Nature based Solutions

for the WFD and the FD

"Nature-based Solutions Catalogue for Water Management" regional workshop
EU4Environment in Eastern Partnerhip Countries:
Water Resources and Environmental Data
30 October 2024

Ioannis KAVVADAS, DG Environment, European Commission

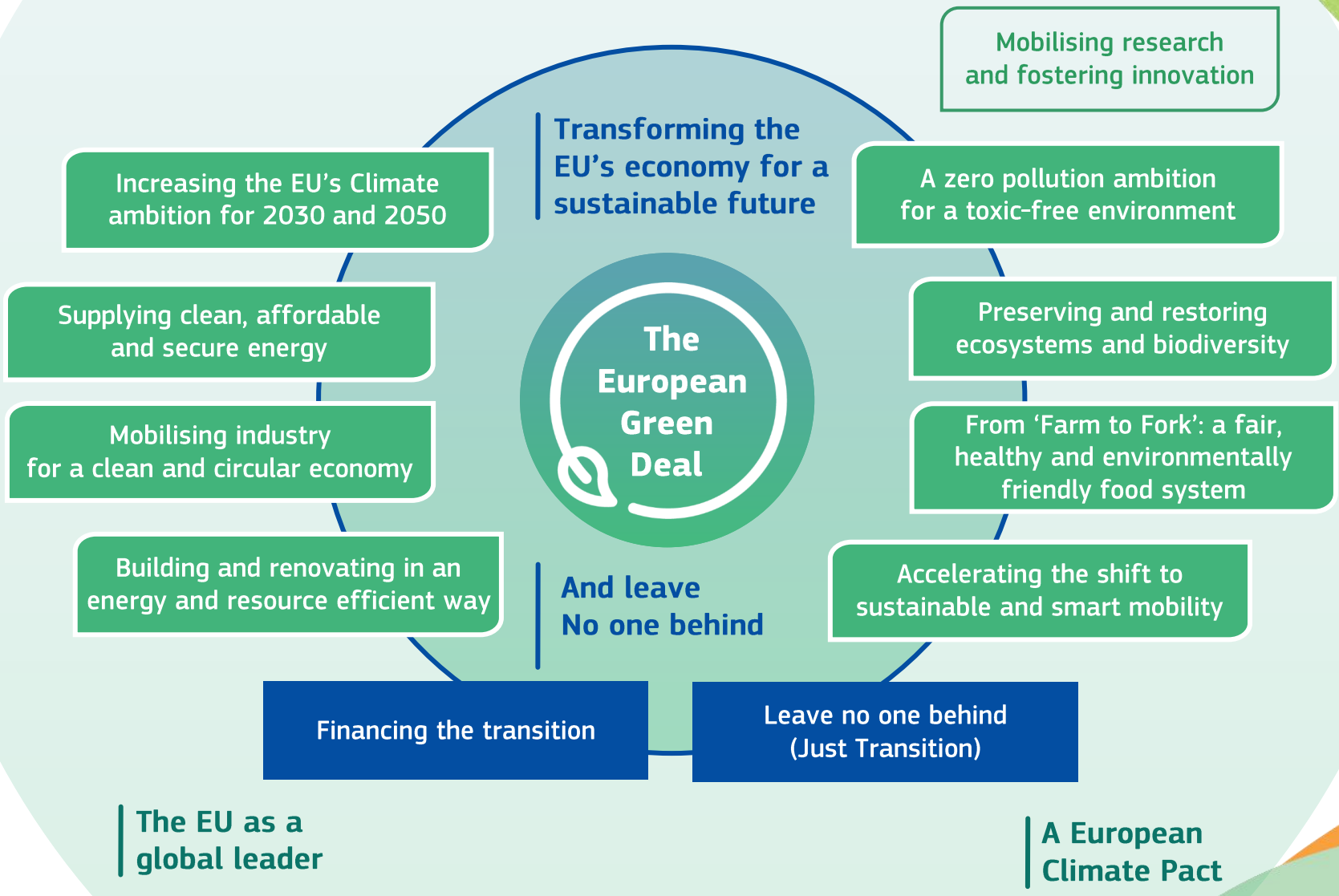
Policy background: European Green Deal

Climate change and **environmental degradation:** Existential threats to Europe and the world.

To overcome these challenges, the “European Green Deal” aims transforming the EU into a modern, resource-efficient and competitive economy, ensuring:

- **zero net emissions** of greenhouse gases by 2050
- economic **growth decoupled from resource use**
- no person and no place left behind

The European Green Deal



EU 2021 Adaptation Strategy

Smarter, faster and more systemic adaptation

Systemic adaptation will further develop and implement adaptation strategies and plans. Three priorities:

- Foster local, individual, and just resilience
- Integrate climate resilience in macro-fiscal policy
- Promote **nature-based solutions** for adaptation

Using nature-based solutions inland, including the restoration of the sponge-like function of soils, will boost the supply of clean, fresh water and reduce risk of flooding. In coastal and marine areas, nature-based solutions will enhance coastal defence and reduce risk of algal blooms

European Commission

Policy landscape keeps evolving (public and private sector)

- EU Taxonomy, an EU classification system for sustainable investments;
- Commission proposal “Corporate Sustainability Reporting Directive”;
- Climate Law (net zero emissions by 2050) and Nature Restoration Law;
- Regulation “Governance Energy Union and Climate Action” (Member States report on their national climate change adaptation);
- “Union Civil Protection Mechanism Regulation” (MS improve the collection of disaster loss data at national level);
- “Critical Entities Resilience Directive” (MS identify critical entities, devise a strategy for ensuring their resilience and carry out national risk assessment)

The economy and banks need nature to survive

The European Central Bank (2023):

"*Our analysis shows that* ***euro area companies are significantly exposed to several ecosystem services****, both directly and via their supply chains. The most important services are mass stabilisation and erosion control (i.e. vegetation cover protecting and stabilising terrestrial, coastal and marine ecosystems), surface and ground water supply, flood and storm protection, and carbon uptake and storage*.

In the euro area, approximately ***72 per cent of companies (corresponding to around three million individual companies) are highly dependent on at least one ecosystem service. Severe losses of functionality in the relevant ecosystem would translate into critical economic problems for such companies. We also found that almost 75 per cent of bank loans to companies in the euro area are granted to companies with a high dependency on at least one ecosystem service.***"

https://www.ecb.europa.eu/press/blog/date/2023/html/ecb.blog230608~5cffb7c349.en.html

European Commission

Water extremes and NbS

- Climate change impacts will most likely worsen. Floods and drought events **expected to be more intense and frequent** in parts of Europe (IPCC, Joint Research Centre).
- *Nature based solutions can play a supporting role*

History

- Urban planning and landscape architecture, sustainable farming
- Green infrastructure (e.g. sustainable urban drainage, eco-bridges, fish ladders)
- **Late 2000's enter "nature-based solutions", an umbrella term**
- Includes nature restoration, disaster risk reduction
- NbS evolved rapidly over the past few years

First multilaterally agreed definition of NbS

In 2022, the United Nations Environment Assembly adopted **the first multilaterally agreed definition of Nature-based Solutions**, building on earlier definitions adopted by the International Union for Conservation of Nature and the European Union, defined as...

"***actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems,***
which address social, economic and environmental challenges effectively and adaptively,
while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits"

https://cop27.eg/#/presidency/initiative/enact

European Commission

NbS for water, in super-broad terms

Can be divided in three groups:

- Renaturalise ecosystems (make water as it was)
- Keep water where it is or slow it down (quantity management)
- Clean water (quality management)

- Bonus No1: all of the above together (multi-functional)
- Bonus No2: “no-regret” solutions

Generally, NbS and water

- Protection and restoration of ecosystems enhances their resilience and has **beneficial impact on water resources**
- Healthy floodplains and wetlands are **important for water quality** and biodiversity
- They **remove** nitrogen in subsurface flow and **trap** sediments, pesticides and phosphorus in overland flow
- They **slow drainage** from land thereby increasing retention
- As the flow is slowed, **aquifers are recharged** and the **flood peak downstream is reduced**

Specifically, types of NbS for water

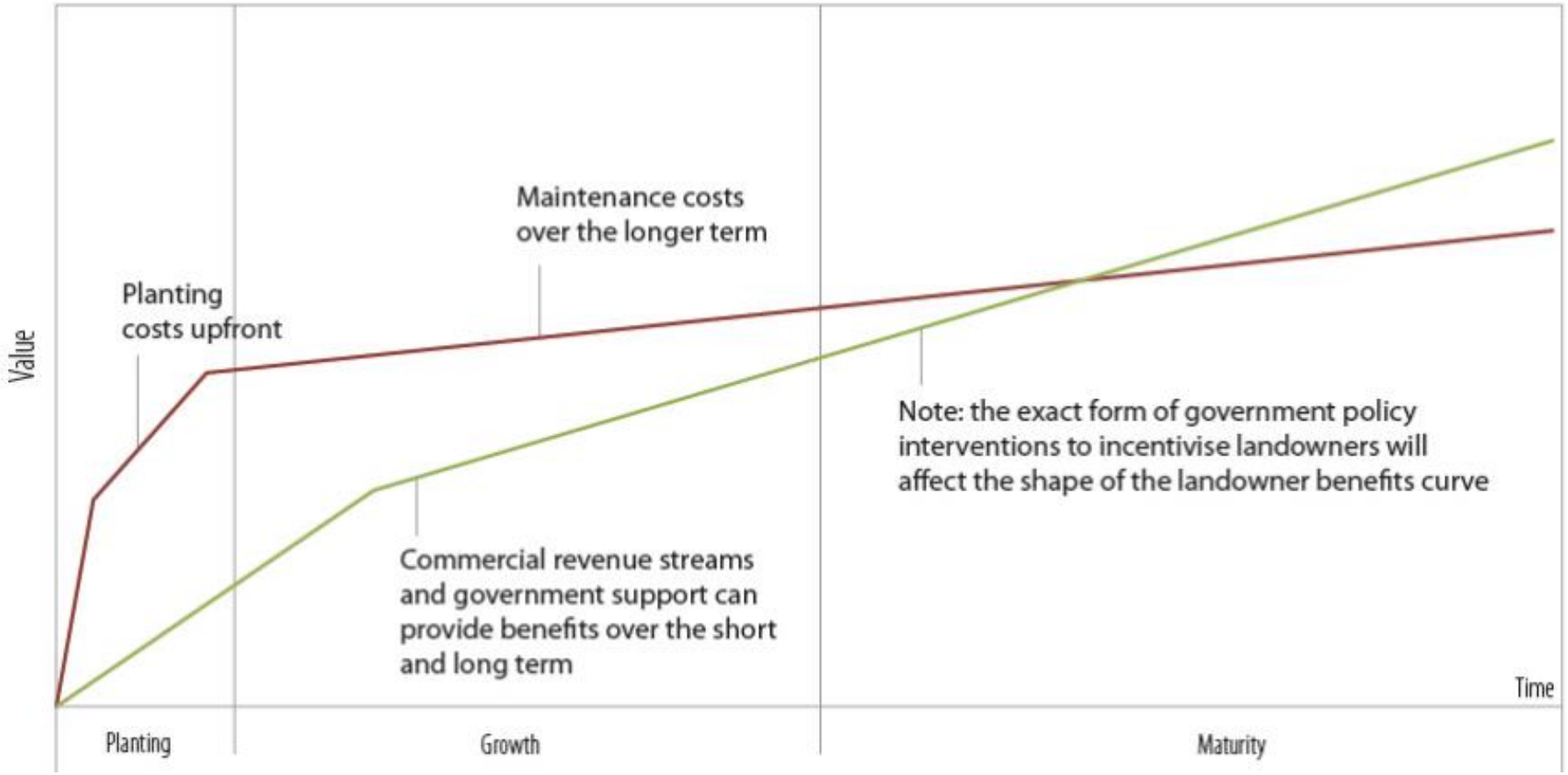
- **Reconnecting rivers to floodplains**, receive water that overflows the river course, slowing the flow and thus reducing flood risk downstream. Nutrient-rich sediment settles as the flow slows down on the floodplain, which slowly releases cleaner water back into the river system.
- **Forests and other vegetation in the catchment**, intercepting rainfall and increasing infiltration, thus moderating both run-off into the river system and storage of water in the soil.
- **Soils and vegetated land**, maintaining good soil structure and vegetation cover, improve water retention and drainage and reduce erosion and pollution of surface waters
- **Riparian buffers**, help to maintain water quality in waterways by protecting streams from non-point source pollution (e.g. surrounding agricultural activities)
- **Wetlands**, contribute to water quality through their natural ability to filter effluents and absorb pollutants
- **Nature-based solutions in growing cities**, constructed wetlands and retention ponds for the treatment and moderation of storm water and grey water (lightly polluted wastewater)

[source: UN Environment Programme]

Challenges to furthering NbS

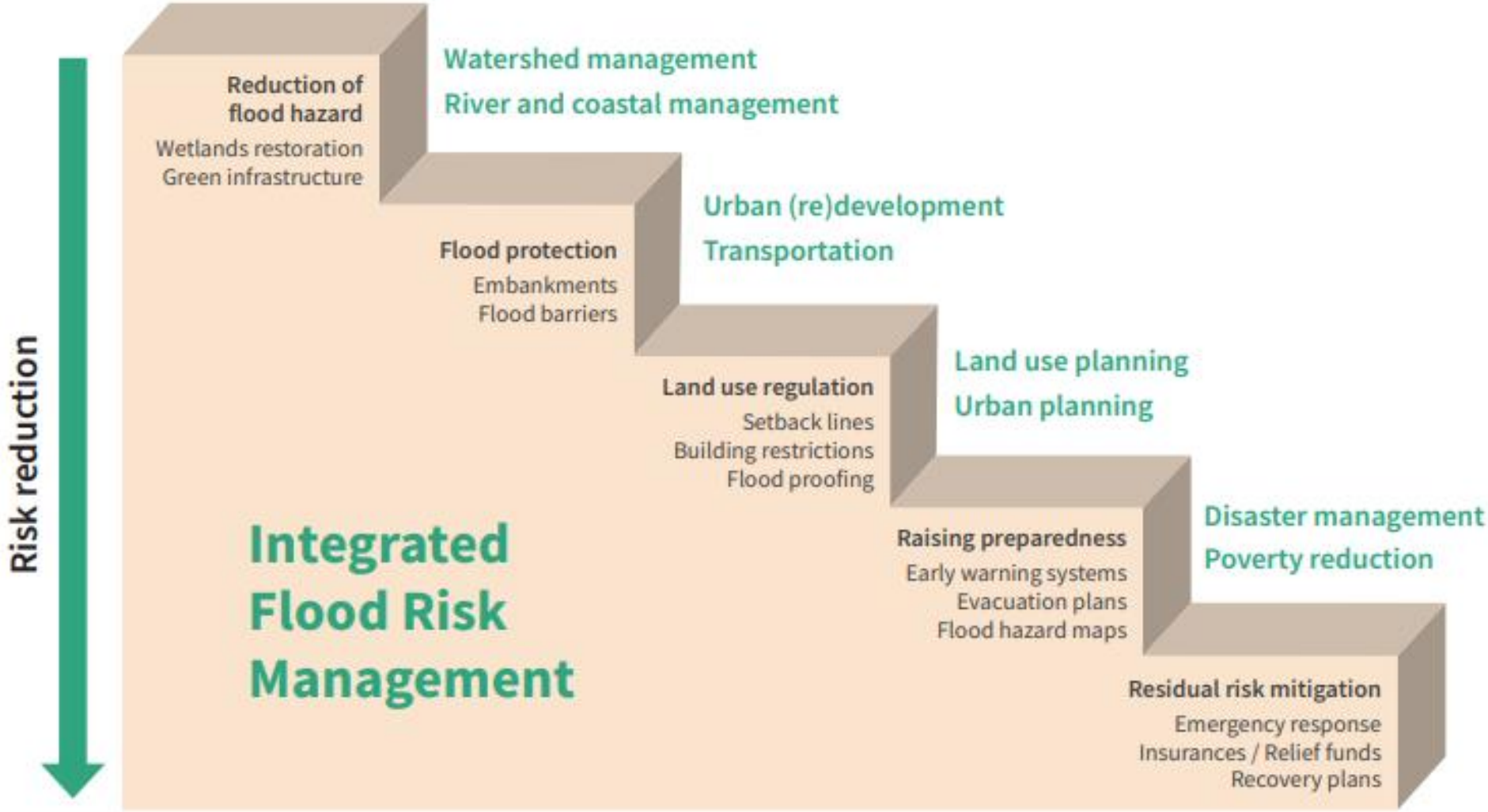
- **Insufficient awareness** of how to work in practice with NbS
- **Regulatory and policy hurdles** (e.g. land rights, competition between uses of land, require reduction of pollutants flowing from farms into adjacent waterways)
- **Accounting for costs and benefits** (costs now, benefits later and discounted to the present)
- **Limited workforce knowledge and skills** (e.g. reliance on external consultants to help develop bankable projects)
- **NbS not always standalone solutions**
- Perhaps as a result of all these, **insufficient funding**

The costs and revenues of an afforestation project over a 50-year period



[Source: EIB, Investing in nature-based solutions; State-of-play and way forward for public and private financial measures in Europe]

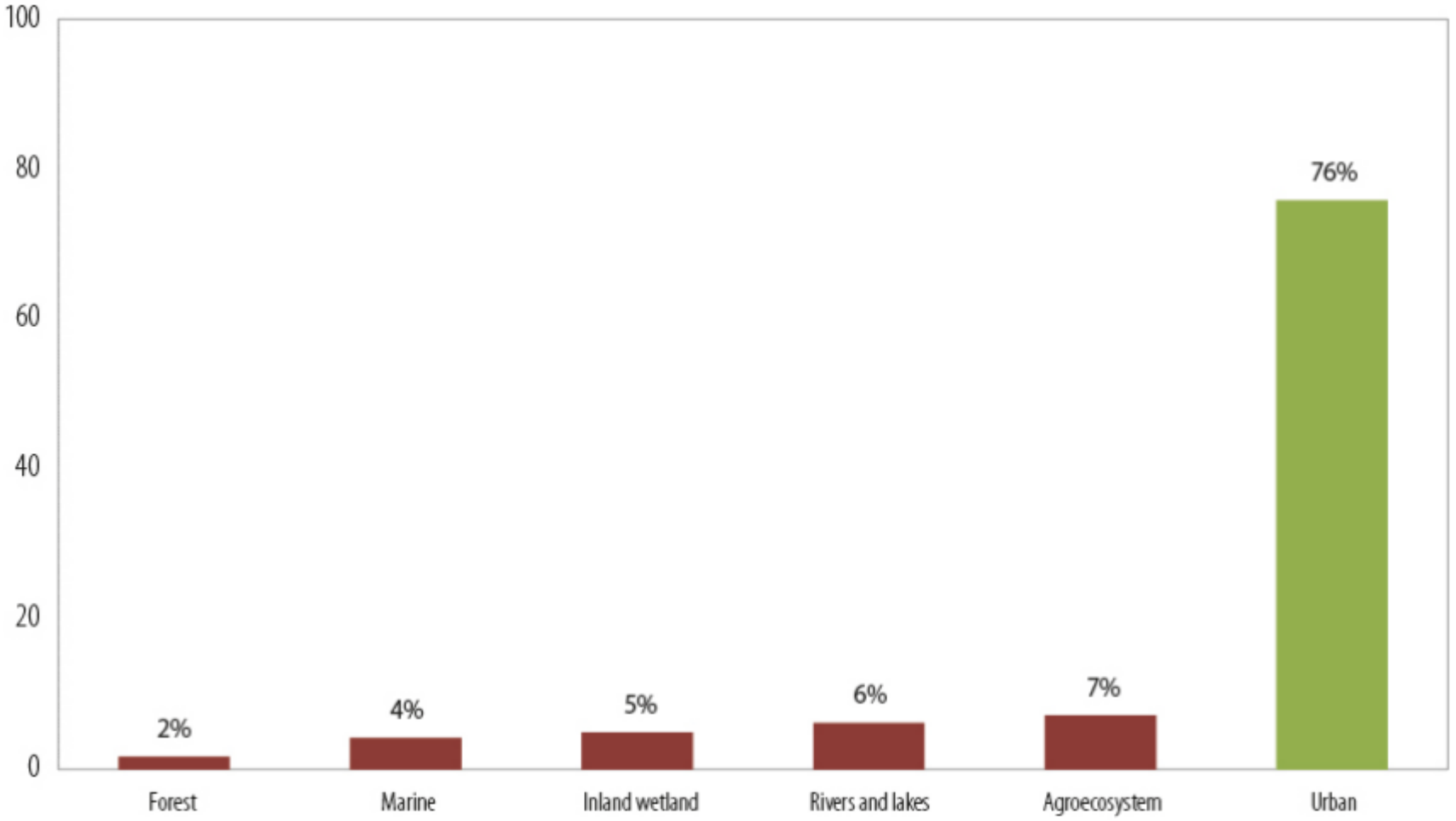
Are NbS a panacea?



[Source: The United Nations World Water Development Report 2018, NbS for Water]

European Commission

Nature-based solutions projects by ecosystem (N=1364 projects), 2000-2022



[Source: EIB, Investing in nature-based solutions; State-of-play and way forward for public and private financial measures in Europe]

European Commission

Are NbS simple or complex?

Are NbS more context specific compared to grey infrastructure?

- All one-off projects are context specific. Civil engineers grow up learning that each project is unique, and it is. This is one reason why cost and time overruns are not unusual. What is also true is that **civil engineering structures have been researched, taught, designed, constructed and studied since "time immemorial"** and so it is better known how to design, procure and build them – and, therefore, more authorities and companies are involved in this trade
- As a result, we still see more "civil" engineering and less "green" engineering

Simple or complex, cont'd

- Sometimes traditional civil engineering ("grey infrastructure") is the only way
- But **we want to increase, whenever possible, the application of NbS**
- From the conception (very start) of a project, or during maintenance, or upgrading we should ask that **either NbS are employed extensively, or that traditional civil engineering and NbS are blended** (i.e. that NbS are not a mere afterthought or an embellishment)

NbS-relevant measures in the 1st FRMPs*

- **Spatial planning and land use**: The FRMPs of all Member States make reference to spatial planning and land use (the extent of information varies; not all FRMPs include measures)
- The most common action under “spatial planning and land use” are **restrictions or bans on construction in flood-risk areas** (16 MS)
- In seven of the 26 MS, FRMPs include measures to **relocate economic activities and properties away from flood prone zones**

* These findings will be updated once the assessment of 2nd FRMPs is over by the end of 2024

NbS-relevant measures in the 1st FRMP-cont'd

- Nature based solutions, including natural water retention measures (NWRMs): All 26 MS include the notion of nature-based solutions in some or all of their FRMPs
  - NWRMs make up about 90% of Luxembourg's 813 individual measures
  - NWRMs make up almost 40% of Slovakia's 1 413 measures

From “measures in Plans” to implementation

- Recently, we looked at documents from MS, related to payments under the Recovery and Resilience Facility, which made reference to NbS
- It is encouraging that **NbS seem to have been embraced by MS** as part of water management in the MS
- It is **not clear though to what extent this actually is the case**, including how much funding is invested in NbS
- Since NbS are not something novel anymore, we must **move from the vague to the precise** – and understand how much NbS are upscaled and mainstreamed
- This way we will be able to **better understand their costs, their performance, their cost/benefit ratio, their endurance as time passes**, incl. how they are affected by climate change

Nature-based Solutions, sources

- 2024, https://eu4waterdata.eu/en/resource-library-hidden/56-eap-region-3/378-catalogue-of-nature-based-solutions-for-water-management-in-the-eastern-partnership-countries.html
- Investing in nature-based solutions (eib.org)
- Implementing nature-based flood protection - Principles and implementation guidance (World Bank, 2017) http://documents1.worldbank.org/curated/en/739421509427698706/pdf/Implementing-nature-based-flood-protection-principles-and-implementation-guidance.pdf
- Nature-based Solutions for Water 2018, https://wedocs.unep.org/handle/20.500.11822/32857 (including risk reduction associated with water-related disasters and climate change)
- New publication: What Nature-Based Solutions can do for us | European Commission (europa.eu) (research-based, including flood mitigation and coastal resilience)
- Nature-based solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction https://www.eea.europa.eu/publications/nature-based-solutions-in-europe
- UN world water development report 2018: nature-based solutions for water https://unesdoc.unesco.org/ark:/48223/pf0000261424
- Nature-Based Solutions for Water Management, https://wedocs.unep.org/handle/20.500.11822/32058;jsessionid=708599D4F36A40784942E15356D0BDFD
- www.nwrm.eu
- https://naturvation.eu/atlas (more than 1000 examples of nature-based solutions)

European Commission

Nature-based Solutions, sources cont'd

- General overview: https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions_en
- What are nature-based solutions and how can we finance them? 2022: What are nature-based solutions and how can we finance them? - Climate Champions (unfccc.int)
- Investing in nature-based solutions: State-of-play and way forward for public and private financial measure in Europe', 2023: https://www.bwb.earth/post/reports-investing-in-nature-based-solutions
- Report on the vital role of nature-based solutions in a nature positive economy, 2022: The vital role of nature-based solutions in a nature positive economy (europa.eu)
- Report on NBS in EU-funded projects, 2020: Nature-based solutions - Publications Office of the EU (europa.eu)
- Report on conceptual aspects of NBS upscaling, 2022: https://www.eionet.europa.eu/etcs/etc-ca/products/etc-ca-products/etc-ca-report-2-22-understanding-the-scaling-potential-of-nature-based-solutions
- Nature-based solutions improving water quality & waterbody conditions; Analysis of EU-funded projects https://op.europa.eu/en/publication-detail/-/publication/d6efaeeb-d530-11ea-adf7-01aa75ed71a1/language-en
- World Bank, May 2023, https://naturebasedsolutions.org/knowledge-hub/58-assessing-benefits-and-costs-nature-based-solutions-climate-resilience-guideline

Evaluating the impact of Nature-based Solutions: a handbook for practitioners

- Enormous collaborative effort of 17 EU Horizon 2020 projects
- Provides practitioners with a comprehensive Nature-based Solutions impact assessment framework, and
- A robust set of indicators and methodologies to assess impacts of NBS

Evaluating the impact of nature-based solutions - A handbook for practitioners
Evaluating the impact of nature-based solutions - Appendix of methods

European Commission

Keep in touch

ec.europa.eu/

europa.eu/

@EU_Commission

@EuropeanCommission

European Commission

europeancommission

@EuropeanCommission

EUTube

EU Spotify

European Commission

Thank you

European Commission