



D2.1 Country facts sheets: first version

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Lead Author/s: Inge Liekens, Dieter Cuypers, Joeri Naus, Iskra Konovska

Contributing Author/s: Taran Aanderaa, Erling Andersen, Marth V Arámbula Coyote, Ildikó Arany Georgia Arhire, Berit Balfors, Mario V Balzan, David N. Barton, Filipe Bernardo, Katažyna Bogdzevič, Benjamin Burkhard, Ieva Čaraitė, Cláudia Carvalho-Santos; Constantin Cazacu, Ján Černecký, Chiara Cortinovis, Balint Czucz, Panayotis Dimopoulos, Davide Geneletti, Cathérine Genereux, Relu Giucă, Adrienne Grêt-Regamey, Noah Greupner, Stian Heid, Barbora Holická, João Honrado, Bart Immerzeel, Jarumi Kato-Huerta, Martina Kičić, Stefan Kleeschulte, Hermann Klug, Ioannis P. Kokkoris, Sabine Lange, Mark Mansoldo, Ulla Mörtberg, Chiara Parretta, Lidia Ponížy, Hristina Prodanova, Paula Rendón, Karl Ruf, Graciela Rusch, Anda Ruskule, Fernando Santos-Martín, Jonas Schwaab, Joana Seguin, Kalev Sepp, Ângelo Sil; Mateja Šmid Hribar, Małgorzata Stępniewska, Thomas Strasser, Eszter Tanács Davina Vačkářová, Wouter Vanreeth, Kristina Veidemane, Dijana Vuletić, Michelle Watson, Christos Zoumides



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1 Preface

The importance of biodiversity, natural capital and healthy ecosystems and the services they supply has increasingly been acknowledged in diverse policy initiatives (e.g., EU Biodiversity Strategies 2020 and 2030, Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), Natural Capital and Ecosystem Services Accounting, Intergovernmental Panel on Climate Change (IPCC) and Convention on Biological Diversity (CBD)).

The EU Horizon Research and Innovation Action “Science for Evidence-based and sustainable decisions about NATural capital” (SELINA) aims to provide robust information and guidance that can be harnessed by different stakeholder groups to support transformative change in the EU, to halt biodiversity decline, to support ecosystem restoration and to secure the sustainable supply and use of essential Ecosystem Services (ES) in the EU by 2030.

SELINA builds upon the Mapping and Assessment of Ecosystems and their Services (MAES) initiative that has provided the conceptual, methodological, data and knowledge base for comprehensive assessments on different spatial scales, including the EU-wide assessment (Maes et al. 2020) and assessments in EU member states. Knowledge and data for different ecosystem types are increasingly available.

The overall objective of Work Package (WP) 02 “Stakeholder networking and decision-making processes” is to

- Provide a better insight in the factors decisive for the successful integration of knowledge on BD, EC and ES into public and private decision-making by stocktaking and analysing evidence based decision-making processes within the different EU MS
- To initiate and support the uptake by means of a European wide network of Communities of Practice
- To develop hand-on materials, based on concrete examples, informing a range of dedicated key actors about preferable ways to scale up the integration of BD, EC and ES research into decision-making processes.

The Deliverable D2.1. “EU MS fact sheets and progress tracking: first version” presents information on how far EU MS are in implementing BD and ES information in decision-making processes. A progress tracking format will be set up later in the project in cooperation with the existing EU progress tracking system if compatible. It also presents information on the actions taken in work package two concerning stakeholder engagement and transformative projects.



2 Summary

The Deliverable D2.1. “EU MS fact sheets and progress tracking: first version” presents information on how far EU MS are in implementing BD and ES information in decision-making processes. A progress tracking format will be set up later in the project in cooperation with the existing EU progress tracking system if compatible. The country factsheets will also become available on the SELINA website.

The deliverable combines the information formerly collected in the Horizon projects ESMERALDA and MAIA, a paper on a conducted survey with participants of national MAES projects overviewing 13 European MAES processes (Vári et al. 2024) and surveys undertaken in this recent project SELINA. Within SELINA, a survey was performed amongst the different partners of the consortium to request for updates and collect their knowledge on uptake of scientific knowledge or approaches into legislations and policy processes at the end of May. We also asked for the barriers for uptake and needs to enhance uptake they perceive in their country. Results of this survey are found in chapter 1 and in the first part of the country fact sheets.

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

In order to achieve this, a broad societal transformative alliance need to be formed. This means the “already convinced” must go even further out of their comfort zone and reach out to those who do not share their interests and values. Transformative change brings together policy makers, civil servants, academics, entrepreneurs, federations, labour unions, activists, and journalists. Within SELINA we attempt to establish such alliances in every member state. An outline of the first meetings of these so-called Communities of Practice is given in chapter 5.2. and in each country fact sheet. In total 19 Communities of Practice are established under the auspices of SELINA, connecting in every country different disciplines and sectors.

In addition, it is always better to show best practices. We asked the stakeholders to nominate transformative projects in their countries and score them on 10 transformative qualities. A first analysis of these projects is given in chapter 5.3 and the nominated projects are also mentioned in the fact sheets. During the next period we will select several projects and perform an in-depth analysis to better understand why they are transformative and how they can learn from each other to even have more impact. The quick analysis shows that most nominated projects are strong in involving multiple stakeholders and values, but improvement is possible on translating and multiply results outside the projects and incorporate more intangible aspects as beliefs, behavior changes etc.



3 List of abbreviations

BD	Biodiversity
CoP	Community of Practice
EC	Ecosystem condition
ES	Ecosystem services
EU	European Union
MAES	Mapping and Assessing Ecosystem Services

4 New evolutions on BD, EC and ES assessment and accounting

4.1 Approach

Building on former information gathered in several EU projects we want to measure further the progress countries make regarding the implementation of the EU Biodiversity Strategy targets. We also want to learn why the wide available scientific knowledge is not fully integrated into policymaking.

In the country fact sheets we gather information from the following sources:

There was a monitoring mechanism established in the frame of the EU H2020 ESERALDA project, which provides regular updates on the progress of the EU Member States in their MAES work and produces an aggregated progress indicator (the “[MAES barometer](#)”, see Maes et al., 2021) and resulted in country fact sheets. Concerning Natural Capital Accounting a similar exercise was done in the EU H2020 MAIA project. Recently a paper was published about a conducted survey with participants of national MAES projects overviewing 13 European MAES processes (Vári et al. 2024). The information in this paper was used to update the country factsheets in this deliverable. Furthermore, a survey was performed amongst the different partners of SELINA to request for updates and collect their knowledge on uptake of scientific knowledge or approaches into legislations and policy processes at the end of June 2024. All this information was compiled in June 2024. Lessons learned on integration from both the survey to the SELINA partners and Vari et al. 2024 were integrated in the first chapter of this deliverable.

In addition, a survey on potential transformative projects was done amongst the stakeholders identified in the SELINA project. Some of the projects were further discussed in the established Communities of practice.



The different member states filled the survey in different levels of detail. Some other countries outside EU, but partners in SELINA, filled also out the survey. For them who did, a country fact sheet was developed.

All the information is compiled in country fact sheet in annex.

4.2 Policy uptake of EC and ES assessment and accounting

In all the member states several studies have been performed or are ongoing on mapping and assessing ecosystem condition and services. Many member states are preparing for the EU obligation to create first ecosystem accounts, with member states reporting on accounts of ecosystem extent and condition and ecosystem services every 2 years (EC, 2022). Several pilots are being carried out.

Providing and reporting biodiversity information and the impact on it is an obligation for various legislative and regulatory purposes. Amongst other, this is the case with Environmental Impact Assessment, protected area designation and management, development permitting, etc. But there is clearly not always a link between the scientific work done and policy uptake (Laurans et al. 2013; Pascual et al. 2023; Barton et al. 2024).

Uptake of the information of ecosystem condition and ecosystem services assessment in the national policy processes is however more on an implicit way as several policy plans e.g. biodiversity strategy, climate plans, city development plans... indicate as a goal to maintain and improve ecosystems and their services or suggest nature based solutions to tackle challenges of climate change, pollution and biodiversity loss. There are almost no legal obligations to calculate and assess ecosystem services or methodologies proposed how to do that in regulations or policy processes. In practice assessments of ecosystem condition and services are usually cited as a substantive argument to decide matters rather than as an explicit legal rule or policy objective. However, EU regulation on ecosystem accounts at the national level and the Corporate Sustainability Reporting Directive are promising steps.

Some member states go one step further and do explicitly consider into legislations and policy processes the assessment and accounting of ecosystem services. For example:

Bulgaria has officially implemented the ecosystem services concept in legislative documents both on national and regional scale. For instance, nine types of public ecosystem benefits of forest areas and six ecosystem functions were specified in the national Law on Forests.

In Estonia examples of ecosystem services assessment work directly supporting spatial decisions include the location analysis of wind farms, which at the time of drafting this report is under further development (<https://keskkonnaportaal.ee/et/tuuleenergeetika-arendamist-piiravate-kitsenduste-kaardistamine-ning-vabade-alade-tuvastamine>).

In February 2022, an amendment to the Italian Constitution added to Article 9 an explicit reference to biodiversity and ecosystems ([The Republic] protects the environment, biodiversity, and ecosystems, caring also about future generations). Moreover, the new version of Article 41 specifies that economic development must respect and protect health and environment along with safety, freedom, and human dignity.



Since 2020 Latvian governmental regulations on MSP (Regulation of the Cabinet of Ministers No 740/2012) explicitly require that MSP includes MAES results in the explanatory (descriptive) chapter of the plan. This practice (before the legal requirement) was implemented in development of the first Latvian MSP from 2015-2019. Now, the results of marine ecosystem service assessment are a part in all steps of planning (including evaluation of the plan). Latvian MSP is also an DP07 demonstrating the uptake.

4.3 Barriers and needs for increasing uptake.

There is a surprisingly high agreement amongst the member states about the barriers preventing scientific knowledge not being translated to implementation processes and national legislation.

In Vari et al. (2024) generating a policy relevant synthesis from the diverse outputs (EC and ES variables and maps) is one of the greatest challenges of an Ecosystem assessment. It is important to show how individual ES stand in relation with other ES, EC and social aspects, being trade-offs and synergies.

This contributes probably to a lack of significant understanding on the importance of environmental issues in general, and the importance of ecosystem services in society and decision-makers (both administrations and politicians) and practitioners (farmers, planners) What in turn leads to a lack of political will and miscommunication between stakeholders.

Involving all relevant stakeholders is therefor often mentioned as very important in nature valuation (e.g. Termansen et al.2023). Involving them as soon as possible- potentially already for scoping and the selection of indicators seems to be crucial for a more successful uptake of the results. But timely and in an equitable way involving stakeholders cost time and a different way of working (Norström et al 2020). It would also improve communication between different government departments and sectors and lead to less contra-productive regulations. One of the needs often mentioned is a broad network with a strong continuous communication and knowledge rising at different levels with different stakeholders (i.e. educational activities for students; traditional mass media and social media news for society; stronger relations and dialog between science and policy representatives and different government departments among themselves). It will also be helpful to have a collection of good/best practice examples, pioneers, and frontrunners as role models. Almost all member states mention a need for further capacity building and funding as realising these broad networks cost human resources and funds.

SELINA is testing if the Communities of Practice established in the project can be the start of these transdisciplinary communications and sharing experiences. In the project we are also collecting good practice examples network costs human resources and funds (see chapter 5).

Another reason mentioned for low uptake of ecosystem assessment results is the lack of legislative background specifically for the protection of ecosystem services. Like said before in some countries this is on its way, but national legislation is usually much stronger for protected species and areas (Vari et al. 2024). The recently adopted Nature restoration Law could change this, as priority settings will require EC and possibly ES assessment. The newly



signed Kunming-Montreal Global Biodiversity Framework might also strengthen the position of ecosystem services in this sense (UN, 2022). Policy incentives and instruments need to be created to facilitate the uptake in private decision making. Incentives should be created to promote sustainable practices and measures to protect biodiversity and ecosystems. This can be done through the development and implementation of laws, guidelines, financial incentives, and other policy instruments.

Insufficient evaluation of uncertainty and data gaps were seen as a critical point for uptake and implementation of MAES (Vari et al. 2024). Also in the survey data gaps were mentioned as a barrier for uptake. Yet there are no widely accepted norms or methods to transparently present the uncertainties of ecosystem assessments (Barton et al. 2024). Simple and clear standards for uncertainty reporting e.g. IPCC/IPBES can be a good starting point. This will also be further investigated in WP4 of SELINA.



5 On the path to transformative change

5.1 Introduction

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

Transformative change is by its very nature disruptive. It prompts resistance from those who benefits from the status quo. New ideas cannot diffuse across social and cultural barriers, local knowledge is not sufficiently included in the policy making process, and stakeholders find it difficult to find common ground. In a first step transactional coalitions need to be formed (Marc Saxer, 2017) where the Natural Champions (the already convinced) work together with each other and with fence sitters (e.g. those who come on board provided it is in their best interest). Doing win-win projects can already have some results on the ground, but more importantly also create goodwill and trust needed. But sooner or later efforts run into resistance. “Paradigm shifts are not academic exercises, but the outcomes of societal struggles” (Marc Saxer, 2017).

Hence, the paradigm can only be shifted by a broad societal transformative alliance.

This means the “already convinced” must go even further out of their comfort zone and reach out to those who do not share their interests and values. Transformative change brings together policy makers, civil servants, academics, entrepreneurs, federations, labour unions, activists, and journalists. These are not easy to build because the social groups usually have different interests and priorities and have different theories of change built on different worldviews and core values (Barton et al. 2024). The idea is to bring them together around the same narrative: we need change. This does not mean that we bring the entire system into the room as people who do not follow the narrative will often turn such alliances into mere talk shops (Marc Saxer, 2017).

In SELINA we try to set the first step into establishing these transformative alliances through the communities of practice. These communities of practice serve as laboratories in which can be experimented with new ideas, incentive structures, and new narratives to bring about change. With the help of a facilitated dialogue, in which the project outcomes as well as the insights and experiences from their professional lives are central themes, practitioners will become empowered and develop new skills they can enact in their daily practices. Experiences and knowledge created in SELINA concerning biodiversity, ecosystem condition and ecosystem services aim at supporting the discourse for nature conservation and restoration.

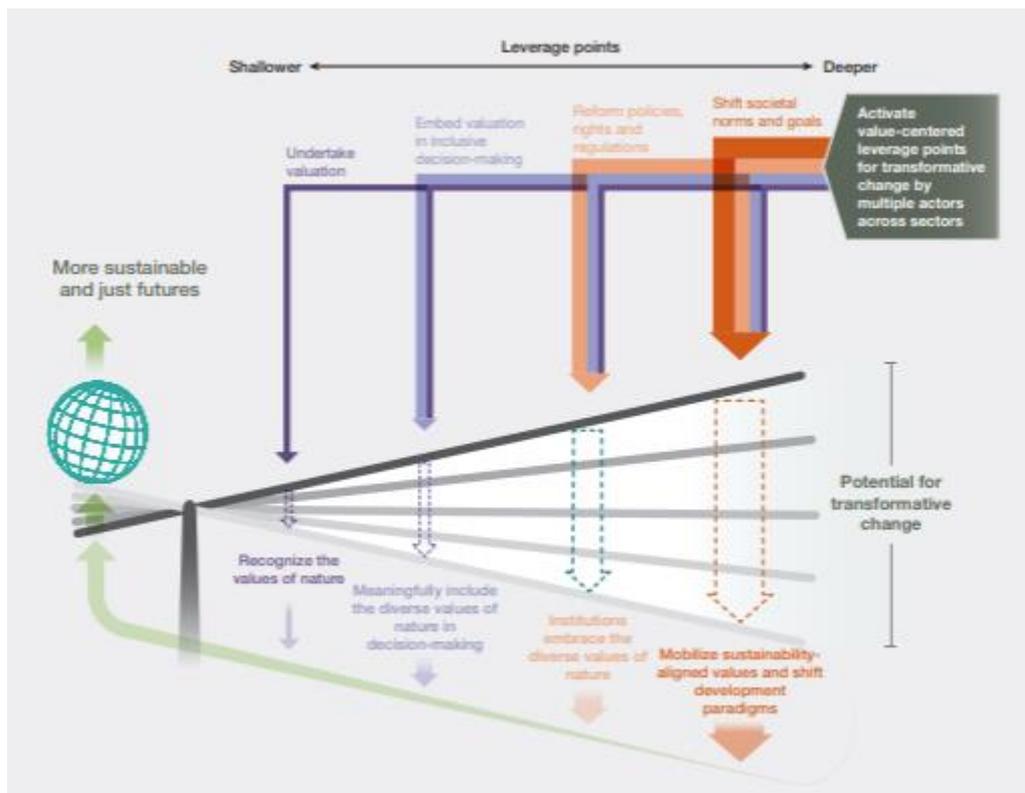


Off course discourse needs to be translated into action. Success stories are needed to give credibility to the narrative of change. In SELINA we went looking for these projects that may form the seeds of transformative change. These projects will be further analysed to see what elements they have inside, how they can be replicated elsewhere and how they act as a catalyser for broader change.

As SELINA is about uptake of BD, EC and ES assessment and accounting knowledge into policy processes, we looked more explicitly to projects where different values of nature were integrated in the processes. This could be mapping and assessment exercises, but we looked particular for projects with a stronger leverage than that.

According to IPBES (2022) transformative change towards more sustainable and just futures relies on a combination of actions that target different values-centred leverage points (i) undertaking valuation that recognizes the diverse values of nature 'ii) embedding valuation in decision making (iii) reforming policies and regulations to internalise nature's values and (iv) shifting underlying societal norms and goals. A variety of leverage points and transformative change frameworks point to the need to work at all leverage points, simultaneously engaging different kinds of actors where they are able Barton et al. (2024).

Figure 1: value-centred leverage points for transformative change



Source: IPBES values assessment 2022



5.2 Communities of Practice

Like said in the introduction of this chapter we attempt to establish a broad societal transformative alliance in every country. Although we start simple.

The objectives of the CoPs established by the SELINA partners or revived from silent existing networks are threefold:

1. In the short term, during the lifetime of the SELINA project, these CoPs will serve as platforms at MS level and as an EU-wide network to support the project and be supported by the project through knowledge exchange and learning processes; and
2. Although no means within SELINA are foreseen to ensure the CoPs are self-sustaining after the end of the project, we will discuss how we can make this happen. Hopefully, in the long term, as a wider goal, these CoPs serve as platforms for knowledge exchange and learning processes on mainstreaming and successful integration of knowledge on BD, EC and ES into public and private decision-making.
3. And, as system thinkers in the making, 1 and 1 is never 2 but much more. These CoPs will be the place where we connect with peers and enable dialogues to get to know them better during discussions or excursions, to better understand their behaviours, beliefs, values, assumptions, and mental models. It is a place to inspire each other.

By May 2024, **19** Communities of practice had been established under the auspices of the SELINA project. The kick-off of these communities of practice on biodiversity and ecosystem services was met with enthusiasm by the participants even if the participant groups were not so big.

Figure 2: Member states with a Community of Practice established within SELINA





There is a large homogeneity within the Communities of Practice in the member states, as the majority of them brought together a broad field of stakeholders from science, policy, business and society (especially NGO's) on a national level (see table). The communities are already rather transdisciplinary but not necessarily interdisciplinary. Most participants have a direct connection with nature restoration, biodiversity and ecosystem services (e.g. Nature department of a national government, business in the nature recreation sector or wood production, Nature protection organisations). Only a minor part of them included unusual suspects (e.g. spatial planners, climate experts, farmer organisations, education department, health department ...). A few communities of practice were a bit different in stakeholders' identification as they narrowed the subject of the community to a particular ecosystem service (e.g. Malta) or choose to establish a more local Community of Practice linked to their demonstration project within SELINA (e.g. Portugal, Azores)

Table 1: NO OF PARTICIPANTS AND TYPE IN THE FIRST MEETINGS OF THE DIFFERENT COMMUNITIES OF PRACTICE:

Country	Science	Policy	Business	Society	total participated kick off	Total invited
Belgium	x	x	x	x	20	126
Bulgaria	x	x	x	x	27	
Croatia	x	x	x	x	17	
Cyprus	x	x		x		
Czechia	x	x	x	x		>50
Denmark	x	x	x	x		75
Estonia	x	x	x	x	15	
Germany	x	x	x	x	30	
Greece	x	x			12	61
Ireland						
Italy	x	x	x	x	42	92
Latvia	x	x	x	x	32	60
Lithuania	x	x		x	16	
Malta	x	x	x	x	?	?
The Netherlands	x	x	x	x	25	
Poland	x	x	x	x	23	
Romania	x	x	x	x	13	
Slovakia	x	x	x			
Slovenia	x	x	x	x		
Spain		x				
Sweden	x	x	x	x		



5.3 Seeds of transformative change

As said, narratives and good examples (seeds of transformative change) are also very important to create leverage for transformative change.

Seeds are defined as (ongoing) projects, initiatives, programmes etc. with the potential to engender transformative change. Going beyond mapping, measuring, and modelling qualities of ecosystems, these initiatives actively challenge the existing social, economic, political and/or technological order. For instance, by redefining users' understanding of human-nature interactions, by changing market dynamics or conditions, or by altering decision-making procedures in the public and private sector.

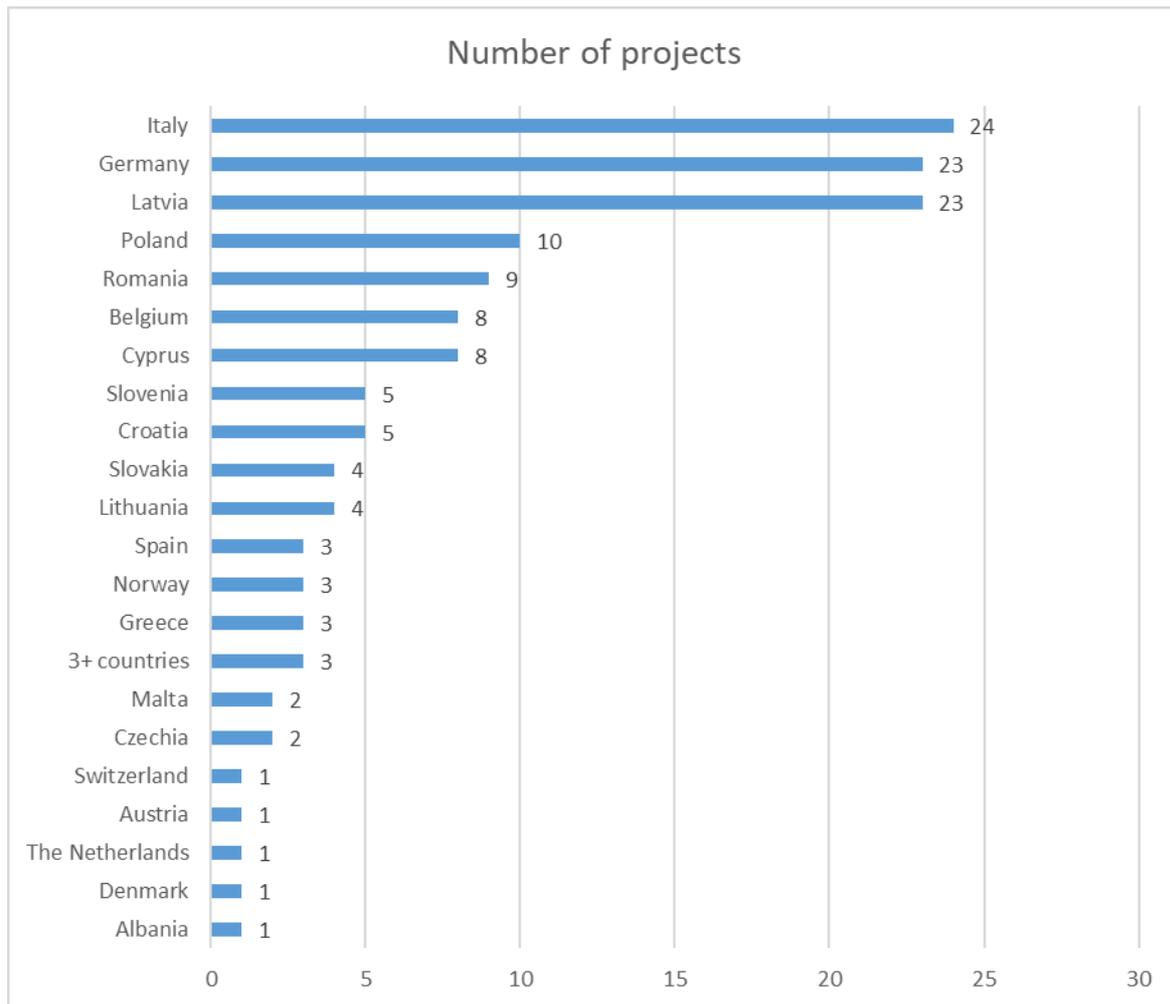
The goal of the collection of these seeds of transformative change is to understand the success factors of and barriers these transformative projects encounter. From an in-depth analysis of a selection of these seeds we will derive some recommendations to give future projects more transformative leverage, with specific attention to the integration of biodiversity, EC and ES knowledge into decision making.

We send out a survey to the partners, communities of practice members and other stakeholders in our networks to gather these seeds. In every country a slightly different process was followed to gather these projects, so the total number per country is not necessarily representative for the number of transformative projects that arise in a country. Some discussed projects within the CoPs and mutually selected the most promising. Others send us the entire list of projects discussed. Others send around the survey to their networks and depend on the stakeholders to fill out the survey. Also, they are a nomination by the stakeholders from their own knowledge, interesting projects in the country can be overlooked.

At the end of May, 146 seeds of change were collected. As 9 of the 27 member states are still missing, we will leave the survey open till the end of 2024.



Figure 3: Number of projects submitted as potential seed of change per country



We asked the contributors why they nominated the project and thought it was transformative and let them score the project on 10 identified transformative qualities.

The selection of 10 questions was retrieved from VITO's Realtouch publication (Nevens et al., 2014, a check list of 72 questions) which is based upon Transition to Sustainable development (Grin, Rotmans and Schot, 2001) and expertise in transition action research built up at VITO since 2009.

The Realtouch tool considers three major matters of the transition/transformation approach:

- What are the important matters at stake?
- What is understood by these issues?
- How can we check compliance for each issue?

It is a checklist that supports reflection and creative thinking on the key items that can 'transitionise' project ideas but also ongoing work.

Nevens et al. 2014 identified 6 content issues based on the upward curve of the transition process and 5 'process' issues.



Figure 4: Six 'content' issues considered relevant.

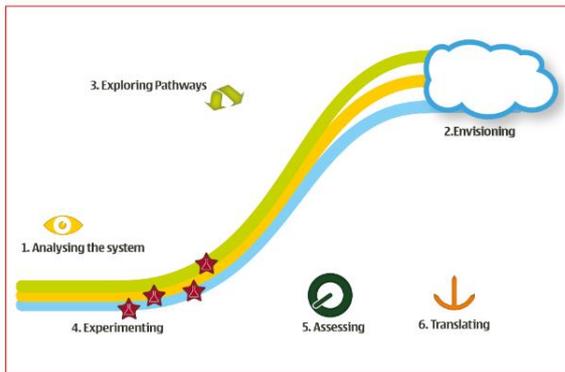


Figure 5: 5 'process' issues considered relevant



The first iterations of this list were discussed among experts within the VITO Nexus team and a first version was tested by one of the SELINA partners to check whether it was comprehensible and feasible to do, and above all not too discouraging. After this first test the list underwent a few more changes (addition of more questions related to the assessor's own comprehension of transformative change, refinement of the core 10 questions, and addition of the scoring mechanism) to result into the current list.

The following 10 questions were picked:

- Does the initiative challenge establish 'mental models' (basic values, assumptions, beliefs) that underly our understandings of, and interactions with, nature?
- Is the initiative guided by a collective and inspiring long-term vision or narrative on the sustainable use of ecosystems, or the sustainable functioning of socio-ecological systems?
- Does the initiative pursue or promote (the development of) a diversity of solutions, strategies, or pathways to improve ecosystem conditions, including unconventional/radically different solutions?
- Do these strategies/solutions (potentially) generate diverse co-benefits that are relevant for various stakeholders?



- The initiative stimulates joint reflection on the root causes of the problem and dedicates a significant amount of time and effort to the collective learning process.
- In addition to more established parameters for biodiversity and ecosystem functioning, does the initiative consider intangible (or less tangible) aspects such as increased consciousness, perception shifts, changing behaviour, etc?
- Does the initiative actively connect to other projects and/or broader coalitions of actors to create leverage for structural change?
- Does the initiative actively approach and support policy makers, industries, communities etc. who are not directly involved, to adopt and disperse new approaches, or revise existing policies/strategies?
- Does the initiative involves a wide range of stakeholders in society who bring (very) different values, perspectives and/or knowledge to the table?
- Does the initiative go beyond an instrumental informing of stakeholders, towards actual involvement, e.g. in co-defining problems and co-creating sustainable alternatives?

In what follows below we quickly analysed the received projects first on some general characteristics like public/private initiative, temporal and spatial scale.

We shortly looked at the answers on the selection of 10 questions to see what these projects have in common and where they differ from each other in transformative qualities. We also wanted to detect patterns on what transformative qualities are already considered and what kind of identified qualities have room for improvement. The idea is in a later phase of SELINA also give advice to the ongoing selected projects and to the demonstration projects how to increase their leverage for change, how to “transitionise” their project.

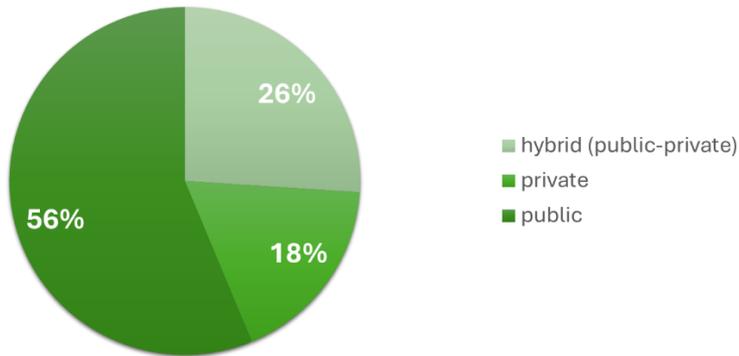
The statistics below are only a first, quick assessment. In the fall of 2024, we will further analyse these nominated projects and look to the narratives given why contributors nominated the projects as a seed of transformative change, what is the specific context (growing environment) where it developed and can grow and what is needed within the project and the environment to make it grow. Again, lessons learned will be derived from this. During the workshop in Leiden, we co-defined together with the SELINA-consortium several criteria for selecting out of this list some 27 projects that will undergo a more in-depth analysis in winter 2025. Lessons on how they arise, what was/is holding them back, what is needed to grow, how EC and ES knowledge plays a role in it, what aspects are very important to be transformative... will be collected. More results will be found in deliverable 2.2.

5.3.1 Some general statistics

The potential seeds of transformative change have diverse sectors taking the initiative and a diverse geographical focus. More than half are public projects where the initiative comes from a partnership between research institutes and administrations, but also hybrid and private projects are nominated. Here the initiative is taken by private companies with or without public authorities.

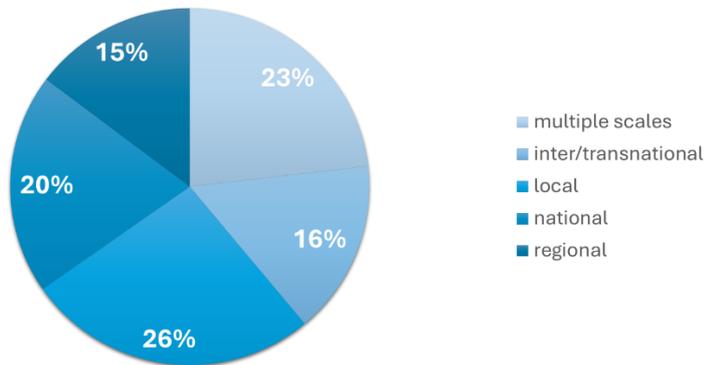


Sector



The geographical scale of the seed is spread between local, regional, national and international scales.

Geographical scale



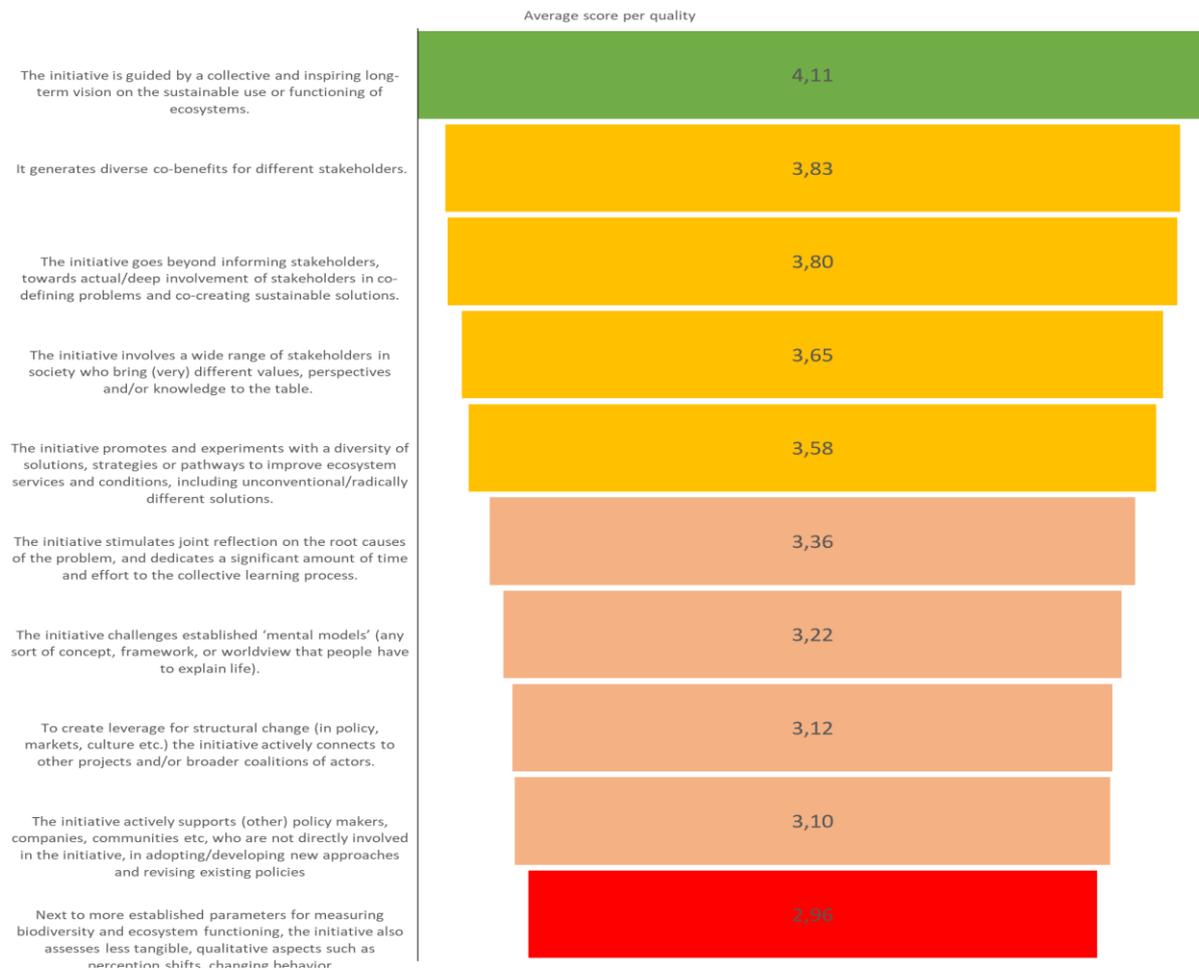
We asked the persons who nominated the potential seeds of change to value the project on transformational qualities based on the 10 check list questions. Results of the scoring are found below (115 of 146 projects were scored)

Legend of the graphs:

- 1 = no, not at all
- 2 = yes, to limited extent
- 3 = yes, to some extent
- 4 = yes, to a large extent
- 5 = yes, to a very large extent



Figure 6: average score on the 10 selected question to test the transformative capacity of projects



Most initiatives indicate that they are guided by a collective long-term vision on the sustainable use or functioning of ecosystems. In general, the proposed seeds score quit well in involving multiple stakeholders and even go beyond just informing stakeholders. They actually involve stakeholders in co-defining problems and co-creating solutions.

But the nominated projects could be made more transformative by challenging existing concepts, worldviews and assessing fewer tangible aspects such as perception shift, behavioural change... Also, some more support to policy makers and other stakeholders not involved in the project in adopting new approaches and revising existing policies could create more leverage for structural change.

5.3.2 Quality 1: analysing the system.

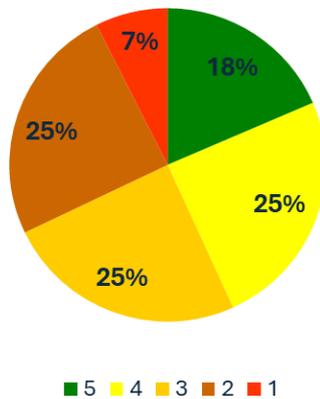
Before you can change something, you first need to know the existing system (in the SELINA case the way decisions are made about land use change and nature restoration and the uptake of BD, EC ES knowledge in these processes). This is done in a system analysis that maps the technological, economic and social factors that influence or connect to the ecosystem under consideration e.g. a forest, a grassland. There should also be a clear view on how decision-making processes influence the ecosystem. The initiative should address these and



challenge the established 'mental models' (values, beliefs, assumptions) that underlie our understanding of and interaction with nature.

Question: Does the initiative challenge established 'mental models' (basic values, assumptions, beliefs) that underlie our understanding of, and interaction with, nature?

Figure 7: % of scoring on challenging the established 'mental models'



Although the projects investigate factors influencing the ecosystem and try to tackle how decision-making influences the ecosystems, they in a lesser extent challenge established mental models. Most proposed seeds have a leverage (lower side) in valuing nature and try to include them into existing policies.

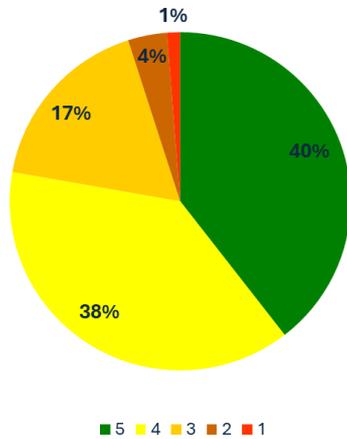
5.3.3 quality 2: Envisioning the future.

In sustainability transitions practice and discourse, a change trajectory towards more sustainable societal systems is mainly initiated by an appealing and inspiring vision: comprehensible images and/or narratives of desired system configurations, based on shared principles of sustainable development. Working with visions entails a shift from 'having to' by 'wanting to' and replaces 're-active' by 'proactive' and 'creative' (Grin, 2). Additionally, truly inspiring visions on the long-term future should be thought of as a basket of diversity: multiple images or narratives complying with established basic principles, leaving room for individual choice in the quest for a sustainable future.



Question: Is the initiative guided by a collective and inspiring long-term vision or narrative on the sustainable use of ecosystems, or the sustainable functioning of socio-ecological systems?

Figure 8: % inspiring long-term vision



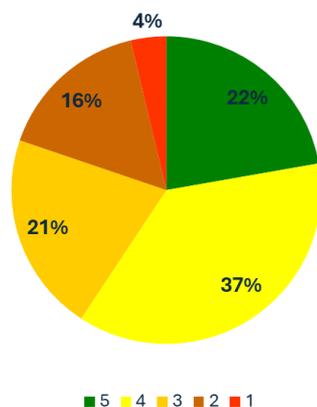
A large majority of the projects has a long-term vision or narrative in the sustainable use of ecosystems or the sustainable use of socio-ecological systems. This is partly logical as most of the projects are focused on including biodiversity and ecosystem services to the forefront in the discussions for a sustainable future.

5.3.4 Quality 2: Exploring pathways & experimenting.

Starting from an inspiring and clear vision, different strategies to realise a desired societal system configuration can be outlined. This ‘back casting’ exercise results in several strategic pathways that contribute to reaching the desired sustainable system setting. Models/scenarios can assess and underpin the effectiveness and feasibility of alternative pathways and the alignment of envisaged or on-going actions (IPBES, 2016).

Question: Does the initiative pursue or promote (the development of) a diversity of solutions, strategies, or pathways to improve ecosystem conditions, including unconventional/radically different solutions?

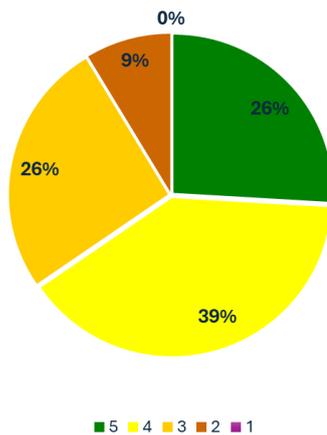
Figure 9: % promoting diverse strategies and pathways



A bit more than half of the proposed initiatives promotes a diversity of solutions to improve ecosystem conditions. The small part that does not do this at all or to a limited extent focuses more on showing the values and benefits of ecosystems, rather than solutions to integrate and maintain them. Or they are focused on showing the benefits of one particular solution.

Question: Do these strategies/solutions (potentially) generate diverse co-benefits that are relevant for various stakeholders?

Figure 10: % generating diverse co-benefits



Most initiatives generate in a more or lesser extent diverse co-benefits that are relevant for various stakeholders. The projects which indicated that it was only to a limited extent, had mostly one stakeholder group as focus e.g. farmers, capacity building for local policy makers...

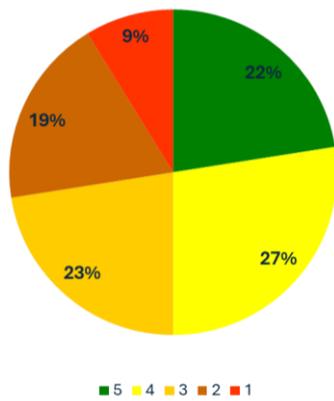
5.3.5 Assessing and learning

During the different trajectories towards the vision, instruments can be designed for an effective follow-up of actions that are undertaken. Monitoring instruments should basically not be designed to 'measure' but to trigger well-considered action, to enhance system change in a desired direction. Additionally, transition monitoring supports continuous reflection and learning with regards to the on-going transition process in relation to its fundamental aims and the encountered enablers and barriers.

Question: The initiative stimulates joint reflection on the root causes of the problem and dedicates a significant amount of time and effort to the collective learning process.

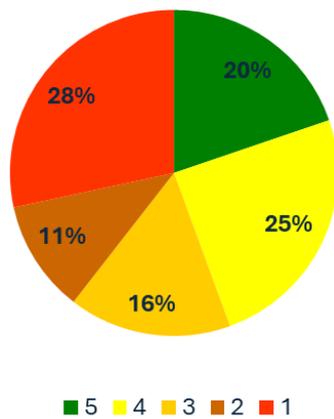


Figure 11: % stimulating joint reflection and collective learning process



Question: In addition to more established parameters for biodiversity and ecosystem functioning, does the initiative consider intangible (or less tangible) aspects such as increased consciousness, perception shifts, changing behaviour, etc?

Figure 12: % considering intangible aspects



There is obviously still room for improvement: only 45% takes fewer tangible aspects into account (deeper leverage).

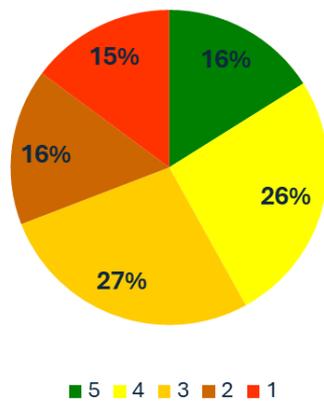
5.3.6 Translating

To initiate systemic change, experiences from the different typical transition activities have to be incorporated and multiplied in multiple and mainstream actions of the relevant system stakeholders. In that way, the lessons learned from experiments, back casting, scenario and envisioning efforts result in an effective and embedded process of change.

Question: Does the initiative actively connect to other projects and/or broader coalitions of actors to create leverage for structural change?

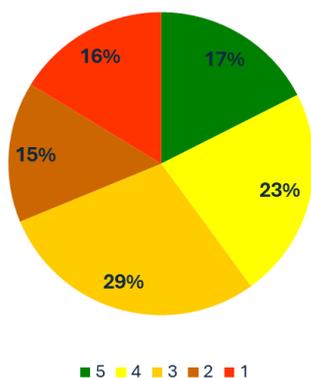


Figure 13: % connecting to other projects



Question: Does the initiative actively approach and support policy makers, industries, communities etc. who are not directly involved, to adopt and disperse new approaches, or revise existing policies/strategies?

Figure 14: % actively approach and support stakeholders not directly involved



Further translation of the outcomes of the initiative into more structural change by informing broader coalitions and/or approaching stakeholder groups outside the project to adopt new approaches or revise policies can be improved in most initiatives. (Deeper leverage of transition)

5.3.7 Interdisciplinary and transdisciplinary

Since 'systems' are concerned, (scientific) work on sustainable development asks for explicitly interdisciplinary approaches. Thereby, interdisciplinarity goes beyond dividing tasks between scientific disciplines/expertise and merely collecting results. It's all about joint understandings, shared problem definitions and hence also the development of a common vocabulary and language. Overcoming disciplinary pillar thinking opens the way for synergetic cooperation and outside-the-box solutions since many sustainability solutions are located at the intersection of sectors and disciplines.

Does the partnership involve all the partners of the different knowledge groups of society that is, industry/commerce, government, academia/research, civil society, and finance?

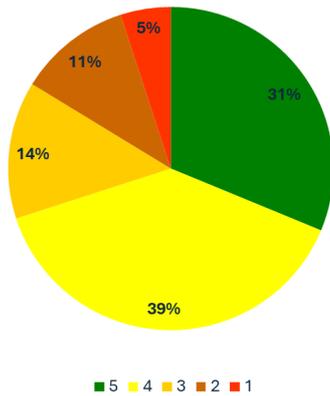
This question was not answered with a score, but we asked who the involved partners and stakeholders were. Most of the project had several stakeholders involved but not always the whole



quintuple helix was involved. Mainly the industry/commerce sector was less involved. As several projects tackled the assessment and mapping of the quality and benefits of nature, only a small group of stakeholders was involved and mostly linked to environmental sciences. In almost none of the initiatives were unusual stakeholder groups like journalists, artists, freethinkers, ... involved.

Does the initiative go beyond an instrumental *informing* of stakeholders, towards actual *involvement*, e.g. in co-defining problems and co-creating sustainable alternatives?

Figure 15: % going beyond an instrumental informing of stakeholders



70% of the initiatives strongly involve stakeholders into the process. The 16% who do this to a limited extent or not at all are again projects that want to promote a specific solution.



6 Country fact sheets

Like mentioned in the approach the content of these fact sheets is based on several sources: fact sheet in EU project Esmeralda, Vari et al. 2024, a survey amongst the partners in SELINA and a request for Seeds of transformative change to different stakeholders within the Communities of Practice or broader networks of the SELINA partners.

The documents reflect the opinion of the authors and are not official statements of the countries. They do not pretend to be complete but serve as an inspiration for dialogue and cooperation.

6.1 Austria

6.1.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Austria conducted a study mapping and assessing 15 ES from 2017 to 2019 (Sonderegger et al., 2019). The study was based on available EC and ES data.

Based on this, the ÖKOLEITA project has created an ES and habitats database in Lower Austria, integrating these into the Austrian Biodiversity Atlas. This project emphasized citizen science and the involvement of stakeholders from various sectors, ensuring the practical application of research findings. Stakeholders included decision-makers like politicians and administration and executives like planning offices. Funding was provided by the Austrian Federal States and their foundations and institutions.

The MOIST project aims to map degraded moorlands and peat soils across Austria to support the restoration and conservation of these areas. It integrates existing data and remote sensing information to create a distribution map of peat and other hydromorphic organic soils using geostatistical methods and machine learning. Field surveys will validate the results, and experts will develop criteria to identify areas suitable for rewetting, aiding in carbon retention, water retention, and greenhouse gas emission reduction. Project duration: 01.2024 – 10.2025.

The LIFE project "AMooRe" aims to implement Austria's Moor Strategy 2030+. The project involves 13 partners, including all nine federal states, the Climate Protection Ministry, the Federal Ministry of Agriculture, Regions and Tourism, and universities in Vienna and Kiel. The project comprises 13 work packages, focusing on restoration projects, knowledge building, awareness measures, and stakeholder engagement across sectors like conservation, agriculture, forestry, water management, climate policy, spatial planning, and tourism.

The GREeNvaluation project developed a toolkit to monitor and evaluate the performance of green infrastructure in real-time. It also aims to raise awareness through targeted communication formats beyond the initial target areas. Although the project ended in 2022, the report was published in 2023.



Additionally, the SELINA project under Horizon Europe aims to integrate biodiversity and ecosystem services into decision-making processes, providing robust methodologies for their assessment.

6.1.2 Examples of uptake in decision processes, regulations and/or legislation

The Biodiversity Strategy Austria 2030 was published in 2023 to align national efforts with EU and international biodiversity goals. This strategy sets quantitative and qualitative targets to protect biodiversity across all habitats in Austria, addressing various sectors. The strategy involves stakeholders such as governmental bodies, interest groups, companies, NGOs, scientists, and landowners. It aims to reconcile protection and sustainable use, offering financial compensation for additional management efforts or income losses due to conservation measures. The strategy's implementation is financed through public and private funds, including a biodiversity fund created by the Austrian government and EU co-financing programs. Progress is regularly reviewed by the National Biodiversity Commission, with interim and final reports scheduled for 2026 and 2030, respectively.

More specific, the "Moor Strategy Austria 2030+" provides a strategic foundation for bogland conservation in Austria. It was developed by the Federal Ministry of Agriculture, Regions, and Tourism (BMLRT) alongside federal states, scientists, and stakeholders through a participatory process.

The biodiversity funds (<https://www.biodiversitaetsfonds.com/>) are an instrument to fund projects on a national level to advance the biodiversity situation in Austria. It supports initiatives which aim to designate new protected sites (IUCN: I+II, V+VI) or seek to enhance existing protected areas.

6.1.3 Perceived barriers and needs to enhance uptake.

6.1.3.1 Barriers:

- Expert networks exist, but lack in activity.
- Austria is split into nine federal states, which have their own legislation for specific domains (e.g. nature and environmental protection). This limits national strategies and assessments.
- Provision of standardized and harmonized data
- Data reliability, technical limitations for data integration

6.1.3.2 Needs:

- Active networks
- Independent hubs / contact points for ecosystem services
- Base funding for hubs, which conduct measures for user uptake (provision of information, workshops, networking events, consultancy)



6.1.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.1.4.1 Community of Practice

For now, no SELINA CoP is active. However, there are several networks active in the biodiversity domain: the Network Biodiversity Austria (Netzwerk Biodiversität Österreich), as well as the Biodiversity-Hub, “Österreichischer Biodiversitätsrat” and the National Hub Biodiversity and Water. An online available network map shows experts in different domains of sustainability or research fields <https://www.kompetenzlandkarte.at/maps/sdgs>.

6.1.4.2 Seeds of transformative change

Network of Transition Town Initiatives in German-speaking countries

- Connecting and supporting transition town initiatives in German-speaking countries
- Promoting and practicing a sustainable lifestyle on a local scale (within their respective towns)
- Initiate a transition on an individual level to ensure a sustainable, liveable future.

OPTimising FOrEst management decisions for a low-carbon, climate resilient future in Europe (OptforEU)

- Provide an improved characterisation of the Forest-Climate Nexus and FES.
- Utilise end-user focused process modelling.
- Empower forest end-users to make informed decisions to enhance forest resilience and decarbonisation.
- Provide a novel DSS service.
- Bridging different EU strategic priorities, robust science, and stakeholders in the forest and forest-based sectors

Restore4Life



Restore4Life's Overall Objective is to develop an online Restore4Life Wetland Restoration Decision Support System that will allow large-scale holistic wetland restoration activities in the Danube basin and Europe through extensive dialogue and co-creation with multiple actors (knowledge holders, policy actors, citizens) as part of the Danube basin lighthouse of the Mission "Restore our ocean and waters by 2030".

6.1.5 References

Sonderegger, G., Färber, B., Götzl, M., Schwarzl, B., Weiss, M., 2019. Erfassung und Darstellung von Ökosystemleistungen - Im Rahmen des Österreichischen Programms für die ländliche Entwicklung 2014 -2020., Reports, Band 0693. Vienna.



6.2 Belgium

6.2.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

In Belgium, the environmental policy is regionalised. The status of activities differs between the regions.

In Flanders the mapping and assessment of ecosystems and ecosystem services is done within the framework of the Nature report (NARA). According to the Nature Decree (legislation of the Flemish Government), the Research Institute for Nature and Forest (INBO) is mandated to report biennially on the state of nature in Flanders (Northern part of Belgium). In 2014 an assessment of the state and trend of 16 ecosystem services was made.

NARA. All the maps and metadata in English can be downloaded from

<https://data.inbo.be/ecosysteemdiensten/>.

Several studies to assess and value ecosystem services were performed in the years following: ECOPLAN assessing 19 different ecosystem services, leading to a QGIS-plugin integrating both ES and evaluation modules (2013-2017, Staes et al. 2017, Vrebos et al 2020), Socio-economic impact analysis of Natura2000 areas (including ecosystem services) (2019). In 2018 a web-based tool to value ecosystem services in local cases was launched (www.natuurwaardeverkenner.be)

In a second phase the NARA report (2016) investigated how the ecosystem service approach could be used on several policy levels in decisions around land use and management. In 2018 4 directions to go for nature policy were developed.

Ecosystem Accounting:

In 2020 a pilot project was launched to calculate an extent account and some ecosystem services supply accounts (wood, water, carbon and health (De Nocker et al. 2023). The Research Institute for Nature and Forest (INBO) initiated in 2024 the research programme Flanders Ecosystem Accounting (FLEA), in co-operation with the Agency for Nature and Forest (ANB) and other experts. The programme intends to develop proposals of ecosystem accounts in preparation of an expected new EU Regulation that will introduce new modules of environmental-economic accounting. For 2024 FLEA focuses on developing an ecosystem typology in three tiers, and on mapping, quantifying, and validating the changes in ecosystem extent over the past ten years (2013-2022). FLEA builds on earlier Flemish research on land use modelling and ecosystem assessment. In addition, FLEA will list the monitoring systems and data that are available to develop ecosystem condition accounts. FLEA also links to a network of experts which the Department of Environment and the Flemish Statistical Authority are initiating. This network will provide the Belgian federal government with ecosystem accounts for the Flemish Region to meet the expected reporting requirements of the new EU Regulation.



The Walloon government decided to work on the 'development of the implementation of the ES concept into practice within the Public Service of Wallonia (SPW)' (Walloon governmental decision

24/04/2014). To put the ES concept into practice, a regional platform on ecosystem services has been launched in September 2014, entitled 'WaES'. It involves all the administrative services concerned and scientists. Several ecosystem services assessment tools have been developed in Wallonia (<https://services-ecosystemiques.wallonie.be/fr/outils.html?IDC=5948>).

In 2022, a new agreement, more modest in its ambitions, was launched to provide Wallonia with a decision support tool which aimed to assess the impact of a change in land use on the provision of ecosystem services. This convention brings together actors from Public Service of Wallonia Agriculture, Environmental Resources and Environment (SPW ARNE), University of Liège - Gembloux Agro-Bio Tech (ULiège-GxABT) (Biodiversity and Landscape Unit) and the Flemish Institute for Technological Research (VITO). It resulted in a Walloon version of the Nature Value explorer (www.natuurwaardeverkenner.be).

Another fast and easily applicable evaluation method developed in Wallonia by SPW ARNE and ULiège - GxABT (Biodiversity and Landscapes Axis) is the "capability matrix".

Stakeholders include design offices, municipal administrations, SPW agents, universities, the Rural Foundation of Wallonia, natural parks, river contracts, local action groups (GAL), the Walloon Institute for Evaluation and Foresight (IWEPS), the Walloon Wood Economic Office, the Federation of Belgian Environmental Associations (Canopea)...

This method is part of the spatial indicator models that relate land cover types or ecosystem types to ecosystem services. It provides an estimate of available stocks, i.e. the amount of ecosystem services that each land cover category can provide in its current state. While ecosystem services assessments focus mainly on a limited number of services, this method makes it possible to consider all the services produced by an ecosystem. It has made it possible to produce a series of service maps published on the Wallonia Geoportal and makes it possible to assess the way in which ecosystem services will be affected by a plan or programme that modifies land cover or land use and to represent this change spatially. It was used in Wallonia to carry out an exercise to assess the impact of land artificialisation in Wallonia between 2007 and 2019 on the provision of ecosystem services.

A tool for assessing the multi-performance of hedgerows according to their spatial location in the landscape has also been developed in Wallonia by the SPW ARNE and ULiège - GxABT (Biodiversity and Landscape Unit). The stakeholders are municipal administrations, SPW agents, natural parks, river contracts, local action groups (GAL), etc. The hedge tool presents the structure of the existing bocage and represents/evaluates in the form of simplified indicators the services potentially provided at maturity by hedges newly planted or planted soon as part of a planting project. The indicators evaluated are descriptive indicators of density, land use, parcel boundaries, in relation to the quality of the hedgerow structure (connectivity, proximity to existing edges and location in the harrier action plan areas), the service to combat soil loss and the fight against runoff and in connection with the windbreak



effect. The tool produces two types of report: a report for each municipality or watershed covered by the planting project and a summary report, for all municipalities or watersheds combined.

6.2.2 Examples of uptake in decision processes, regulations and/or legislation

Biodiversity information is an obligation for various legislative and regulatory purposes e.g. Environmental impact assessments, permits etc. But there are not so many examples of where ecosystem services are explicitly mentioned in decision processes or regulations. Ecosystem condition and services are usually cited as a substantive argument to decide matters rather than as an explicit legal rule or policy objective. Which does not alter the fact that these objectives and rules are sometimes ecosystem services related.

The term 'ecosystem services' is found to have successfully penetrated Belgian policy across different sectors. Ecosystems, ecosystem condition and ecosystem services are mentioned explicitly or implicitly in putting nature-based solutions and their benefits to society as an important measure to climate related issues, agricultural development, city planning etc.

For example, National Biodiversity Strategy, Natuurdecreet... mention the restoration of biodiversity, ecosystem condition and services explicitly: Following the new European Biodiversity Strategy to 2030 and the adoption of the Kunming Montreal Global Biodiversity Framework at the Conference of the Parties in Montreal in December 2022, the Interministerial Conference for the Environment decided to update the Belgium's national strategy to align our objectives for the coming decade. For the moment it is open for public consultation (06/2024). Ecosystem services are mentioned in the text to measure the impact on them and protect and restore them. One of the goals is also to make knowledge on biodiversity and ecosystem services more accessible for policy makers and the public and to integrate biodiversity and ecosystem services approach into educational programs.

More implicitly, the Flemish Climate Adaptation Plan talks about green-blue veining in relation to heat stress, related to evapotranspiration, shadowing and albedo changes by vegetation/trees. The Ministerial decree on high-stem orchards talks about investigating the societal value of those orchards and valorising its values. Several policies/legislations have incentives and policy instruments e.g. subsidies for agri-ecological measures, voluntary agreements that favour ecosystem services, but at the same time instruments, e.g. production subsidies, that work against ecosystem services and biodiversity.

In Flanders for some infrastructural projects an environmental impact assessment and a societal cost benefit analysis is obligatory. In the environmental impact assessment biodiversity is explicitly taken along. In the part on impact on people implicitly ecosystem services are considered but not explicitly. In the manual to perform a cost-benefit analysis, the impact on nature is linked to the Nature Value explorer, a web-based tool that quantifies the impact of land use change on 12 ecosystem services. The existence of the tool made it easier to take impact on biodiversity and ecosystem services into account as knowledge gaps and time limits were a barrier before to do a thorough impact assessment.



The tool is also used in other spatial plans (implementing NBS in cities, restoration of nature areas...) to calculate the impact of the measures on society and economy.

In Wallonia ecosystem services are at the heart of the definition of the concept of green infrastructure included in the recent reform of **the Territorial Development Code (CoDT)**, which came into force on 01/04/2024. This reform sets out the main principles and new concepts of territorial development to be set out in the **Territorial Development Scheme (SDT)**. The latter was adopted by the Walloon Government on 25/04/2024 and will enter into force on 01/08/2024. It refers extensively to green infrastructure and ecosystem services. The stakeholders are the municipalities, in particular urban planning departments, architects, developers, companies, environmental associations, etc.

The **Walloon Strategic Plan for the Common Agricultural Policy (CAP) 2023 - 2027** approved by the European Commission on 05/12/2022) explicitly provides for *"Contributing to halting and reversing the process of biodiversity loss, improving ecosystem services and preserving habitats and landscapes"*. It identifies, via the SO6 strategic objective *"Contribute to the protection of biodiversity, improve ecosystem services and preserve habitats and landscapes"*, the possibility of making ecosystem payments within the framework of eco-schemes (RE long land cover, RE ecological network with significant aid for the maintenance of hedges and ponds). The stakeholders are farmers, professional agricultural organisations, advisory services (NATAGRIWAL, PROTECT'eau, etc.), non-governmental organisations, etc.

The **360° Biodiversity Strategy** adopted by the Walloon Government on 25/04/2024 explicitly stipulates that the assessment of the impacts of a project must gradually ensure that the impacts on ecosystem services are considered and that these will be valued. Enhancing ecosystem services is foreseen in Strategic Objective 1.3; in particular through operational objective 1.3.4 *"Preservation of habitats and associated ecosystem services"*; in particular, action 1.3.4.2 provides for the promotion of the consideration of ecosystem services, in particular *through* tools such as *"Nature Value Explorer"*. In addition, a land artificialisation trajectory will be set in 2025 with a view to reducing land artificialisation and moving towards zero km²/year by 2050. The approaches that will be developed will be evaluated according to their impact on ecosystem services. A wide range of stakeholders are concerned, such as municipalities, farmers, foresters, companies, etc.

One of the measures and actions of the **Circular Economy Deployment Strategy "Circular Wallonia"** (2021) is to support actions to preserve and restore biodiversity and ecosystem services as part of circular economy projects. The stakeholders are diverse and varied: companies, training institutes, the Public Service of Wallonia (Departments of Soil and Waste, Sustainable Development, Economic Policy Department), business support services, the water sector, technology hubs, etc.

The Brussels Soil Quality Index (IBKB) is a tool to assess soil quality. The IBKB-PRO is intended for all professionals who want to integrate the concept of 'soil quality' in the design of their urban development project to use better quality soils for the development of biodiversity, vegetable gardening or rainwater infiltration.



The European directives and regulations in this area are a very important lever. Clear objectives to be achieved in terms of biodiversity and ecosystem services are a strong signal.

In addition, several political parties explicitly refer to ecosystem services in their programs. There is growing interest in integrating ecosystem services into policies and actions on the ground.



6.2.3 Perceived barriers and needs to enhance uptake.

6.2.3.1 Barriers:

- The lack of knowledge or a poor understanding of the issues related to ecosystem services and their impact on humans.
- The lack of political will.
- Absence of legal obligations.
- The economic context.
- The absence of a transversal unit within the Administration.
- The lack of human and financial resources to support the integration of ecosystem services.

6.2.3.2 Needs:

- Political willingness
- Legislative base or a clear framework (a directive or a rule e.g.)
- Administration commitment
- Human resources
- Funding

6.2.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.2.4.1 Community of Practice

The Belgian Platform of transformative change was kicked-off on December 5th, 2023, where the common grounds were established. A second meeting took place on April 25th, 2024.

For the moment it counts 14 participants but many more showed their interest.

Policy: Flemish governments departments (environment, education, agriculture, OVAM, INBO, VLAIO...)



Science: VITO

Business: The shift (a network of private organisations), consultants

At the platform we try to bring in some 'mycelium wisdom'

- Bringing together people from different disciplines in science, policy, business, and society
- Connecting participants in new ways and allowing for open-ended networking
- Mobilising different forms of knowledge to create new shared knowledge.
- Connecting to and building on existing networks of knowledge, energy, and affection.
- Seeing the questioning and breaking down of 'old' paradigms not as acts of violence but as a necessary and valuable source of new life.
- Stimulating the imagination and cultivating a sense of play.

We want to inspire, learn, and create a fertile soil for 'seeds of transformative change' to grow. To create a safe space to propose and test ideas and to Taste new ways to engage and look at things.

In the second meeting we took a deeper look into the "Nature tissue Planning" (natuurweefselplanning) project and took lessons from it for our own projects.



Other platforms:

The WAL-ES platform, a cross-cutting regional platform within the Public Service of Wallonia, aims to design and disseminate tools to support public decision-making using the notion of ecosystem services. From 2014 to 2016 and from 2018 to 2023, it enabled the development of a conceptual framework first and then the development of assessment tools such as the Nature Value Explorer tool, the capacity matrix and the hedge tool.

Workshops to develop the capacity matrix as well as training on the Nature Value Explorer tool, the capacity matrix and the hedge tool were carried out. The participants come from the administration, design offices, municipalities, nature parks, river contracts, local action groups (GAL), research institutes and universities. In addition to the participants in the workshops mentioned above, requests were made by various structures: federations of environmental associations, operators specialising in

6.2.4.2 Seeds of transformative change

8 seeds of change were nominated for Belgium amongst others:

- **“Yes, we plant”** Walloon project: Plant 4 000 km of hedges or 1 million trees.
- **8-Week program Nature Connectedness**
 - Nature connectedness is the degree to which people regard nature as part of their identity. Research shows that people with a higher degree of nature connectedness reap physical and mental benefits. Even more: in mental well-being, nature connectedness appears to provide health benefits that exceed the (already well documented) benefits of contact with nature. Therefore, two years ago, the INBO Nature and Society team started developing a science-based, multi-week program to encourage nature connectedness in people. The nature exercises offered are based on the five pathways to nature connectedness (Lumber, Richardson, & Sheffield, 2017), which are explained in more detail in this INBO publication. This fall, a group of 12 people was assembled in each Flemish province to follow this nature connectedness program for six weeks. The program combines individual nature exercises with weekly group meetings in a green environment. During the group meetings, certain exercises are repeated, participants get the chance to exchange experiences and are motivated to keep up the program. To assess the impact of the program, participants are surveyed not only before, during and immediately after the program, but also one month later.
- **Greenblue business models for farmers** (Groenblauwe businessmodellen voor landbouwers)
- **Duurzaam beleggen Ugent**
 - To push banks to invest Ugent funds sustainable, otherwise take funds away to another bank.
- **Grassroots- climate farm**: Regenerate a piece of land by producing healthy food for people, powered by energy of the sun (not fossil)
- **Nature network planning (Natuurweefselplanning)** another co-productive way to bring nature back in cities again.



6.2.5 References

NARA All the reports (in Dutch) are to be found <https://www.vlaanderen.be/inbo/inbo-natuurrapporten>.

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6.3 Bulgaria

6.3.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Bulgaria launched a two-stage program in 2015, with the first stage creating a set of methodologies that were horizontally compatible across ecosystem types, fitted into a standardised database, accommodating for both EU and national classifications and indicator systems in the context of eLTER's (European Long-Term Ecosystem Research) system, and combined both EC and ES assessment. This resulted in an extensive framework with mapping and assessment of nine broad ecosystems emphasizing in situ verification and including a guide for long-term ecosystem condition and services monitoring in line with the MAES framework and the eLTER's Whole System approach (Katrandzhiev et al., 2022).

Since 2022, Bulgaria has been constantly working on different aspects of ecosystem services mapping and assessment in various projects and initiatives. Further mapping and assessment of the ecosystems in Natura 2000 sites is planned to start in 2024, while several studies have already reported geospatial and classification issues within the national database outside Natura 2000 (Petkova et al. 2022), and the possibilities for further development of indicators in karst areas (Stefanov et al. 2023), and forest ecosystems (Nedkov et al. 2023).

In 2023, the implementation of a significant project aimed at completing the Natura 2000 network in the Bulgarian part of the Black Sea, including data collection and analysis, as well as additional field studies, was completed (BG16M1OP002-3.005-0001). The information on the distribution and conservation status of the types of natural habitats and species subject to protection in the marine and coastal Natura 2000 sites under the Habitats Directive has been enriched and improved. Gathered information will improve the efficiency of the management of the sites. Monitoring schemes for the target habitats and species were developed and updated. Proposals for synchronization and optimization of the processes for data collection and reporting under Habitats Directive, WFD and MSFD were made. Through such projects Bulgaria fulfills its commitments in the EU and improves the implementation of the EU Nature Directives.

6.3.2 Examples of uptake in decision processes, regulations and/or legislation

Bulgaria has officially implemented the ecosystem services concept in legislative documents both on national and regional scale. For instance, nine types of public ecosystem benefits of forest areas and six ecosystem functions were specified in the national Law on Forests. Additionally, a pilot functional zoning of forests based on the law, was done for the purposes of the management plans in three out of 28 districts in the country (Montana, Smolyan and Dobrich districts). In 2023 the amendment to the Biodiversity Act in Bulgaria was adopted.



6.3.3 Perceived barriers and needs to enhance uptake.

6.3.3.1 Barriers:

- Misinformation and slow communication between all parties involved.
- Lack of significant understanding on the importance of environmental issues in general, both in society and decision-makers.
- Lack of funding for activities that are not required by the EU.
- Lack of sufficient human resources.
- Political will.

6.3.3.2 Needs:

- Continuous communication and knowledge rising at different levels with different stakeholders (i.e. educational activities for students; traditional mass media and social media news for society; stronger relations and dialog between science and policy representatives).

6.3.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political, and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.3.4.1 Community of Practice

Bulgarian Community of Practice kicked-off in January 2024 at the National Institute of Geophysics, Geodesy and Geography – Bulgarian Academy of Sciences (NIGGG-BAS) in Sofia, Bulgaria. A total of 27 participants from diverse sectors, including business (Denkstatt, Coca-Cola HBC), academia (Sofia University, Institute of Biodiversity and Ecosystem Research), government (Sofia Municipality, Executive Environment Agency, Executive Forests Agency, Central Balkan National Park, the Bulgarian National Focal Point of IPBES), and civil society, gathered to lay the foundation for the SELINA Community of Practice (CoP) in Bulgaria.

The defined purpose of the Bulgarian CoP is fostering a national connectivity towards collaborative and impactful transformation, where representatives of policy, business, education and science share experience and knowledge. While communication, education



and data flow take central part for achieving the purpose, Bulgarian CoP members agreed on the most urgent steps to be taken and further developed.

The Bulgarian Community of Practice succeed to generate several important outcomes for the short time of its existence. Since the kick-off meeting in January 2024, there are groups of outcomes related to communication, events and education activities were recorded:

- Communication-related outcomes include: a shared cloud space for materials related to the CoP, shared list of the membership, registered email for the Community of Practice. Next step on this point is to keep updated.
- Event-related outcomes resulted in a bilateral IPBES Capacity building workshop for Bulgaria and Romania, held in March 2024 in Sofia, Bulgaria, where participants from both SELINA CoPs – Bulgarian and Romanian, had the opportunity to present practices, projects and national frameworks relevant to invasive alien species and transformative change. The workshop itself was organized by the Institute of Biodiversity Network (ibn), Germany with the local support of the Bulgarian Ministry of Environment and Water (MOEW), and the National Institute of Geophysics, Geodesy and Geography – Bulgarian Academy of Sciences (NIGGG-BAS).
- Education-related activities of Bulgarian CoP members were undertaken in late April 2024 during the biggest event for Geography and Earth Sciences in Bulgaria – the Bulgarian Geographical Festival. SELINA and CoP members of the NIGGG-BAS team organized an experimental mapping and assessment of coastal and wetland ecosystems near Burgas city with over 20 secondary school students and their teachers from all over the country. The central outcome of this activity is that a certain group of students and teachers were informed for the importance of the ecosystem services concept and the international science-policy platforms (IPBES) – both still not included in the Bulgarian school educational system and textbooks.

Links:

- Kick-off: <https://project-selina.eu/news/community-practice-bulgaria-search-seeds-change>
- IPBES workshop: <https://project-selina.eu/news/selina-bilateral-ipbes-capacity-building-workshop-sofia-bulgaria>

6.3.4.2 Seeds of transformative change

In the Community of practice a number of projects were discussed:

No	Project/Initiative	Level (0-5)	Discussion group
1	Regulation of ecosystems and ecosystem services in national legislation	5	Public administration
2	Creation of the National Trust EcoFund (https://ecofund-bg.org/en/home/)	5	Public administration



3	Setting ambitious targets by the business (e.g. for 100% collection and recycling of packaging)	5	Public administration
4	The platform https://ednodarvo.io/	5	Local government
5	The Bulgarian National Long-term ecosystem research network (LTER-Bulgaria) (https://project.lter-bulgaria.net/)	5	Science
6	INES project (INtegrated assessment and mapping of water-related Ecosystem Services for nature-based solutions in river basin management) (https://inesproject.com/)	5	Science
7	Restore4Life project (https://restore4life.eu/)	5	Science
8	Biodiversa+ (https://www.biodiversa.eu/)	4	Public administration
9	Coordination Council of Central Balkan Biosphere Reserve	4	Local government
10	Communication	4	Business
11	Mapping and assessment of ecosystem services	4	Business
12	SBTi	4	Business

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6.4 Croatia

6.4.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Before 2022 A study for Freshwater Ecosystem Services was developed with a focus on water management and on lowland river ecosystem services. Some were evaluated for the Danube basin area in Croatia, some only for the pilot study area on Drava River dependent on the available data.

Recently, the Institute for Environmental and Nature Protection of the Ministry of Environment and Green Transition is involved in the Biodiversa project **The European Biodiversity Partnership**. The activities of the Institute involve participating in the implementation of Tasks within each specific work package, and within Work Package 2, they pertain to: a) transversal themes of harmonizing nature status monitoring in the EU and b) harmonizing monitoring methodologies and programs for different groups or categories of animals, plants, and other organisms, as well as habitats and ecosystems.

Ministry of Environment and Green Transition financed the project **Mapping of coastal and benthic marine habitats in the coastal sea of the Republic of Croatia and benthic marine habitats in the Croatian epicontinental zone** in time period (09/2021 – 10/2023) that resulted with maps of marine habitats to increase the availability of data on marine biodiversity related to the distribution of species and habitats.

6.4.2 Examples of uptake in decision processes, regulations and/or legislation

- Environmental Impact Assessment (EIA), a process of evaluating the acceptability of a proposed project concerning the environment and determining the necessary environmental protection measures to minimize impacts and achieve the highest possible preservation of environmental quality. The assessment process is conducted at an early stage of project planning, before the issuance of a location permit or other approval for projects for which a location permit is not mandatory. This is prescribed by national legislation and harmonized with EU directives.

Leverage point/key moment: becoming an EU Member State, harmonization of national and EU legislation.

Uptake: creation of legislative framework, duration of the process, administration

- Assessment of Suitability for the Ecological Network, a procedure used to evaluate the impact of a strategy, plan, program, or intervention, both individually and in conjunction with other strategies, plans, programs, or interventions, on the conservation objectives and integrity of ecological network areas. The assessment of suitability is not conducted for a strategy, plan, program, or intervention directly related to and necessary for the management of an ecological network area.

Leverage point/key moment: establishment of Natura2000 network



Uptake: creation of legislative framework, establishment of Natura2000 sites, writing plans and management programs for the Natura2000 network

6.4.3 Perceived barriers and needs to enhance uptake.

6.4.3.1 Barriers:

- Numerous stakeholders involved in the process that need to be coordinated.
- A lot of administration
- Business as usual
- Weak connectivity and exchange of experiences among stakeholders and ministries

6.4.3.2 Needs:

- More funding for basic research that would enhance current knowledge and bring Croatia to a similar level with other EU states.
- Comprehensive overview of the status of ecosystem services, ecosystem condition, and biodiversity on a national level.
- Better connection and exchange of experiences among stakeholders and ministries.

6.4.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political, and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.4.4.1 Community of Practice

The SELINA Community of Practice in Croatia was officially launched on January 11, 2024, with an online meeting hosted via Microsoft Teams. The event brought together 17 participants from 13 public and private institutions in Croatia, spanning sectors such as nature protection, environmental protection, higher education, water management, and government. At the meeting a representative from the Ministry of Economy and Sustainable Development responsible for nature protection was also present.

The kick-off meeting began with a warm welcome from the Croatian Forest Research Institute, followed by an introductory presentation on the SELINA project, highlighting its



aims and objectives, with a particular focus on establishing the Croatian Community of Practice.

Throughout the meeting, participants engaged in discussions on various topics, including ecosystem conditions, ecosystem services, and ecosystem management, all of which are highly relevant to the SELINA project. Additionally, participants shared insights into their past and ongoing projects.

6.4.4.2 Seeds of transformative change

Through the online survey 5 projects were nominated as Seeds of transformative change:

- **Green Urban Renewal Strategy for the City of Zagreb**
 - Systematic and sustainable green and blue spaces management
 - Zagreb green infrastructure network development
 - Establishing circular space and building management
 - Inclusive governance of green infrastructure development and circular space and building management
- **CarEx – Care for Extensive grasslands**
 - The CarEx project underscores key objectives focused on managing threatened dry grasslands in Natura 2000 sites: Kozjansko Park (Slovenia) and Žumberak Samoborsko gorje Nature Park (Croatia). The primary aim is to develop effective grassland management practices, with a central emphasis on mowing, ensuring biodiversity conservation, and evaluating its impact.
 - The project endeavours to raise awareness about connecting corridors through educational activities, workshops, lectures, and participation in regional events. Dissemination of findings and best practices for dry meadow biodiversity preservation will be achieved through collaboration with other protected areas.
- **Ecosystem services of reedbeds:** mapping the selected reedbeds and discovering their ecosystem services
- **CA20138 - NETWORK ON WATER-ENERGY-FOOD NEXUS FOR A LOW-CARBON ECONOMY IN EUROPE AND BEYOND (NEXUSNET)**
 - The main aim of NEXUSNET is to empower collaborations between European Union (EU) and international researchers and stakeholders with the objective to synthesize the existing empirical Nexus research, and to define a concerted research agenda that promotes an integrated approach and produces an intellectual toolkit, demonstrating a clear link to improved resource management and governance outcomes that underlie the value of Nexus.
- **Wetlands for brighter future**
 - riparian proper functioning condition assessment
- **"Restore4Life**
 - its Overall Objective is to develop an online Restore4Life Wetland Restoration Decision Support System that will allow large-scale holistic wetland restoration activities in the Danube basin and Europe through extensive dialogue and co-creation with multiple actors (knowledge holders, policy actors, citizens) as



part of the Danube basin lighthouse of the Mission “Restore our ocean and waters by 2030”.

Partnership ([The European Biodiversity Partnership](#) | [Biodiversa-plus](#) | [Project](#) | [Fact sheet](#) | [HORIZON](#) | [CORDIS](#) | [European Commission \(europa.eu\)](#))



6.5 Cyprus

6.5.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

A first set of indicators for the mapping and assessment of ecosystems and their services (MAES) in Cyprus was proposed in a study in 2020. The study was focusing on developing appropriate indicators for diverse ecosystems on the island.

After 2020 several studies on mapping and assessing ecosystem services took place or are ongoing:

- LIFE IP PHYSIS LIFE18 /IPE/CY/000006 (Pandoteira)
- Conceptual framework and development of the National Ecosystem Assessment methodology for Cyprus (CY NEA). The methodology is specifically adapted to local conditions (e.g., ecosystem types, pressures, impacts on ecosystems, assessment indicators, etc.). Vogiatzakis I., Manolaki P. (eds) 2022
- Finalization of the National Set of ES Indicators
- Implementation of the CY NEA on selected Natura 2000 sites, work in progress

Also, in many case studies ecosystem services were mapped and assessed:

- Mapping and assessment of ecosystem services at Troodos National Forest Park in Cyprus. Kounnamas, C., & Andreou, M. (2022). This study maps and assesses ecosystem services within the Troodos National Forest Park using the Common International Classification of Ecosystem Services (CICES 5.1). It identifies 36 different ES and categorizes them into provisioning, regulating, and cultural services.
- The Case of Larnaca's Salt Lakes Bekri, E. S., Kokkoris, I. P., & Christodoulou, C. S. (2023). This study examines the management implications of ecosystem services provided by Larnaca's Salt Lakes, a protected peri-urban area. It uses spatial analysis to map areas with the potential to support various ecosystem services, emphasizing the need for sustainable management practices.
- Manolaki, P., & Vogiatzakis, I. N. (2017). performed a rapid appraisal of ecosystem services in the Rizoelia National Forest Park, focusing on both biodiversity and human well-being. The assessment categorizes ES into provisioning, regulating, and cultural services.
- A study exploring the development, selection, and application of appraisal tools designed to help stakeholders mitigate soil threats, relevant for ES groups (Regulating: soil conservation, and Supporting: soil health and fertility. It highlights researchers' experiences across Europe, providing insights into the effectiveness, social acceptability, and economic feasibility of various soil improvement measures. The study includes a case study from Cyprus, specifically focusing on the maintenance and rehabilitation of dry-stone terraces in the upstream area of a selected watershed. The study emphasizes the importance of systematic appraisal tools in supporting decision-making processes related to soil conservation and management; stakeholders involved include farmers, policymakers, environmental managers, researchers.



- A study developing and applying a methodology to assess changes in ecosystem services (ES) based on measured or estimated soil property changes resulting from various soil management measures such as mulching, terracing, and no-till farming. The methodology was applied in 16 case study sites across Europe, representing a diverse range of soil threats and land use systems, including Cyprus. The insights gained from these assessments can help inform soil conservation and management strategies, particularly in terms of improving soil health and enhancing ecosystem services. Schwilch, G., Lemann, [...], Zoumides, C. & Hessel, R. (2018).

6.5.2 Examples of uptake in decision processes, regulations and/or legislation

There is an explicit reference to ES in the National Biodiversity Strategy. However, in terms of practical implementation (mapping/assessment/valuation) there are gaps, i.e., there is no specific obligation. The LIFE IP Physis project (see above), aims to harmonize national obligations with European requirements, starting from Natura 2000 sites: work in progress.

6.5.3 Perceived barriers and needs to enhance uptake.

6.5.3.1 Barriers:

- Knowledge gaps:
 - No comprehensive mapping of ecosystem services (ES)
 - No agreed methodology for ES assessment
- Lack of capacity in the public sector:
 - No dedicated staff for ES
 - Limited understanding of the ES concept
- No legislative base for ES integration
- Unclear concepts among stakeholders
- Disagreement among conservationists about the value of an ES approach
- Insufficient funding
- Lack of data

6.5.3.2 Needs:

- Nationwide mapping of ES, beyond just pilot areas
- More implementation projects on a national scale
- Intersectoral collaboration for integrating ES into decision-making processes.
- Increased funding for ES initiatives
- Development of guidelines on incorporating ES into spatial planning
- Legislative integration of ES into Natura 2000 (N2K) management plans
- Integration of ES into the planning system
- Increased stakeholder awareness of the ES approach
- Demonstration of the value of ES through successful case studies from other EU countries



6.5.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

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6.5.4.1 Community of Practice

1st CoP meeting held on 28 February 2024

Participants: representatives from governmental bodies, research institutions, non-governmental organizations (NGOs), and educational institutions.

Defined Purpose: the primary aim of the CoP is to facilitate transformative change in environmental and agricultural practices in Cyprus. This involves:

- Enhancing communication and collaboration among stakeholders.
- Engaging a broader range of participants, including private sector entities, municipalities, citizen groups, and policymakers.
- Promoting initiatives that have a lasting impact on environmental conservation and public awareness.
- Prioritizing ecosystem services and integrating them into decision-making processes.

Outcomes

- Communication and Stakeholder Engagement: Identified platforms for information sharing such as Viber, Microsoft Teams, and Email, with a preference for formal communication channels like email.
- Discussed the inclusion of private sector entities, municipalities, and citizen groups as potential stakeholders for broader engagement.
- Initiatives and Projects:
- Tree Planting: Recognized public interest but noted the need for sustained efforts and resources for long-term impact.
- Active Citizenship: Emphasized the necessity of systemic actions and long-term planning.
- Environmental Education: Advocated for introducing environmental education in schools to shift cultural perspectives.



- Ecosystem Services: Highlighted the importance of ecosystem services and awareness campaigns.
- Policy Engagement: Stressed the need for policymakers to be more involved and informed.

Considerations for Cyprus:

- Acknowledged the small and often repetitive participation in meetings, suggesting the expansion of the network.
- Identified cultural and capacity issues and the need to re-activate and link the SELINA CoP with ESP-Cyprus.
- Noted difficulties in integrating ecosystem services into decision-making processes, highlighting the need for better uptake and implementation.

6.5.4.2 Seeds of transformative change

2 projects were nominated:

**Darwin Plus project “Akrotiri Marsh Restoration: a flagship wetland in the Cyprus SBAs” 2)
Darwin Plus project “Habitat Restoration & Wise Use for Akrotiri & Cape Pyla” (2021-2024)**

- Enhance the biodiversity richness of the wetland, by restoring Akrotiri marsh to a mosaic of habitats, similar to the state it was in some decades ago.
- Promote the economic viability of conservation grazing, conserve important plant species, increase public awareness and ecotourism opportunities.

Thkio Mosfilies – Outdoor teaching area

To set up a nature reserve and create a hub for environmental education in the Ammochostos District, with the hopes of changing hearts and minds in the area and influencing young children into becoming valuable members of society that love and protect nature.

6.5.5 References

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6.6 Czechia

6.6.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

The MAES process in the Czech Republic was initiated by a national assessment of grassland ecosystem services (Hönigová et al., 2012). Later, an integrated assessment of ecosystem services was performed using value transfer and the Consolidated Layer of Ecosystems of the Czech Republic (Frélichová et al., 2014). Meanwhile, ecosystem services assessments were a component of several case studies focusing on ES modelling, trade-off analysis, participatory mapping, evaluation of nature-based solutions and ecosystem-based disaster risk reduction. All assessment projects were conducted as part of research initiatives funded by national or European projects, but no official MAES program was launched in Czechia.

A national Platform for Ecosystem Services (NPES) was established in 2022 in the Czech Republic. NPES evolved within the Integrated Project LIFE, LIFE-IP: N2K Revisited – Integrated LIFE project for the Natura 2000 network in the Czech Republic, called One Nature. NPES was established as a scientific-political body with a vision to support and coordinate the creation of policies and strategies focused on ecosystem services in the field of nature conservation and biodiversity, as well as other departmental policies.

Since 2022, a working Group on Ecosystem Accounting was established under the auspices of the Czech Statistical Office. It associates around 25 experts mainly from ministries, governmental agencies, academic and non-governmental institutions. The aim is to communicate and support the development of ecosystem accounts according to current EU and Eurostat guidelines. Czechia has been also involved in voluntary reporting.

6.6.2 Examples of uptake in decision processes, regulations and/or legislation

In Czechia, ecosystem services are addressed in National Biodiversity Strategy and Action Plan. It is also a component of other national policy documents, namely National Adaptation Strategy and Action Plan and others. There is an ongoing update of the National Biodiversity Strategy which will incorporate current needs, including role of the National Platform on Ecosystem Services and others. There is no direct legislative basis.

6.6.3 Perceived barriers and needs to enhance uptake.

6.6.3.1 Barriers

Following key barriers have been identified in participatory discussion within NPES and SELINA Community of practice:

- Lack of Awareness about ES: Limited knowledge among politicians, officials, the general public, and even professionals (e.g., among architects or farmers). The need for cooperation across various sectors and creating simple, concrete examples to explain ES concepts.
- Diversity of Approaches: Lack of uniform terminology and existence of various, non-unified methodologies.



- Insufficient Practical Implementation: Gap between extensive research and political action, especially in areas like carbon production charges.
- Legislative Inertia vs. Research Progress: Difficulty in updating legislation to reflect new scientific findings.
- Complexity of Funding Titles: Challenges, especially for smaller farmers, in navigating numerous funding titles related to ES.
- Limited Influence of Environmental Policies: Environmental considerations should be as important as economic ones, but often face unfavourable conditions.
- Lack of Data-Based Policies: Conflict between political decisions and scientific research.
- Absence of Legislation Adjustments and Environmental Economists: Need for more specialized professionals in the field.

6.6.3.2 Needs:

- Awareness-raising
- Mainstreaming of ES in various policies, such as urban planning, forestry, agriculture, education, ecological assessments, and anti-erosion measures.
- Creating discussion forums for sharing and communicating different opinions among nature conservationists, scientists, and others
- A unified methodology anchored in legislation, customized for each sector, and a standardized evaluation system.

6.6.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political, and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.6.4.1 Community of Practice

NPES was established as a scientific-political body with a vision to support and coordinate the creation of policies and strategies focused on ecosystem services in the field of nature conservation and biodiversity, as well as other departmental policies. The goal of NPES is to support the exchange of information and the sharing of experiences in the area of assessment and use of ecosystem services in decision-making. The activity of the platform will also facilitate international cooperation and support the development of a national network of



institutions cooperating in the field of ecosystem services and further developing individual key themes.

The NPES associates over fifty nominated representatives across the spectrum of nature protection, state and local government, academic institutions, organizations operating in the field of water management, agriculture, and forestry, as well as non-profit organizations.

The establishment of NPES was preceded by extensive consultation process, inter alia interviews and workshops with key stakeholders relevant for nature conservation, including Natura 2000 management, and ecosystem service assessments and policy uptake of results. Therefore, NPES represents diverse stakeholders from various sectors and policy areas.

SELINA Seeds of change discussions about successes, barriers, visions, and transformative projects were participative component of the program at the 2nd (June 2023) and 3rd (April 2024) NPES meetings.

6.6.4.2 Seeds of transformative change

The following projects were nominated:

LIFE-IP One Nature, including National Platform on Ecosystem Services

The Integrated LIFE project for the Natura 2000 network in the Czech Republic, called One Nature, contributes to the conservation of biodiversity and the promotion of ecosystem services in the protected areas of the Natura 2000 network. Thanks to more efficient management planning, research and using its results in practice also thanks to a good cooperation with landowners and land users located in protected areas, the project helps to ensure the most suitable management and, above all, to preserve these valuable sites for the benefit of nature and people in the future. It initiates cooperation at the national scale on implementation of ecosystem services through the National Platform on ecosystem Services.

Additional projects with transformative potential were identified at the NPES third meeting in April 2024:

Planting for the Future (Czech Environmental Partnership)

This initiative wants to connect all those who plant trees. Whether they are municipalities and cities, associations, state institutions, companies, schools, farmers or landowners, volunteers, and donors. It aims to achieve the goal of planting 10 million trees outside of the forest, over the next 5 years. It would help to cool down Czech cities and support the resilience of the Czech landscape from the effects of climate change. Initiative provides finances for tree planting by communities, provides advice and guidance and aims to change the legislation.

<https://www.sazimebudoucnost.cz/>



Farmer School – Vocational School of Organic Agriculture

The only school of organic and biodynamic agriculture in the Czech Republic that offers a comprehensive programme of practical training on organic farms at home and abroad. They strive for sustainable agriculture that does not plunder the landscape but heals it, agriculture that thinks about future generations. Their graduates are expected to disprove the economic clichés and build up organic farms showing both environmental and financial sustainability. Farmer school educates and supports young farmers who have the desire to establish new farms and thus contribute to the restoration of natural farming, healthy landscapes and rural life.

<https://farmarskaskola.cz/farmer-school-vocational-school-of-organic-agriculture/>

Fem4Forest – Forests in Women's Hands

Fem4Forest identifies and analyses the innovation needs of labour market and forest entrepreneurs and demonstrates the transferability of ideas and good practice examples (GPE) by a series of pilot actions within the Danube region (DR) territory to push forward the ability of women actors to gain a foothold in the workforce resp. innovate their forest business to boost the competitiveness of the forest-based sector on the European market. Therefore, the main objective of Fem4Forest is to strengthen the forest sector at local, regional and interregional level through increased involvement and ability of women actors by supporting their equal presence and competences at the market in DR.

<https://dtp.interreg-danube.eu/approved-projects/fem4forest>

6.6.5 references

J. Frélichová, D. Vačkář, A. Pártl, B. Loučková, Z.V. Harmáčková, E. Lorencová Integrated assessment of ecosystem services in the Czech Republic Ecosystem Services, 8 (2014), pp. 110-117, 10.1016/j.ecoser.2014.03.001

I. Hönigová, D. Vačkář, E. Lorencová, J. Melichar, M. Götzl, G. Sonderegger, V. Oušková, K. Chobot, M. Hošek (2012) Survey on Grassland Ecosystem Services (Report to the EEA – European Topic Centre on Biological Diversity) Nature Conservation Agency of the Czech Republic, Prague



6.7 Denmark

6.7.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

“In Denmark a series of projects have targeted the assessment of ecosystem services from 2014 onwards. The emphasis has been on developing a land use model to provide support for the analysis and evaluation of alternative policies. A Danish MAES process was set up and is led by the Nature Agency under the Ministry of the Environment in cooperation with scientific expertise at the universities of Aarhus and Copenhagen. The first report from the process was published (Termansen et al., 2015) and provides an assessment of the status of mapping of ecosystems, ecosystem services and biodiversity in Denmark in relation to MAES. Moreover, it provides a description of the relevant knowledge and data for mapping the economic value of ecosystem services and biodiversity”.

“An ES model with sixteen ES and biodiversity indicators (Termansen et al., 2017) was created for a specific catchment. Based on this model a national scale model focusing on seven ES and biodiversity indicators was developed. The model has been used to evaluate policy scenarios for implementation of the water framework directive and the co-benefits of achieving water quality targets (Hasler et al., 2022)”.

The national Danish statistical office is preparing for future demands and requirements on ecosystem service accounting and has among other things established a development group to support this work.

Ecosystem services are often referred to in the work of the Danish Biodiversity Council. The council is an independent and research-based expert body consisting of experts in the field of nature and biodiversity in Denmark. The council is established by and advises the government and parliament on initiatives that can create better conditions for Danish nature.

6.7.2 Examples of uptake in decision processes, regulations and/or legislation

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6.7.3 Perceived barriers and needs to enhance uptake.

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6.7.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals



and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.7.4.1 Community of Practice

The Danish community of practice on ecosystem services has not been set up specifically for the SELINA project, but the SELINA project has enabled a revitalization of the existing network. This network, called ‘Dansk netværk om biodiversitet og økosystemtjenester’ (Danish network on biodiversity and ecosystem services), was established as part of the former ESMEALDA project. After the ESMEALDA project the network has been hosted by the Danish IPBES secretariat, which is supported by a group of six universities and the Ministry of Environment. The network is open for all persons interested in the subject and includes around 75 individuals from research, private companies, authorities and NGOs and lobby organization. The mission of the network is to strengthen knowledge sharing between those who study or work with biodiversity and ecosystem service-related topics including research or policy in Denmark. The primary activity of the network is 1-3 annual network meetings dealing with relevant topics including presentations and discussions. More information on the network can be found on the website of the Danish IPBES secretariate ([LINK](#)).

6.7.4.2 Seeds of transformative change

One project was received through the online survey:

- Pilot project - a comprehensive plan for Gudenå valley
 - The purpose of the pilot project is to create a platform for implementation of the Master Plan for the Gudenåen River

6.7.5 References

Hasler, B., Filippelli, R., Levin, G., Nainggolan, D., 2022. Scenarier for fuld implementering af VP3 indsatskrav for kystvandoplande 2021-2027, Videnskabelig rapport fra DCE - Nationalt Center for Miljø og Energi nr. 502. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi.

Termansen, M., Levin, G., Hasler, B., Jacobsen, J., Lundhede, T. & Thorsen, B.J. 2015. Status for kortlægning af økosystemer, økosystemtjenester og deres værdier i Danmark. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi, 128 s. - Videnskabelig rapport fra DCE – Nationalt Center for Miljø og Energi nr. 147 . <http://dce2.au.dk/pub/SR147.pdf> (accessed 2015-06-23)



Termansen, M., Hasler, B., Levin, G., Filippelli, R., Lundhede, T.H., Strange, N., Nainggolan, D., Bladt, J., Zandersen, M., 2023. National arealforvaltningsmodel for vand, klima, biodiversitet og friluftsliv., IFRO scientific report.



6.8 Estonia

6.8.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Since 2016, Estonia has been constantly working on different aspects of ecosystem services mapping and assessment in various projects and initiatives.

In Estonia, the national MAES project ELME was launched in 2016 aiming to develop and implement novel biodiversity monitoring methods and perform EC and ES mapping and assessment in the country. After conducting several preliminary works, incl. compiling a roadmap for MAES, a countrywide mapping and assessment of the EC and ES of the main natural and semi-natural terrestrial ecosystem types was completed in 2020 (Helm et al., 2021). All map layers are open to use. [Project ELME 1 layers](#)

In 2021–2023 in continuation of the ELME project, a nationwide assessment and mapping of the economic benefits of Estonian terrestrial ecosystems was performed (Helm et al. 2023). All map layers are to be found [here](#)

Marine ecosystem services (covering the exclusive economic zone area of Estonia) were assessed and mapped in 2019 within ELME and are being further elaborated in the course of other projects (e.g., project MAREA5). Several projects have also addressed urban and freshwater ecosystem services, but further work needs to be done.

6.8.2 Examples of uptake in decision processes, regulations and/or legislation

The data of the ELME1 project are used in several projects and activities:

- ELME 1 Ecosystem Status Aggregate Assessment is used by the Municipal Portal (Status of Green Spaces in Local Authorities (<https://minuomavalitsus.ee/>))
- The Estonian Environmental Development Plan KEVAD (2023-2035).
- Examples of work directly supporting spatial decisions include the location analysis of wind farms, which at the time of drafting this report is under further development (<https://keskkonnaportaal.ee/et/tuuleenergeetika-arendamist-piiravate-kitsenduste-kaardistamine-ning-vabade-alade-tuvastamine>)
- Among the examples of the use of the results of natural asset assessments, one of the most directly used applications is the biocontrol benefit assessment approach used for the intervention "Ecosystem services on farmland", <https://www.agri.ee/media/723/download> Ecosystem services is part of payment schemes of Estonian Agri-Environmental Program. There are payment measures like, "Climate and environment action plan: conservation ecosystem services on farmland", "Supporting bees forage area".
- The ELME natural goods and ecosystem services layers have also been used in nature conservation planning, e.g. in the establishment of protected areas, more specifically in the justification of protection in the explanatory memoranda for the drafting of conservation regulations (e.g. Lihula Nature Reserve).



- So far, the explanatory memoranda of the protection regulations have focused on the more easily described provisioning services (e.g. lost timber revenue from the protection), while the ELME assessments have been supplemented by climate regulation benefit assessments based on ecosystem-related carbon. However, in addition to the carbon sequestration benefit (which is one of the most frequently estimated and used in decision making in other countries), conservation management should start.

The data of the ELME 2 have already been used and will be used in several processes:

- **ENVIRONMENT - Land use planning, environmental impact assessment, master planning, green network planning, wind farm siting.**

The main research questions:

- Where are the gaps in the ecological and/or social functioning of the green network?
- Where are there valuable ecosystems to be integrated into the network?
- Where are the valuable ecosystems that need to be avoided?
- Where are the places where the functioning of the network should be improved?
- **Conservation planning:** Delimitation of protected areas, habitat restoration, etc.
- **Accounting** (reporting, ecosystem accounts, etc.). Statistical Office, environmental accounts, **Municipalities.** Meeting strategic objectives (including input to indicators, metrics)
- **Measures, Support schemes.** Agri-environmental Program, Spatial planning of food production and forest management; Production that makes skilful use of nature's benefits (pollination, pest control, landscapes that avoid pesticide and fertiliser leaching, habitats that support soil fertility)
- **Basis for assessing land-use** changes, planning changes, Will be Use National Plan for 2050
- **Basis for further research**, implementation projects, Environmental awareness and everyday conscious use of nature:
- **At Universities:** Part of several courses.

6.8.3 Perceived barriers and needs to enhance uptake.

6.8.3.1 Leverages

- In general, there is full support from national authorities (Environmental Agency, Ministry of Climate, and the Ministry of Regional affairs and Agriculture, by universities) to implement ESS (no need for transformative change).
- Municipalities, and private companies need clarification and support. With partial support from farmers, two environmental programme actions are linked to ÖST: eco-planning and landscape elements.
- There are several good examples of implementation of the concept.



6.8.3.2 Barriers:

- Political will in some sectors, excessive focus on a single service (carbon sequestration), Forest sector
- Lack of significant understanding on the importance of environmental issues in general, both in society and decision-makers, especially at municipal level.
- Lack of funding for activities that are not required by the EU.

6.8.3.3 Needs:

Continuous communication and knowledge rising at different levels with different stakeholders (i.e. educational activities for students; traditional mass media and social media news for society; stronger relations and dialog between science and policy representatives).

6.8.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.8.4.1 Community of Practice

Within the context of SELINA a Community of Practice on ES was established.

In the kick-off meeting 15 participants attend, representing 8 organisations and institutions:

Governmental organisations:

Environmental Agency
Ministry of Climate
Ministry of Regional Affairs and Agriculture
Agricultural Registers and Information Board (ARIB)

NGOs:

Estonian Society for Nature Conservation
Estonian Green Movement



Business:

Kobras Ltd (Environmental planning)
Agron Ltd (Agriculture)

Science

Department Environmental Protection and Landscape Management, Estonian University of Life Sciences

The goals of the first meeting were:

- to exchange experiences, ideas, and observations on how to implement ES in practice.
- to discuss the limitations and barriers in implementing ES issues into practice.

6.8.4.2 Seeds of transformative change

Only 1 project was nominated as a seed of change through the online survey, although in the uptake section of this country fact sheet several interesting projects are mentioned that could be potentially very transformative.

- LIFE project "Developing and demonstrating portfolio of nature based and smart solutions for improving urban climate resilience in Latvia and Estonia" (LIFE LATESTadapt)
 - Key objectives: To increase resilience of Estonian and Latvian urban areas to extreme weather events, by focusing on 4 specific objectives: - nature-based solutions - digital change - quality of planning - engaged communities and skilled enablers.

6.8.5 References

Helm, A., Kull, A., Veromann, E., Remm, L., Villoslada, M., Kikas, T., Aosaar, J., Tullus, T., Prangel, E., Linder, M., Otsus, M., Külm, S., Sepp, K., 2021. *Metsa-, soo-, niidu- ja põllumajanduslike ökosüsteemide seisundi ning ökosüsteemiteenuste baastasemete üleriigilise hindamise ja kaardistamise lõpparuanne. ELME projekt. Tellija: Keskkonnaagentuur (riigihange nr 198846) (Forest, peatland, grassland and agricultural ecosystem status and baseline mapping of ecosystem services, final report. ELME project. Commissioned by: Environment Agency (call for tender No 198846), 242 pages.*

Report ELME 1 [available](#)

Helm, A., Kull, A., Kiisel, M., Poltimäe, H., Rosenvald, R., Veromann, E., Reitalu, T., Kmoch, A., Virro, H., Mõisja, K., Nurm, H-I., Prangel, E., Vain, K, Sepp, K., Lõhmus, A., Linder, M., Otsus, M., Uemaa, E. (2023). Eesti maismaaökosüsteemide hüvede (ökosüsteemiteenuste) majandusliku väärtuse üleriigiline hindamine ja kaardistamine. Tehniline lõpparuanne. Riigihange "Maismaaökosüsteemiteenuste üleriigiline rahaline hindamine, sh meetodika



väljatöötamine” (viitenumber 235366, Keskkonnaagentuur) (**A nationwide assessment and mapping of the economic value of the benefits (ecosystem services) of Estonian terrestrial ecosystems. Final Technical Report. Public Procurement 'Nationwide financial valuation of terrestrial ecosystem services, including development of methodology, Final Report 258 pages**). Tartu Ülikool. Eesti Maaülikool. ISBN 978-9985-4-1398-2 (pdf)

The Final Report of ELME 2 Project is [available](#):



6.9 Finland

6.9.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

TEEB for Finland scoping study “Towards Sustainable and Genuinely Green Economy - The value and social significance of ecosystem services in Finland” was published in early 2015 with a roadmap for decision-makers (<https://helda.helsinki.fi/handle/10138/152815>).

No further updates received.

6.9.2 Examples of uptake in decision processes, regulations and/or legislation

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6.9.3 Perceived barriers and needs to enhance uptake.

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6.9.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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6.9.4.1 Community of practice

There is not yet a community of practice established under the SELINA project. The idea is to organise one around the demonstration project tourism business in the Helsinki archipelago.

6.9.4.2 Seeds of transformative change

No projects nominated yet.

6.9.5 References

Jäppinen, J.-P. & Heliölä, J. (eds.) 2015: Towards a sustainable and genuinely green economy. The value and social significance of ecosystem services in Finland (TEEB for Finland). Synthesis



and roadmap. The Finnish Environment 1en/2015. The Finnish Ministry of Environment, Helsinki. 144 p.



6.10 France

6.10.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

“In France, the EFSE program produced six big reports on six different ecosystem types, using a working group structure (agroecosystems; Tibi and Therond, 2017), forests, continental waters, marine ecosystems (Mongruel et al., 2019), urban ecosystems, mountainous ecosystems (Crouzat et al., 2019), which are reviews about the ecosystem types, their condition and their services. These reports include assessments and maps of those ecosystem types and ES relevant to these ecosystem types (e.g., 14 assessments and maps for agricultural areas). There are also 5 reports focusing on specific ES case studies on local to national scale: pollination (national without overseas), carbon sequestration (national including French Overseas), forest recreation (national without overseas), coastal erosion (on a regional scale in Aquitaine), ecosystem services mappings in the region Ile-de-France (regional case study)”.

6.10.2 Examples of uptake in decision processes, regulations and/or legislation

The French National Biodiversity Strategy (NBS) and the French National Strategy for Ecological Transition Towards Sustainable Development (NDS) have addressed the issue of maintaining and restoring ecosystem and their services as set in the EU Biodiversity Strategy Target 2.

6.10.3 Perceived barriers and needs to enhance uptake.

No answer received.

6.10.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

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6.10.4.1 Community of Practice

A network around biodiversity exists.



6.10.4.2 Seeds of transformative change

No projects were nominated through the online survey. Another member state identified the below project:

French GREEN BUDGET

The Green Budget assesses the environmental impact of the State budget by identifying budgetary and tax expenditures that are favourable and unfavourable to the environment. Starting from this edition onwards, it additionally reports on the budgetary aspects of ecological planning. The 2024 Green Budget mirrors the unprecedented rise in resources allocated to ecological planning, with a €7 billion increase in payment appropriations, corresponding to €10 billion in commitments. The State's green budget is an essential tool in ensuring that France is on the path towards ecological transition.

https://www.budget.gouv.fr/reperes/green_budgeting/articles/budget-bill-2024-4th-edition-green-budget

6.10.5 References

E. Crouzat, M. Zawada, K. Grigulis, S. Lavorel 2019 Design and implementation of a national ecosystem assessment – insights from the French mountain systems' experience *Ecosystem People*, 15 (2019), pp. 288-302, 10.1080/26395916.2019.1674383

Mongruel, R., Kermagoret, C., Carlier, A., Scemama, P., Le Mao, P., Levain, A., Ballé-Béganton, J., Vaschalde, D., Denis, B., 2019. Evaluation des écosystèmes et des services écosystémiques marins et côtiers, contribution au programme EFESE : Condensé de l'étude réalisée par l'IFREMER, l'UBO et l'AFB. <https://doi.org/10.13140/RG.2.2.13557.32488>.

A. Tibi, O. Therond 2017. Évaluation des services écosystémiques rendus par les écosystèmes agricoles., Une contribution au programme EFESE INRA. (2017)



6.11 Germany

6.11.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

In Germany, the national research concerning biodiversity and ecosystem services (MAES process in the broad sense) started already around 2010 with “Natural Capital Germany - TEEB-DE”. Building on the valuations in this project, recommendations for the development of a first national indicator set for the assessment of ecosystem services (for ca. 20 priority ES), were suggested (Albert et al., 2015) and further developed and agreed upon with experts (e.g. Grunewald et al., 2017).

In the last couple of years, diverse research projects have been executed on the topic of mapping, assessing and accounting for biodiversity, ES and EC. These national and international research projects have different specific research foci, consider diverse spatial scales, and involve different sets of stakeholders. One example of a national project is Bio-Mo-D (Appreciating biodiversity - modernising economic accounting in Germany, <https://www.ioer.de/en/projects/bio-mo-d>). The project runs until September 2024 and aims at integrating biodiversity and ecosystem services into economic accounting and reporting at governmental and corporate levels in Germany. By modernizing economic reporting according to the SEEA-EA framework, it enhances the appreciation of biodiversity and ecosystem services among decision-makers and societal actors. The project promotes interdisciplinary and transdisciplinary forums for stakeholders to exchange information on methods, standards, and policy interfaces for including nature's multiple values. It aims to positively impact the shift towards more ecological business practices. A second example is the transdisciplinary project ValuGaps (<https://www.valugaps.de/en>), funded by the German Federal Ministry of Education and Research (BMBF), which runs until October 2024. The overarching project goal is to contribute significantly to anchoring the values of biodiversity and Natural Capital in Germany. ValuGaps aims at developing methods to close information gaps, i.e. by dealing with uncertainties, and gathering existing knowledge in such a way that it is ready for practical application by decision-makers.

In addition, very recently the German MAES Report was published (Nature under pressure - Report on the state of ecosystems and their services for society and economy - German MAES-Report on Target 2, Action 5 of the EU-Biodiversity Strategy 2020, published in December 2023, https://biodiversity.europa.eu/countries/germany/maes/maesreport_d_23april2024.pdf/).

The Report details the state of terrestrial and marine ecosystems, focusing on agricultural and forestry soil conditions, forest monitoring, and ecosystem modelling. It covers ecosystem classification, recent changes, key indicators of ecosystem condition, and provides nationwide assessments and maps of ecosystem services. The report discusses strategies to prevent degradation of natural capital, ways to invest in nature for welfare enhancement, and Germany's global responsibility for ecosystem conservation.



Federal Statistical Office

In recent years, the Federal Statistical Office of Germany has developed ecosystem accounts to systematically capture and assess the interaction between humans and the environment. Generally, these accounts are based on the UN's SEEA EA framework and cover three main areas: extent, condition, and services of ecosystems. They document the various ecosystem types and their temporal changes. In a first step, the Federal Statistical Office has developed a National Ecosystem Classification for Germany, which was first published in 2021 (https://www.destatis.de/EN/Themes/Society-Environment/Environment/Environmental-Economic-Accounting/ecosystem-account/Methods/national-ecosystem-classification-5852206219004.pdf?__blob=publicationFile). Based upon this classification, the Federal Statistical Office has created and published extent (Bellingen et al. 2021) and condition accounts for the diverse ecosystems classified in the National Ecosystem Classification. An ecosystem atlas (<https://oekosystematlas-ugr.destatis.de/>) with detailed maps and data has been developed which has the potential to support policy decisions and environmental management. In the future, the Federal Statistical Office will regularly update the extent and condition accounts and develop ecosystem service accounts, as well.

6.11.2 Examples of uptake in decision processes, regulations and/or legislation

- One example is the Federal Nature Conservation Act, which is the legal basis for nature and landscape conservation as well as nature/ landscape management measures. According to the Federal Nature Conservation Act, various aspects of biodiversity, such as species and habitat protection, must be taken into account in various planning and authorization procedures. This may involve carrying out environmental impact assessments or preparing environmental reports in which the impact of projects on biodiversity must be assessed.
- Each federal state in Germany has its own nature conservation laws that complement the federal legislation. These laws often include specific requirements for biodiversity assessments at the regional level.
- The association Kommbio (“Municipalities for Biodiversity in Germany”; <https://kommbio.de/kommbio-municipalities-for-biodiversity-in-germany/>), an alliance of currently 397 cities, communes and districts exchanging information and supporting each other in working for biodiversity on a local and regional level, celebrated her 10th anniversary in 2022.
- In addition, Germany also has a National Strategy on Biological Diversity, complying with the global Convention on Biological Diversity, which aims to conserve and restore the diversity of landscapes, plants and animals on the territory of Germany. The strategy is highly ambitious and includes concrete measures and targets for integrating biodiversity concerns into various policy areas, including agriculture, urban planning, energy and transport. The process of developing the new National Strategy on Biological Diversity is currently underway.

Potential facilitating factors/ leverage points:



- Directives such as the EU Biodiversity Strategy and targets set by the European Union provide policy windows and a legal framework for Germany to align its national legislation and policies with broader European conservation and restoration goals.
- The availability of scientific research and expertise on biodiversity and ecosystem services likely provide evidence-based arguments for policymakers to integrate these considerations into legislation and policy frameworks.
- Public awareness and support for environmental conservation likely create a favourable political climate for policymakers to prioritize biodiversity and ecosystem services in legislation and policies.

6.11.3 Perceived barriers and needs to enhance uptake.

6.11.3.1 Barriers

Certain industries or other stakeholders such as citizens may have been resistant to regulations or policies that impose additional costs or restrictions on their activities in the name of biodiversity, conservation, or ecosystem services preservation. More precisely, balancing biodiversity conservation with economic development interests has posed challenges, especially in sectors such as agriculture or energy, where there can be conflicts between conservation goals and economic interests.

Also, the complexity and uncertainty surrounding ecosystem services assessments and valuation may have made it challenging to integrate these considerations into policy frameworks in a standardized and consistent manner. Usually, decision-makers seem hesitant to deal with the large number of assessments methods but prefer to have one standardized approach at hand how to assess ecosystem condition and services. Ideally, many policymakers are looking for an all-in-one solution/indicator suitable for every purpose (e.g. the 1.5°C indicator as the ultimate goal to treat all aspects of climate change). Furthermore, potentially the coordination among different government departments and sectors, as well as between the different legislative levels of the German government (federal, state, and local), may have posed challenges in implementing integrated approaches to biodiversity conservation and ecosystem services management.

6.11.3.2 Needs:

The potential facilitating factors, which have been defined above, should be strengthened in order to facilitate the uptake. The following actions might also support the uptake of biodiversity and ecosystem information in policy- and decision-making:

- Improving data availability, quality and standards. Efforts must be made to improve data collection and monitoring to enable informed decision-making. This can be achieved through investment in monitoring programs, technological innovation, and capacity building. Furthermore, it would be useful to indicate and consistently use uncertainty measures and to communicate them together with respective assessment results.



- The involvement of environmental organisations, local communities, and other stakeholders is crucial to ensure that biodiversity and ecosystem concerns are heard and considered throughout all stages of the policy-making processes. Raising the awareness of various social classes and stakeholder groups may increase the acceptance and support the faster implementation of needed measures.
- Helpful to have a collection of good/best practice examples, pioneers, and frontrunners as role models.
- Most importantly, policy incentives and instruments need to be created to facilitate the uptake in private decision-making. Incentives should be created to promote sustainable practices and measures to protect biodiversity and ecosystems. This can be done through the development and implementation of laws, guidelines, financial incentives, and other policy instruments.

6.11.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things really differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another mean is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.11.4.1 Community of Practice

In January 2024, on the initiative of SELINA in collaboration with the projects BioMoD, ValuGaps, and the Innovation Network Ecosystem Services Germany ESP-DE, a Community of Practice was launched by means of a first workshop on "Transformation through cooperation: What makes knowledge transfer from ecosystem services, natural capital, and biodiversity research a success?". Nearly 30 participants from science, policy, NGOs, and businesses gathered in Hannover to foster collaboration and streamline efforts in utilizing ecosystem services and biodiversity research in Germany. They discussed coordination strategies, identified synergy opportunities, and laid the groundwork for the Community of Practice in Germany. Future CoP-DE thematic meetings are planned to take place once per year.

6.11.4.2 Seeds of transformative change

23 projects were nominated as seed in the online survey. Below some of them are mentioned:

- Public welfare bonus (Public money for public services - further development of a model for rewarding the environmental services of agriculture in agricultural



- policy) encourage farmers to adopt practices that promote environmental sustainability by providing incentives for these practices.
- Model district in Freiburg Vauban
 - Implementation of a socio-ecological urban district:
 - providing high-quality building plots within city limits to counteract migration to the outskirts.
 - promoting dense, space-saving construction, low-energy building techniques, public green spaces, and efficient public transportation
 - car-free living with a specific traffic concept within the neighbourhood and alternative mobility options
 - establishing a central marketplace and a neighbourhood centre
 - Ecovillage „Sieben-Linden “in Saxony-Anhalt, Building a sustainable village with 300 residents:
 - Local treasures (A campaign by the Consumer Association of North Rhine-Westphalia that provides information about climate-friendly food and offers recipes for a seasonal diet with regional foods)
 - FREI DAY (engl. Free Day, a learning format for pupils in which they are given the opportunity to develop their own sustainable projects)
 - Cyclebude - Professional and sustainable cargo bike courier service in Rostock

6.11.5 References

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6.12 Greece

6.12.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

In 2023 (and ongoing) the national monitoring project for the Natura 2000 species and habitat types started, organized by the Ministry of Environment and Energy and performed by various scientific organizations and experts (e.g. universities, scientific institutions). Data from this project were used in the past to create experimental accounts for ecosystem condition (using biodiversity attributes, structure data, abiotic data). An example of how this project can contribute into ecosystem condition assessments is highlighted in the JRC Publication “EU-wide methodology to map and assess ecosystem condition” (Vallecillo et al. 2022).

In 2022 (and ongoing) Greece and the Hellenic Statistical Authority, via the University of Patras, participates in the ESA Project “Pioneering Earth Observation Applications for the Environment - Ecosystem Accounting” (PEOPLE-EA). The main objective of the PEOPLE (Pioneering Earth Observation Applications for the Environment) Ecosystem Accounting project (PEOPLE-EA) is to study the relevance of Earth observations for SEEA compliant ecosystem accounting and to demonstrate its use for terrestrial and freshwater ecosystems. Greece works on a regional case study assessment on ecosystem extent, condition and ecosystem services accounts.

As a deliverable of the LIFE IP 4 NATURA project, the web-based Public Participation Geographic Information System of the LIFE-IP 4 Natura project (ppGIS/webGIS LIFE-IP 4 NATURA), presents at a national scale the ecosystem services (such as timber production, climate regulation, erosion regulation, recreation provision, etc.) that Greek ecosystems offer to the public. The ppGIS/webGIS LIFE-IP 4 NATURA was designed and developed within the framework of the LIFE-IP 4 Natura project by the Aristotle University of Thessaloniki - School of Rural and Surveying Engineering, in collaboration with the University of Patras - Department of Biology, the Natural Environment and Climate Change Agency (NECCA), the Greek Ministry of Environment and Energy and WWF Greece.

6.12.2 Perceived barriers and needs to enhance uptake.

6.12.2.1 Barriers:

- No legislative base for ecosystem accounting.
- Funding is always an issue, especially for activities that are not obligatory.
- However, lack of human resources is also a very important issue.

6.12.2.2 Needs:

- Standardized approaches and models for ecosystem condition / ecosystem services assessments for the local scale.
- Local scale datasets and funding for field surveys and validation.
- Legislative connection of natural capital accounting with national (and regional) reporting mechanisms.



6.12.3 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.12.3.1 Community of Practice

The first SELINA Community of Practice (CoP) meeting was held on the 15th of November 2023, at the University of Patras Botanical Museum. Sixty-one relevant stakeholders, from different agencies and authorities have been invited with responsibility and/or interest in the Greek Test site area (Peloponnese (Peloponnisos), Greece).

A smaller number of invited people participated (12 persons):

Academic:

- University of Patras

Central Government:

- Forest Service

Natural Environment and Climate Change Agency (NECCA):

- Management Unit of Chelmos-Vouraikos National Park and Protected Areas of the Northern Peloponnese
- Management Unit of Strofylia Wetlands National Park and Protected Areas of Western Peloponnese

Regional Government:

- Region of Western Greece
 - Department of Regional Development and Entrepreneurship Incentives
 - Department of Regional Policy Planning and Integration of Regional Development Programme Projects

A comprehensive and fruitful conversation was held, with results that can be summarised as follows:

- All participating stakeholders see CoP as an important scheme / framework for communicating their respective activities and especially their implementation projects, with other agencies and authorities, as well as with the scientific community, in order to avoid overlaps and/or delays due to similar responsibilities.
- Forest Service has data that can be useful for the SELINA project Tasks.
- CoP was identified as a means of communicating their projects outcomes to different and wider interested parties and following this, adapt their procedures to standardise data collection, registering and reporting.



- SELINA project goals presentation, and in particular the CoP targets presentation, were identified by the participants as the missing ring for a step forward, from until now administration and management to a diversified new era, that incorporates multiple (most of them already available) input from different agencies and resources.

6.12.3.2 Seeds of transformative change

Through the online survey we received 5 projects:

- **Prevention and rehabilitation of areas affected by natural disasters in the protected area of the Vouraikos River.**
- **Combat of Plantain metachromatic ulcer in areas of the Municipality of Kalavryta.**
- **Maintenance-improvement of the recreation area at the location of Taxiarches Waterfalls in Ano Vlasia**
- **Forest map (Cadastral project) of Greece.**
- **Study circles:** As part of the Horizon 2020 project SHARED GREEN DEAL, we have 6 Streams. In one Stream - the Biodiversity Stream - so-called Study Circles were set up in which adult participants explore cultural values related to biodiversity, the loss of biodiversity and possible solutions in rural and urban areas.



6.13 Hungary

6.13.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

“Hungary completed its first national MAES project between 2016 and 2021 (Vári et al., 2022). The project aimed at supporting national nature conservation, providing a sound basis for management and decision-making. This work covering the whole country produced a high-resolution ecosystem map (Tanács et al., 2022b), with three hierarchical levels of ET. The project also assessed ecosystem condition, and, in parallel, some EC indicators linked to specific ES (Tanács et al., 2022a). 12 ES were chosen for mapping and assessment through prioritisation in a participatory approach. Some regional assessments complemented the national mappings: several regulating ES for urban areas (four case studies) and for hydrologic ES (Zala watershed).

According to the current plans, a follow-up project project will start in late 2024 or early 2025. It will include the further development of mapping methods used in the original MAES-HU and the remaking of several maps to allow an analysis of change.

There are two ongoing research projects related to the Hungarian MAES. One (carried out by Eötvös Loránd University) is about forest condition mapping with different methods and at different scales and it included the validation of the MAES-HU forest condition map with detailed field data. The other project (by HUN-REN Centre for Ecological Research) includes (a) the validation of other national condition maps from MAES-HU, e.g., croplands (b) exploring the relationship between pressures and condition at the national level (c) identifying ES hotspots and conflict areas by combining the MAES-HU ES and EC maps. It also includes continued cooperation with the Nature Conservation Department of the Ministry of Agriculture (exchange of condition-related data and results).

6.13.2 Examples of uptake in decision processes, regulations and/or legislation

The results from MAES-HU were directly used in the new Biodiversity Strategy of Hungary. The involvement of the Ministry in the project ensured that the results were something they could use for their purposes (and this was true for any stakeholder involvement – those involved in the planning and the actual mapping were enthusiastic about using the results). EU requirements are a strong incentive for uptake (e.g. management plans for Natura2000 areas), also any kind of planning or other action that requires national-scale data (e.g. flood protection, designation of areas related to the Nature Restoration Law...)

There is also a strong demand for data (especially EC data) at the local level (e.g. local planning) but not all the national-scale data are suitable for that.



6.13.3 Perceived barriers and needs to enhance uptake

6.13.3.1 Barriers:

- It is unclear how to reach potential users effectively – they seem to rely mostly on information from trusted sources.
- Scale issues – when someone tries to use the national maps at an inappropriate (usually too fine) scale, they get disappointed for the lack of proper detail (or precision) at the required scale.
- Uncertainty issues – no matter how well uncertainty is documented, the maps/data are sometimes used as if there was no uncertainty – which may lead to a loss in trust.

6.13.3.2 Needs:

- The demonstration of good practices for potential users (related to the appropriate use of the data and their uncertainty)
- In the long run we would need more detailed and precise data to produce national maps which also work well on a finer scale

6.13.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.13.4.1 Community of Practice

The Hungarian Community of Practice under SELINA flag is in the planning phase. A first meeting will be organised in fall 2024.

6.13.4.2 Seeds of transformative change

For the moment (June 2024) only two projects were nominated as a potential seed of change:

10 millió Fa (10 million Trees): 1 person 1 tree. We professionally plant 10 million trees in Hungary and beyond. We also aim to reach and involve at least 10 million people in the process. So we plant trees and ideas: trees to be our bodyguards in tackling biodiversity and the climate crisis and ideas to go much further than planting 10 million trees.



Restore4Life: "Restore4Life's Overall Objective is to develop an online Restore4Life Wetland Restoration Decision Support System that will allow large-scale holistic wetland restoration activities in the Danube basin and Europe through extensive dialogue and co-creation with multiple actors (knowledge holders, policy actors, citizens) as part of the Danube basin lighthouse of the Mission "Restore our ocean and waters by 2030".

6.13.5 References

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6.14 Ireland

6.14.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

In 2016, the Irish Government commissioned a study to provide a pilot assessment and mapping report on a limited set of “prioritised” ecosystem services in Ireland. The report was published by the National Parks and Wildlife Service as part of their regular “Wildlife Manuals” publication series. The project set out to initiate discussion on how ecosystem services assessments can be integrated into multisectoral decision making processes in Ireland. The project involved engagement of local stakeholders to identify which ecosystem services should be prioritised as part of the pilot, to identify ES mapping needs and available data sets, and develop indicators for national ecosystem service mapping. The project produced a series of maps and gave recommendations for further work on ES assessment and mapping in Ireland.

This remains the only formal government-commissioned study on ES assessment and mapping in Ireland to date. There has been no further development in this area at national level since the publication of this report; however, the pilot study has provided impetus for a number of thematically related projects which have been grant-aided or part-funded by state or semi-state agencies, and which have helped build knowledge and capacity for natural capital and ecosystem services assessments and related approaches in the Irish context. These projects are also helping to inform policy making, with issues of natural capital accounting and ecosystem services now routinely referenced in several areas of national policy relating to climate change mitigation and adaptation, biodiversity conservation, agriculture, and marine and coastal zone management, amongst other areas.

A recent key project was the [INCASE project \(Irish Natural Capital Accounting for Sustainable Environments\)](#), funded by Ireland’s Environmental Protection Agency, which ran from 2019 to 2023. This project, led by Trinity College Dublin and University College Dublin, focused on four river catchments, assessing a set of prioritised services relating to water resources, land use and carbon storage using the UN System of Environmental-Economic Accounting-Ecosystem Accounting (SEEA-EA). The project considered two key stakeholder groups: State and Semi-state agencies and Government offices; and other related research projects, including Ordnance Survey Ireland (OSI) / EPA land cover mapping project, EPA Environmental Sensitivity Mapping (ESM) tool project, European Innovation Partnership (EIP) projects and other related research projects.

INCASE used an input-output model to assess the impact of policy change on natural capital stocks, used data visualisations to produce sectoral natural capital management frameworks, produced a gap analysis of information monitoring systems and the policies underpinning them, and conducted economic impact assessments to better understand the trade-offs between policy options in the study catchment areas. The [final report from the project](#) (2023) highlighted the importance of further development of natural capital accounting and ES assessment in Ireland, and included a number of recommendations for further research, capacity building and investment.



Another project building on the outputs from the INCASE project is [the For-ES project](#), led by the same project team as INCASE. The project is also partly run by Coillte, a private sector forestry company which is owned by the Irish state (Coillte is the Irish language word for forests), with funding from the Department of Agriculture, Food and the Marine. The project runs from 2021 until 2025 and will focus on developing natural capital accounts for selected commercial forestry sites, some of which are incorporated in the SELINA project as an aggregate Test Site. This project will develop Natural Capital Accounts for specific forest sites to capture information on forest natural capital stocks and related flows of ecosystem services. The ES to be addressed are commercial timber production, carbon sequestration, water retention, support for biodiversity and provision of recreational spaces. Bayesian Belief Network modelling will be used to understand the effects of different management decisions on ecosystem service flows, and an interactive web-based management scenario tool will be developed.

At the time of writing for this summary, a full stakeholder mapping exercise has not yet been completed for the project, however as a state-owned private forestry company the two major stakeholder groups are Coillte itself, and the Irish state, as For-ES will seek to provide data to guide sustainable forestry practices in Ireland into the future. Local stakeholder groups will be identified for each of the forestry operations being studied. In addition to members of the public visiting these forests for recreation who will be surveyed during 2024 as part of the valuation assessments (in collaboration with SELINA), other stakeholders may include local landowners and farmers, and other businesses and civil society organisations.

Projects such as INCASE and For-ES are helping to increase the knowledge base and serve as a template for further development of methods and data sets. The Central Statistics Office, Ireland's national statistics institute tasked with collating statistics on Ireland's society, economy and environment, established an Ecosystem Accounts Division in 2020 and has been developing [a set of ecosystem accounts for prioritised services](#). In addition, the National Economic and Social Council, an independent advisory body reporting to the Department of the Taoiseach (Irish Prime Minister) has in 2024 produced [guidance on natural capital accounting](#).

INCASE (Irish Natural Capital Accounting for Sustainable Environments, a pioneering EPA-funded project to apply Natural Capital Accounting principles to catchments in Ireland. The project team prepared accounts for four catchments across Ireland using the UN System of Environmental-Economic Accounts (SEEA) Central Framework and SEEA Experimental Ecosystem Accounts guidelines. These map the stocks and flows of ecosystem and geosystem services, highlight challenges, knowledge and data gaps, with a series of recommendations to enable and operationalise Natural Capital Accounting in Ireland. The project ran from 2018-2023. [Research 441: Irish Natural Capital Accounting for Sustainable Environments \(INCASE\) | Environmental Protection Agency \(epa.ie\)](#).

6.14.2 Examples of uptake in decision processes, regulations and/or legislation

Policy:



The state agency responsible for preparing and implementing headline policies for the conservation and sustainable use of biodiversity in Ireland is the National Parks and Wildlife Service (NPWS). Since its original establishment in 2003, NPWS has sat as a division of various government departments, its parent department often changing in alignment with the properties of the government at that time; at the time of writing this factsheet it sits within the Department of Housing, Local Government and Heritage. Further to a strategic review of the NPWS in 2021, the government has committed to establishing NPWS as a separate state agency, which should strengthen its mandate and ability to work across government sectors.

[Ireland’s fourth National Biodiversity Action Plan](#) (the national policy document on the conservation and sustainable use of biodiversity, produced in line with the commitment to produce a National Biodiversity Strategy and Action Plan under the UN Convention on Biological Diversity), covering the period from 2023 to 2030, includes several targets and action items aimed at mainstreaming ecosystem services and natural capital across government. Examples of these are given in the table below.

Whilst these policies are not legally mandated by formal statute and are therefore not enforceable they nevertheless provide an important step forward in Ireland’s commitments to action on conservation and sustainable use of biodiversity by setting a framework for developing natural capital and ecosystem services assessments on a sectoral basis, and by setting a precedent which will be further developed as the current National Biodiversity Action Plan is implemented and reviewed, and in future versions of the Plan.

Table 1: Examples of targets and action addressing natural capital, ecosystem services and related concepts under Ireland’s 4th National Biodiversity Action Plan

Target	Associated action(s)
By 2027, definitions, tools and safeguards to maintain and enhance biodiversity and ecosystem services associated with agroecology systems are in place	DAFM, NPWS, the Heritage Council, academia and research institutions will work together to develop measures and support tools to maintain and enhance biodiversity and ecosystem services associated with agroecology systems including High Nature Value farming and farmland
By 2027, optimised benefits in flood risk management planning and drainage schemes are in place	Office of Public Works (OPW) will work with relevant authorities to ensure that Flood Risk Management planning and associated Strategic Environmental Assessment, Environmental Impact Assessment and Appropriate Assessment (AA), minimises loss of biodiversity and ecosystem services through policies to promote more catchment-wide and non-structural flood risk management measures
	The OPW, in coordination with other relevant stakeholders, will continue to enhance its knowledge and capacity with regards to Nature-based Solutions for Catchment Management (NBS-CM) and will assess the potential NBS-CM as part of the development of the future flood relief schemes



By 2027, systems and standards for natural capital accounting are being developed and implemented in Ireland	A network of experts in Natural Capital Accounting will be established for the island of Ireland
	The Central Statistics Office (CSO) will collaborate to advance ecosystem accounting and reporting methods and standards in Ireland, in line with the SEEAEA framework
By 2027, mainstream the natural capital approach across sectors	Relevant bodies will develop appropriate guidance for key sectors on the use of Natural Capital Accounting.
By 2027, first national ecosystem accounts completed	CSO will develop ecosystem accounts for Ireland
	Relevant organisations will conduct a national assessment of stocks, flows and trends in ecosystem services to identify priority ecosystems and threats to natural capital using appropriate tools, to be coordinated with relevant authorities in Northern Ireland

As referenced above, several current national policy documents and sectoral strategic action plans -many which predate the current National Biodiversity Action Plan - make note of the importance of biodiversity, natural capital and ecosystem services (and related approaches) to meeting their core objectives. Several other government sectors have been tasked with delivering actions under the Plan, including the Department of Enterprise, Trade and Employment, the Department of Finance, the Department of Transport, and the Department of Education. Notably, the health sector has been omitted from the Action Plan.

It is anticipated that the implementation of the EU Nature Restoration Law (adopted by the European Parliament in 2024) and actions in support for the Global Biodiversity Framework will see further development of policy instruments and capacity on these themes.

Processes/laws

The use of biodiversity information is required under Irish law implementing the EU legislation on Strategic Environmental Assessment and Environmental Impact Assessment, and under other legal instruments concerned with regulation of sectoral activities that may negatively impact upon biodiversity (particularly where consideration of potential impacts for Natura 2000 sites is required).

However, the use of Ecosystem Service assessments of any kind is not obligatory in any part of the planning or decision-making process.

Key leverages

Politically, the participation of the Green Party within the coalition government established in February 2020 has had a significant impact on how and to what extent issues of biodiversity, natural capital and ecosystem services have been considered cross a range of national policies, as indicated by the incorporation of these and related concepts into various sectoral plans and strategies in the intervening years. This has created an internal focus on the wider costs and benefits of biodiversity conservation in Ireland and created space for enhanced consideration of biodiversity within in inter-departmental processes and working groups.



In 2022, a formal act of the Irish parliament established [a Citizens Assembly on Biodiversity Loss](#), which tasked a randomly selected group of members of the public from all regions of the country to consider the extent and implications of the biodiversity crisis in Ireland and globally. The Assembly held its final meeting in February 2023 and prepared a report and list of recommendations for action to the parliament. Whilst many of these actions are yet to be implemented, the Assembly nevertheless gained significant media attention and helped to further raise awareness of the crisis on a national scale.

The adoption of the Global Biodiversity Framework at the 15th Conference of Parties of the UN Convention on Biological Diversity in December 2022 and the adoption of the EU Nature Restoration Law in 2024 are also seen as key leverage points which will help with mainstreaming of biodiversity, natural capital and ecosystem services and support current policies under the National Biodiversity Action plan towards adopting an all-of-government, all-of-society approach to the biodiversity crisis.

6.14.3 Perceived barriers and needs to enhance uptake.

6.14.3.1 Barriers:

The major barrier to uptake of concepts of ecosystem services and natural capital in decision making across government remains a general lack of awareness of these concepts, their importance and how they can be applied, outside of the environment and nature conservation agencies. This is exacerbated by operational and financing models which reinforce silo-based thinking. However, as a result of the projects referenced above, awareness is improving steadily, as evidenced by consideration of natural capital, nature-based solutions and / or ecosystem services within several national policy documents across several sectors in recent years; for example, Ireland's National Forestry Policy 2023 – 2030, the annual Climate Action Plans (most recent being 2024), the National Marine Planning Framework to 2040 (published 2021) and Food Vision 2030 (published in 2022). Key sectors where awareness is low and where uptake has not yet been adequately demonstrated include housing, transport, human and veterinary health, finance, and education.

Another difficulty is that the increasing awareness has not yet been supported by increased delivery of key communications or data tools, such as local, regional, or updated national ecosystem service mapping or sector-specific environmental economic accounts. However, it may be expected that additional research and pilot projects building on INCASE and For-ES will help address this, whilst implementation of the Global Biodiversity Framework and the EU Nature Restoration Law should see greater investment in capacity building across government.

A lack of political will in some quarters also hinders uptake, as environmental measures, particularly nature conservation policies, are widely framed as anti-business, anti-rural or anti-development. Arguably this is a universal issue, and in Ireland it is particularly tied to a historically limited view of land use, with the value of land being perceived in terms of production capacity or physical development potential rather than in terms of public goods. Ireland's latest National Biodiversity Action Plan (2023-2030) commits to an all-of-government, all-of-society approach to nature conservation which may help to address this



issue by more effectively mainstreaming key concepts across all government agencies, however, will require a large-scale public information and education campaign to address specific concerns of, in particular, rural communities. Locally focused and locally managed nature conservation projects have started to change this paradigm to some extent, though they require greater and ongoing support.

6.14.3.2 Needs:

The development and implementation of policies on biodiversity, natural capital and ecosystem services remain the purview of a small number of environmental agencies within government (and primarily led currently by the NPWS). A more concerted national policy led by the Irish parliament or Department of the Taoiseach to engage all sectors of government is required. Whilst steps are being taken in that direction, notably the actions prescribed across government in the 4th National Biodiversity Action plan, progress is slow and further resources are required to address issues of knowledge gaps, capacity building, and information exchange.

Greater efforts are also required to engage the public at large in addressing the biodiversity crisis. Whilst overall awareness of biodiversity and the need for greater conservation effort is relatively high, particularly among younger age groups, there is still a lack of awareness as to the wider values of biodiversity to society and the economy, and to other public concerns such as healthcare, housing, demographic change, and employment. More consistent public information campaigns across all media are required to highlight the importance of natural capital and ecosystem services.

6.14.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.14.4.1 Community of Practice

Information on the communities of practice still to be received.





6.15 Italy

6.15.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

The National Ecosystem Assessment of Italy, began in 2014, and just completed its biophysical evaluation with the production of the map of Ecosystems of Italy. The methodology used to produce the map is based on the integration of the CORINE Land Cover 2006 – CLC; the map of natural potential vegetation, which integrates climate, geo-morphology and vegetation data; the biogeographic regions.

The second, updated version of the Ecosystems Map of Italy, used as a reference for the implementation of biodiversity-related policies in the country, was released in 2023 (<https://www.tandfonline.com/doi/full/10.1080/11263504.2023.2284135>). The new version includes updated crosswalks between the Italian ecosystem typology and Corine Land Cover and EUNIS habitats, and a new crosswalk with the IUCN Global Ecosystem Typology.

The updated map was at the basis of the compilation of the Italian Red List of Ecosystems (https://www.mase.gov.it/sites/default/files/archivio/allegati/biodiversita/lista_rossa_ecosistemi_2023.pdf), also published in 2023. The identification follows the criteria and categories of risk defined by IUCN.

A large project funded by the European Union Next Generation EU was launched in 2023 with the name of *National Biodiversity Future Center (NBFC)*. It is one of five national centres dedicated to frontier research and it involves an extensive national network of more than 1,500 researchers and 48 partner institutions, including universities, research centres, associations, and other private and social entities, committed to studying and preserving Italian ecosystems and biodiversity (<https://www.nbfc.it/en>). In 2024, NBFC released the first annual report on biodiversity in Italy (<https://www.nbfc.it/en/forum-nazionale-biodiversita-2024>).

6.15.2 Examples of uptake in decision processes, regulations and/or legislation

In February 2022, an amendment to the Italian Constitution added to Article 9 an explicit reference to biodiversity and ecosystems (*[The Republic] protects the environment, biodiversity, and ecosystems, caring also about future generations*). Moreover, the new version of Article 41 specifies that economic development must respect and protect health and environment along with safety, freedom, and human dignity.

6.15.3 Perceived barriers and needs to enhance uptake.

The Italian National Biodiversity Strategy 2030 identifies needs and transversal areas of action in order to overcome existing barriers and to achieve its goals for 2030.

The main areas of action are:

- Strengthening the implementation and enforcement of environmental legislation



- Promoting a business way of thinking in favour of biodiversity
- Mobilizing funds in favour of biodiversity
- Improving knowledge, education, and training
- Ensuring the active involvement of civil society in decision-making processes and in the implementation and evaluation of policies

6.15.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.15.4.1 Community of Practice

The Italian Community of Practice consists of 92 participants representing diverse sectors, including associations and non-profits, the private sector, research institutions, and public sector representatives.

This first CoP meeting brought together 42 participants and focused on getting to know each other, finding cross-cutting objectives, and fixing how to operate within the community to foster collaboration and knowledge exchange.

The participants' main expectations are to create a network for exchanging experiences, knowledge, and best practices and to promote interdisciplinary dialogue. They wish to discuss best practices and analyse effective decision-making processes to improve biodiversity and ecosystem service management strategies. There is a shared interest in connecting with concrete knowledge and practices to enhance territorial planning strategies and actions. In this regard, the CoP is an opportunity to support policymakers in territorial planning.

The importance of creating networks and collaborations with entities and stakeholders within the CoP to facilitate idea exchange and cooperation on future projects has also emerged. In particular, there is a desire for dialogue with experts to understand how to facilitate decision-making processes and foster innovation.

The Italian CoP has been envisaged to focus on planning processes at diverse scales. Moreover, it aims to become a place for continuous learning and finding solutions to



ecosystem services and biodiversity problems. It will enable dialogue among the scientific community, the private sector, associations, the public sector, and policymakers aiming to integrate these themes into their practices.

Participants have generally expressed a willingness to engage in activities that can contribute to developing and advancing methodologies for assessing ecosystem services and involving stakeholders in planning.

The specific suggested activities are:

- Developing methodologies for biophysical and economic assessment of ecosystem services, including spatial modelling and creating sets of shared indicators.
- Designing outreach and engagement activities to raise awareness of communities about the importance of biodiversity.
- Elaborating common projects and project proposals on topics that have emerged during CoP activities and transdisciplinary collaboration on shared case studies.

6.15.4.2 Seeds of transformative change

Through the online survey a comprehensive list of 24 projects were sent in as potential seeds of change. After a selection round 5 projects were nominated as candidates for in-depth analysis.

- **Vital – Restore Venice Lagoon Saltmarshes**
 - Vital - Restore Venice Lagoon Saltmarshes is an ambitious project aimed at the comprehensive restoration of the Venice lagoon ecosystem, integrating environmental sustainability with social benefits on a large scale.
- **PROGIREG project – Reconverting post-industrial areas in the city of Turin.**
 - The PROGIREG project in Turin focuses on transforming the post-industrial area of Mirafiori Sud into green infrastructure using innovative nature-based solutions (NBS). This effort is part of a larger initiative funded by the European Commission's Horizon 2020 program aimed at urban regeneration using natural methods.
- **'Forestami' – Increasing urban forests in the city of Milan.**
 - Forestami aims to transform Milan's urban landscape through extensive afforestation efforts by 2030, significantly boosting tree canopy cover and natural capital. Collaborating with partners like Politecnico di Milano, Città Metropolitana Milano, and local municipalities, the project engages a diverse array of stakeholders—from research institutions and public administrations to social cooperatives and businesses.
- **'Montagna, servizi ecosistemici e strumenti di governance in Toscana'** – Enhance Ecosystem Services provided by mountains ecosystems.
 - The "Montagna, servizi ecosistemici e strumenti di governance in Toscana" project is a comprehensive initiative aimed at valorising ecosystem services in the Tuscan mountains through innovative governance tools, notably Payments for Ecosystem Services (PES). Its primary goal is to develop robust management models, particularly under the framework of Italy's Law



221/2015, focusing on water-related ecosystem services in the Amiata and Mugello regions of Tuscany.

- **Urban, peri-urban, and extra-urban forestation initiatives in Italy' Metropolitan Cities**
 - The urban, peri-urban, and extra-urban forestation initiative is a pioneering effort aimed at tackling air pollution, climate change impacts, and biodiversity loss across Italian Metropolitan Cities.



6.16 Latvia

6.16.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Latvia has not yet implemented an overall 'Mapping and Assessment of Ecosystem Services' (MAES) project at national level. Ecosystem service mapping mostly has been implemented through various EU funded projects addressing specific ecosystem types.

In 2023, an ambitious national scale project "Nature Census" was concluded which was aiming to prepare the ground for biodiversity conservation and ecosystem protection by surveying the distribution and quality of the protected habitats of European Union importance. The project was implemented by the Nature Conservation Agency, starting from 2016, funded by the EU Cohesion Fund (85%) and the State Budget. The distribution of grassland, mire, forest, freshwater, coastal and inland dune, caves and rocky habitats were mapped over a total area of 1.3 million ha. The results of this project were also planned to be used for national scale assessment of ecosystem condition and ecosystem service mapping.

In 2022, the interim results of the "Nature Census" were used for identification and prioritization of areas to be protected for achievement the 30% target of EU Biodiversity Strategy 2030. In a project, commissioned by the Nature Conservation Agency and implemented by the BEF-LV, the areas for protection were prioritized based on their biodiversity value and ecosystem service potential by using spatial conservation prioritization tool "Zonation" (Moilanen et al., 2012). As an input to the prioritization model the nation scale (wall-to-wall) maps were prepared, including distribution of the EU protected habitats and their conservation status, distribution of protected species, grassland connectivity and proportional share in 1x1 km grid cell, ecological condition of freshwaters as well as four regulating ecosystem services - filtration/accumulation, flood control, global climate control, and maintenance of habitats for few flagship bird species (woodpeckers, owls and lesser spotted eagle) and hermit beetle.

The national scale studies of forest ecosystem services are implemented by the Latvian State Forest Research Institute «Silava». This includes the second stage of the study on "Impacts of forestry on forest and related ecosystem services" (2021-2026), which collects quantitative information for a model for mapping and assessing changes in the quality of forest ecosystem services, continuation of the work on the ecosystem service indicators as well as ecosystem service mapping in the state forest by development of algorithm for automated calculations.

In 2022, Interreg Central Baltic project "From MARine Ecosystem Accounting to integrated governance for sustainable planning of marine and coastal areas" (MAREA) was finalized. The project outputs included process-based modelling of ecosystem service supply within entire marine waters of Latvia, developed by the University of Tartu in co-operation with BEF-LV. The mapping results are used for interim evaluation and updated of Latvian MSP.

In 2022, a national project "Improving knowledge on state of the marine environment" financed by European Maritime and Fisheries Fund 2014-2020 and lead by Ministry of



Environmental Protection and Regional Development of the Republic of Latvia. The work on ecosystem services was implemented by “Aktiivs” Ltd in the frame of the Study “Building a knowledge and information base of economic and social analysis of the use of marine waters and achievement of the marine environmental targets” (2017-2021), implemented by AKTiivs Ltd. The study includes an economic and social analysis of marine use, an assessment of the costs of marine degradation, an assessment of potentially necessary additional measures and their cost-effectiveness analysis, an assessment of the socio-economic benefits of the sea and the use of ecosystem services.

From 2020 till end of 2023 a nation scale project "Sustainable territorial development and rational use of land resources" (LandLat4Pol) was conducted by the Institute of Agriculture Resources and Economics, funded by the State Research Programme, Vidzeme University of Applied Sciences and the Latvian University of Life Sciences and Technologies. The project results include the national scale online landscape atlas and identification of the landscapes of national importance, which can contribute to national scale cultural ecosystem service assessment.

6.16.2 Examples of uptake in decision processes, regulations and/or legislation

Biodiversity information is used very widely, including spatial planning as well as all nature or resource related planning processes. Mapping and assessment of ecosystem services explicitly are required by maritime spatial planning (MSP) legislation and marine strategy framework legislation.

Since 2020 Latvian governmental regulations on MSP (Regulation of the Cabinet of Ministers No 740/2012) explicitly require that MSP includes MAES results in the explanatory (descriptive) chapter of the plan. This practice (before the legal requirement) was implemented in development of the first Latvian MSP from 2015-2019. Now, the results of marine ecosystem service assessment are a part in all steps of planning (including evaluation of the plan). Latvian MSP is also an DP07 demonstrating the uptake.

The EU Maritime Spatial Planning Directive 2014/89/EU, which aims to establish and implement MSP by applying an ecosystem-based approach. The MSP directive highlights that healthy marine ecosystem and their multiple services, if integrated into planning decisions, can deliver substantial benefits in terms of food production, recreation and tourism, climate change mitigation and adaptation, shoreline dynamics control, and disaster prevention. Various EU and Baltic Sea basin guidelines on ecosystem-based approach have been supporting the uptake of ES in MSP. The biggest challenge is related to marine data availability in spatially explicit way as well as knowledge on functions and processes and their due to complex interdependencies of marine components.

Marine protection and management legislation (Regulation of the Cabinet of Ministers No 1071/2010) requires that when conducting assessment of marine environment, the following information shall be included:



- description of the services and resources provided by the marine ecosystem, as well as of their users and an assessment of the value of the respective services, indicating the following:
 - the economic, social, cultural and ecological value of the services and resources.
 - the direct or indirect added value of the types of the use of the sea and employment.
 - the services and resources affected by human activities.

The process is also supported by cooperation among experts at Baltic Sea Level coordinated by HELCOM Secretariate. The knowledge from regional cooperation activities supports national assessments.

6.16.3 Perceived barriers and needs to enhance uptake.

6.16.3.1 Barriers:

- Low awareness and recognition of the importance of environmental issues in general, both in society and among decision-makers.
- Low understanding of the ecosystem service concept among society and decision-makers.
- Lack of political will and interest in the topic.
- Insufficient capacity/knowledge among researchers, environmental experts and planning practitioners for applying ecosystem service mapping and assessment methods (particularly regarding ecosystem service modelling methods).
- accessibility and quality/accuracy of spatial data.

6.16.3.2 Needs:

- Active promotion of the ecosystem service concept at different levels (politicians, decision-makers, public administrations, entrepreneurs, leaders of study programmes, society).
- Introducing of the ecosystem service concept in the legislation for land use planning and management.
- Training of ecosystem service mapping/modelling experts.
- Strong cross-border and international cooperation
- Guidelines from European Commission that are linked to the implementation of the Directives.

6.16.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.16.4.1 Community of Practice

The first SELINA CoP meeting in Latvia was organized in 23.05.2023. By this we were renewing the Latvian ecosystem service community (started during the ESMEERALDA project) and involving many new participants, including researchers, practitioners and civil society representatives interested in the topic of ecosystem services and its uptake in decision-making. In total we have invited ca. 60 people from whom 40 expressed interests in joining the CoP. The first meeting was attended by 32 people, including:

Science

17 researchers (from University of Latvia; Latvia University of Life Sciences and Technologies; Riga Technical University; Latvian Institute of Aquatic Ecology; Institute of Agricultural Resources and Economics; and Latvian State Forest Research Institute "Silava", BEF)

Policy

8 representatives of public administrations (Nature Conservation Agency; Kurzeme Planning Region; and Riga City Council, Ministry of Environmental Protection and regional development.)

NGOs

3 representatives (Society “Par Lielu Lielo Juglu” and Association “Baltic Coasts”)

Business

4 representatives (LLC “Riga Forests” and two environmental consulting companies - LTD “AKTiiVS” and LTD “Estonian, Latvian & Lithuanian Environment”)

The meeting aimed: (i) to present SELINA project and the recent policy developments in Europe regarding ecosystem services and natural capital; (ii) to discuss the current developments and achievements in the field of ecosystem services in Latvia; and (iii) to identify Latvian projects and initiatives that can serve as "seeds of change" on the way to integrating ecosystem services into the decision-making.

Participants of the meeting showed strong interest in further cooperation and information exchange to support ecosystem service research and its uptake in decision making in Latvia. During the discussion the main challenges and opportunities for ecosystem service research in Latvia were highlighted. Participants admitted that recently there are many good ecosystem services related initiatives, however, good examples are lacking on a national level.



We have the knowledge and the experts, but we need the political will to apply this knowledge to policy and decision-making. Embedding of the ES approach at national level governance is required. National level ES assessment would have to be conducted in a way that can be used by practitioners in land use/spatial planning. Participants also addressed the data availability issues - often data exist, but the accessibility is chaotic, they are hard to find – data are scattered in many sources, project websites etc. Additionally, part of open access data sets is only available in view mode, which prevents its full use in practical decision-making, especially in the private sector. Furthermore, a need a centre of excellence of fundamental science was expressed that would bring together knowledge on biodiversity and ecosystem services.

6.16.4.2 Seeds of transformative change

Latvia identified 23 potential seeds of change, of which four were analysed more in detail in the CoP. Those four were nominated for an in-depth analysis within SELINA.

- **Ecosystem service-based management of forests**
 - Voluntary initiative of the LLC "Riga Forests". A shift in forest management towards an ecosystem service-based approach with extensive public and stakeholder engagement. Focus on the diverse values of forest.
- **m² of a meadow (project GrassLIFE)**
 - Project of Latvian Fund for Nature is finalised, but followed up by several initiatives, e.g. "m² of meadow", which has successfully involved seniors, as well as a wider society. Showed that everyone can get involved in the conservation of natural meadows (either by donating, or sowing, or collecting seeds etc.)
- **Mitigating the impact of invasive fish species – round goby**
 - Campaign "Ķeriet svešos!" ("Catch the aliens!"), example of the round goby. The initiative has led to a significant reduction of the species and recovery of native species and habitats.
- **Removing obstacles from rivers or mitigating their impact: example of river Lielā Jugla**

Another 4 projects were nominated through the online survey:

- **Forest landscape ecological and local forest activities design planning to preserve and increase offer of ecosystem services.**
 - Key objectives: Forest activities planning on base of forests landscape planning. Development of local forest design plans and public discussion with society. Online development of ecosystem services based on actual forest inventory data.
- **Iesēj savu kvadrātmetru, Pilsētas pļavas**
 - Key objectives: Involving people in the creation of wildlife oases in different scales - from 1 m² in private land to hectares of urban green areas transforming them into urban meadows.
- **Let's do good for nature!**



- To provide possibility for wider public to get involved in (expert indicated) nature conservation activities, with the main benefits:
 - Nature education/awareness raising via personal, practical «hands-on» experience; also included into student internship programs.
 - Team building with high added value (for corporate clients).
 - Possibility to stay fit and healthy (fresh air, nature, physical activity)
 - Visiting places outside touristic hotspots
 - Keeping also cultural heritage alive



6.17 Lithuania

6.17.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

The project Lithuanian National Ecosystem Services Assessment and Mapping (LINESAM) established the first MAES in Lithuania between 2018 and 2022. The project was developed at a national scale for terrestrial (Kalinauskas et al., 2023) and marine environments (Inácio et al., 2020), cropland (Gomes et al., 2021), woodland and forest, and urban environments. LINESAM considered different ES domains (e.g., regulation and maintenance, provisioning and cultural) and components (capacity, flow and demand). ES were also forecasted for terrestrial and coastal/marine environments (Gomes et al., 2021).

There are several ongoing or recently finished scientific projects concerning Ecosystem Services (ES) mapping, assessment or accounting. Project Lithuanian lake ecosystem services and impacts of climate and land-use change (LACLAN) is focused on lake environments. Project Mapping and Assessment of Lithuanian national and regional Parks Ecosystem Services (MALPES) is focused on protected areas. The MAFESUR project is dedicated to mapping and forecasting ES in urban areas. Finally, the newest project System of Environmental-Economic Accounting – Ecosystem Accounting in Lithuania (SEEAL) is developing ecosystem accounts for ecosystem extent, condition and services.

For the moment State Data Agency and Ministry of Environment of the Republic of Lithuania are making an inventory to of all possible data sources for conditions accounts based on ecosystems defined so as identifying ecosystem services that could be evaluated regarding Natural Capital Accounting Regulation amendment.

6.17.2 Examples of uptake in decision processes, regulations and/or legislation

There are no obligations to perform ecosystem services mapping or assessment.

6.17.3 Perceived barriers and needs to enhance uptake.

Barriers: lack of human resources working with ecosystem services in public authorities (e.g. in the Ministry of Environment), legislative base doesn't require consideration of the ES.

Needs: detailed recommendations how to implement ecosystem accounting into policy making (e.g. providing methodological guidance).

6.17.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.



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6.17.4.1 Community of Practice

The Community of Practice in Lithuania is supposed to help in analysing needs related to ecosystem services assessment, mapping and accounting; to clarify the barriers of uptake.

Communities of Practice (CoP) first workshop was held online through MsTeams platform on 30th November of 2023. Attended 16 participants. Participants represented different public institutions (e.g. State Data Agency of Lithuania, directorates of protected areas), NGO's (e.g. Center for Environmental Policy), universities.

In the plenary discussion several significant questions were raised, concerning projects outcomes, their contribution to better management, and best collaboration practices that could be applied to keep the community members in touch for prolonged collaboration. It was agreed to meet virtually twice a year to update on project activities and results. Based on the outputs of the CoP meeting in Lithuania a promotional video was created. It was targeted to stakeholders and other interested parties that could not attend the meeting in November but wanted to join CoP's at latter stages.

6.17.4.2 Seeds of transformative change

4 projects were nominated.

- Interreg Latvija - Lithuania project "Optimal catch crop solutions to reduce pollution in the transboundary Venta and Lielupe river basins".
 - The project was initiated with the aim to investigate catch crop potentials to reduce agricultural pollution in the transboundary Venta and Lielupe RBDs, extend the existing knowledge about catch crops and quantify their potential environmental effects and benefits, support farmers in decision making, and initiate a dialog between farmers, experts and stakeholders about future developments of agri-environmental measures in Latvia and Lithuania.
- project EcoServe: Future Ecosystem Services in the Lithuanian Coastal Zone in the Context of Global Change (Ateities ekosisteminės paslaugos Lietuvos kranto zonoje globalios kaitos kontekste)
 - The aim of the project was to assess the future ecosystem services in the coastal area of Lithuania. Mapping, evaluation, and modelling of ecosystem services were carried out in the Nemunas delta and the Curonian Lagoon and in the rural areas located in the ~10 km zone from the coast under conditions of changing climate and future socio-economic scenarios. We modelled the impact of climate change scenarios on ecosystem services. Based on these



scenarios, we developed guidelines for adapting to the consequences of climate change. For cases of new ecosystem services, we have predicted possible economic activities that could provide jobs in the future and increase the demand for qualified workers.

- Analysis of opportunities for the development of organic seed production in Lithuania
- National study on integrating the valuation of ecosystems and their services into decision-making processes in public administration and economic sectors in Lithuania.
 - The study was prepared to demonstrate the benefits of integrating ecosystems and the services they provide and their socio-economic evaluation into public policy and decision-making processes in the public administration and economic sectors by increasing the efficiency, economy and sustainability of decisions in various areas of public policy and improving the state of ecosystems and the services they provide in Lithuania, as well while also ensuring public welfare and strengthening the understanding and support of state institutions and other interested parties by integrating the assessment of ecosystems and their services into decision-making.

6.17.5 References

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6.18 Luxembourg

6.18.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

The Environment Department of the Ministry for Sustainable Development and Infrastructure launched the development of a methodological guide for the implementation of the MAES in Luxembourg at the end of 2013. Based on this guide, the minister in charge prioritized 13 ecosystem services to be mapped by the end of 2014.

At national level, an exercise was undertaken to compile Ecosystem Extent Accounts according to the imminent updated reporting obligation under the European Environmental Economic Accounts (Regulation (EU) No 691/2011) (Ecosystem Extent Accounts for Luxembourg, 2023, unpublished).

The aim was for preparation for reporting under the regulation and was commissioned by STATEC (the National Institute of statistics and economic studies of the Grand Duchy of Luxembourg).

A study was undertaken specifically addressing the Ecosystem Services provided by open landscape habitats in Luxembourg (unpublished, October 2023). This work was commissioned by the Ministère de l'Environnement, du Climat et de la Biodiversité and addressed firstly 'A framework for evaluating ecosystems and their services' (Part A) and 'A review of ecosystem services in open landscapes' (Part B). The report addressed the reported pressures (national reporting under the EU Habitats Directive)

This findings from this work are being summarised in a newsletter.

6.18.2 Examples of uptake in decision processes, regulations and/or legislation

While ecosystem services are not specifically referenced in legislation pertaining to environmental impact assessments. They are implicitly contained in the protective targets of the strategic environmental assessments itself (i.e. DE: "Schutzgüter" or FR: "Facteurs").

6.18.3 Perceived barriers and needs to enhance uptake.

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6.18.4 On the way to transformative change

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6.18.4.1 Community of Practice

There is no community of practice organized for Luxembourg. As discussed previously, there may be some interest in joining the Belgian CoP.

6.18.4.2 Seeds of transformative change

No seeds were collected through the online survey.



6.19 Malta

6.19.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

A qualitative assessment of the ecosystem services delivered by ecosystems in Malta has been carried out by MEPA for Malta's Fifth National Report to the CBD (<https://www.cbd.int/doc/world/mt/mt-nr-05-en.pdf>), for which a preliminary identification of key ecosystems and ecosystem services for Malta was carried out.

Following a period of trial mapping, which focused on determining the appropriate mapping resolution and scale for use in policy and the mapping effort required, as well as discussions with national experts, an amended ecosystem typology was adopted. Furthermore, the official mapping of ecosystems commenced in Q4 of 2017 and continues to date. Following this work, ecosystem service assessment and mapping will be carried out as part of the national ecosystem service assessment. We are aware of the following biodiversity and ecosystem service assessment research projects:

- Modern Approaches to the Monitoring of BiODiversity (MAMBO). Grant agreement ID: 101060639. Partners Involved: Ecostack Innovations. MAMBO will combine the technical expertise of computer science, remote sensing, social science expertise on human-technology interactions, environmental economy, citizen science, and biological expertise on species, ecology, and conservation biology. The project will engage stakeholders in identifying biodiversity monitoring needs and investigate the establishment of a virtual lab to automate workflow deployment and efficient computing of the vast data streams.
- Malta Pollinators Monitoring Scheme (MPOMS): The MPOMS is part of the EU Pollinators Monitoring Scheme (EUPOMS) has been started in 2023 by the Environment and Resources Authority (ERA), University of Malta and the Malta College of Arts, Science and Technology. Pollinator monitoring is carried out by citizen scientists under the supervision of experts from the mentioned institutions.

6.19.2 Examples of uptake in decision processes, regulations and/or legislation

The National Biodiversity Strategy and Action Plan (NBSAP) is a national policy that aims at providing strategic direction at a national level on the management and protection of biodiversity. It also streamlines various sectoral aspects to ensure sustainable use of natural resources; this ensures a better quality of life and the reduction in biodiversity loss. Two actions relevant to ecosystem services are identified:

- ACTION 4.4: Indicators and genetic methods for analysing and monitoring genetic variation in species of special concern for ecosystem services or conservation are developed and implemented. This is supported by scientific research that addresses knowledge gaps.
- ACTION 16.1: The values of biodiversity and ecosystem services are further integrated in national policies, and planning processes, such that biodiversity is increasingly mainstreamed.



Biodiversity information is an obligation for various legislative and regulatory purposes. Amongst other, this is the case with Environmental Impact Assessment, protected area designation and management, development permitting, etc.

If the focus is on ecosystem service mapping and assessment, to our best knowledge, there has been one illustrative case of the uptake of ES in decision-making and this is related to the development of the river basin management which is currently being supported by the LIFE 16 IPE MT 008 project (<https://www.rbmplife.org.mt/>).

In 2019, Ecostack Innovations carried out an ecosystem services assessment for the main water catchments in Malta. Indicator data and expert assessment were used to assess and map ecosystem services in the main water catchment. A total of 17 ecosystem services were assessed and mapped.

Provisioning services included cultivated crops, reared animals and their outputs, wild plants, algae and their outputs, groundwater for drinking purposes, groundwater for non-drinking purposes and surface waters for non-drinking purposes. Maintenance and regulation services included micro and regional climate regulation, global climate regulation by reduction of greenhouse gases, regulating chemical condition of freshwaters, flood protection, maintaining nursery populations and habitats, pollination and mass stabilisation and control of erosion rates. With regard to cultural services, aesthetic, scientific and educational; physical and experiential, heritage and cultural services were considered. Final results were made available via a dedicated Geoportal: <https://lifeip-rbmp-geoportal-valleymanagement.hub.arcgis.com/pages/ecosystem-services>

This assessment has informed the development of valley management plans for several key valleys in Malta.

6.19.3 Perceived barriers and needs to enhance uptake.

6.19.3.1 Barriers

In Malta, the uptake of biodiversity information into decision-making faces several challenges:

- Political Landscape: Environmental policies can be politically contentious, with economic growth often prioritized over environmental sustainability.
- Data Availability: Limited availability and accessibility of high-quality, up-to-date biodiversity data can impede informed decision-making.
- Funding Constraints: Adequate funding for biodiversity projects is often lacking, limiting the scope and effectiveness of conservation efforts.
- Public Engagement: Low levels of public awareness and engagement with biodiversity issues can reduce the perceived importance of these initiatives.

To improve the integration of biodiversity information into decision-making, the following measures could be beneficial:



- Political willingness to undertake a formal national ecosystem assessment to support future decision-making.
- Increased Funding: Securing more funding from national budgets and EU programmes to support biodiversity research and conservation projects.
- Capacity Building: Training and capacity-building programs for stakeholders involved in biodiversity and ecosystem services assessments.
- Public Awareness Campaigns: Increasing public awareness and engagement through education and outreach programs, emphasizing the importance of biodiversity and ecosystem services.

6.19.3.2 Needs:

- Funding: More consistent and substantial funding to support biodiversity research and conservation initiatives.
- Data and Research: Improved data collection, management, and sharing practices to ensure that decision-makers have access to the best available information.
- Stakeholder engagement, networking and capacity-building: Enhanced collaboration among government agencies, NGOs, the private sector, and the public to ensure a holistic approach to biodiversity conservation.

6.19.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.19.4.1 Community of Practice

Malta Living on Resilience through Nature includes participants from various sectors, including government agencies, academic institutions, non-governmental organizations (NGOs), and private sector stakeholders involved in tourism and environmental management.

- Government Agencies: Environment & Resources Authority, Energy & Water Agency, Ambient Malta, Planning Authority, Project Green, Ministry for the Environment, Energy and Regeneration of the Grand Harbour, and others.
- Academic Institutions: University of Malta, Malta College of Arts, Science and Technology
- NGOs: Nature Trust Malta, BirdLife Malta.



- Private Sector: Malta Business Bureau, hotels, land managers, transport companies, tourism operators.

The primary purpose of this CoP is to enhance the integration of ecosystem services (ES) into decision-making processes, particularly within the tourism sector. This involves:

1. Mapping and Assessing Ecosystem Services: Identifying and evaluating sites with high natural capital value.
2. Stakeholder Engagement: Building a robust network of stakeholders from various sectors to collaborate on nature-based tourism initiatives.
3. Digital Tool Development: Creating an online platform to promote and market nature-based tourism experiences in Malta.
4. Sustainable Tourism Promotion: Encouraging sustainable tourism practices that benefit both the environment and local economies.

First Outcomes:

- Initial Assessments: Conducting preliminary assessments of nature-based tourism using crowdsourced data.
- Stakeholder Network: Establishing connections between key stakeholders in the tourism and environmental sectors.
- Interactive Mapping: Developing the first comprehensive map of sites and experiences with high natural capital value.

6.19.4.2 Seeds of transformative change

Characterising nature-based tourism/recreation in Malta

The primary goal of this project under the SELINA (Sustainable Ecosystem Services in Nature Areas) framework is to enhance the understanding of nature-based tourism in Malta by identifying the specific experiences and locations preferred by tourists. Key targets include developing a network of stakeholders from both the public and private sectors who are involved in nature-based tourism and creating an online tool to boost the market for such tourism. This tool aims to support the growth of nature-based tourism, fostering economic development and promoting sustainable practices.

The project will demonstrate the value of ecosystem services (ES) approaches by developing methodologies and tools that align with the objectives of the tourism sector. By emphasising the significance of nature-based tourism, the project aims to highlight its contribution to the broader economic landscape and the creation of green jobs. Additionally, this initiative will provide practical applications of Mapping and Assessment of Ecosystems and their Services (MAES) outcomes, which have previously been underutilised in tourism. The tools developed will help shift tourism focus from over-visited sites to areas with high natural capital, educating visitors about the importance of preserving natural environments.

The project also aims to address several challenges, including the mapping and assessment of sites with high natural capital value and unique social-ecological importance. By developing an interactive map and digital marketing tool, the project will promote these areas and



experiences, involving businesses such as hotels, land managers, and transport companies. The digital solution will also support national authorities in planning and environmental management, contributing to the EU Biodiversity Strategy for 2030 and potentially providing significant economic benefits.



6.20 The Netherlands

6.20.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

In the Netherlands there are five main ES projects funded by the Dutch government dedicated to mapping and/or assessment of ecosystem services. In short, the project 'Atlas Natural Capital' focuses on mapping ES and the project 'Natural Capital Accounts' focuses on both assessment and mapping. The projects 'Indicator of Nature Services', 'Natural Capital The Netherlands' and the project 'TEEB-NL' focus on ES assessment.

The Atlas Natural Capital was officially launched on 22 September 2015. The Atlas provides information on the status and trends of natural capital and ecosystem services in the Netherlands. It created also the Groenebatenplanner, an assessment tool.

The Central Bureau for Statistics (CBS) compiles the National Accounts for the Netherlands annually. The CBS is researching the possibility of a Natural Capital Account using the UN System of Environmental-Economic Accounting. The Natural Capital Account would describe which economic sectors use ecosystem services and where the services are supplied. The Accounts can be described in physical (e.g. CO₂-storage and water use) and monetary terms.

Further information on running projects/processes to be received.

6.20.2 Examples of uptake in decision processes, regulations and/or legislation

Inclusion of Nature-Based Solutions in the Dutch Beleidskompas

Since 2023, the Dutch Beleidskompas, a strategic policy guide for national policymakers, incorporates Nature-Based Solutions (NBS) to address environmental and societal challenges. These solutions, such as wetland restoration and urban green spaces, enhance ecosystem resilience and improve human well-being.

The Ministry of Infrastructure and Water Management, along with the Ministry of Agriculture, Nature and Food Quality, leads the implementation of NBS. They collaborate with local governments, environmental NGOs, research institutions, and private sector partners. Key stakeholders include local communities and environmental scientists, who provide support and expertise for these initiatives.

Inclusion of Ecosystem Services in the Nationaal Programma Landelijk Gebied (NPLG)

The Nationaal Programma Landelijk Gebied (NPLG) incorporates ecosystem services to enhance rural development and environmental sustainability in the Netherlands. By making use of the National Natural Capital accounts, valuing natural processes such as pollination, water purification, and soil fertility, the NPLG aims to support agricultural productivity, biodiversity, and climate resilience.

The Ministry of Agriculture, Nature and Food Quality oversees the integration of ecosystem services in the NPLG, working closely with provincial governments, farmers, environmental



organizations, and research institutions. These stakeholders collaborate to implement practices that sustain and enhance ecosystem services, ensuring long-term benefits for both the environment and rural communities.

Milieu Effect Rekeningen and Ecosystem Services Mapping

Milieu Effect Rekeningen (MER) are environmental impact assessments required for major projects and policies in the Netherlands. These assessments now increasingly include ecosystem services (ES) mapping to evaluate the benefits provided by natural processes, such as clean air, water, and biodiversity. The integration of ES mapping in MER helps to identify and balance ecological, economic, and social trade-offs, aiming for more sustainable outcomes.

The Ministry of Infrastructure and Water Management leads the MER process, collaborating with local governments, environmental NGOs, scientific experts, and industry stakeholders. Key leverage points that facilitated the uptake of ES mapping in MER include the alignment with EU Biodiversity Strategy targets and the Nature Restoration Law, as well as enthusiastic support from certain political parties and European funding opportunities. These factors created a policy window, encouraging the adoption of comprehensive ES assessments.

Despite the progress, challenges remain in fully integrating ES assessments into MER. Not all ecosystem services are considered, leading to incomplete evaluations and unrecognized trade-offs, which can hinder truly nature-positive decisions. The building and construction sectors, where MER is commonly practiced, often face difficulties due to these gaps. Nevertheless, the inclusion of ES mapping in MER represents a positive step towards incorporating ecological considerations into policy and project planning, promoting better environmental and societal outcomes.

Use of the Groene Baten Planner in Urban Development Projects

The Groene Baten Planner (Green Benefits Planner) has been utilized in large-scale urban development projects, such as in Dordrecht, to incorporate ecosystem services (ES) assessments into city planning. This tool helps quantify the value of natural capital, integrating ecological, economic, and social benefits into the decision-making process. In Dordrecht, the Groene Baten Planner was used to highlight the value of green spaces, water management, and biodiversity, demonstrating their contribution to urban resilience and public health.

The urban development projects in Dordrecht involved a collaboration between the municipal government, urban planners, environmental NGOs, health experts, and local communities. Key leverage points that facilitated the uptake of the Groene Baten Planner included European funding availability, policy alignment with the EU Biodiversity Strategy targets, and strong support from local political parties advocating for sustainable development. These factors created a conducive environment for integrating ES assessments into the planning process.



While the Groene Baten Planner offers clear insights into the value of natural capital and addresses health benefits derived from ecosystem services, it remains incomplete in its assessments. Not all ecosystem services are considered, which can obscure trade-offs and leads to underappreciation of the full value of natural capital. Despite these challenges, the tool has positively influenced policymaking in the building and construction sectors, promoting a more holistic approach to urban development that recognizes the importance of ecosystem services for sustainable and healthy cities.

6.20.3 Perceived barriers and needs to enhance uptake.

6.20.3.1 Barriers:

- **Political Landscape:** The political climate can be a significant barrier, as changes in government or political priorities can disrupt long-term environmental initiatives. Inconsistent support for green policies can hinder the steady progress needed for comprehensive ecosystem services (ES) uptake.
- **Legislative Gaps:** While there are policies that support the integration of ES, a lack of a robust legislative framework specifically mandating their consideration can make implementation inconsistent and non-uniform across different regions and sectors. This is illustrated in the large number of harmful subsidies financing the intensive agricultural businesscase.
- **Funding Limitations:** Sufficient and consistent funding is crucial for the implementation and maintenance of ES projects. Budget constraints and competing priorities can limit the financial resources available for environmental initiatives.
- **Awareness and Understanding:** A lack of awareness and understanding of the benefits of ES among policymakers, stakeholders, and the public hinders their integration into planning and decision-making processes. Lots of them are not aware of the National Natural Capital accounts and how they can make use of them. Misconceptions about the costs and benefits of ES are also a significant barrier.
- **Technical Challenges:** The complexity of accurately mapping, assessing, and valuing ES requires advanced technical expertise and data, which is not always readily available. This leads to incomplete or inaccurate assessments, reducing their effectiveness.

6.20.3.2 Needs:

- **Strong Legislative Framework:** Establishing clear laws and regulations that mandate the consideration of all ES in all relevant policy areas would provide a solid foundation for consistent and effective uptake.
- **Stable Funding Sources:** Ensuring dedicated and stable funding for ES projects would help overcome financial barriers. This could involve public investment, private sector partnerships, and access to European funding programs. Where identified harmful subsidies can be redirected to subsidies that support nature positive activities?
- **Capacity Building and Education:** Investing in education and capacity-building initiatives to enhance the understanding and skills of policymakers, planners, and stakeholders regarding ES. This would include training programs, workshops, and the development of educational resources.



- **Technical Support and Data Accessibility:** Providing technical support and ensuring the availability of high-quality data and tools for ES assessment would enable more accurate and comprehensive evaluations. This could involve collaboration with research institutions and the development of standardized assessment methodologies.
- **Political Commitment and Leadership:** Strong political commitment and leadership are essential to drive the integration of ES. Championing these initiatives at the highest levels of government can help overcome resistance and ensure sustained focus on environmental priorities. The development of a Gross Ecosystem product and the integration of this in National statistics accounts could be a helpful first step.

6.20.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.20.4.1 Community of Practice

The Community of Practice (CoP) Natuurlijk Kapitaal was established to facilitate knowledge exchange and collaboration among stakeholders interested in the integration of natural capital and ecosystem services into decision-making processes. Participants include representatives from local governments, environmental organizations, research institutions, and private sector entities.

The primary aim of the CoP is to foster collective learning and development by bringing together diverse perspectives and expertise. Over the past year, the CoP has made significant strides in identifying needs and opportunities through initial meetings that highlighted demand and supply dynamics. The group has worked on case studies in rural areas, such as the Noardlike Fryske Wâlden, and urban settings, like the municipality of The Hague. A focused session was conducted on non-market values, culminating in an evaluation meeting that incorporated insights from the international Selina Project identifying ‘Seeds of Change’.



Recently, the CoP has been relatively quiet due to a leadership transition within the Ministry of Agriculture, Nature and Food Quality (LNV) and an evaluation of the CoP's effectiveness. This pause provided an opportunity to reflect on the CoP's progress and plan for its future. Despite productive knowledge exchanges, it became clear that the CoP had not fully achieved its goal of collective learning and development. This shortfall is partly due to the current composition of the group, the diversity of themes covered, and the limited capacity of participants to engage deeply with the topics.

Moving forward, the CoP will focus more on practical case studies where the integration of natural capital and ecosystem services can have a significant impact. The group's composition will be adjusted to better align with these practical needs.

Currently the CoP is inviting stakeholders to join the CoP if they are involved in a project where incorporating natural capital and ecosystem services into decision-making could provide valuable insights or strengthen the business case. Additionally, for municipal stakeholders, we aim to improve the transfer of existing knowledge on this subject.

6.20.4.2 Seeds of transformative change

Several projects were nominated. Only of the following information was received.

The "Werklandschappen van de Toekomst" (Work Landscapes of the Future) project envisions the creation of sustainable and innovative work environments that harmonize economic activities with ecological and social goals. This project aims to redesign industrial and commercial landscapes to be more resilient, inclusive, and adaptable to future challenges.

The project incorporates seeds of transformative change by integrating principles of sustainability and circular economy into the design and development of work landscapes. It emphasizes the use of green infrastructure, renewable energy sources, and sustainable materials to reduce environmental impact. The project also specifically promotes social inclusion and community engagement, ensuring that the benefits of sustainable development are widely shared.

Key stakeholders include local governments, businesses, environmental organizations, and research institutions. Together, they collaborate on pilot projects and case studies that serve as models for future developments. By fostering innovation and collaboration, the "Werklandschappen van de Toekomst" project aims to transform work landscapes into thriving, sustainable ecosystems that support both economic growth and environmental stewardship.

Embassy of the North Sea gives a voice to the North Sea through ambassadors in discussions.

Emissary of GAIA: In 2023, Meyberg launched the 'Emissary of GAIA', a groundbreaking project that provides ecosystems the ability to speak through AI and communicate with humanity.



6.21 Poland

6.21.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

MAES for Poland started in the second half of 2014. The nationwide MAES project in Poland was carried out in 2020–2023. ECOSERVPOL Services provided by main types of ecosystems in Poland – an applied approach, *is a project predefined by the Ministry of Climate and Environment as the Operator of the "Environment, Energy and Climate Change" program under the EEA (European Economic Area) Financial Mechanism 2014-2021*. Main coordinator: Małgorzata Stępniewska

The project aimed to increase the scientific capacity of the Polish researchers to develop ES approach, as well as raise officials' awareness of the potential of ES from the political, social and ecological point of view. The analysis covers ES provided by agroecosystems, forests, urban ecosystems, freshwaters, marine ecosystems, degraded ecosystems, and ES on the landscape level.

The main objectives of the project are:

- Transferring of general and specific scientific knowledge on ecosystem services which exists in Europe to the process of mapping and assessment of ecosystem services in Poland.
- Increasing the scientific potential to map and assess of ecosystem services.
- Increasing the scientific potential and the ability of administration and interested social groups to implement this approach in environmental management.
- The subject of the project is the mapping and assessment of services provided by the main types of ecosystems in Poland in a practical context.

To achieve the above, following activities have been implemented: selection relevant ecosystem services (ES) and their indicators for main ecosystem types in Poland; mapping and assessment of ES in national, regional and local scale; cross-cutting analysis of ecological, cultural and economic values of ES; identification of significant ES synergies and trade-offs and relevant ES bundles; dissemination and exchange of knowledge. The deliverables include list of ES and relevant indicators for main Polish ecosystem types, maps of main ES values, critical literature review for ecological, cultural and economic values of ES, as well as case studies in different spatial scales.

The following groups are expected to benefit from the project:

- Scientists – by increasing the capacity of the Polish researchers dealing with main ecosystems to develop ecosystem services (ES) approach.
- Administration on the regional and local levels and experts-practitioners – by developing officials' awareness of the potential of ES approach from the political, social and ecological point of view, as well as will building their skills for including ES assessment into process of environmental management.
- Interested social groups, including activists – by increasing their awareness of the benefits obtained through properly managing ecosystems.



The project results are communicated to interested stakeholders through informing the media about the project and its practical social and ecological values; organizing the meetings for administration representatives and expert-practitioners; presentations of project results at conferences as well as in scientific publications; providing information about the project and its results on the project website. The deliverable summarizing the project results is the handbook on ES approach for environmental management (in Polish).

Another large project is the **Ecosystem Services of Polish forests - potential assessment**.

WWF Poland Foundation (Fundacja WWF Polska) Project coordination by the WWF Poland Foundation - Olga Poleszczuk-Tusińska. Coordinator of the author's team - Andrzej Affek, Institute of Geography and Spatial Organisation, Polish Academy of Sciences

Goals:

- Estimation of the potential of various types of forests in Poland to provide key ecosystem services (total for the entire country and divided into natural forest regions*).
- Indication of types of forest ecosystems with a distinctive potential to provide many services (service hotspots).
- Determining the connections between forest ecosystem services.

The project assessed the potential to provide 17 of the most important ecosystem services provided by forests in Poland. Services from each of the three sections of the Common International Classification of Ecosystem Services (CICES V5.1), i.e. the supply, regulatory and cultural services sections, were included. The potential value for selected ecosystem services was calculated or estimated based on 16 indicators. One service does not always correspond to one indicator because the potential for some services was estimated using the same indicator, while for some services, more than one indicator was developed. Each service and its indicator were presented according to the same scheme including three text parts: (1) description of the service, (2) method of assessing the potential (including the construction of the indicator and source data) and (3) results (diversification in the country according to forest habitat types and natural forest regions)

** Natural forest region - a unit of country division used in forestry. It is an area with similar physiographic conditions where a specific type of forest develops best.*

Since 2010 every two years the countrywide Symposia on Ecosystem Services in Transdisciplinary Approach (ECOSERV) takes place in Poznań. These events are milestones for the growing interests of Polish scientists (mainly geographers and economists) on ES.

6.21.2 Examples of uptake in decision processes, regulations and/or legislation

So far, we haven't diagnosed explicit uptake of ecosystem services assessment in specific legislation or policy process in Poland.



6.21.3 Perceived barriers and needs to enhance uptake.

6.21.3.1 Barriers:

- Lack of knowledge among participants of environmental management processes about methods and data sources for assessment of ecosystem condition and ecosystem services,
- Insufficient integration of green infrastructure, nature-based solutions and ecosystem services approaches in legislation and strategic documents.

6.21.3.2 Needs:

- Disseminate existing knowledge about the assessment of ecosystem services among administrative staff at different levels and embed a definition of ecosystem services in Polish law.
- Training activities for participants in environmental management processes.
- Enhancing the recognition of green infrastructure, nature-based solutions and ecosystem services in relevant national legislation and strategic planning.

These abovementioned barriers and needs were diagnosed in Cities' Partnership Initiative: Sustainable Development of Polish Cities in Areas of Digital, Green Infrastructure and PPP Solutions. Final report. The World Bank, 2023. <https://policycommons.net/artifacts/5032031/cities-partnership-initiative/5797468/>

6.21.3.3 Recommendations:

- Ecosystem services have particular potential for use in spatial planning when considering the effects of decisions on various land uses.
- It is necessary to include this approach in legal acts and disseminate it among experts.
- Ecosystem services should be introduced into legal regulations regarding environmental impact assessment for planned projects and strategic documents.
- With regard to urgent interventions, environmental impact assessment procedures should be accelerated, with due use of nature compensation in situations of overriding public interest.
- The implementation of ecosystem services in environmental management should take into account the analysis of all the natural, cultural and economic benefits provided by ecosystems.
- Assessment of aquatic and water-dependent ecosystem services should be developed within the framework of legal regulations regarding the reimbursement of costs of water services.
- The implementation of ecosystem services should be linked to ecosystem restoration activities resulting from the European Biodiversity Strategy 2030.
- The European Environment Agency plays an important role supporting the process of dissemination and implementation of ecosystem services into practice, which can and should be used by experts and in the activities of public institutions.



The above set of recommendations results from a seminar for representatives of central institutions on implementing ecosystem services as an approach to environmental management (22-23/06/2022), carried out as part of the "ECOSERVPOL" project "Services provided by the main types of ecosystems in Poland – approach applied." <https://ecoservpol.amu.edu.pl/rezultaty-projektu/>

6.21.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.21.4.1 Community of Practice

23 participants took part in the first Polish CoP meeting. They represented 12 organisations and institutions.

Representatives of the city hall and city authorities:

Municipal Affairs Department, Poznan City Hall (1 representative)

Project Coordination and City Revitalisation Office, Poznan City Hall (3 representatives)

Department of Environmental Protection and Agriculture, Gorzów City Hall (1 representative)

Poznań City Council (1 representative)

Governmental organisations:

State Water Holding, Polish Waters, Regional Water Management Board, Poznan (1 representative)

"Ujście Warty" National Park (1 representative)

NGOs:

Polish Allotment Gardeners Association, Gorzów Wielkopolski Branch (3 representatives)

Poznań Metropolis Association (1 representative)

Business:



EnviMap Co. (1 representative)

Invest-Eko Co. (1 representative)

Aquanet Retention Ltd. (2 representatives)

Science

Department of Integrated Geography – SELINA project participants.

The aim of the meeting was to exchange experiences, ideas and observations on how to achieve benefits from the environment while harming it as little as possible and how to implement solutions related to BD, EC and ES into practice that improve the quality of the human living environment.

The aim of the meeting was also to diagnose, on the one hand, the limitations and barriers in implementing BD, EC, ES issues into practice, and, on the other hand, to diagnose those factors that had a positive impact and stimulated the implementation of projects and programs related to BD EC and ES.

Although at the first meeting, we did not define seeds of change that could become the basis for transformational changes, we did diagnose stimulants and de-stimulants in the process of implementing BD EC and ES issues into programs and projects.



6.21.4.2 Seeds of transformative change

The CoP nominated 10 projects as seeds of change. Below a selection is described:

Green kindergartens and schools in Poznań: greening playgrounds with 1) Improved quality of learning and development space for pre-school and school children (primary objective), 2) Positive impact on the local climate (site + neighbourhood) - green islands in the city, 3) Increased awareness and knowledge through practice of environmental issues, both among children, teacher staff, parents, neighbours, etc.

Active Blue - a water-friendly school: Promoting knowledge about sustainable water management, especially in environmental protection, flood protection, and preventing the effects of drought. Additionally, knowledge about water protection and the principles of safe water recreation is promoted.

Biodiversity in allotment gardens: 1) Increasing public awareness of the role of biodiversity in allotment gardens, 2) Promoting pro-ecological attitudes and mobilizing allotment gardeners to protect the environment, 3) Counteracting negative phenomena that destroy biodiversity, such as excessive use of pesticides, mineral fertilizers, burning, the problem of waste, 4) Preservation species richness of native species and varieties.

Support of small-scale water retention and development of blue-green infrastructure in the Poznań Metropolis area: 1) protection of water resources of the Metropolis of Poznań, 2) protection of biodiversity, 3) development of blue-green infrastructure, 4) elimination of urban heat islands, 5) fight against droughts and floods, 6) improvement of air quality

6.21.5 References

Raport published in Polish: Affek A., Kończowska E., Kowalska A., Regulska E., Wolski J., Solon J., 2023. Usługi ekosystemowe polskich lasów. Ocena potencjału. Warszawa: Fundacja WWF Polska. <https://doi.org/10.7163/Rap.0003>



6.22 Portugal

This analysis will be based on what partners in SELINA know about their country and some research, although there may be other projects of which they are unaware.

6.22.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

In 2014 a short-term pilot MAES was set up in the Alentejo region. Based on the methodologies and indicators for mapping and assessing the status of the ecosystem and its services, a national level assessment was set up.

Since 2022, several scientific projects in Portugal have focused on mapping, assessing, and accounting for biodiversity and ecosystem services. These projects are mainly carried out by universities with focus on research. But there are many others with transformative power carried by companies, using frameworks like the natural capital protocol for sustainability reports or FSC (Forest Stewardship Council) certification for forest and ecosystem services (<https://experience.arcgis.com/experience/47220be01de14ef8a4c073452429433e/?org=fsc-portugal>).

The researchers are not aware of any projects led by governmental authorities on national ES assessments, although some regional and local institutions may act as partners. However, in 2022, at the request of the Ministry for Environment of the Portuguese Government, a national study called Biodiversity 2030 - New agenda for conservation in the context of climate change (Araújo, M.B. et al. 2022 - <https://www.fundoambiental.pt/listagem-noticias/biodiversidade-2030.aspx>) was conducted to support the decision-making process and policies on biodiversity in Portugal.

Some examples of ES projects from academia emphasize ES analysis as the main focus, considering specific regions, basins, or ecosystem types in the country. For example:

- The iCarbono project by the Polytechnic Institute of Bragança CIMO – iCarbono (<https://cimo.ipb.pt/index.php?r=project/view&id=468>).
- The MaSOT - Mapping Ecosystem Services from Earth Observations project by the University of Lisbon, funded by the Portuguese Science Foundation (FCT) (https://masot.shinyapps.io/masot_shiny/).

Other projects integrate ES assessments as part of a broader analysis, for instance:

- On socio-ecological and biotechnological solutions for aquatic biodiversity conservation, such as the River2Ocean project (<https://river2ocean.pt/>), which involves stakeholders like fishermen, governmental technicians, NGOs, and tourism and recreation companies from three river basins in Minho region.
- Initiatives focusing on Biosphere Reserves, such as Reservas da Biosfera project (<https://www.reservasdabiosfera.pt/>) with a community of practice in each of the nine Portuguese Biosphere Reserves.



- Projects aimed at development and innovation in the agri-food sector, such as Cultivar (https://icultivar.pt/en/home_en/#pll_switcher), involving stakeholders from the local farming sector – Cultivar
- The Bonex project, which boosts NEXUS Framework Implementation in the Mediterranean, with local producers as stakeholders – Bonex (<https://www.cense.fct.unl.pt/index.php/projects/bonex-boosting-nexus-framework-implementation-mediterranean>).

In the country there are several LIFE projects that support biodiversity conservation and ES uptake at the local level. For example, LIFE MARONESIA (LIFE19 GIC/PT/001285 - <https://www.lifemaronesa.eu/en/>) applies a sustainable model of extensive livestock production towards climate change adaptation, with stakeholders such as local farmers, producers' association and academia.

6.22.2 Examples of uptake in decision processes, regulations and/or legislation

The Portuguese Nature Conservation and Biodiversity Strategy 2015-2020 includes several objectives and targets delivering national assessments, valuation and accountability of ecosystem services. Connected targets contributing to Target 2 of EU Strategy are also foreseen, namely related to the development of green infrastructures (rural and urban) and ecosystem restoration.

In 2015 the Government also fulfilled an in-depth reform of the taxation regime adopting a comprehensive green taxation regime that includes, inter alia, fiscal incentives to rural landowners within protected areas (including Natura 2000) that delivers ecosystem services. This incentive foresees a reduction up to 50% reduction of Municipal Property Tax on rural property and an exemption of this tax and Municipal Property Transfer Tax in the cases where a Forest Management Plan is in force.

6.22.3 Perceived barriers and needs to enhance uptake.

6.22.3.1 Barriers:

- Lack of dialogue between academia and the public sector, including harmonized language and willingness to seat at the same table.
- Lack of time from both parts.
- Low literacy from stakeholders.
- Politics to support ES uptake
- High bureaucracy
- Lack of funding and investments.

6.22.3.2 Needs:

- Common language
- More capacity building, communication initiatives, targeted local informative sessions.
- Social recognition of the work developed.



- Initiatives to promote the link between stakeholders and academia through local projects.

6.22.4 On the way to transformative change

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6.22.4.1 Community of Practice

At the Northern Portugal test site (site 17), regional stakeholders have been identified, mainly technicians from regional and local authorities. However, it cannot currently be considered a community of practice for three reasons:

1. The regional scale of analysis creates a distance from local issues, which is essential for a community of practice.
2. There are significant regional asymmetries between the east and west of Northern Portugal, which envisages the creation of a local community of practice focused on concrete problems with targeted solutions in which the stakeholder’s involvement from the beginning is very important.
3. According to the established analysis at the Northern Portugal test site, only a final stakeholders' meeting will be organized.

6.22.4.2 Seeds of transformative change

No projects were nominated through the online survey.



6.23 Romania

6.23.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

A project was implemented in Romania for the mapping of ES at national level as a support tool for the implementation of the EU Biodiversity Strategy 2020. The project entitled “Demonstrating and promoting natural values in support of decision-making processes in Romania (N4D) was developed by several institutions including National Environmental Protection Agency (NEPA), WWF-Romania, Romanian Space Agency and the Norwegian Institute for Nature Research.

No new national assessment of ecosystem services since 2022 in Romania, but in several protected areas, National Parks and Natura 2000 sites, the administrators contracted experts and consultancy companies to perform mapping, assessing and accounting of the ecosystem services provided in particular by forest and pasture ecosystems focusing more on provision and cultural services. Another initiative was the project IDES - Improving water quality in the Danube River and its tributaries by integrative floodplain management based on Ecosystem Services. The IDES Manual was developed, presenting a new approach for ecosystem service-based integrative floodplain management, one which considers all relevant societal interests and objectives. Twenty-six ecosystem services which are typically provided by river-floodplain systems in the Danube River basin were selected from the three main groups of services and evaluated.

Three large scale biodiversity or condition monitoring project were finalized in Romania in 2022:

- National monitoring of habitats and species conservation status according to the Article 17 of Habitat Directive (Romania, 2019-2022).
- National monitoring of bird species conservation status according to the Article 12 of Birds Directive (Romania, 2018-2022).
- National assessment and monitoring of invasive species according to Regulation (EU) No 1143/2014 (Romania, 2018-2022).

6.23.2 Examples of uptake in decision processes, regulations and/or legislation

In Romania there is not any legal obligation to perform ecosystem service mapping or assessment despite the fact that in several policy texts there are references to quality or quantity related with different resources (e.g. water, food etc.) in the WFD and CAP

6.23.3 Perceived barriers and needs to enhance uptake.

6.23.3.1 Barriers

Lack of policies and procedures related with ecosystem services.



6.23.3.2 Needs

clear policies/legislative measures and guides/ procedures etc.

6.23.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.23.4.1 Community of Practice

A Community of Practice under the auspices of SELINA was established. The first meeting of the Romanian SELINA Community of Practice (CoP) took place on 22 January 2024 in Bucharest, at the University of Bucharest Platform for Research on Systemic Biology and Ecology. The meeting was an in-person event and was attended by thirteen professionals in the field of ecology and environmental protection. Stakeholders were representatives of academia, research, non-governmental organizations, private business and government administration.

The meeting started with a general presentation of the SELINA project and an introduction of the “seeds of change”, transformative change and Community of Practice, followed by a dialog and an exchange of different work-related experiences and knowledge regarding the relationships between ecosystem services and biodiversity protection. Participants had the opportunity to present to each other and to discuss their selected project for the filling in of the SELINA “seeds of change” questionnaire.

At the end of the meeting, participants showed interest in further cooperation and information exchange to support ecosystem services research and to facilitate a better integration of them in biodiversity conservation policies in our country.

6.23.4.2 Seeds of transformative change

Several projects were nominated as a seed of change:

EcoClub: Improving the efficiency of learning processes through the support provided by extracurricular activities and supporting the personal development of children as future citizens actively involved in the sustainable future of the Earth.



REVISION OF THE MANAGEMENT PLAN AND RBDD REGULATIONS: increasing the degree of protection and conservation of biodiversity

Peat RO2:

- To restore the structure and function within 12 degraded wetland/peatland ecosystems
- Mitigate the effects of climate change on a number of 12 wetland/peatland degraded ecosystems.
- Raising awareness amongst local communities, stakeholders and the general public, about the importance of wetland /peatlands
- To support local capacity to mitigate the effects and adapt to a changing climate.

OPTimising FOrEst management decisions for a low-carbon, climate resilient future in Europe (OptforEU):

- Provide an improved characterisation of the Forest-Climate Nexus and FES.
- Utilise end-user focused process modelling.
- Empower forest end-users to make informed decisions to enhance forest resilience and decarbonisation.
- Provide a novel DSS service.
- Bridging different EU strategic priorities, robust science, and stakeholders in the forest and forest-based sectors.



6.24 Slovakia

6.24.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

In 2014 an initiative was started by the Ministry of the Environment of Slovak Republic to map and assess ecosystem services under the MAES Framework, under the Operational programme “Quality of the Environment 2014-2020”.

A recent project is the ESA project - PEOPLE ecosystem accounting: The main objective of the PEOPLE (Pioneering Earth Observation Applications for the Environment) Ecosystem Accounting project (PEOPLE-EA) is to study the relevance of Earth observations for SEEA compliant ecosystem accounting and to demonstrate its use for terrestrial and freshwater ecosystems. The PEOPLE-EA Consortium gathers the European top experts in the domain of ecosystem accounting and Earth Observation.

The team will co-design together with the Early Adopters a system to prototype the generation of European SEEA-EA Tier-2 / Tier-3 ecosystem accounts.

The system will ease the generation of Earth Observation-based accounts for statistical offices through integration of three technologies (OpenEO, INCA models and ARIES semantics) and keep Europe in the leading position in ecosystem accounting at biophysical level. The Early Adopters explore the generation of ecosystem accounts using Earth Observation in Greece, Italy, the Netherlands, Norway and Slovakia.

Main objectives:

- Review and describe the added value of integrating Earth Observation data for ecosystem accounting in terrestrial and freshwater ecosystems, expressed in physical terms for ecosystem extent, condition and ecosystem services.
- Co-develop (pioneer and test) innovative high-quality EO-based ecosystem account models according to the FAIR principle following an agile method.
- Showcase and validate several selected demonstrators to prove the value of integrating EO in national ecosystem accounting in a regular and consistent manner through the appliance of a cloud-based tool using open standardized interfaces.
- Contribute to the international collaborative efforts to advance the use of EO in ecosystem accounting and support countries developing their national ecosystem accounts.
- Prepare an outlook (R&D roadmap) to further scale-up the use of EO in ecosystem accounting.

A forest condition account provides a consistent framework for the observation, reporting and analysis of past trends and present conditions, can guide investments in the conservation or restoration of degraded ecosystems, and can mainstream the ecological values of forests in policy making and implementation. Our forest condition account aggregates thirteen forest condition variables into a forest condition index to measure the similarity of different forest types to a reference condition based on observations in primary and protected forest sites. All variables can be calculated across every country at the European continent between 2000



and 2023 at yearly basis, and are mostly derived from Earth Observation to describe water availability (NDWI), soil organic carbon (SOC), the number of threatened forest birds, above ground biomass, ecosystem net primary productivity (NPP), forest connectivity, leaf area index (LAI), vegetation index (NDVI), fraction of green cover, severity of drought, tree (canopy) cover density, landscape naturalness and forest fragmentation. At local scale (e.g. province level) six variables are calculated at 10 to 20m spatial resolution.

More information: <https://esa-people-ea.org/en>

6.24.2 Examples of uptake in decision processes, regulations and/or legislation

Resolution of Government of SR no. 304/2015 from June 3rd, 2015, approved the update of the Wetlands Management Policy for 2015-2021 and its Action plan for wetlands for 2015-2018, wherein the objective 1 in goal 1 relates to ecosystem services (Annex 2).

Mapping and assessment of ecosystem services is also one the core tasks of the Updated National biodiversity strategy 2020 and its Action plan. It is available in Slovak on http://www.minzp.sk/files/oblasti/ochrana-prirody-a-krajiny/biodiverzita/1_vlastny_apbioid_aug_2014.pdf.”

When we exclude standard EIA processes, a competent authority (such as ministry or district offices) asks for documentation about conditions in an affected area including habitats condition and occurrence of species. This documentation is provided by the State Nature Conservancy. Currently, Slovakia has no legislation which takes directly ecosystem services assessment as an obligation.

6.24.3 Perceived barriers and needs to enhance uptake.

6.24.3.1 Barriers:

- Insufficient financial sources
- Political willingness
- No legislative base
- No national system for ecosystem accounting and regular assessment with defined needs (only partial work of some organizations)
- Lack of experts

6.24.3.2 Needs:

- Find suitable and long-term financial sources.
- To bring up together experts who could focus their work on national needs.
- Achieve better awareness on the role of ecosystems services and accounting in policy development.



6.24.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.24.4.1 Community of Practice

National COP was based on the previous national MAES group with the intention to find and invite new possible partners. Permanent representatives of the group are selected experts from various fields and organizations. The first meeting was attended by representatives of : State Nature Conservancy, Constantine the Philosopher University, Institute of Forest Ecology, Slovak Academy of Science, Bratislava Metropolitan Institute, National Forest Centre, Slovak Hydro meteorological Institute, Statistical Office SR, Ministry of Finance SR, The Slovak Environmental Agency, The Water Research Institute, Technical University, National Agriculture and Food Centre, Esprit Company- research and consulting activities, CETIP – collaborative research network organisation.

During the meeting, projects and activities were introduced, which help to achieve the change and better use of ecosystems services assessments in policy development, but also increase of the environmental awareness. As a conclusion, the group agreed that we need to achieve better awareness on the role of ecosystem services and accounting in policy development, to set it as a priority, and one of tools that can be used is strengthening of the Community of Practise with intention to look for new partners active at national level, potentially more in business sector.

6.24.4.2 Seeds of transformative change

Several projects were nominated. Through the online survey SELINA received 2 projects but in the community of practice more projects were discussed.

“We care about the landscape”, which was introduced by the representative of the Slovak Academy of Science, as a competition for students at elementary schools and their teachers. The main aim was to motivate children to think and discuss about landscape around their schools as land in a competitive activity. A change they can influence and realistically achieve.

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The overall objective is to create commitment of policy- and decision- makers and key stakeholders in Healthy Forest Regions (HFR) for enhancing forest ecosystem functionality, to safeguard biodiversity and ecosystem services (ES) for human wellbeing and to strengthen sustainable regional development. Therefore, the project will operationalise the potential of capitalising on forest ES for local and regional benefits and develop solutions for a transition to ecosystem-based forest management.

Coevolutionary approach to unlock the transformative potential of nature-based solutions for more inclusive and resilient communities “with the focus on question, how can different nature based- solution contribute to the societal change needed to address the ongoing biodiversity and climate crisis. Partners of these project are working on co-designing fair nature-based solution governance techniques, models and practises.



6.25 Slovenia

6.25.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Slovenia knows an increasing trend in the number of studies assessing Ecosystem services. Most of the studies tackle one ecosystem or particular ecosystem services.

In May 2024, the Statistical Office of the Republic of Slovenia (SURSTAT) launched an informal working group on ecosystem accounts.

The Statistical Office of the Republic of Slovenia (SURSTAT) has so far implemented 2 international projects in the framework of the European Green Deal (EGD) activities, co-funded by the European Commission (Eurostat), in the years 2022-2024. These are pilot projects, which also covered the topics of ecosystem accounts (development and upgrading), namely: ecosystem volume accounts, ecosystem services accounts and ecosystem status accounts. The aim was to establish methods for the calculation and subsequent reporting of data under these 3 strands, in line with the proposed amendment to EU Regulation 691/2011 on environmental economic accounts (Link: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0329>) and Eurostat guidelines.

It is also worth mentioning the following project:

- SELINA Project <https://www.project-selina.eu/> in which ZRC SAZU represents Slovenia.
- European LIFE project NarcIS (Nature Conservation Information System - <https://narcis.gov.si/ords/r/narcis/life-narcis/life-narcis>), which is implemented by the Slovenian Environment Agency (ARSO) and foresees the establishment of a single-entry point linking all relevant data in the field of nature conservation and also covering some ecosystem data.
- National research targeted NatGuidES project <https://giam.zrc-sazu.si/en/programi-in-projekti/identification-assessment-and-mapping-of-ecosystem-services-in-valuable-nature> which was focused on ES identification, assessment and mapping in protected areas

6.25.2 Examples of uptake in decision processes, regulations and/or legislation

In Slovenia, biodiversity is integrated into all fundamental strategies, plans and programmes at state level, as well as into various sectoral strategic documents. The integration of environmental requirements into all policies and activities is essential for the enforcement and facilitation of sustainable development.

In addition, the Operational Programme for the Implementation of European Cohesion Policy 2014-2020 had a special investment priority devoted to the conservation and restoration of biodiversity of soils and promotion of ecosystem services.

There is currently no legislation in Slovenia that would provide for systematic monitoring of ecosystem mapping and status, or for the assessment of ecosystem services. It is worth noting



that an amendment to EU Regulation 691/2011 (mentioned in the answer to the previous question) is expected to be adopted by the end of 2024, which will oblige Slovenia to report from 2026 (the data reporter to Eurostat is expected to be SURS). The revised Regulation foresees 3 sets of ecosystem accounts: Ecosystem Extent Accounts (area by ecosystem type, according to the new EU ecosystem typology), 7 Ecosystem Service Accounts (provision of crops, timber, pollination, global and local climate regulation, nature-based tourism and air filtration) and 9 ecosystem indicators (proportion of urban green space, urban PM 2.5 concentration, organic carbon stocks for fields and grasslands, farmland and woodland bird indices, dead wood, tree canopy density and proportion of impermeable surface in coastal areas).

Much of the data on the extent, services and, in particular, the state of ecosystems that is available at national level is part of other national reporting obligations to international institutions or for environmental monitoring. Unfortunately, this data is monitored, collected and published through a number of different institutions, so there is no complete overview of which legislative obligations are behind which. A useful database from a wide range of sources, which also contains some information on this topic, is available from the ARSO, as part of the Environmental Indicators in Slovenia (Link: <https://kazalci.arso.gov.si/sl/content/kazalci-okolja-v-sloveniji>).

In addition, Biodiversity conservation (BC) is a commitment enshrined in the Nature Conservation Act and by-laws and is one of the key requirements for verifying the impact of documents and interventions on CB through an environmental impact assessment (EIA) during the adoption process.

6.25.3 Perceived barriers and needs to enhance uptake.

In the course of the NatGuidES project, it has become clear that the key barriers (especially in ES assessment, let alone uptake in decision-making) are lack of data (in certain areas), lack of knowledge, lack of trained staff. We saw that there is a need for more concrete analysis, knowledge transfers and collaboration between researchers, knowledge transfer from the research community to decision makers and (protected areas') managers, where we saw that due to the complexity and specific knowledge, decision makers and managers will not be able to engage in all processes in a participatory way - this is one of the main findings of the NatGuidES project (article currently under review).

As additional barriers we would add the monitoring, collection and publication of data at different institutions mentioned in the previous answer, so there is no complete overview of this data; there is a need for unified databases. This will be partly covered, inter alia, by the ecosystem accounts at SURS (SiStat database) when the data are published (expected at the end of 2026, with an annual or 3-year publication period), as well as by the NarclS system at ARSO (although this is designed for a broader scope and does not specifically focus on ecosystem services or the state of ecosystems).



Adequate knowledge in this field is also a problem, as ecosystem services monitoring and other topics in this field are fairly new and institutions do not yet have a fully developed knowledge of the material. There has also been a lack of networking between different institutions working on the same or very similar topics. This is one of the reasons why SURS has recently set up an informal working group for the development of ecosystem accounts in Slovenia (as mentioned in Q1).

6.25.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.25.4.1 Community of Practice

The 1st Slovenian CoP took place on January 23, 2024. The participants came from public research/educational institutions, public professional institute, public administration, protected area management, private non-profit institutes and private companies.

The event started with a warm welcome and an introduction to the SELINA project, Community of practice and the concept of transformative change (Seeds of change).

During the meeting, participants discussed a wide range of topics, including non-formal education, the intrinsic value of nature, the integration of ecosystem services into decision-making processes and the need for enhanced cooperation. Exciting proposals for "Seeds of change" emerged from the discussions, such as the Forest Fund, dialogue on flood management, agricultural policy outcomes, active communication with agricultural advisors, mobility development projects and non-formal learning about biodiversity based on Study Circle approach.

Overall, the event provided a platform for fruitful discussions and the exchange of innovative ideas. The participants expressed their willingness to meet in person about twice a year.

6.25.4.2 Seeds of transformative change

In Slovenia, the following Seeds of change were identified.

- Forest Fund (Suzana Vurunić)



- Floods and the dialogue between forestry institutions (Urša Vilhar)
- Agricultural policy and the outcome of targeted actions (Nika Debeljak)
- Active communication with agricultural advisors (Marjetka Šemrl dos Reis)
- Haloze Development Core (Nika Debeljak)
- Community of the Julian Alps (mobility) (Jelena Hladnik)
- Additional practice from the Škocjan Caves Park (Alenka Gorjan, Nina Štrekelj)
- Slovenian Institute for Adult Education (Nevenka Bogataj)
- Društvo Trajna (Andrej Koruza – this one was selected in addition)
- CA20138 - NETWORK ON WATER-ENERGY-FOOD NEXUS FOR A LOW-CARBON ECONOMY IN EUROPE AND BEYOND (NEXUSNET)
 - The main aim of NEXUSNET is to empower collaborations between European Union (EU) and international researchers and stakeholders with the objective to synthesize the existing empirical Nexus research, and to define a concerted research agenda that promotes an integrated approach and produces an intellectual toolkit, demonstrating a clear link to improved resource management and governance outcomes that underlie the value of Nexus.
- Study Circles - SHARED GREEN DEAL: As part of the Horizon 2020 project SHARED GREEN DEAL, we have 6 Streams. In one Stream - the Biodiversity Stream - so-called Study Circles were set up in which adult participants explore cultural values related to biodiversity, the loss of biodiversity and possible solutions in rural and urban areas.



6.26 Spain

6.26.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

The Spanish national ecosystem assessment (EME) implemented from 2010 to 2016, aimed at contributing to the National Strategy on Green Infrastructure, Connectivity and Ecological Restoration, for maintaining and improving the provision of ecosystem services of the elements linked to the development of green infrastructure. The assessment has been developed at different scales, i.e. national (for 14 ecosystems), sub-national (i.e. Andalucía and Murcia regions), and many case studies at local level.

The National Strategy for Green Infrastructure and Ecosystem Restoration in Spain aims to create a robust framework by 2050. This infrastructure will address critical environmental challenges, including reducing habitat fragmentation, enhancing ecological connectivity, and providing essential ecosystem services for human well-being. Additionally, it will play a crucial role in mitigating climate change effects across both rural and urban areas while promoting societal resilience and adaptive capacities.

The strategy involves several key components: restoring degraded ecosystems, integrating strategic sectorial policies, implementing effective governance models, and fostering social awareness and shared responsibility. As part of this effort, the SELINA Demonstration Project (DP) serves as a national-scale case study. The DP analyses ecosystems and their services as well as potential restoration sites. These insights will guide decisions on preserving critical green infrastructure elements.

As part of the activities under the National Strategy for Green Infrastructure and Ecosystem Restoration, MITECO has developed and updated a methodological guide for identifying green infrastructure elements (MITECO, 2024).

Ecosystem accounting:

The Ecosystem Account for Spain represents a national-scale initiative involving collaboration between URJC the Ministry for Ecological Transition and Demographic Challenge (MITECO) and the National Institute of Statistics of Spain (INE). This study integrates biophysical accounts, extent, condition and ecosystem services, and links this information to economic and human activities.

The study developed core accounts based on the SEEA-EA framework, including a biodiversity thematic account with a specific focus on forest ecosystems. It also introduced new methods and data, such as the National Ecosystem Classification, statistical approaches for monitor ecosystem changes and flows, and innovative techniques using machine learning and deep learning.

The Ecosystem Account covers various aspects:

- Ecosystem Extent Accounts: These encompass all ecosystems (Bruzón et al., 2022).



- Ecosystem Condition Accounts: Specifically for forest ecosystems (Bruzón et al., 2023; Maes et al., 2023).
- Ecosystem Services Supply and Use Tables (Physical Terms): Includes metrics related to crop production, livestock, timber production, freshwater supply, water infiltration, soil fertility, carbon storage, nature recreation, and carbon stock and sequestration (González-García et al., 2022).
- Ecosystem Services Supply and Use Tables (Monetary Terms): Covers economic values associated with crop production, livestock production, timber production, freshwater supply, water infiltration, soil fertility, carbon storage, and nature recreation (Santos-Martín et al., 2016).
- Additionally, thematic accounts focusing on carbon and biodiversity are currently in preparation.

6.26.2 Examples of uptake in decision processes, regulations and/or legislation

The development of Spanish ecosystem accounts aligns with EU Regulation No. 691/2011 of 6 July 2011 on European Environmental Economic Accounts. Both the EU Biodiversity Strategy and the Habitats Directive mandate that each member state produce a six-year report detailing their provisions for compliance. In Spain, this commitment is explicitly outlined in Law 42/2007, enacted on December 13, which focuses on Natural Heritage and Biodiversity.

Ecosystem accounts play a crucial role in achieving the objectives outlined in these strategies and directives. Additionally, stakeholders recognize the importance of ecosystem accounts for climate adaptation, monitoring progress towards Sustainable Development Goals (SDGs), and fulfilling commitments under the Convention on Biological Diversity (CBD). The Spanish National Ecosystem Assessment has already contributed to meeting some of the targets set by the EU Biodiversity Strategy.

Leverage points:

The development of Spanish ecosystem accounts is a key leverage point, aligning with EU Regulation on European Environmental Economic Accounts. These accounts are essential for meeting the requirements of the EU Biodiversity Strategy and the Habitats Directive Spain's commitment to this process is reinforced by the law on Natural Heritage and Biodiversity. Ecosystem accounts support climate adaptation, progress monitoring towards the SDGs and the CBD. The Spanish National Ecosystem Assessment has been instrumental in achieving some EU Biodiversity Strategy targets.

National Strategy for green infrastructure and ecosystem restoration

Spain has established its legislative framework through Law 33/2015, an amendment to Law 42/2007, which outlines the national strategy for green infrastructure, ecological connectivity, and restoration. Additionally, Order PCM/735/2021 plays a central role in guiding the development and execution of the National Strategy for Green Infrastructure and Ecological Connectivity and Restoration. Aligned with broader EU biodiversity strategies and UN Sustainable Development Goals, this strategy aims to preserve and restore ecosystems and their services through green infrastructure.



Effective implementation of this strategy requires collaborative efforts among various stakeholders, including autonomous communities, ministries, and public administrations. Coordination and cooperation among these entities are crucial for maintaining and enhancing green infrastructure. Currently, the focus extends beyond identifying components to ensuring the integration of standardised and regularly updated cartography.

The National Strategy for Green Infrastructure and Ecosystem Restoration in Spain leverages several key elements to drive progress. These include the restoration of degraded ecosystems, the integration of strategic sectorial policies, effective governance models, and fostering social awareness and shared responsibility. The SELINA Demonstration Project (DP) serves as a national-scale case study, providing crucial insights into ecosystem services and potential restoration sites. Additionally, the development of ecosystem accounts in alignment with EU regulations ensures compliance and supports broader environmental and climate objectives.

6.26.3 Perceived barriers and needs to enhance uptake.

6.26.3.1 Barriers:

- Barriers to the effective implementation of ecosystem accounts include the complexity of integrating diverse data sources and the need for consistent and comprehensive data collection. There can be challenges in ensuring that all stakeholders, including government agencies, researchers, and public organizations, are effectively coordinated and engaged. Additionally, securing adequate funding and resources for ongoing assessment and reporting can be difficult.
- There is a lack of high-resolution national data, making it difficult to make informed decisions at regional or local levels. Another barrier is the uncertainties related to data quality or modelling. Additionally, standardising existing data and maps is crucial to avoid inconsistencies across different geographical scales and administrative bodies. Lastly, some stakeholders lack the technical capacity to fully implement the tiered approach proposed in the Methodological Guide.

6.26.3.2 Needs:

- To address these barriers, there is a need for enhanced data integration and management systems to ensure comprehensive and consistent ecosystem accounting. Strengthening collaboration among stakeholders, including government, academia, and public organizations, is crucial. Adequate and stable funding is necessary to support the continuous development and maintenance of ecosystem accounts. Furthermore, public awareness and understanding of the importance of ecosystem accounts for environmental policy and decision-making need to be increased.
- Spanish government institutions would benefit from targeted training to enhance their understanding of ecosystem accounts. Additionally, a concise guide outlining practical applications of these accounts would facilitate the process. Furthermore, fostering systematic communication and knowledge-sharing among different countries can lead to more effective implementation.



- There is a need for targeted training for autonomous communities and governmental institutions. Equipping them with the necessary skills for mapping and assessing ecosystems will enhance their capacity. Furthermore, supporting the use of the methodological guide for identifying green infrastructure elements will facilitate more effective ecosystem management. Furthermore, the consistent application of ecosystem services mapping and assessment within legislative and policy frameworks is necessary to guide decision-making and ensure compliance with national and EU directives.

6.26.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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6.26.4.1 Community of Practice

The Committee on Protected Natural Areas is a specialised committee affiliated with the State Commission for Natural Heritage and Biodiversity. Its primary role is to facilitate coordination and collaboration between the Autonomous Communities and MITECO concerning the conservation of Protected Natural Areas in Spain.

The Committee for Protected Natural Areas aims to foster cooperation among the representative and management bodies responsible for various protected natural areas. These specialised committees conduct technical analyses and submit proposals to the State Commission, focusing on thematic matters relevant to their specific areas or those specifically assigned by the Commission.

In 2009, a dedicated working group was established within the Committee to develop Conservation Guidelines for the Natura 2000 Network in Spain. This group comprises experts from most of the Autonomous Communities and the then Ministry of the Environment.

Public Administrations play a crucial role in identifying the elements that constitute Spain's Green Infrastructure within their respective jurisdictions. These identifications are based on the criteria outlined in Goal 0 of the National Strategy for Green Infrastructure and Ecological Connectivity and Restoration.



To ensure consistency in cartography across different geographical scales and administrative bodies, the identification process also relies on the Methodological Guide for identifying green infrastructure elements. This guide was developed by the working group.

Recently, on 31st October 2023, the working group, along with three collaborating universities, conducted an online workshop about the application of the methodological guide. Invitations were extended to 58 individuals from the Autonomous communities in Spain, MITECO, URJC UPM, University of Seville (U. Sevilla - CTFC), and Tragsatec.

In 2024, the working group plans to hold at least two additional meetings. These sessions will focus on implementing the latest version of the guide in various Autonomous Regions, with the goal of developing regional green infrastructure plans by July 2024.

6.26.4.2 Seeds of transformative change

3 projects were nominated through the online survey:

- **Implementation of the National Strategy for Green Infrastructure and Ecological Connectivity**
- **Spanish Working Group on Habitat Fragmentation** due to Transportation Infrastructures (WGHFT) to promote the exchange of knowledge, raising awareness and providing technical guidelines to contribute to developing green infrastructure and sustainable transportation networks.
- **Demonstration project 1:** This initiative will help to establish the guidelines for the identification and conservation of the elements of the territory that make up the green infrastructure of the Spanish territory, and so that the territorial and sectorial planning carried out by public administrations allows and ensures the ecological connectivity and the functionality of ecosystems, mitigation and adaptation to the effects of climate change, defragmentation of strategic areas for connectivity and restoration of degraded ecosystems.

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6.27 Sweden

6.27.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Sweden has a well-developed system for monitoring the state of the environment, which describes both the current state and changes in the environment. The Swedish EPA coordinates the environmental monitoring. The Swedish time series are in many cases unique in their length.

The national environmental monitoring aims to provide a holistic view of the environmental status in Sweden and has been conducted since 1978. Studies are carried out in different natural habitats, with a variety of tests. Revisions of the program are carried out approximately every five years.

The state-funded national environmental monitoring is separated into ten program areas – more information on these program areas can be found on their separate webpages. Some aspects of the state of the environments, for example biological diversity, are relevant within several of the program areas. Every program area consists of subprograms, and every subprogram can include several different investigations. These investigations are carried out according to standardized methods, consisting of measurements of multiple variables.

The environmental monitoring program is funded by its own government appropriation. Decisions on funding allocation for national or regional environmental monitoring is taken by the Swedish EPA in consultation with the Swedish Agency for Marine and Water Management.

Several agencies, organizations and other groups monitor, or contribute in some way to the environmental monitoring, including national agencies, regional agencies, local agencies, universities other higher education institutions, consulting companies, research institutes, associations and private individuals.

Environmental monitoring is not restricted to collecting and analysing data. It includes storing the data long-term, performing quality assurance, and making the results available to the public. These tasks must be carried out in accordance with laws, regulations and policies on data security and accessibility.

In 2023, the Swedish Environmental Protection Agency presented a proposal for a national strategy and action plan regarding the Convention on Biodiversity. The proposal contains one overall objective and three strategic theme areas. These in turn contain proposals for 21 action areas. The action areas are developed in collaboration with authorities and actors. The report also contains an overview and assessment of how Sweden's existing national goals and other policy instruments respond to the new framework. The proposal for a national strategy and action plan is a first step, and one of several pieces of the puzzle in the implementation of the Kunming-Montreal framework for biological diversity.



Environmental Accounts (Statistics Sweden)

The Environmental Accounts provide a systematic description of the relationship between the environment and the economy and can be used for analyses of various types. They function as a satellite system to the National Accounts, presenting environmentally related physical and economic information for industries, the public sector and households. They also provide information for analysing environmental and economic policies and is used for developing indicators for sustainable development.

Analysis tool for environmental accounts data (Published 2023-09-28).

The analysis tool for environmental accounts data is a tool built in Excel for analysing environmental-economic data from the environmental accounts.

Using the tool, it is possible to extract both production-based and consumption-based data (data from the demand-side). In the consumption-based data, data is further divided into various components of final demand, for example household consumption or government consumption.

6.27.2 Examples of uptake in decision processes, regulations and/or legislation

Since 2005, the Sweden Parliament has adopted 16 environmental quality objectives. One of the objectives is “A rich plant and animal life” and states that “Biodiversity must be preserved and used in a sustainable way, for current and future generations. The species' habitats and ecosystems as well as their functions and processes must be protected. Species must be able to survive in long-term viable populations with sufficient genetic variation. People must have access to a good natural and cultural environment with rich biological diversity, as a basis for health, quality of life and welfare”.

The overall aim of Swedish environmental policy is to hand over a society in which the major environmental problems facing the country have been solved. This is summed up in a ‘generational goal’, which describes what is to be protected and what changes need to be made in our society.

The environmental quality objectives describe the quality of the environment that Sweden wishes to achieve. For each objective there are a number of 'specifications', clarifying the state of the environment to be attained. To facilitate progress towards the generational goal and the environmental quality objectives, the Government adopts milestone targets in priority areas.

The idea of the environmental quality objectives is that they should be followed up on a regular basis, with annual reports to the Government and an in-depth evaluation once every parliamentary term. A number of government agencies are responsible for following up and evaluating specific environmental quality objectives. The Swedish Environmental Protection Agency, working with all the agencies with responsibilities within the environmental objectives system, prepares an overall report to the Government. The results of this follow-up are presented on sverigesmiljomal.se.



The in-depth evaluation of Sweden's environmental goals for year 2023 is the sixth of its kind since the Swedish Parliament (Riksdag) decided on the environmental goals in 1999. It is part of a systematic and regular follow-up of environmental policy and the state of the Swedish environment.

Regarding the assessment of ecosystem services as part of the required environmental impact assessment, the legislation for Impact Assessments does not provide clear guidelines. However, biodiversity, flora, and fauna are explicitly addressed in Swedish legislation (Environmental Code) for impact assessments. This lack of clarity results in varying approaches: some Environmental Impact Statements include a thorough description and consideration of ecosystem services, while others focus solely on biodiversity, flora, and fauna. In Sweden, a recent study has looked into this in order to identify ways to strengthening ecosystem services in EIA.

6.27.3 Perceived barriers and needs to enhance uptake.

6.27.3.1 Barriers:

- Political interests.
- Risks related to decrease of resources for example to monitor biodiversity and ecosystem services.
- Conflicting interests.
- Fragmented responsibilities.

6.27.3.2 Needs:

- Knowledge sharing
- Education
- Collaborations between different authorities.
- Strengthening the role of physical planning to facilitate the integration and implementation of the uptake of biodiversity and ecosystem services.

6.27.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.



A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.27.4.1 Community of Practice

In Sweden, The Swedish Biodiversity Center (CBM) plays an important role in promoting biodiversity and ecosystem services in society. CBM collaborates with other agencies to conduct research, provide expert reports and information. The work includes consultancy services, government assignments, attendance at international negotiations and cooperation with a range of stakeholders such as government agencies, organizations, museums and natural resource managers. To understand use of biodiversity as a social issue, CBM highlights ecological, political, legal, social and historical aspects of biodiversity conservation.

The Swedish Biodiversity Center (CBM) arranges every year a conference that is open for everyone. In 2023, the Diversity Conference was about the new global framework for biodiversity, which was negotiated at COP15 in Montreal in December 2022. At the conference, it was discussed how the Swedish environmental goal work should be able to contribute to a better development for biological diversity and to the global goals. The Diversity Conference involves 10 parallel workshops where the global framework's goals were presented, and there were discussions about how the implemented in the Swedish environmental goal work, policy and legislation can be enhanced.

6.27.4.2 Seeds of transformative change

Only one project was for the moment nominated:

Study Circles - SHARED GREEN DEAL: As part of the Horizon 2020 project SHARED GREEN DEAL, we have 6 Streams. In one Stream - the Biodiversity Stream - so-called Study Circles were set up in which adult participants explore cultural values related to biodiversity, the loss of biodiversity and possible solutions in rural and urban areas.



6.28 Other Countries: Norway

6.28.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Norway is not a member of the EU nor is nature protection and the EU biodiversity strategy part of the European Economic Area (EEA) agreement. Of these reasons, Norway is not legally committed by the EU biodiversity strategy. Consequently, Norway has not developed formal or specific plans for implementation or execution of this particular EU-strategy. Despite this, Norway seeks close collaboration with the EU on important environmental policy areas, including issues related to nature management. The Ministry of Climate and Environment therefore follows closely EU efforts on mapping and assessment of ecosystem services and on green infrastructure, and where appropriate they seek to harmonize Norwegian policy with EU and European follow-up measures.

The most comprehensive effort made so far on mapping and assessment of ecosystems in Norway is the development of the Norwegian Nature Index. An assessment of values of Norwegian ecosystem services, published in 2013 by an expert Commission appointed by the Norwegian Government, concludes that the comprehensive set of data on which the NI is based can serve as a good starting point for further development of indicators for ecosystem services.

Since 2022 a lot of projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting took place:

- National Insect Monitoring program. (2021-ongoing, Extension of area coverage 2023) Norwegian Environment Agency (responsible organization), Norwegian Institute for Nature Research (technical and scientific responsibility).
- Government appointment of the Norwegian Environment Agency and Statistics Norway to co-coordinate the implementation of ecosystem accounting in Norway (2023).
- A map of ecosystem types with national coverage compatible with Eurostat's proposed typology (level 1) for SEEA EA reporting. (2023). Norwegian Environment Agency (responsible organization), Norwegian Institute of Bioeconomy (lead).
- Overview of biophysical ecosystem services models and data sets compliant with SEEA EA accounting, with potential for national, regional and local level applications (2023-2024). Ecosystem services in SEEA EA accounts in Norway. Assessment of available models and data sets (in Norwegian). Norwegian Environment Agency (responsible organization), Norwegian Institute for Nature Research (lead of the report), Norwegian Institute for Water Research, Norwegian Institute of Bioeconomy.
- Development of a platform for ecosystem accounting to inform county and municipal level planning. Exploratory process through five digital gatherings (2023) when County and Municipal technical staff shared advances in the field and discussed development needs. Piloting biophysical ecosystem accounts of selected ES at selected municipalities (2024-2026). The Norwegian Association of Local and Regional Authorities (KS) (lead), Asplan Viak and the Norwegian Institute



for Nature Research (partners). Ca 240 participants (technical and planning sections) from Counties and Municipalities, research institutes, the Norwegian Environment Agency (2023-2026).

- Overview of monetary accounting methods compliant with SEEA EA (2023). The Norwegian Environment Agency (responsible organization), Statistics Norway (report lead).
- Overview of compatibility of Norway's ecosystem condition sets of indicators (including WFD indicators), with the SEEA EA and Eurostat's proposed indicators for ecosystem accounting. Norwegian Environment Agency (responsible organization), Norwegian Institute for Nature Research (lead of the report), Norwegian Institute for Water Research, Norwegian Institute of Bioeconomy.
- Statistics Norway participates in the testing the new ESTAT Guidance Notes for ecosystem accounting both for extent and condition accounts (projects are in progress)
- National Standard for Blue Green Factor calculations, incentivizing ecosystem services objectives and nature-based solution designs in urban developments (Standard Norge)
- National extent accounts revealed a five-year loss of nature types of 208 km² (2018-2023), reported by the National Broadcasting Corporation (NRK 2024) and widely disseminated in other media.
- Statistics Norway and NINA collaborate on developing standardised reporting tools for ecosystem accounting for extent, condition and services accounts, in ESA's PEOPLE-EA project and Eurostat-funded pilot testing of INCA-tool.

6.28.2 Perceived barriers and needs to enhance uptake.

- A common understanding of why ES assessments are important. Discussions ongoing about the relevance, issues of utilitarian view/values to manage nature, scepticism when data are incomplete or misleading actions (e.g. away from biodiversity conservation).
- Technical barriers: testing and validation of ES models, agreement on ES models and data to use, inclusion of ES models-relevant data in data sharing platforms (GeoNorge), development of RS enabled datasets.
- Technical capacity at many levels, county and municipal (for planning), consultants (for projects), research (make use of models from various disciplines, validation of models, and exploration of data sets).
- Reporting and assessment requirements. In standards and regulations.

6.28.3 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.



Transformative or transformational change refers to “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES, 2019). Simply said, doing things differently, rather than doing less or optimising the system.

A means to enhance uptake is bringing people of the quadruple helix together and exchange information and learn from each other. Another is to establish projects that can show that it works and lead to possible pathways of transformative change.

6.28.3.1 Community of Practice

NINA/Norway’s CoP is called: “Professional network for mapping ecosystem services – nature’s goods.” It has a registration page here: <https://www.nina.no/B%C3%A6rekraftig-samfunn/%C3%98kosystemtjenester/Faglig-nettverk-for-kartlegging-av-%C3%B8kosystemtjenester-naturgoder>

The purpose of the network is to share experiences and discuss methodological issues about ecosystem services.

Our first event is the SELINA Trondheim workshop keynotes (Session 5, as a webinar for the network), followed by a first interactive meeting in August/September. <https://www.nina.no/Om-NINA/Aktuelt/Nyheter/article/ecosystem-accounting-in-support-of-sustainability-related-targets-of-the-global-biodiversity-framework>

6.28.3.2 Seeds of transformative change

Through the online survey 2 projects were nominated as seed of transformative change:

- **Tree Crown Project**
 - Demonstrate a method for mapping, assessing and valuing urban trees that can be scaled to any urban area in Norway.
- **Norway in Red, White and Grey**
 - In January 2024 the Norwegian Public Broadcasting Corporation (NRK) published an article illustrating how during the last 5 years Norway has lost on average 79 m² of nature per minute, or 207 km² in total. This figure includes the equivalent of two soccer fields of nature mapped as “valuable” according to different official categories. In a matter of a few days the story became one of NRK’s top ten most read online news ever. It has led to a step-change in public perception of the urgency for action, supported by knowledge in ecosystem accounts, particularly at local project and municipal level. Norway in red, white and grey. https://www.nrk.no/dokumentar/xl/nrk-avslorer_-44.000-inngrep-i-norsk-natur-pa-fem-ar-1.16573560



6.29 Other countries: Switzerland

6.29.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

Commissioned by the Swiss Federal Office for the Environment (FOEN), the interdisciplinary research team in charge of the research project ValPar.CH examines the benefits and added values of the ecological infrastructure (EI) in parks of national importance. This network of ecologically valuable areas forms the basis of ensuring the social, economic and ecological values of nature's contributions to people (NCP, ecosystem services). The ValPar.CH research project is one of three sub-measures of the pilot project “Valorisation of the ecological infrastructure in the parks of national importance” as part of the “Action Plan for the Swiss Biodiversity Strategy (AP SBS) “.

More details are available under www.valpar.ch

6.29.2 Perceived barriers and needs to enhance uptake.

6.29.2.1 Barriers:

- Research outputs temporally not in-line with needs from the cantons.
- Level of details of calculations not suitable for site-specific measures
- No mandate to consider future change.
- Difficult to consider multiple values of nature, no aggregated information.
- Lack of understanding of the role of NCPs for supporting ecological infrastructure

6.29.2.2 Needs:

- Courses/education for practitioners for awareness raising on biodiversity and NCPs and their temporal and spatial dimensions.
- Political mandate to consider NCPs in defining ecological infrastructure.
- New policy instruments to consider flexible conservation areas because of temporal changes in species distribution due to climate change.
- Policy to plan across administrative boundaries.

6.29.3 On the way to transformative change

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6.29.3.1 Community of Practice

The existing network will be expanded by other networks (e.g. Speed2zero – a research network) to jointly develop a platform for defining renewable energy locations.

6.29.3.2 Seeds of transformative change

There are no projects nominated through the online survey except an international project:

Network of Transition Town Initiatives in German-speaking countries

Objectives of the network:

- Connecting and supporting transition town initiatives in German-speaking countries
- Publicity work to spread the idea of transition.

Objectives of individual transition town initiatives:

- Promoting and practicing a sustainable lifestyle on a local scale (within their respective towns)
- Initiate a transition on an individual level to ensure a sustainable, liveable future.



6.30 Outer regions: Azores

6.30.1 Update on projects concerning biodiversity, ecosystem condition and ecosystem services assessment and accounting since 2022.

São Miguel test site is one of the islands of the Azores archipelago, an outermost region of the EU. The linked paper gives a good description of the current lagging state of mapping and assessment of biodiversity and ecosystem services in the Azores and mentions the initiatives from MOVE and MOVE-ON projects (although MOVE-ON was already undergoing before 2022).

As actual mapping proceeds, a territorial expansion of included areas can also be observed towards EU Overseas. Some of the EU Outermost Regions and Overseas Countries and Territories have also picked up the ES concept and first applications of EU MAES can be found (Sieber et al., 2022, Sieber et al., 2021, Sieber et al., 2018). Yet, MAES implementation in the EU Overseas still lags far behind continental Europe (Sieber et al., 2018), and even where EU Overseas are included in national assessments, (e.g., France), they are not considered to the same extent [the same can be said of Portugal and Azores]. This can largely be attributed to the lack of appropriate data, knowledge, and research capacity (Sieber et al., 2022), which are being addressed by current anchor projects such as MOVE and MOVE-ON. To protect ecosystems all across the EU and meet the objectives of the EU Biodiversity Strategy 2030, an inclusion of the EU Overseas is vital.

The MOVE-ON project aims to advance MAES methodology implementation in European ORs and OCTs. The project also intends to strengthen the scientific and technical MAES community in those territories, tackling the bottom-up approach initiated in MOVE project and demonstrating the benefits of ecosystems conditions assessments and their services to support decision-making, capitalizing the on-going work to further test and implement the MAES methodology in different regions underpinned by four anchor projects in French Guiana, Macaronesia, Reunion and South Atlantic Region.

In the case of the Azores, the focus was on marine and coastal habitats, namely the creation of the Macaronesian Marine Habitat Platform (MHP), that settles a baseline for future management of the archipelago's ecosystems and their services up to 100m depth, since decisions about conservation strategies need to be supported by data about habitat trend variations. The results highlighted the importance and singularity of coastal marine habitats of the Macaronesia.

There are some research projects mainly driven by academia and research institutes concerning biodiversity and services in the Azores, such EU BIODIVERSA+ as BioMonI - Biodiversity monitoring of island ecosystems BioMonI - Biodiversity monitoring of island ecosystems - Project - GBA (uac.pt) or MaCoBioS - Marine Coastal Ecosystem Biodiversity and Services in a Changing World MaCoBioS - Marine Coastal Ecosystem Biodiversity and Services in a Changing World - Project - GBA (uac.pt). There is also a long-term LIFE IP project led by the directorate of the environment Objetivos - LIFE IP Azores Natura (lifeazoresnatura.eu) which targets special conservation and special protection zones of Natura 2000 network in



the Azores, seeking to contribute local actions for the improvement and conservation of 24 species and 13 habitats protected by the Habitats directive and Birds Directive.

6.30.2 Examples of uptake in decision processes, regulations and/or legislation

In the Azores, environmental impact assessments are required for infrastructural projects, which includes impacts on biodiversity, particularly upon species/habitats with special conservation status. For the moment no other examples were collected. The directorate of the environment needs to be contacted.

6.30.3 Perceived barriers and needs to enhance uptake.

6.30.3.1 Barriers

- Fragmentation of efforts and resources between different projects and initiatives.
- Disconnection between the research work from academia and the outputs from the public sector (it is much more likely that some assessment done by a governmental entity receives uptake rather than the same assessment done in the context of academic research).
- High bureaucracy.
- Expanding ecosystem service assessments beyond purely biodiversity/conservation centred efforts.

6.30.3.2 Needs:

- Centralized coordination of initiatives and resources towards common goals centred around ecosystem accounting.
- Centralized repository of reports, publications and datasets.
- Capacity building and involving more specialists in MAES and SEEA framework, especially from the valuation/policy angle.

6.30.4 On the way to transformative change

The overall conclusion of the IPBES global assessment (IPBES 2019) was that Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond, may only be achieved through transformative changes across economic, social, political and technological factors.

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6.30.4.1 Community of Practice

So far, at the São Miguel test site (Azores), there is no formal SELINA Community of Practice established. Relevant public regional stakeholders, namely the directorate of the forest resources and the directorate of the environment, have been approached. However, because their contributions and involvement have been narrowly focused on necessary inputs and provision of data for the test site activities in the context of the SELINA project., it has not yet evolved to a Community of Practice.

6.30.4.2 Seeds of transformative change

No seeds of transformative change were received through the online survey.



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