new pledge of GBP 100 million in finance for the Adaptation Fund and Ursula von der Leyen pledged EUR 1 billion in funding for the Global Forests Finance Pledge at the COP26. In addition, the Green Climate Fund (GCF) supports nature-based investment funds, green bonds and equity for climate action projects. In September 2021, IFAD committed 30 percent of climate finance to support NbS in rural small-scale agriculture by 2030. The World Bank Group has recognized NbS as one of its key priority areas as it aims to prioritize adaptation and resilience on several fronts as part of its new Climate Change Action Plan (2021–2025).

At the moment, there is no consolidated approach across FAO on NbS, although FAO is already working on NbS under different approaches. Request during the first meeting of the FAO interdepartmental working group on NbS to define NbS for food and agriculture and outline what activities FAO could be undertaking on this conceptual approach. FAO is currently undertaking internal consultations from across its regions, country offices, and thematic streams in an attempt to develop an internal framework for NBFAS. The future FAO Framework for Nature-based Food and Agriculture Solutions (NBFAS) shall build on the Agriculture NbS Framework and a screening tool for project design, developed for the FAO Regional Office for Asia and the Pacific (RAP) in 2019. The goals of NBFAS are to (1) advance FAO's position and approach on NbS, (2) identify entry points for FAO's work on NbS, and (3) establish linkages to Rio Conventions and Sustainable Development Goals (SDGs).

3. Dr. Appachanda Thimmaiah, International Agriculture Specialist, FAO REU

Keynote Speech: Presentation of the report: Mapping Agroecological Approaches to promote NbS in ECA

Dr. Appachanda Thimmaiah presented the study findings from the mapping of the agroecological approaches to promote NbS in the ECA region, including those related to the use of digital technologies supportive of sustainable natural resource management under the changing climate. The main task was to conduct a deskwork regional study on the major NbS that increase crop productivity and provide ecosystem services through combinations of integrated crop management, crop diversification, soil fertility and sustainable water management practices in the ECA region.

The report defined NbS as *“using natural processes or elements to improve ecosystem functions of environments and landscapes affected by agricultural practices and enhance livelihoods and related social and cultural functions over various temporal and spatial scales. It is an approach to identify, prioritize systems that combine traditional, conventional, and natural solutions to generate positive,*

cumulative biophysical interactions and social benefits". It recognized crop rotation, cultivating legumes and cover crops, using compost farm residues, integrating agroforestry systems, planting windbreaks, and adopting biological pest and insect management as key NbS practices in agriculture. The purpose of these practices is to promote ecosystem resilience by (1) enriching soil and plant health, (2) improving soil fertility and microbial life, and (3) preventing the degradation of the ecosystems.

The report used seven countries from the ECA region that had made progress in practices that increased crop productivity and ecosystem services – integrated crop management, crop diversification, soil fertility, and sustainable water management practices. NbS directly and indirectly linked to agriculture such as organic farming, forest conservation, agroforestry systems, livestock farming, grazing optimization, water conservation, peatland restorations, soil fertility management, biodiversity conservation, and traditional knowledge systems such as beekeeping were discussed. Reports from FAO, the International Union for Conservation of Nature (IUCN), the Research Institute of Organic Agriculture (FiBL), the International Federation of Organic Agriculture Movements (IFOAM), and the World Bank Group; peer-reviewed journals (Google Scholar, Springer, Elsevier and Science Direct portals); and grey literature facilitated understanding the evidence-based case studies of the practices and their co-benefits.

A summary of the main results of the study is shown in Table 1.

Table 1. Summary of the results of the study

Country	Agriculture	Animal husbandry	Forestry	Other
Kyrgyzstan	100 percent organic by 2028 Intercropping, cover crops	Important occupation	Walnut fruit forest	n/a
Uzbekistan	Sustainable agriculture, ban on GMO	Sustainable livestock and dairy	Agroforestry, restoration	n/a
Belarus	Programme supporting sustainable agriculture	Government support for livestock programs	Peatland conservation	Eco-tourism, aquaculture, beekeeping
Ukraine	Organic agriculture, soil conservation	Dairy and meat products	Conservation activities	Re-leaf paper, wax moth for plastic degradation
Armenia	Composting, value added products	Active sector	Target tree planting	Beekeeping
Georgia	Sustainable agriculture	Important sector	Forest restoration	n/a
Türkiye	Conservation agriculture	n/a	Agroforestry, EbA, FLS, CAS, REED +	n/a

4. Dr. Elisabeth Simelton, Researcher, ICRAF

Master Class: NbS Methodology for RAP

Dr. Elisabeth Simelton presented a technical framework for characterizing NbS in agricultural systems. The framework emerges from a review of peer-reviewed articles on NbS and green infrastructure.⁴ The framework connects the conventional divide between production and conservation to add functionality, purpose, and scale to project design.

NbS for food and agriculture need sectoral principles to be transformative, e.g. nature-based irrigation in agriculture and forestry. NbS (focus on people and nature) can be viewed as an entry point to ecosystem-based adaptation (focus on nature), ecological engineering, agroecology, and GIAHS. The International Union for Conservation of Nature (IUCN)'s position paper on "NbS to climate change as an integral part of broader adaptation and mitigation plans and strategies" defined NbS as "actions to protect, sustainably manage and restore natural or modified ecosystems" while addressing societal challenges and providing human well-being and biodiversity benefits.

FAO's framework for NbS in the agriculture sector – which is based on literature review and consultations in RAP 2019–20 – is centred on (1) sustainable practices, (2) green infrastructure, (3) amelioration and (4) conservation. It is based on the notion that sustainable practices must sustain or increase production, retain or increase nutrients and regulate microclimates (adaptation). On the other hand, it should reduce discharge or flow of water, prevent erosion (anchoring/armouring a slope or riverbank, catch eroding material), stabilize slopes, and drain water from a soil (rainwater harvesting). Amelioration (also known as bio/phytoremediation) must remove/degrade/contain/stabilize pollutants and restore or stimulate soil conditions/microorganisms.

NbS screening is done following four steps: (1) baseline situation, (2) problem description, (3) disabling/enabling, and (4) identifying solutions. The baseline situation in step 1 covers the current status of agricultural and natural resources, the main agricultural practices and methods of natural resource utilization in the agricultural landscape, and the near-future socioeconomic trends and climate change impacts. The problem description in step 2 seeks to answer the following questions:

1. What are the problems occurring in the project area?
2. What are the causes of these problems and what are the contributions by the agricultural sector?
3. What is the severity (magnitude, frequency) and area scale of the problem?
4. What are the impacts on people?

Regarding step 3, "disabling" focuses on what wider factors (landscape, administrative, infrastructure) are disabling the implementation of NbS practices or could exacerbate the identified problems. Enabling NbS implementation could provide opportunities or decrease the impact of identified problems: For which key problems should and could the project include NbS, and what policy alignments are needed? In step 4, finding NbS should be centred on the participation of local communities (women and men) and local knowledge in problem and solution identification. It should also focus on return on investment/capita of intervention/co-investment and consider construction material – expected lifetime and disaster risk levels. In conclusion, steps to use the NbS framework to map interventions and solutions include:

1. Fill in the proposed set of interventions.
2. Mark what functions the interventions address.
3. Use the checklist to see how the questions are captured.
4. Consider the gaps you identified and decide whether any NbS add synergies between more functions.

5. Dr. Elisabeth Simelton (ICRAF) and Manar Abdelmagied (Climate Change Specialist, FAO OCB)

Interactive Workshop Activity: Implementing NbS in a degraded landscape of ECA

Dr. Elisabeth Simelton hosted the group interactive session with the participants of the webinar. The session was guided by the following questions:

1. Are you familiar with NbS?
2. If you are already applying NbS, in what country(ies) is your work? For what sector do you use NbS?
3. If you are planning to apply NbS, in what country(ies) and for what sector?
4. What issues are you foreseeing that NbS can solve?
5. Where do you see possible entry points for NbS within FAO?
6. What are your key priorities in the Region/Country Office for NbS?
7. What would your Region/Country Office need to become operational on NbS?

Closing remarks

Dr. Viliami Fakava (Agricultural Officer, FAO REU) thanked the presenters for covering crucial elements of scaling NbS in ECA. This dialogue aimed to provide an interactive working environment that would generate up-to-date information on naturebased solutions (NbS) in Europe and Central Asia (ECA). NbS encompasses activities that safeguard, sustainably manage, and restore natural ecosystems. These activities are critical in tackling biodiversity loss and overexploitation of natural resources, and in assisting countries in adapting to the adverse effects of climate change and its associated impacts.

ECA is home to a variety of NbS activities, including a walnut fruit forestry initiative in Kyrgyzstan, peatland conservation and agroforestry in Belarus, aquaculture, and ecotourism in Uzbekistan. Other examples include the Re-leaf Paper Initiative in Türkiye, as well as forest restoration practices in Georgia. In this regard, NbS is becoming an important field of activity for FAO, owing to its prominence in international fora, as seen by the formation of the NbS Investment platform and the unveiling of the New Global Map of best practices for NbS. NbS is also on the high-level political agendas of the European Commission and the United Nations. Moreover, there is a rise in funding opportunities for NbS such as the Global Environment Facility, Green Climate Fund, IFAD, and the World Bank, among others.

In ECA, NbS is constrained by a lack of awareness of NbS practices, budgetary restrictions, inconsistencies in government-supported initiatives, lack of technology and innovation, and market insecurities. To counter these challenges, capacity building, technological and financial interventions, creation of regional and global marketplaces, are all needed to promote NbS in ECA. In order to scale NbS in the region, a joint effort incorporating all of these interventions is required.

FAO is now holding internal consultations across its operating regions, country offices, and theme streams in an attempt to build an internal framework for NbS. This framework will aim to (1) enhance FAO's position and strategy on NbS, (2) identify entry points, and (3) link to RIO Conventions and SDGs. Furthermore, the framework for NbS in agriculture should include sustainable practices, green infrastructure, amelioration, and conservation.

Annex 1: Agenda

9 DECEMBER 2021

Time	Title	Speaker
10.00	Moderator welcome	<i>Marta Arnés García</i>
10.02 – 10.10	Opening remarks	<i>Tania Santivañez, Agricultural Officer, Delivery Manager of RI3 FAO REU</i>
10.10 – 10.25	<i>Keynote Speech: 'The current state of FAO's framework on Agricultural NbS' (15 Min)</i>	<i>Dr. Reuben Sessa, Natural Resources Officer FAO OCB</i>
10.25 – 10.35	<i>Comments, Q&A</i>	
10.35 – 10.50	<i>Keynote Speech: 'Presentation of the report: Mapping Agroecological approaches to promote NbS in ECA' (15 Min)</i>	<i>Dr. Appachanda Thimmaiah International Agriculture Specialist, FAO REU</i>
10.50 – 11.00	<i>Comments, Q&A</i>	
11.00 – 11.45	<i>Master Class: "NbS Methodology from RAP" (45 min)</i>	<i>Dr. Elisabeth Simelton, ICRAF</i>
11.45 – 12.15	<i>Interactive workshop activity: Implementing NbS in a degraded landscape of ECA (30 min)</i>	<i>Dr. Elisabeth Simelton, ICRAF Manar Abdelmagied, Climate change specialist FAO OCB</i>
12.15 – 12.25	<i>Comments, Q&A</i>	
12.25 – 12.30	<i>Wrap up and closing remarks (5 min)</i>	<i>Dr. Viliami Fakava, Agricultural Officer, FAO REU</i>

