



Deliverable D4.3: Briefing on policy opportunities for mainstreaming freshwater nature-based solutions

Imprint

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MERLIN Key messages

- 1. Transformation (a fundamental change in scale and pace) is required to mainstream freshwater restoration across Europe.**
- 2. European Union (EU) public policies are a lever for transformation, through creating new opportunities, maintaining good practices and disrupting drivers of degradation.**
- 3. Six EU policies relevant to six economic sectors (Agriculture, Hydropower, Insurance, Navigation, Peat Extraction and Water Supply and Sanitation) were reviewed. The implementation of four policies in selected Member States was also assessed.**
- 4. The policies could do more to make the types of measures being demonstrated in the MERLIN case studies more visible.**
- 5. The policies can promote Nature-based Solutions (NbS) using the IUCN Global Standard criteria to ensure that all aspects of NbS are properly considered.**
- 6. All six economic sectors have the potential to play an important role in promoting the use of freshwater NbS; some sectors such as the Peat Extraction or Insurance sector could be more visible.**
- 7. Policies need to work together with aligned objectives, instruments and implementation to have a coherent approach to the biodiversity, climate and economic crises.**
- 8. Strategic policy planning processes (such as Common Agricultural policy strategic plans) can play a role in promoting freshwater NbS and developing cross-sectoral, catchment scale interventions. Review processes for these plans, and for permits or licences, can be triggers for change.**
- 9. There are several policy review opportunities arising between now and 2030 to embed freshwater NbS as a mainstream practice.**

MERLIN Executive Summary

This policy briefing looks at how European Union (EU) policies can help mainstream freshwater restoration as nature-based solutions (NbS). Policies are an integral part of the institutions that condition how economic sectors and society interact with freshwater environments. The H2020 [MERLIN](#) (Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation) project considers how to transform these institutions, through creating new opportunities, disrupting unhelpful practices and maintaining or amplifying good practice across Europe (see section 1).

The briefing focusses on six EU focal policies: Green Deal (2019), Proposed Nature Restoration Law (2022), Water Framework Directive (2000), Common Agricultural Policy (1962/2023), Climate Law (2019) and Adaptation Strategy (2019). The implementation of these policies in seven Member States (Austria, Finland, Hungary, Netherlands, Portugal, Romania and Spain) is also assessed (see section 0).

The briefing focusses on three aspects of policy transformation levers, summarised below.

→ Do the focal policy documents promote freshwater NbS?

Policies can help by making the role of freshwaters and NbS more explicit and visible in their documents. Creating more freshwater indicators may be useful to ensure that policies actively consider the outcomes and impacts of their actions on freshwater environments. Using the IUCN Global Standard criteria draws attention to the full range of issues for policies to consider when using policy to mainstream NbS. Areas that need more attention include the need to work in an integrated manner, at scale with close attention to reconciling trade-offs whilst ensuring there is biodiversity net gain.

→ Do the focal policy documents encourage the six economic sectors to implement NbS?

All six sectors (agriculture, hydropower, insurance, navigation, peat extraction, and water supply and sanitation) have stakes in our focal policies and therefore could be recognised more explicitly in policy documents. The agricultural sector is clearly involved in all the focal policies, whereas the peat extraction sector is almost invisible. More visibility for sectors such as the peat extraction, navigation

and insurance sectors can be created, and the central role of the agriculture, hydropower and water supply and sanitation sectors should be maintained and amplified. However, involving these sectors may also require disrupting power asymmetries between sectors and addressing conflicts. Policies can create or maintain more cross-sectoral opportunities to identify common benefits from NbS.

→ Do focal policies work coherently to support NbS?

The cohesive vision of the Green Deal needs to be amplified. Whilst vertical coherence (ensuring objectives, instruments and implementation align) is designed into the focal policies, the planning processes need to be maintained and amplified, funding barriers disrupted, and licence reviews maintained or created to increase the potential for NbS to be considered. Horizontal coherence (ensuring multiple policy objectives, instruments and implementation align) is also increasingly designed into the policies, but remains challenging to deliver, as it compounds the difficulties faced by vertical coherence. Coherence, when adequately resourced and supported, can accelerate mainstreaming of freshwater NbS.

These findings are translated into [recommendations](#) (see section 5) that cover a range of policy aspects including budget commitments, cost-recovery, planning processes and networks, capacity building, knowledge sharing, new indicators and new approaches to monitoring and evaluation.

These findings and recommendations will be discussed further the relevant policy actors at European Union (EU), Member State (MS) and regional levels associated with the MERLIN case studies (CS) to assess which have the most promise, particularly considering policy windows of opportunities between now and 2030. These prioritised policy levers will be used to inform the cross-sectoral routemaps (possible pathways to mainstream freshwater NbS) for EU and Member State stakeholders (see section 6)

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Abbreviations	
AECC	Agri-Environment Climate Commitment
AS	Adaptation Strategy
CAP	Common Agricultural Policy
CSP	CAP strategic plans
CS	Case study
CL	Climate Law
COM	European commission
GAEC	Good Agricultural and Environmental Condition
GD	Green Deal
IUCN	International Union on Conservation of Nature
LULUCF	Land use, Land use change and Forestry
NECP	National energy and Climate plan
NbS	Nature-based Solutions
RBMP	River Basin Management Plans
RT	Round Table
WFD	Water Framework Directive
WSS	Water supply and sanitation

1 Introduction

MERLIN is a H2020 project that aims to contribute to delivering the EU Green Deal goals through a focus on freshwater restoration measures implemented in predominantly rural areas throughout Europe (see the [Case-study portal](#)). These measures include wetland and peatland restoration; instream and riparian restoration in small streams; and floodplain restoration in large rivers. The focus of the overall project is to learn from existing good practice in these 18 case studies and to upscale and mainstream these practices across Europe. Mainstreaming means normalising ideas considered common in one domain into other domains, to build shared understandings and concerted actions (Scott, Holtby, East, & Lannin, 2022).

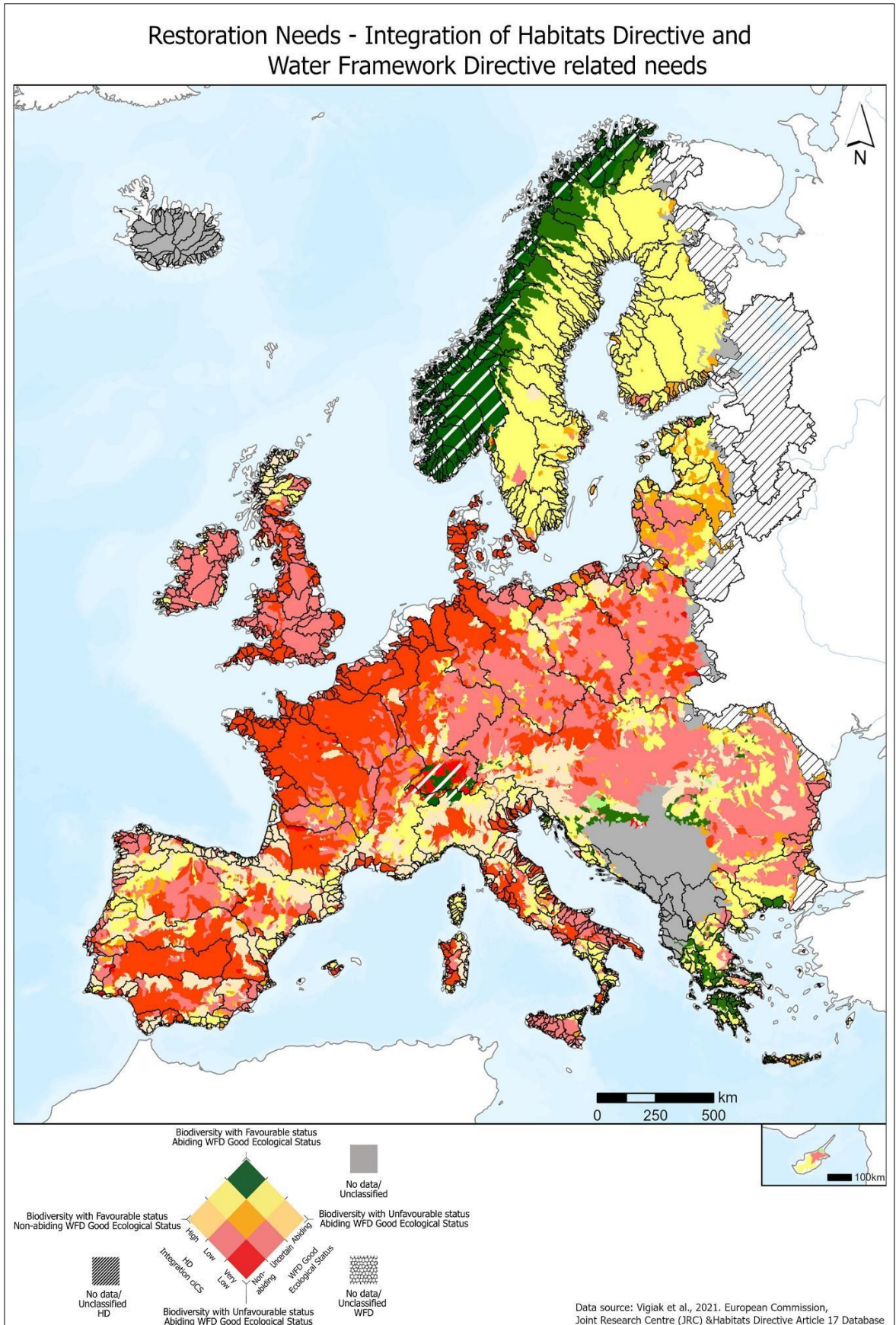
The Transformations Work Package (Work Package 4) considers how to move beyond using these MERLIN restoration measures for solely conservation goals, to measures that act as Nature-based Solutions (NbS) to societal challenges. The definition of an NbS is “*actions to protect, conserve, restore, sustainably 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*” (UNEP, 2022) (building on prior definitions used by IUCN and the European Commission). A key part of the mainstreaming is to embed the use of NbS, where appropriate, as usual for society and economic sectors (Mayor et al., 2021; Newell, Twena, & Daley, 2021). Therefore, to mainstream NbS we are working with six economic sectors: Agriculture, Hydropower, Insurance, Navigation, Peat extraction and Water supply and Sanitation (Berczi-Siket et al., 2022). This may mean transforming existing practices.

Current environmental policies are not yet achieving all their stated objectives, as the climate and biodiversity crises continue, with threats to climate and environmental commitments (Dupont, Oberthür, & von Homeyer, 2020). For example, strategic scale mapping (Duarte et al., 2023) shows that many river restoration units are not yet achieving the combined objectives from the Water Framework Directive (WFD) and Habitats Directives. The difficult passage of the proposed Nature Restoration Law through the European Parliamentary committees also highlights the challenges in achieving restoration at scale and at speed. Therefore, the transformation is needed.

Transformation in this context means: fundamental change in a social-ecological system resulting in a new forms, functions or meanings (Chan et al., 2020; O'Brien, 2012). Public policy is part of a wider transformation framework being used in MERLIN Work Package 4 (Transformation) (Carmen, Ibrahim, Blackstock, & Waylen, In preparation) as public policy levers have been identified as a key part of transformation (Palomo et al., 2021; Wolfram, 2016). EU and Member State policies steer practices by economic sectors and civil society to achieve overarching goals and are therefore an important part of transformation levers to for mainstream freshwater restoration and Nature-based Solutions (NbS) across Europe.

Public policy is a broad category encompassing many different aspects, including primary and secondary legislation, wider institutional arrangements such as plans, strategies, incentives, programmes, monitoring, evaluation or assessment and knowledge exchange (C. Schmidt & Fokkens, 2023). The concept of a policy cycle illustrates that policy is dynamic, involving design, implementation, and review. Policies are multi-level within the EU, involving EU directives or regulations that are transposed or directly implemented in Member States and their regions. These dynamics accommodate the different economic, environmental, and social contexts across Europe. Whilst restoration is achieved by tangible actions in specific ecosystems, policies provide legal, financial, and voluntary instruments to assist or hinder such activities. Debates whilst developing and implementing policies also raise public awareness and can help or hinder the acceptability of the policies with those involved in the policy implementation. Note that this briefing is not addressing private policies or policies that govern private finance.

Restoration Needs - Integration of Habitats Directive and Water Framework Directive related needs



Data source: Vigiak et al., 2021. European Commission, Joint Research Centre (JRC) & Habitats Directive Article 17 Database

Figure 1: Policies and Restoration Needs (Duarte et al., 2023)

The briefing focuses on a selection of focal policies (Green Deal, Proposed Nature Restoration Law, EU Adaptation Strategy and Climate Law, Common Agricultural Policy and Water Framework Directive, see section 2.2) to consider the interactions and potential pathways between current conditions and freshwater restoration mainstreamed across Europe using NbS principles (Löhr, Chlebna, & Mattes, 2022). Therefore, the intended audience for this briefing are those designing and implementing these policy levers at the EU, Member State and Regional levels. It is written for policy entrepreneurs (Timmermans, van der Heiden, & Born, 2014; Valin & Huitema, 2023) working with, or in, economic sectors, who are willing to champion existing good policy practice, create positive policy pathways and disrupt policy processes that impede these goals.

The briefing findings (section 3) are structured to reflect on three research questions:

1. Do the focal policy documents promote freshwater NbS?;
2. Do the focal policy documents encourage the six economic sectors to implement NbS?; and
3. Do the focal policies work coherently to support NbS?

The findings generate recommendations (section 5) about how policies, working together and involving the economic sectors, can help mainstream restoration as an NbS across Europe.

2 Methods

This section introduces the methods used for these assessments and the policies that were assessed for this briefing.

2.1 Methodological approach

As there are many detailed individual policy evaluations undertaken by EU institutions and academia including the H2020 cluster of projects that MERLIN is part of, the approach sought to complement these by focussing on the research questions above. Thus, the approach takes a broad perspective on the role and practice of these policies, rather than in-depth textual analysis, or modelling of cause/effect. The approach is interpretative, seeking opportunities for transformative change, rather than a traditional analysis of policy design or evaluation of individual policy impacts.

The briefing has been developed through three stages (as shown in Figure 2 below).

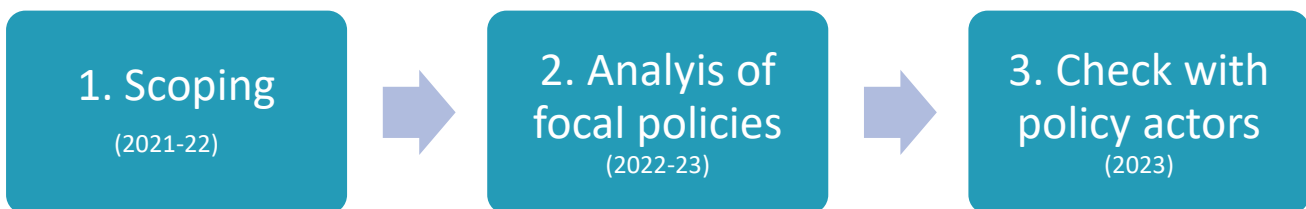


Figure 2: Methodological approach

2.1.1 Scoping discussion on policy transformations

The first year of the project, the methodology used to generate D4.1 (Berczi-Siket et al., 2022) revealed several sources of information regarding how policies could be used in transformation and mainstreaming. These included interviews with European Commission (COM) actors covering DG AGRI, DG ENV, DG CLIMA, DG MOVE and EEA during the summer of 2022 (n= 8) and the questionnaire to European restoration stakeholders implemented in summer 2022 (Ibrahim, Lorenzo-Arribas, Martinez, & Blackstock, 2022). During field visits and early deliverables from the MERLIN case studies, further issues were revealed. We held scoping discussions with sister project policy analysts from H2020 [Ponderful](#), [SUPERB](#) and [WaterLANDS](#) (n=7) and drew on the discussion paper on the proposed Nature Restoration Law (Hering et al., 2022). Finally, literature on mainstreaming NbS through policies, such as the Global NbS Policy Tracker (Durkin, van Hilten, Lloyd, Da Matta Alves, & Zhang, 2022) were considered. These inputs were used to design a policy assessment template with questions to guide the reading of the policy documents. This allowed us to standardise the assessments of the policies in ways that responded to our three research questions on NbS, sectors and coherence. These discussions also helped decide on the focal policies to consider in the analysis (see section 2.2).

2.1.2 Process of policy analysis

Relevant documents for the six focal EU documents, and the relevant Member States (see Table 2) were collected. Where necessary, these documents were translated from the original language by AI software (for the list of documents used, see section 7). Overall, the briefing draws on over 90 different source documents. These documents were read, and the information used to complete templates for the EU and Member State level policies. The resulting information was categorised under the themes (NbS, links to sectors, and coherence). There were the perceptions and interpretations of the template authors.

For the first research question (section 3.1: Do the focal policies promote freshwater NbS?) references to freshwaters, NbS or measures relevant to restoration were identified. The policies were also assessed using the

IUCN Global Standard for NbS (International Union for Conservation of Nature, 2020) using these eight criteria to see whether the full range of aspects underpinning a NbS were being covered. For the second research question (section 3.2: Do the focal policy document encourage the six sectors to implement NbS?) references to the six economic sectors, or synonyms, were identified, as well as noting references to other sectors and references to where sectors were explicitly or implicitly required to work together to deliver the policy objectives. For the third research question (section 3.3: Do focal policies work coherently to support NbS?), the policy documents were assessed following the dimensions of coherence as illustrated in Figure 3.

Four rounds of review and discussion were held to clarify the contents and agree common themes within this team from January – June 2023. The individual templates were compared using the cross-case qualitative analysis. The presence or absence of data related to the themes were summarised in an excel spreadsheet and the interpretation of common or divergent patterns utilised the richer textual information available in the source documents. To ground the analyses in the reality of the MERLIN case studies, documents collating information about the demonstration projects were reviewed for information about policy issues, including the implementation plans (Gerner et al., 2023), self-evaluation of progress (Buijse et al., 2022) and the draft Regional Scalability Plans (Pietilä et al., 2023), which were summarised in individual CS templates. The data from the CS templates were combined with data from the policy templates to generate the findings.

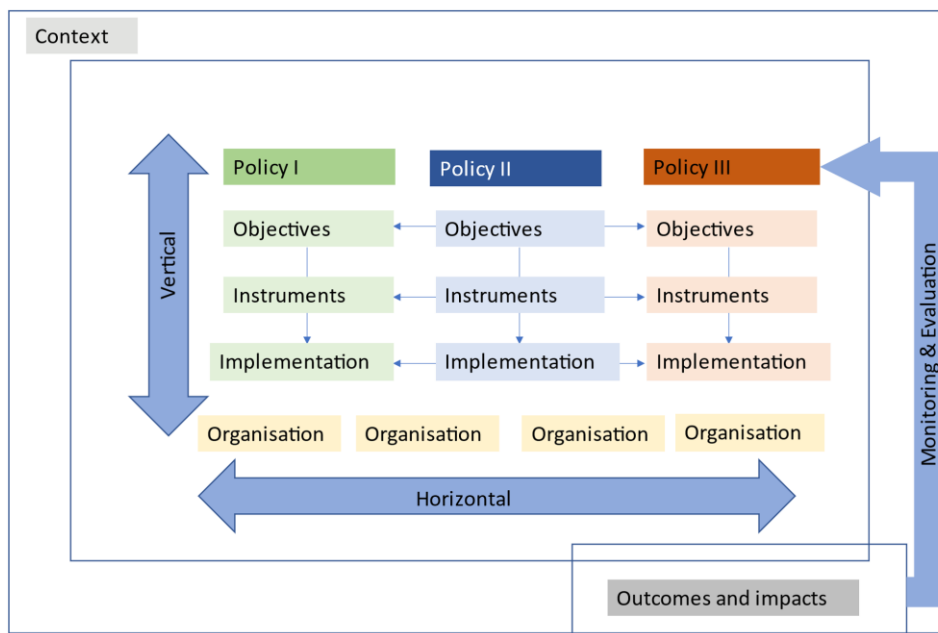


Figure 3: Approach to Policy Coherence

2.1.3 Checking the findings with policy actors

Part of the transformative approach is to ensure that solutions emerge from the findings; and these findings are co-constructed as far as possible. Policy issues were also discussed at the sectoral roundtables (RT) held May-June 2023; the quarterly Work Package 4 meeting with the MERLIN consortium partners and a bespoke webinar was held with participants from DG ENV, DG CLIMA and DG REGIO in June 2023¹. For those unable to attend from DG MOVE and DG AGRI, notes and slides were circulated with an invitation to comment. The summary of draft findings and proposed solutions were also circulated for comment to the EU policy contacts, sector partners and CS partners during early September 2023 and feedback incorporated to generate the final version. Acronyms after italicised quotes refer to the organisation and individual to retain anonymity. The overall contribution to the discussions are summarised in Table 1 below.

¹ Quotes are anonymised with numbers referring to an organisation and letters referring to different individuals from the same organisation.

Table 1: Distribution of participants discussing policies

Sector	Interviews (Policy makers only)	Round Table 1	Round Table 2	Webinars with the Commission
Agriculture	4	0	23	0
Hydropower	0	9	16	0
Insurance	0	9	24	0
Navigation	1	13	12	0
Peat Extraction	0	15	23	0
Water Supply & Sanitation	1	5	17	0
Cross-sectoral	3	0	0	28
Total	16	51	143	

2.1.4 Limitations

Due to the timing of the analysis, some of the documents and plans were not the most up-to-date (especially in the case of the Spanish River basin management plans (RBMPs)). Furthermore, it was not possible to capture all the detail in the documents (for example the Hungarian RBMP documents run to over 700 pages) so it is possible that specific examples may have been overlooked. Furthermore, the approach relies on the synthesis of the individual template authors. This made the data set tractable to developing shared thematic findings, however, the templates will reflect the specific expertise and interpretations of these authors. Another expert may have provided another interpretation. These limitations were overcome as best as possible, such as through rounds of discussion and asking for reviews to check that the final synthesised findings are credible. Finally, we have adapted the IUCN Global Standard thematic criteria for policy analysis. Strictly speaking, the Global Standard was designed to assess implementation of NbS in projects or programmes, not as a policy evaluation tool.

2.2 Focal Policies for the Briefing

This briefing considers both EU environmental and EU non-environmental policies, given the focus on mainstreaming NbS using policies relevant to both freshwater restoration and the six economic sectors (Harrak & Lemaitre, 2023). As part of the year 1 scoping, a long list of policies (n= 56) with relevance to MERLIN measures and NbS was drawn up (see section 9). However, it would have been impossible to implement the multi-perspective and multi-level analysis across these number of policies, so a short list was selected for this briefing. Analysis was conducted on documents associated with the list below:

- The overarching **Green Deal** (GD) (European Commission, 2019) that signals increased coherence between policies to respond to climate and biodiversity crises and sets the overall policy ambition that the other policies must deliver;
- The proposed **Nature Restoration Law** (European Commission, 2022) that, when passed, provides an EU-wide regulatory framework for conserving nature and signals the ambition for restoration;
- The **Water Framework Directive** (WFD) (Water Framework Directive, 2000) that is the foundational policy governing Europe’s surface and groundwater bodies;
- The **Common Agricultural Policy** (CAP) (European Commission, 2023a) that funds many restoration activities but agriculture is a driver of water quality and quantity stressors on the environment and Biodiversity (European Court of Auditors, 2021);
- The **Climate Law** (CL) ("Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change. Communication from the Commission to the European Parliament, the Council, the European

Economic and Social Committee and the Committee of the Regions" 2021) captures important drivers for restoration (such as Net Zero involving Land use, Land use change and Forestry (LULUCF)² as net sinks for other sectors) but also increased targets for renewable energy including hydropower; and

- The **Adaptation Strategy (AS)** ("Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.," 2021) that promotes addresses drought and floods; but also highlights the role of nature in providing climate resilience.

The combination of water, energy, food and ecosystem-climate policies also allowed us to build on recent WEFE nexus thinking (Baulenas & Sotirov, 2020; Carmona-Moreno, Dondeynaz, & Biedler, 2018).

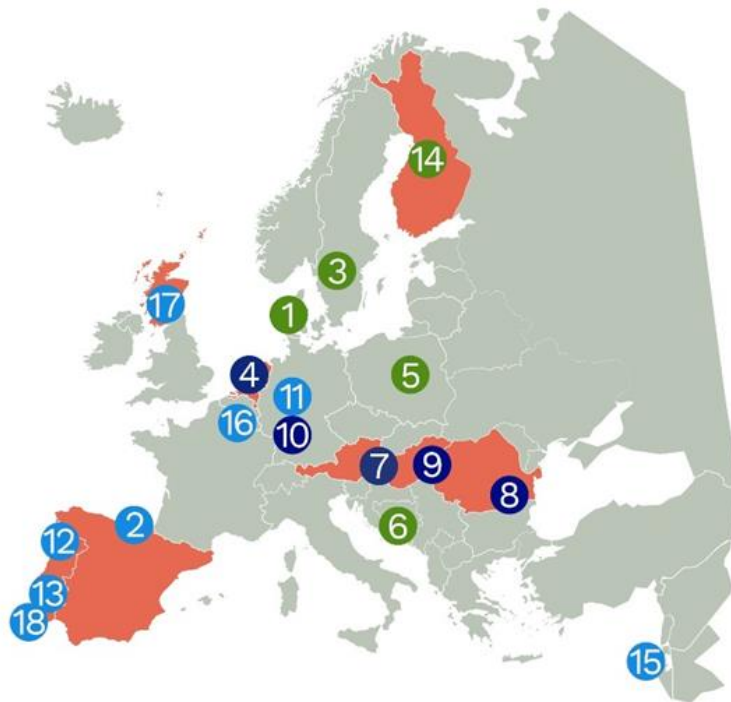


Figure 4: Distribution of Member States and MERLIN Case Studies selected for analysis. Green circles relate to peatlands and wetlands; light blue to small streams and dark blue to large trans-boundary rivers.

While this briefing considers all 6 selected policies, the implementation focus is on four policies (AS, CAP, CL, WFD). Implementation is the responsibility of individual Member States so it is important to have multi-level analyses. We considered implementation in the **seven** EU member states and the regions (where appropriate) related to the focal **MERLIN** case studies (see Figure 3). Regions can involve cross boundary or supra-national areas involving more than one member state (e.g. Danube or Rhine basins). Each of the four policies were studied in two Member States to allow comparison as shown in Table 2 below.

² Land Use, Land Use Change and Forestry

Table 2: Breakdown of the multi-level policy approaches

Policy	EU	Member state & MERLIN CS Region	
Green Deal (GD) (2019)	✓	N/A	N/A
Proposed Nature Restoration Law (2022)	✓	N/A	N/A
Adaptation Strategy (AS) (2013, 2021)	✓	Netherlands ³ AS (2016) Rhine CS4	Romania AS (2022) Lower Danube CS8
Common Agricultural Policy (CAP) (1962/2023)	✓	Hungary CSP (2023) Tisza CS9	Portugal CSP (2023) Sorraia CS13
Climate Law (CL) (2021)	✓	Austria NECP (2019) Middle Danube CS7a	Finland NECP (2019) Komppasuo CS14
Water Framework Directive (WFD) ⁴ (2000/2014)	✓	Hungary RBMP (2022-27) Danube RBMP (2022-27) Middle Danube CS7b	Spain ⁵ RBMP (2015-22) Eastern Cantabrian RBMP (2022-27) Basque Country ⁶ CS2

It is important to recognise the different types of policies involved and to what degree they are legally binding on Member State administrations. The legal status depends on the legal procedure by which the plan or strategy has been adopted. For example, the Hungarian 3rd RBMP was adopted in a Governmental decree and whilst not legislation, the decision is binding on the addressees such as the Minister responsible for water management, and the plans cannot conflict with any Hungarian law. CAP Strategic Plans (CSPs) are bound by a Commission Implementing Decision that is a legally binding act of the European Union once adopted. In other words, the implementation of the EU policies is affected by the legal status of the plans and strategies; and this influences the ability for the Commission to require actions to be taken by Member States.

³ The latest National AS has been submitted to the European Commission but was not publicly accessible for analysis at the time of writing.

⁴ Implemented in HU by Government Decree 221/2004 VII.21.)[221/2004. (VII. 21.) [translated as ‘Certain rules of watershed management] in 2008.

⁵ The EU Commission website showed that Spain had not presented the 3rd RBMPs to the Commission in March 2023, so the analysis used the 2nd RBMPs. However, some of the evaluation documents refer to the draft 3rd RBMPs.

⁶ The Basque RBMPs have not been analysed in detail but the analysis considered the relevant RBMP data in the overview provided by the Spanish Ministry

3 Findings

The findings presented here are focused on the main research questions described in section 1 (Introduction):

1. Do the focal policy documents promote freshwater NbS?;
2. Do the focal policy documents encourage the six economic sectors to implement NbS?; and
3. Do focal policies work coherently to support NbS?

The findings consider whether, and in what ways, the focal policies may need to transform to mainstream freshwater restoration.

3.1 Do the focal policy documents promote freshwater NbS?

In this section, we consider how the focal policies at EU and Member State levels apply to freshwater environments of relevance to the CSs (peatlands and wetlands; riparian zones and floodplains); whether the policy documents refer to NbS; and to what extent the policies align with the eight thematic criteria used in the IUCN Global Standard for NbS (IUCN, 2020). The findings suggest that freshwaters as part of solutions to societal challenges could be more visible, the concept of NbS is gaining traction but the use of IUCN Global Standard criteria highlight areas for policies to improve to mainstream NbS to protect freshwater ecosystems whilst resolving societal challenges (see Table 3).

3.1.1 References to freshwater environments

To identify how these policies could support the mainstreaming of freshwater measures used in MERLIN, we checked whether the policy documents considered freshwaters. For the overall Green Deal, no specific ecosystems are targeted directly but COM actors believe that the Green Deal has created a new space for land and freshwater restoration to be part of key policy domains (COM Webinar, 2023). All the other policies mention all aspects of relevance to MERLIN (wetlands, peatlands, small streams and large rivers). Most policies highlighted freshwaters as ecosystems impacted by climate and other human derived drivers. However, some also presented freshwaters as part of solutions to societal challenges. The CL indicate how wetlands and peatlands can act as sinks for GHGs, and this was also highlighted within CAP - DG AGRI actors were keen to stress that CAP investments support wetland creation and peatland rewetting to support climate mitigation (Agriculture round table, June 2023). The Dutch and Romanian Adaptation Strategies (AS), recognise the role of freshwater in buffering climate impacts. Overall, policies can do more to highlight the link between protecting freshwaters and the benefits from nature restoration to society (COM webinar, June 2023).

3.1.2 References to Nature-based Solutions

There are far fewer references to restoration or NbS than to freshwaters in the policies assessed. This matters as NbS need to be visible if we want them to be mainstreamed. The lack of explicit promotion of NbS in policy documents was a criticism voiced in the scoping questionnaire (Ibrahim et al., 2022).

The more recent policies were more likely to use the term NbS, with the Green Deal, proposed Nature Restoration Law and AS at EU level being proponents of the use of NbS, potentially as NbS is a relatively recent concept in policy circles. *“I think we are witnessing on how much time it takes before these broader concepts are translated into more specific actions”* (167E, interview, summer 2022). For example, NbS were only mentioned twice in the Dutch national AS implementation programme (2016) but NbS are mentioned several times in the Romanian AS (2022) suggesting such an evolution. However, the CAP strategic planning regulations, and Portugal CSP did not mention NbS and there was only one reference to a forestry NbS in the Hungarian CSP, which were all published in 2023. The EU Climate Law mentions NbS once, but neither the Finnish nor the Austrian NECPs mention NbS. Likewise, we found no references to the phrase NbS in the review of EU or Member State level RBMPs plans. There were potential synonyms for NbS in the data – for example the RBMPs and CSPs refer to natural water retention measures (NWRMs) which have been described as a form of NbS by others (Schmidt & Rogger, 2021) and the Danube RBMP referred to green infrastructure.

There were also few references to NbS in the MERLIN CS data. Interventions are more commonly referred to as restoration or conservation. However, sometimes measures are being recategorized into NbS, e.g. Room for the Rhine Branches programme (CS4) where the current impact of the climate crisis combined with biodiversity

crisis encouraged the development of NbS that target wider objectives than the original policy intention (Pietilä et al., 2023). The Tisza (CS9) also focuses on implementing NbS at a landscape scale (Buijse et al., 2022) although with limited support from the current Hungarian CSP.

What constitutes a NbS was also contested. Policy actors interpreted the concept differently. For example, DG AGRI actors considered on farm measures to protect soil health as a NbS - *“the basic obligations for farmers under the CAP are already in the line of the Nature Based Solutions”* (Interview, 84P, summer 2022). Whereas DG ENV actors were keen to see collective NbS at the catchment scale *“you do need catchment wide collaboration and that’s very often very difficult ... there are possibilities ... certain countries have been finding solutions to try and do this, but yes it, it was extremely limited. We really have been pushing and trying to convince Member States to do more with nature-based solutions”* (93F, Agriculture RT, June 2023). This highlights the importance of building a shared understanding of NbS, using a Global Standard.

3.1.3 Compliance with the IUCN Global Standard for NbS

The eight IUCN thematic criteria were used to see whether the focal policies were addressing all aspects of NbS. The criteria highlight the ambition involved in mainstreaming NbS and suggest that for transformation, policies should be designed and implemented in ways that address all eight criteria.

3.1.3.1 Societal Challenges⁷

The EU and Member State policies situate themselves in wider context and recognise the multiple challenges and drivers that act upon the freshwater ecosystems that need restoration. The documents note the increasing urgent need to respond to the multiple simultaneous crises (climate, biodiversity, economic etc). In particular, the CAP was now *“looking at the sustainability part from the 3 angles, the environmental sustainability, the economic and the social”* (84B, interview, summer 2022). These multiple goals are also highlighted in MERLIN, e.g. Deba River (CS2) barrier removal goes beyond WFD good ecological status objectives to address four societal challenges: disaster risk reduction, environmental degradation and biodiversity loss, human health, and climate action (Buijse et al., 2022).

3.1.3.2 Designing at Scale⁸

This criterion was more problematic. During the Agricultural RT, the Dutch CSP was highlighted as a good example, as it includes large-scale cooperation measures for wetland restoration and management, alongside non-productive investments (Agriculture RT report, June 2023). Whilst the CAP regulations include instruments for collective action at the landscape scale⁹, there was nothing in the Portuguese CSPs that promoted collective action for catchment restoration. In the Hungarian RDP, there are voluntary incentives under the Rural development plan investments for integrated landscape management using natural water retention measures, especially if it is implemented in cooperation between local land managers. Thus, while working at beyond farm scales is possible, it is not yet common across the Member State (Agricultural round table, June 2023). Furthermore, working at such scales requires coherent spatial implementation between policies. The Finnish Climate Change Plan for the Land Use Sector uses the same spatial units as the Finnish River Basin Units, but such spatial alignments between policies is rare.

Lack of coordinated sectoral interactions can also be problematic), for example, However, policies can help to drive restoration at scale, for example, the Ukrainian part of the Tisza basin (adjacent to CS9) is now developing their first RBMP, which is considering sectoral interactions (pers. comm, Tisza Field Visit, May 2023). The need for stronger policy instruments to incentivise, support and ultimately require working collectively at the catchment scale has been raised in the sectoral roundtables e.g. to implement upstream NbS to protect surface and groundwater supplies requires *“strong coordination of stakeholders – we need to have a correct*

⁷ Does the policy cover why it is needed by society, including how the policy is relevant to climate change adaptation and mitigation, disaster risk reduction, ecosystem degradation and biodiversity loss, human health, socio-economic development, food security and water security. Are the challenges clearly documented, urgent, and desired outcomes identified?

⁸ Does the policy talk about the need to work at the landscape or multiple scales beyond a restoration site? Does it recognise interactions between ecosystems, society and the economy and with other interventions and sectors?

⁹ Catchment or landscape scale means considering the connections between individual sites to generate a strategic perspective on the socio-ecological dynamics of these connections.

policy framework” (25A, WSS round Table, June 2023). Supranational river commissions were also recommended as ways to promote policy coherence at catchment scale e.g. International Commission for the Protection of the Danube River (ICPDR). (Hydropower round table, June 2023).

3.1.3.3 Biodiversity Net gain¹⁰

Policies were committed to protecting nature as strongly signalled by the overarching Green Deal, but most were weak on the commitment to biodiversity net gain or prevention of harm; and often did not focus on the cause-effect relationships between drivers and biodiversity decline (see criterion 7 on trade-offs). Even the proposed Nature restoration law has few specific references to phasing out national subsidies for environmentally harmful activities in the proposed NRPs, rather than promoting biodiversity net gain. As with criterion 2 (Designing at Scale), some policies espouse positive action, but the implementation record shows these objectives are not always being met e.g. the CAP Strategic Objective on preservation of landscapes and biodiversity (European Court of Auditors, 2020). However, case studies in MERLIN such as CS7a&b (Austrian and Hungarian Danube) illustrate a growing trend to pay closer attention to biodiversity gain and nature restoration over time as part of achieving WFD’s objectives for good ecological status, despite flood protection laws traditionally being prioritised over that of conservation within Austria.

3.1.3.4 Economic Feasibility¹¹

Policies did not have much information regarding cost-effectiveness, cost-benefit, cost recovery and supplementing public funding with private investments; and there could be more attention to economic feasibility when promoting environmental measures. However, economic instruments need to take adequate account of environmental benefits or the costs of environmental harm in the future as stated in Interviews with policy makers (DG AGRI, CLIMA, MOVE, summer 2022) and this was repeated in the COM webinar, June 2023 “traditionally cost-benefit analysis is still very much linked to this very narrow growth paradigm” (86F). This can be linked to the insufficient attention given to the assessment of socio-economic drivers or the socio-economic costs of not improving the water environment in past RBMPs (Buchanan et al., 2019).

The WFD is unusual in its focus on cost recovery that addresses the polluter pays principle (Lindhout & Van den Broek, 2014). The Hungarian RBMPs were highlighted making progress on cost recovery and improving water economic instruments, whereas the Spanish RBMP was assessed as less advanced on these matters (Schmidt and Rogger, 2021, European Commission, 2021). However, cost-recovery is not working in all member states or for all sectors, as the Romanian Danube CS8 is working where agricultural irrigation water, the main abstraction pressure in their area, is subsidized by the state to be free to farmers (Burger, KILIFI, & PLIEGO, 2022).

Discussion with economic sector stakeholders have highlighted the need for stronger evidence for cost effectiveness of the MERLIN measures (Berczi-Siket et al., 2022); and this concern was picked up in the questionnaire (Ibrahim et al., 2022) as well as other policy assessments (Emanuele Quaranta, Dorati, & Pistocchi, 2021). The Komppasuo case (CS14) is monitoring the effects peatland restoration has on how much carbon is sequestered, on water quality and biodiversity to support the national implementation of LULUCF and potential carbon markets.

3.1.3.5 Inclusive Governance¹²

NbS need inclusive governance to employ multiple forms of knowledge, including local and indigenous perspectives, and to improve gaps in capacity and understanding. All the policies involved multiple stakeholders and a range of societal interests, and most policy documents noted the need to ensure a just transition. Issues of governance are key to coherence and discussed further in section 4.3. The Finnish NECP explicitly included institutional arrangements to include indigenous knowledge and cultural practices in climate actions. However, only the Hungarian CSP highlighted a conflict resolution mechanism. Given that issues associated with trade-

¹⁰ Does the policy prioritise avoid destruction of intact ecosystems? Set clear and measurable biodiversity outcomes? Focus on the assessment of the state of the ecosystem and drivers of degradation? Ensure any adverse impacts on nature from NbS are monitored and addressed? Enhance ecosystem integrity and connectivity?

¹¹ Does the policy refer to the costs and benefits associated with NbS? Is there reference to cost-effectiveness? Are NbS compared to alternative solutions? Are externalities considered? Are financing options (including market-based, public sector and voluntary commitments) considered?

¹² Does the policy refer to all sectors of society involved in NbS? Does the policy make use of indigenous and local community knowledge? Does the policy include an understanding of stakeholder interests and include conflict resolution mechanisms?

offs or lack of integration between different sectors using freshwater, omission of conflict resolution mechanisms in policies seems problematic.

3.1.3.6 Balancing Trade-offs¹³

The overall Green Deal clearly recognizes not only trade-offs but also that different social groups may have different trade-offs between costs and benefits. The Climate law documents openly acknowledge issues of trade-offs and social justice with different capacities for burden sharing. The WFD has a clear mechanism to handle trade-offs between the environment and other societal benefits (derogation articles) but had less reference to social justice beyond the focus on stakeholder engagement. Other policies including the proposed Nature Restoration Law tend to assume that benefits of intervening to restore nature and take climate action outweigh the costs; and any disbenefits can be handled through provision of EU funding. The CSP were also weak on how to handle trade-offs – whilst the objectives may highlight sustainability, there is also a trend to agricultural intensification that “mainly is not in line with what we try to achieve in terms of being sustainable” (89A, interview, summer 2022). MERLIN CS4 (Rhine) is experiencing problems with trade-offs between policy objectives, particularly in areas where grazing patterns may change to allow restoration of flood dynamics, in the context of the resistance to the Dutch government’s attempt to reduce the number of livestock to meet climate objectives (pers comm, Tisza field visit, May 2023).

3.1.3.7 Evidence and Adaptive Management¹⁴

All the EU and Member State policies follow a policy cycle of planning, reporting standardised indicators and reviews by the EU Commission as well as other EU institutions, such as the EU Court of Auditors. However, it is important to note that even policies such as WFD with its ambitious and pan-EU indicators struggle to fully understand and explain the changes in freshwater ecosystems; and it has taken three cycles of RBMPs (over 18 years) to get sufficient data to report on all aspects of the policy. However, some respondents to the scoping questionnaire believe a lack of evidence impedes policy support for NbS (Ibrahim et al., 2022). Plans following review cycles can be adaptative and have increased in their ambition over time, which bodes well for the newly implemented NECP, CSPs and AS. Many MERLIN case studies emphasise the importance of learning and sharing. The development of a Catalogue of Measures for the Danube east of Vienna, relating to middle Danube stretches in Austria CS7a is an example of something that can be built upon and adapted by in RBMPs and AS.

3.1.3.8 Mainstreaming to International Platforms¹⁵

The EU Climate law, CAP, Nature Restoration Law and Green Deal are all clearly using international platforms to help share learning and mainstream sustainability. The Hungarian RBMPs reference the Intergovernmental Panel on Climate Change (IPCC), UN Agenda 2030 and International Commission for the Protection of the Danube River (ICPDR), even though the EU WFD documents are not particularly explicit about requiring these links; and the Dutch AS that explicitly contributes to the Paris Agreement and exchanges knowledge, experiences, and best practices with other countries and international organizations. In contrast, the Spanish RBMPs appear to be more inward looking, focussed on resolving issues created by the complex region and transboundary governance structures. Likewise, the Finnish NECP seemed to be more outward looking than the Austrian plan. The Finnish CS14 (Komppasuo) is particularly important as Finland has about 110,000ha of peat extraction sites that require after-use restoration measures (around 60, 600ha in current use) (Lang et al., 2022), so the ability to illustrate the benefits from the restoration of peat extraction sites for WFD and climate goals (particularly LULUCF) is being fed into a national and international policy discussions (Pietilä et al., 2023). There were no clear references to human rights in the policy documents however, access to water as a human right could be seen as a central to water management (United Nations General Assembly of the human right to water and sanitation, 2010).

¹³ Are trade-offs between costs and benefits identified and safeguards provided? Is it clear whose trade-offs are being considered (as they differ between social groups)? Does the policy use existing standards to ensure trade-offs are managed?

¹⁴ Does the policy have a monitoring and evaluation or Monitoring, Results and Verification framework? Does the policy enable iterative learning throughout the policy cycle?

¹⁵ Does the policy refer to sharing lesson to trigger change? Does the policy relate to global targets on human well-being, climate change, biodiversity and human rights, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), IPCC and IPBES?

The current situation, based on the assessment, is presented in Table 3 below, with green showing where policies were assessed as in line with the criterion, and orange where there were challenges to consider.

Table 3: How policies consider the IUCN Global Standard criteria for NbS

Criteria	Assessment of policies
1. Does the policy refer to societal challenges?	The EU and Member States policies address a wide range of challenges.
2. Does the policy refer to designing at scale?	Current implementation processes suggest that interventions are rarely implemented at catchment or landscape scale; and sectoral interactions can also be problematic.
3. Does the policy refer to biodiversity net-gain or prioritization of nature protection?	Policies were committed to protecting nature as strongly signalled by the overarching Green Deal, but most were weak on the commitment to biodiversity net gain or prevention of harm; and often did not have explicit focus on the cause-effect relationships between drivers and biodiversity decline.
4. Does the policy refer to economic feasibility?	Policies often lacked information on cost-effectiveness, cost-benefit, cost recovery and supplementing public funding with private investments.
5. Does the policy refer to inclusive governance?	Policies involve a range of societal interests, and most spoke about the need to ensure a just transition as part of the response to the multiple crises the policies were designed to respond to.
6. Does the policy refer to balancing trade-offs?	Not all policies recognised trade-offs, and most did not address how to distribute the costs and benefits of restoration.
7. Does the policy use evidence-based adaptive management?	The EU and Member State policies follow a policy cycle of planning, reporting standardised indicators and reviews by the EU Commission as well as other EU institutions, such as the EU Court of Auditors. However, lack of evidence to use NbS remains a barrier.
8. Does the policy refer to international mainstreaming and sustainability?	Not all policies included explicit alignment to global efforts or sharing best practices with other countries and international organizations.

3.14 Summary

Policies can help make the role of freshwater restoration more visible. If policies position freshwater restoration as part of the solution to societal challenges, this can help to mainstream restoration and better deliver the Green Deal goals. Most policies could do more to help highlight NbS, and this is not only a matter of time for a new concept to become familiar but the need to address multiple challenges including the need to work in an integrated manner, at scale, with close attention to reconciling trade-offs and ensuring there is biodiversity net gain. Policies need to promote NbS when appropriate with careful attention to the IUCN Global Standard for NbS to ensure there is a positive step change: protecting freshwaters so they can continue to benefit society and enable economic development.

3.2 Do the focal policy documents encourage the six economic sectors to implement NbS?

Willingness from the private sector to implement NbS was the top change required by respondents to the scoping survey (Ibrahim et al., 2022) so therefore active sectoral involvement is a critical part of policy making and implementation. It is important that policies illustrate how economic sectors can prosper whilst working with nature, whilst not damaging biodiversity or ecosystem services. Although all the policies may be relevant to these six sectors, there were mixed results regarding to what extent the sectors, and their roles, were made explicit.

3.2.1 Agriculture

Every policy reviewed at EU or Member State level had some relationship to the agricultural sector¹⁶. Agriculture is prominent in the Green Deal, primarily through the Farm to Fork Strategy but also through other policies such as the Circular Economy Action Plan. The CAP recognises how some agriculture creates pressures on wetlands, peatlands and freshwaters systems. COM actors suggest that the new CAP can support freshwater restoration through requirements for organic farming, soil cover and reduced tillage that support natural hydrological cycles, although success depends on uptake and implementation. The MERLIN case study in Sorraia, Portugal (CS13), is implementing NbS solutions for irrigation as a prototype of a CAP eco-scheme that can be considered for other irrigation lowland valleys of Central and Southern Portugal. (Buijse et al., 2022). Agriculture as a sector was associated with creating quality and quantity pressures on the water environment in the EU and Member State WFD documents; with associated measures suggested to mitigate these pressures. Likewise, the CL and NECPs noted that agricultural practices emit GHGs and need to mitigate or reduce such emissions through technical efficiencies such as (such as reduced fertilisers); change in the intensity of production or restorative soil management etc. Pasture, cropland, wetlands and peatlands are expected to be managed as carbon sinks via the LULUCF regulations. Agriculture, and its associated food systems, are deemed vulnerable to impacts of climate change and in need of protection in the AS; as well as being part of the solution through climate friendly farming practices promoted in NECPs. However, the overall reaction to the agro-ecosystem aspects proposed within the Nature Restoration Law suggests that using policies to mainstream freshwater restoration is not widely accepted by the agricultural sector. Overall, the policies highlight that the agricultural sector is, or should be, actively delivering nature and climate friendly farming practices, not only for the benefit of society and future generations, but to protect the sustainability of water resources on which farming depends.

3.2.2 Hydropower

The current energy policy context makes delivering some policy objectives, like the proposed targets for removal of barriers to improve connectivity (Belletti et al., 2020), more difficult. Hydropower is considered, by its proponents, as one way to help progress the GD (International Hydropower Association, 2021). The EU Climate law promotes the expansion of renewable energy and it's Fit for 55 package has revised the renewable energy directive to support Member States to increase the use of renewables in their energy mix. Both the Austrian and Finnish NECPs reference increasing hydropower capacity; and the Hungarian CSP references the need to use renewable energy on farms that could include small hydro schemes. The EU AS and the Portuguese CSP explicitly highlights the need to consider the impact of droughts and low flows on hydropower energy production. The language in the Nature Restoration Law and WFD is quite indirect, referring to barriers associated with multiple functions including energy generation rather than naming the sector. In both policies, hydromorphological effects from barriers including hydropower dams and their operations (ecological flows reduced, hydropeaking, sediment trapping, fish migration blocked) are clearly identified. Furthermore, impounded waters can also emit GHGs. The WFD includes measures for barrier removal and for mitigation of pressures from barriers through good practice, but the WFD under article 3 also allows designation of heavily modified water bodies, with revised ecological status objectives, when water is stored for power generation, and such derogations have been widely used across Member States. The Spanish RBMP summary highlights some areas of good practice, e.g. significant barrier removal planned in the Duero basin but there are still significant challenges with many court cases fighting for or against barrier removal (Directorate General for Water State Secretariat for the Environment., 2017). RT and DG AGRI actors stressed that barriers are often multifunctional and provide domestic or agricultural irrigation water supply (see also (E. Quaranta et al., 2022),

¹⁶ Within MERLIN, this covers arable, horticultural and livestock but not forestry - see D4.1 (Berczi-Siket et al., 2022).

but the CAP does not consider barrier removal within its remit. Finally, a DG ENV actor suggested that hydropower license fees could have a proportion reserved for NbS, using the cost-recovery aspects of WFD, to help fund removal of obsolete barriers in catchments where they operate.

3.2.3 Insurance

The Insurance sector is clearly referenced in some policies; implied some others and not referenced in the rest. The role the insurance sector is twofold in policies – to finance NbS through Life insurance and to promote NbS as risk reduction measures through natural catastrophe insurance. The EU AS, particularly its CLIMATE-ADAPT platform highlights the role that the natural catastrophe insurance data could help with risk management and adaptation; this was also found in the Dutch and Romanian AS. The Dutch AS also highlighted the role of life insurance in financing NbS. The EU and Member States CSP have strong links with agricultural insurance, through article 47 and article 76 that offer support for production and harvest insurance premiums; although more could be done to ensure that these measures promote NbS as potential options, something that is being explored in CS8 (Romanian Danube). Although insurance was not picked up by name, the focus within the WFD on managing risks from floods and drought within the EU and Member State documents suggests that natural catastrophe insurance could be important and could fill knowledge gaps regarding the costs of flood damage (EEA, 2021). The EU Climate Law does not refer to insurance, the Finnish and Austrian climate mitigation policies recognise the potential role of insurance in their NECPs but not in the context of freshwater NbS. The Nature Restoration Law doesn't mention the insurance industry despite the fact it is highlighted as having a role in financing restoration (Hudson et al., 2023). In general, there is an indirect relationship with Insurance within these policies, but the sector could help normalise the consideration of NbS in 'building back better' after floods and droughts, thus the sector should be named as an active stakeholder in policy mainstreaming processes.

3.2.4 Navigation

Navigation, or inland water borne transport as it is more often named, was mentioned in most EU and Member State policies. As set out in the Green Deal and reinforced by the EU and Member State climate policies, there is a desire for a modal shift away from road transport to train and water transport; and the focus in these policies is how the inland water transport sector can reduce their emissions per tonne/Km. However, the reference is not directly related to any form of freshwater restoration or NbS. This modal shift is increasing the hydromorphological pressures on water bodies (Schmidt and Fokkens, 2023). Interviews and round table data show that 'good navigation status' under TEN-T Regulation 1315/2013 often is at odds with measures for good ecological status under the WFD. For example, both the MERLIN Rhine case study (CS4) and Austrian Danube (CS7a) have noted that mitigation of drought reduced navigation possibilities via the greater use of more weirs to meet Green Deal goal on sustainable transport might have to take prevalence above nature restoration goals (Buijse et al., 2022). The WFD at EU and Member State level recognises that modifications to allow navigation for freight or recreation can be covered by Art 3a (iii) designation of Heavily modified water bodies; and this is picked up in contemporary reviews of the RBMPs to ensure they are coherence with the Sustainable and Smart Mobility Strategy (European Commission, 2020)- see the Danube RBMP3 "Joint Statement" on environmentally sustainable inland navigation. However, the Austrian NECP stated further through the TEN-T that "improving fairway conditions west and east of Vienna" will need to achieve good ecological status. References were indirect in the Nature Restoration Law, which refers only to the removal of barriers including those no longer needed for inland navigation (Article 7) and more direct links could be made here. The EU AS notes that climate change may result in low flows and storm surge which can impede inland water borne transport but also highlight the role that restoration of wetlands and peatlands and floodplains might play in improving hydrology and therefore navigable fairways. The Dutch and Romanian AS also highlight climate impacts on inland water transport; and how ecological restoration can help buffer impacts of climate action. As with hydropower, it could be possible to use a proportion of fairway dues for NbS, which could be implemented using common regulations for coherence and structural funds (see section 3.3.2) (COM webinar, June 2023) or WFD cost recovery processes.

3.2.5 Peat Extraction

In several policies, peatlands are referred to as protected habitats under Natura 2000 or Ramsar designations, which is rather different to seeing peat as a commodity used within the agro-food or energy systems. Peatland restoration is referred to in the Nature Restoration Law, the EUCL recognises the need for 'carbon farming' to

use agricultural peatlands as carbon and CAP's GAEC2¹⁷ protects wetlands and peatlands on agricultural land, preventing peat extraction on land supported by CAP funding and from degraded peatland becoming a GHG source. The Peat Extraction sector was only mentioned once – the Finnish Climate plan for Land use sectors includes references to 'climate-resilient after use of peat extraction areas' and a working group has been set up to half energy produced from peat by 2030, however, the Finland Integrated Energy and Climate Plan wants to protect some peat use in power¹⁸ and heating due to energy security concerns. Post-extraction sites are increasingly considered for renewable energy (solar, wind) promoted as part of NECPs, which can be difficult to combine with restoring natural wet peatland functions. There could be greater support for paludiculture or wet forestry to allow land use businesses using post-extraction sites to co-exist with restoration processes (Greifswald Mire Centre & Wetlands International European Association, 2022). The proposed EU carbon removal certification framework could provide a way to help integrate after use measures into CAP and climate policies more effectively, such as ensuring any definition of 'managed wetlands' sink targets in LULUCF regulations that apply from 2026 explicitly includes the Peat Extraction sector in their operationalisation. However, the burden of mitigating GHGs from extraction in the source member states, rather than the consuming member states, is contested by the sector (RT discussions, 2023). The omission of the Peat Extraction sector in the focal policies may be because the sector is governed through mining licences and environmental assessment regulations under individual Member State planning regimes (Peters & von Unger, 2017), also confirmed in roundtables and interviews with COM actors in 2022. This means that the policy framework for licencing this sector is very variable between Member States (Räsänen et al., 2023) and this variability in after-use ambitions could be standardised using carbon farming policy processes. NECPs working with CSPs could support the sector to work cooperatively on landscape scale peatland restoration and help to harmonise appropriate after-use ambitions. The Just Transition Fund, part of wider climate policies, can be used to support the transition of peat industry from extraction to restoration and alternative after use (LIFE Peat Restore, 2021) a mechanism being considered for upscaling in the wider region around CS14 Kompassuo, Finland.

3.2.6 Water supply and sanitation

In contrast to Peat Extraction, the WSS sector was mentioned directly or indirectly in all policies. The WSS sector is seen as affected by climate change - the Green Deal highlights the need for a stable water supply; a theme repeated in the EU and Member State AS and is highlighted as a 'vulnerable sector' (in the EU and Austrian Climate policies). Here the restoration of wetlands and floodplains is seen to improve the resilience of water supply. The WFD has a strong link to the sector through the focus on chemical parameters to protect drinking water quality. The recent Drinking Water Directive (2020) has extended its scope from designated drinking water protected areas to ensuring risk management for all waterbodies that support drinking water sources. The WFD allows for HWMB to be designated if needed for drinking water storage, and the Nature Restoration Law Article 7 promotes the removal of barriers no longer needed for water supply but makes little reference to the sector beyond this point. Increasingly, WFD restoration measures are helping to protect flows and groundwater recharge that are in turn the inputs to the drinking water supply system. Drought management plans can be developed as part of RBMPs. The Lower Danube, Romania (CS8) highlight that droughts plans under the Romanian AS could be an opportunity to promote floodplain restoration and NbS (Buijse et al., 2022). The WSS sector is an important player in promoting NbS – the European Investment Bank was quoted as stating that "drinking water supply companies could play a much more active role than they are doing now" (93F, COM webinar, June 23) but in the sector does not feel they had a clear policy mandate to develop NbS "it is possible to build a shared vision but it takes a lot of time, someone has to bring the initiative. The water industry is not a leading partner in these discussions but are open to participate" (220C, WSS round table, June 2023). However, in the Hungarian Liberty Island demonstration project (CS7b), WWF worked with drinking water companies when implementing measures to meet WFD and Natura 2000 obligations, so that restoration helped to improve long term water supply. Therefore, sector needs to work with local authorities and land managers.

3.2.7 Other sectors

The policies aim to involve all economic sectors as well as civil society in delivery of its objectives. Whilst the sectoral approach distinguishes forestry from agriculture, however, this sector is clearly implicated in the EU

¹⁷ Good Agricultural and Environmental Conditions (GAEC) – GAEC2 requires the protection of wetlands and peatlands to prevent the release of GHGs.

¹⁸ However, the majority of peat extracted in Europe is used in the horticultural sector (Kern et al., 2017).

and Member State CSPs, in the EU CL Fit for 55 package and LULUCF regulations; and the AS. Forestry as NbS is addressed more fully as part of the MERLIN sister project, [SUPERB](#). The Austrian NECP highlights the role of the bio-economy including cultivation of biomass and biofuels; and the energy sector and other industries are also referenced. The Dutch AS also talks about sector specific adaptation strategies for urban planning, infrastructure, nature conservation, and health; the Romania AS adds forestry, tourism, education, cultural heritage (particularly relevant to historic barriers), transport, and other industries to this list. The EU and Member State RBMPs also reference sectors such as mining, power generation beyond hydropower (e.g. hydrogen or nuclear power); recreation, ecotourism and other manufacturing industries. In some documents, such as the Danube 3rd RBMP, nature conservation is also treated like an economic sector with interests in how the WFD is implemented. Furthermore, land use planning, construction and public infrastructure development are important sectors involved in urban-based NbS and blue-green infrastructure that intersect with the focal policies (Pietilä et al., 2023). These additional sectors contribute to the breadth of stakes to be considered as part of the planning processes within policy coherence (see section 3.3).

3.2.8 Cross-sectoral issues

Section 3.2 has shown the breath of stakeholders that could be involved if the criterion of inclusive governance (section 3.1.3.5) is implemented when mainstreaming NbS. These policies require action by all these sectors to implement the plans and measures to achieve the policy objectives; and it is important to consider the synergies and conflicts that might arise between sectors when engaged in policy planning and implementation processes. As already hinted above, the policies around justification of, or removal of, barriers and channel modifications (WFD, Nature Restoration Law) often refer to multifunctional barriers for agricultural irrigation, hydropower, flood protection (affecting insurance) and drinking water supplies. Coherence between these sectoral policies has been highlighted as delivering significant co-benefits (Eureau, 2017); and CAP ENVCLIM options to increase regenerative farming practices are believed to lower the need for agricultural abstraction and reduce competition with the WSS sector (84A, interview, July 2022). The EU and Member State AS also call for inter-sectoral cooperation - for example the Dutch AS implementation programme emphasises the importance of cooperation and collaboration between Agriculture, Insurance, and Water supply and Sanitation sectors to address climate nature resilience.

Cross-sectoral involvement is required in CSP and RBMP development. However, it is not clear if procedural sectoral integration in policy development will lead to substantive integration in policy implementation. Evaluations of the WFD implementation note that when several economic sectors (e.g. Agriculture, Industry, Navigation) need to adapt their practices to comply with WFD objectives, the implementation of the WFD often faces more challenges (Buchanan et al., 2019). Scoping Questionnaire responses (Ibrahim et al., 2022) suggest that policy subsidies via CAP, renewable energy directives under the Climate Law and other policies covering navigation seem to drive 'unfair and unsustainable water allocation' to these sectors. The Hungarian and Portuguese CSP note increasing water scarcity and the need to invest in irrigation infrastructure and technologies to protect agricultural water supplies, which may increase competition for drinking water supplies - understanding both trends in demand and water supply including conflicting uses was seen as important (COM Webinar, DG CLIMA, 2023). Restoration of past peat extraction sites may lead to difficulties in working at a landscape scale, when rewetting conflicts with drainage of downstream agriculture or other forms of land use (Ibrahim et al., 2022) unless the measures are coordinated to avoid unintended impacts of changes to the hydrological system. However, when directed through policy processes, restoration of degraded peatlands (including Peat Extraction sectors) involving the agricultural and extraction sectors, could benefit the Hydropower, Insurance, Navigation and WSS sectors through stabilising surface water flows and reduced sedimentation.

Addressing these cross-sectoral linkages requires competent administrations with experience of multi-interest conflict resolution. From the data, Member States lack a government body ensuring cross-sector cooperation and harmonised, integrated solutions, except for the Dutch approach to Spatial Planning that is supporting progress in MERLIN CS4 (Rhine). The cycles of RBMPs are building up such capacities to connect at least some of the sectors, although more could be done through formal policy coherence (see section 3.3).

3.2.9 Summary

The findings regarding the visibility of sectors in the focal policies are shown in Table 4 below. The green illustrates visibility, light orange for mixed results or where the reference is indirect (the sector is not named, but issues e.g. barrier removal, renewable energy, protecting peatlands that pertain to the sector are highlighted), and darker orange where the assessment did not see a connection in the documents.

Table 4: Sectors mentioned with policy documents (not necessarily associated with freshwater NbS).

	Green Deal	Nature Restoration law	Adaptation Strategy	Common Agricultural Policy	Climate Law	Water Framework Directive
Agriculture	Yes	Yes	Yes	Yes	Yes	Yes
Hydropower	Indirect	Indirect	Yes (EU) No (NL, RO)	Yes (PT); Indirect (EU, HU)	Yes	Yes
Insurance	Indirect	No	Yes	Yes	No (EU, AT) Yes (FI)	Indirect
Navigation	Yes	Indirect	Yes	Yes (HU); No (EU, PT)	Yes	Yes
Peat Extraction	No	No	No	Indirect	No (EU, AT) Yes (FI)	No
Water Supply and Sanitation	Yes	Indirect	Yes	Indirect	Indirect (EU, AT) Yes (FI)	Yes

Note: AT – Austria; EU – European Union; FI- Finland; HU- Hungary; NL – Netherlands, PT – Portugal, RO- Romania

Overall, except for agriculture, and perhaps insurance, there is little written connection made in the policies between these sectors and their active role in supporting or implementing freshwater NbS. More often, references to the economic sector are implied through references to infrastructure e.g. barriers associated with energy production and/or water supply. Thus, we can infer these sectors have a stake in the policy goal, mainstreaming suggests that governance processes for policy development, planning and implementation involve the full suite of economic sectors involved and do so to build cross-sectoral solutions at a catchment scale. Considering IUCN Criteria 5 and 6, planning processes should also take account of the different levels of political influence within and between the sectors. Sectoral involvement should focus on pathways to support NbS rather than a platform to resist freshwater restoration and NbS or focus solely on their sectoral needs.

3.3 Do focal policies work coherently to support NbS?

This section looks at the issue of policy coherence. Mainstreaming NbS “requires horizontal and vertical cooperation, collaboration and integration among the different agencies institutes and governmental structure” (interview, 177C, summer 2022). Policy incoherence through conflicting objectives or implementation problems (Schleyer, Görg, Hauck, & Winkler, 2015) can impede NbS (European Commission Directorate-General for Environment, 2021). This is because the diversity of policy frameworks across Europe can lead to a piecemeal site-by-site approach (Schmidt & Rogger, 2021). The Green Deal is perceived to provide strong overarching objectives that link multiple policies, strategies and plans together (Ibrahim et al., 2022) and provides a common vision for mainstreaming environmental concerns into policies. In this briefing, we explore how coherence might support mainstreaming freshwater NbS. The findings consider vertical and horizontal coherence as illustrated in Figure 2. There is also a temporal aspect to coherence when policies are reviewed, as these reviews provide a window of opportunity to embed mainstreaming of freshwater restoration as NbS.

3.3.1 Vertical coherence

Vertical coherence implies standard policy design, ensuring that the objectives of the policy have appropriate instruments (regulation, incentives, procedures); these instruments are well implemented; and that some form of monitoring and evaluation allows a feedback loop to show that the logic model for the policy is being delivered (see section 3.1.3.7). Here we consider how an individual coherent policy can help mainstream aquatic restoration following NbS principles. This section does not analyse the individual policy designs in detail but highlights the main issues that may have relevance.

Objectives: many objectives seem to fit with the transformational intent in MERLIN, as there is increasing recognition that non-environment objectives rely on nature and should do no harm to biodiversity. Policy documents suggest that the effects on freshwater ecology can be mitigated if well implemented but these statements do not encourage these sectors to seek new alternatives such as NbS. In all cases, the policies cover a wide range of sustainability objectives, including but not limited to climate or environmental issues such as a focus on security, development and justice. This leads to a multiplication of objectives within individual policies e.g. Portugal CSP with 9 strategic objectives ranging from market competitiveness and income viability to reversing biodiversity loss; likewise the Romanian AS has thirteen strategic objectives covering many different economic sectors. Without coordination to resolve trade-offs, these objectives can become contradictory or even conflictual. There are tensions with trying to ‘do it all’ when we are reaching planetary limits. The analysis shows the documents are unclear regarding how trade-offs within a policy should be managed (see section 3.1.3.6).

Instruments: The EU policies are frameworks that allow member states to adapt policy instruments to be appropriate to their specific circumstances. Some elements are compulsory, some compulsory but within ranges, some are options and offer equivalence so that the same outcome can be delivered by Member State proposed measures. Thus, the data reveals a complex and crowded landscape of plans and strategies that corral a variety of measures, funding with conditions and implementing regulations. The analysis therefore considers plans, funding, and licences as instruments that can influence the mainstreaming of NbS.

Plans seem particularly important when looking at ways to support and mainstream freshwater NbS as they include a menu of measures for Member States to implement. The Nature Restoration Law Annex VII has specific information on the measures that can be used for Member State restoration plans; the CSPs offer a mix of compulsory farm practices and a menu of practices and investments that Member States can customise; whilst all RBMPs generate compulsory programmes of measures from a defined set of ‘Key Types of Measures’ (KTM) that can be used to advance freshwater restoration. The Member State AS have a clear focus on measures to adapt to climate change, but don’t have a specified menu of actions although they follow an action planning process (European Commission, 2023b). The Climate Law and associated energy plans also have three clear policy levers (Emission trading scheme, effort sharing and LULUCF) but again do not have specific measures or instruments that support freshwater NbS. Therefore, list of measures including NbS within plans can make NbS more visible and encourage uptake and mainstreaming.

Plans require attention to institutional design and governance processes to maintain that vertical coherence and deliver their objectives. In Hungary and Spain, there are complex legal frameworks that make it more

difficult to reconcile the environmental objectives required by WFD with the preceding water rights legislation. Different abstraction regimes (for drinking water or agriculture irrigation) can be implemented by different government departments, which can impede allocation choices for achieving RBMP objectives. The Basque case (CS2) confirms that the Spanish water management has a complex water regime, where large inter-regional basins depend directly on the central government, while the management of smaller intra-regional ones is highly delegated, with different regulatory agencies in each province (Pietilä et al., 2023). Within Member State climate policies, there is often the need for multi-level coordination – e.g. Austrian climate law has federal and regional planning processes. In some cases, there are multiple climate plans such as Finnish Medium-term plan; a Long-term plan (under development); and a climate plan for land use. Therefore, delivery of one policy often requires liaison between multiple ministries, agencies and stakeholders. However, this interaction doesn't always happen “CSP are often negotiated and drafted by Ministry of Agriculture, and often other ministries are not really connected or [sufficiently] involved” (89A, COM Webinar, June 23).

Funding for the focal policies comes from the public purse. There is a strong commitment to fund biodiversity and climate action (e.g. 7.5 % of annual spending to biodiversity in 2024, to be increased to 10 % in 2026 and 2027, (European Commission, 2023b). The 2021-2027 Multiannual Financial Framework (MFF) estimates allocations to biodiversity will amount to nearly EUR 114 billion. However, there is no dedicated budget for biodiversity (or for climate action). Instead, the sum is made up from a range of budgets: Structural and Cohesion Funds (totalling EUR 20, 138 million); Recovery and Resilience Funding (EUR 11, 067 million); R&D funding (EUR 9, 362 million); and CAP and Fisheries (EUR 790, 34 million) (Aubert et al., 2022). This can be compared to the CAP where Annual EU expenditure is €49bn (constant 2018 prices); around 32% of 21-27 MFF budget. Having a dedicated funding process was seen as one way to mainstream NbS – “It's important to have a dedicated budget line in order to secure funds that can help nature restoration” (189F, Agricultural round table, June 2023) rather than having to access funds from other public policy sources; or through research and innovation projects. These funding sources are filtered through multiple government ministries adding additional barriers (see also section 3.3.2).

The CAP budget is extremely important for freshwater restoration and NbS measures, through conditionality (especially GAEC 2); Eco-Schemes and Agri-Environment Climate Commitment (AECC) within the Rural Development Programme (COM webinar and Agricultural RT in June 2023). However, critiques suggest that the proportion of budget on these measures, compared to measures that sustain intensive agricultural practices remains small (EEB, 2022). Whilst it remains economically favourable to produce commodities on drained wet or peat soils, and on flood plains, these incentives act as a barrier to wetland and floodplain restoration as agricultural stakeholders feel that the AECC payments do not outweigh the opportunity costs of such a change in production. Indeed, some stakeholders at RTs stated that budget share signals the degree of political commitment to the environmental aspects of the Green Deal. Feedback from the project partners and RT discussions suggest two ways to use the CAP budget to mainstream freshwater NbS. Firstly, through increasing the share of RDP funding on freshwater NbS, such as Hungary where 38% of RDP funding is directed to 'interventions in favour of the environment and climate'(ENVCLIM) measures (higher than EU average). Or secondly, from the Scottish example in CS17 (Forth Basin) where the Scottish government is proposing 'enhanced conditionality' whereby up to 50% of the income support payment requires additional compulsory measures to protect soil health and biodiversity beyond the previous cross-compliance requirements.

The CAP architecture of incentives differs from the WFD focus on cost-recovery. However, cost recovery seems to be implemented more actively within the WSS sector than the navigation, hydropower or agricultural sector. For example, the Spanish process was highlighted as improving with a reported 79.7% financial and 67.9% environmental costs expected to be recovered during 2nd RBMP process. (Directorate General for Water State Secretariat for the Environment., 2017). However, there were lower metrics for agriculture than for urban or industrial sectors, with many exemptions for agricultural water use, and a Spain lacks a pricing system to incentivise better use of water due to scarcity (WWF & Adena, 2017).

Using private finance to meet the investment gap between available public funds and what is needed to mainstream restoration (Aubert, McDonald, & Scholl, 2022; Hudson, Hart, & Verbeek, 2023) is common in mainstreaming guidance. However, there was very little material in the documentation we assessed about how public-private funding might work to support NbS in these rural areas. Concern over market payments for ecosystem payments jeopardising CAP payments through conflict with State-aid rules was seen as a barrier to catchment level interventions in WSS round table discussions, although there are precedents (EEA, 2021). – There was uncertainty about how to use private finance for NbS “*public funding covers a lot of the environmental public goods as it is really difficult to coordinate these collective payments among private players into a nature-based solution. It's very complicated to coordinate that, to avoid free riding*” (273, Agriculture

round table, June 2023). However, the Romanian AS (2022) highlights market instruments e.g. certification and payment for ecosystem services, rather than cost recovery programmes as the way to engage economic sectors. In the Forth, Scotland, case (CS17), the potential for better returns from commercial carbon markets in the future may be contributing to the slow uptake of public funding for peatland restoration (pers. comm, Forth field trip, April 2023). The interaction with market instruments e.g. carbon credits will be very important to how freshwater restoration is taken up (DG AGRI interviews, Summer 2022) and is an area for further policy attention.

Permits or licences, such as to allow abstraction, are a statutory requirement under WFD and place binding conditions on all water users. However, there is some incoherence, as there are examples where Member States are permitting actions that seem to go against overall policy objectives, such the decision to provide more irrigation licences in Ebro RBMP; or the National Hungarian programme to increase irrigated areas under their CSP, despite concerns over ground and surface water scarcity. Licencing of hydropower activities has emerged as an important leverage point from the sectoral reviews, as reviews of licences can trigger decision making about whether to pursue NbS (e.g. removal of aging hydropower barriers (Chaffin & Gosnell, 2017) or review existing entitlements in light of increased pressures in the catchment. However, the broad review indicates it was often unclear how licences are implemented and there seems to be variability across Member States. Some Member State energy policies do not require barriers to be removed at the end of their concession period as part of their licence to operate for energy generation) (Miguélez Carbajo, 2017) Information from the CSs, confirmed by other research (Schmidt and Fokkens, 2023), highlights that licences without regular review processes prevent adaptation to new sustainability policy objectives highlighted above. However, CSs also report that implementing NbS also triggers the need to apply for licences to restore rivers or wetlands, so licences can also be a barrier to NbS implementation.

Implementation: Currently, there is limited progress on the main climate and biodiversity objectives, suggesting that stronger vertical coherence is needed to achieve the targets. Overall, only 40% of Europe's surface waters are in good status or above; the Austrian climate neutrality by 2040 seems unlikely (Augere-Granier & McEldowney, 2021); and CAP impacts on water continue (European Court of Auditors, 2021). Of relevance to MERLIN, there is delayed implementation for KTM on 5&6 (continuity, free flowing rivers) and (ecological flows) throughout Europe. Some of these delays were due to taking time to establish monitoring trends, but lack of funding and governance issues such as conflicts between governance levels and/or different policy regimes were also highlighted (European Commission, 2021).

The EU policies steer actions by Member State actors and the COM actors argue they have limited influence “we cannot instruct the Member State to act but we can suggest to them to do it” (89A, COM Webinar, June 2023). The COM are developing strategies that require the COM to act together with Member States to increase this leverage. Implementation also depends on political will. Member States exhibit differences in ambition and interpretation of their responsibilities, such as with inland navigation and NbS “Hungary right now is not interested in inland navigation at all also for the political reasons” (93C, summer, 2022). International (cross-border) RBMPs like the DRBMP are based on Member State interactions and negotiations, sharing good practice to increase cooperation, although not all international river basin commissions function smoothly - there can be conflicts and difficulties involved in arriving at consensus or sharing data (COM Webinar, June 2023).

Implementation also depends a great deal on capacity of the competent authorities and their agencies. Insights from RTS and interviews noted that Member States administrations often lack individuals to translate expert knowledge on topic into the strategies, policies and plans. Case Study 7a Middle Danube, Austria, highlights the issue of divided and changing responsibilities across government ministries, as well as staff changes within the ministries. In this case study there is currently low technical capacity within the Ministry with responsibility for flood risk and the topics of waterways, water bodies, floods and flood protection no longer fall under one ministry (Buijse et al., 2022).

Projects were often used to help with planning, knowledge exchange and demonstration. There were often references to projects in policy documents, such as the DRBMP that highlighted the need for restoration projects to be planned to improve ecological and hydrological connectivity along the Danube. Measure 14 in the Hungarian RBMP is designed to help with pre-financing interventions, used to support feasibility studies, engaging landowners and negotiating access and consents, often through such projects. More generally, it is projects funded by the EU, such as the Horizon Programme, Interreg, LIFE and Just Transition that not only pay for the NbS but also the costs involved in building consensus, collecting pre and post information on how an intervention works and evidence of impacts on economic sectors. It seems to be through projects that cross-

sectoral or even cross-policy interactions are developed; but these processes are needed over long time periods and to link up sites - The Hungarian evaluation of the RBMPs suggest that there is a need for more coherent packages to link projects together to achieve restoration at scale (WWF Hungary, 2021). Romanian and Dutch AS highlight research, development and training as part of delivery climate resilience; whilst the CAP funded European Innovation Partnerships (now part of the CAP Strategic Network) provides the institutional framework for sharing knowledge and project results regarding NbS and agriculture.

Monitoring emerged as an important aspect of vertical coherence and adaptive management (see IUCN criterion 7, section 3.1.3.7). All the policies assessed in this analysis have timelines for their objectives and most have targets to achieve. The plans associated with the focal policies (AS, NECPs, CSPs and RBMPs) are regularly reviewed (see section 7) and this provides an opportunity to promote NbS. However, to do so, there is a need for freshwater NbS to be visible in policy options and considered in the next planning phase. Overall the adaptive planning cycle first popularised by RBMP is being rolled out to other policies and this cycle provides opportunities for knowledge sharing, and debate. Project insights also need to be targeted into coherent policy making in a systemic manner using multi-scale monitoring and data sharing (Harrak & Lemaitre, 2023).

As well as monitoring the process of policy implementation, the outcomes also need to be clear. There needs to be sufficient indicators to allow an assessment of freshwater status and improvements (Haase et al., 2023). However, the Green Deal uses indicators from the 8th Environmental Action Programme, but these lack specific indicators on freshwater ecosystems (there are terrestrial biodiversity indicators, an indicator associated with nitrates in Groundwater and the Water exploitation Index for water scarcity). The Austrian and Finnish NECPs include monitoring plans that encompass effects of interventions, cost-effectiveness and consolidate new understanding of climate change, but again these are not freshwater ecosystem focussed. The CAP has a new Performance, Monitoring and Evaluation framework, described in the CSP regulation Articles 128-136; but again the indicators do not specifically target freshwater. The WFD has a strong EU wide monitoring system focussed on freshwater ecosystems; with a final target to reach Good Status in 2027. However, the ‘one out, all out’ approach to good status makes it harder to show where progress has been made across multiple parameters and retain the support of non-environmental stakeholders (27A, Hungarian interview, April 2023). The lack of strong freshwater indicators beyond the WFD could be problematic for mainstreaming NbS.

However, understanding the freshwater ecology must be linked with socio-economic data and local knowledge about how the aquatic environment in terms of how it functions as part of the wider working landscape to support mainstreaming as an NbS (Ibrahim et al., 2022) Indicators and monitoring, particularly from projects, need to be translated and utilised in EU and Member State policy cycles but “we don't have such a capacity right now to somehow extrapolate this knowledge and this information for this application to the European scale” (177C, INTERVIEW summer, 2022). Therefore, policy processes have a role to play in sharing information and making decisions in their broad planning networks, to building capacity and understanding.

3.3.2 Horizontal coherence

Horizontal coherence is alignment of different policies at the levels of objectives, instruments and implementation practices (see Figure 2). The Fitness check of WFD (European Commission, 2019) highlighted the lack of mainstreaming of WFD objectives in other policies was part of the reason for failure to meet objectives. Policy coherence within the Member State NECP was also judged as inadequate (European Commission, 2020) These interactions can be complex, including diagonal coherence whereby the objective of one policy is delivered, at least in part, by the instrument of another.

Table 5: The policies involved in Horizontal Coherence

Policy	References to other EU policies in policy documents	
EU GD	Biodiversity Strategy for 2030 Circular Economy action plan Common Agricultural Policy Strategy on adaptation to climate change	Climate Law Farm to Fork Industrial Strategy Water Reuse Regulation
EU Adaptation	Biodiversity Strategy for 2030 Circular Economy Action Plan Covid 19 Recovery funding Green Deal initiatives Farm to Fork Strategy Floods directive Forest Strategy for 2030 Taxonomy for sustainable activities	Just Transition policy Non-financial disclosure obligations Renewed Sustainable Finance Strategy Renovation Wave Smart and Sustainable Mobility Strategy Soil Strategy Water Framework Directive Zero Pollution action plan
EU Climate Law	Common Agricultural Policy Biodiversity Strategy for 2030 Bio-Economy Strategy Forest Strategy for 2030 Strategy on adaptation to climate change Strategy to reduce methane emissions	Farm to Fork Strategy Green Deal Long Term Vision for Rural Areas Nature Restoration Law (Proposed) Renewable Energy Directive Soils Strategy
EU CAP	Formal references in Annex XIII: Air Quality and Pollutants reduction Birds and Habitats Directives Climate Law	Nitrates Directive Sustainable Use of Pesticides Directive Water Framework Directive <i>Strategy on adaptation to climate change is not in the Annex as not a 'law'</i>
EU WFD	Formal references in Article 10 and Annex VI: Bathing Water Directive Birds Directive Drinking Water Directive Environmental Impact Assessment Directive Habitats Directive Later WFD policy documents also reference: Ambient Air Quality Directive Biodiversity Strategy for 2030 Common Agricultural Policy Circular Economy Action Plan Farm to Fork Strategy Floods Directive Green Deal Pharmaceuticals Strategy	Integrated Pollution Prevention Control Directive Major Accidents (Seveso) Directive Nitrates Directive Plant Protection Products Directive Sewage Sludge Directive Urban Waste Water Treatment Directive Renewable Energy Directive Smart and Sustainable Mobility Strategy Strategy on Adaptation to Climate Change Strategic Environmental Assessment Directive Sustainable Chemicals Strategy Sustainable use of water in agriculture Zero Pollution Action Plan
EU Nature Restoration Law	Circular economy action plan Common Agricultural Policy Forest Strategy for 2030 Pollinator Initiative Soil Strategy Strategy on adaptation to climate change Birds and Habitats Directives	Climate Law Green Deal Invasive Alien Species Regulation Marine Strategy Framework Directive Water Framework Directive Zero pollution action plan

The data suggest that there is a lot of horizontal coherence expected from the focus policies; and that these expectations are growing over time (see the section for WFD in Table 5). Coherence between NECPs and AS (linking delivery of both mitigation and adaptation objectives) has also increased as climate action ambitions grow. Policies varied widely in the extent of other policies with which to be coherent (from only three picked up from the Hungarian CSP to over 26 policies listed in the review of EU WFD documents). Table 5 data suggests some gaps- the EU AS does not highlight CAP (although it does highlight the Farm to Fork Strategy) even though Member States use CAP funding to implement adaptation interventions; and the CAP doesn't highlight the EU AS (due to its legal status). Finally, the Green Deal and EUCL appear to omit mention of the WFD. Therefore these horizontal coherence relationships are not always symmetrical.

Horizontal coherence is important to resolve conflicts between policy objectives “for example, some time ago that we had, you know, 2 different strategies for the same thing in the European Union, and they were completely different approaches.” (88D, interview, summer, 2022). The horizon scanning questionnaire (Ibrahim

et al., 2022) highlighted similar concerns – some respondents felt the some of the CAP objectives undermined the objectives of the Biodiversity Strategy; the response to the proposed article 9 of the Nature Restoration Law also illustrates some resistance to stronger restoration goals on agricultural land. The discussion over trade-offs (section 3.1.3.6) and sectors (section 3.2) also highlights potential tensions between policy objectives. There seems to be an assumption in the narrative of the Green Deal (and in the proposed Nature Restoration Law) that there are easily achievable ‘win-win’ coherence relationships; and the potential for conflict when delivering different policy objectives simultaneously is not made explicit in the policy documents.

Horizontal coherence requires interaction of policy **instruments**. The patchwork of funding sources discussed under vertical coherence (section 3.3.1), such as funding measures in RBMPs using Rural Development Plan incentives, involves horizontal coherence required between instruments. EU policy can increase coherence and thus influence nature positive actions using the Common Provisions Regulation that allows DG REGIO to check that certain policy objectives are considered (including WFD) before Member States are allowed access to funds. For example In Hungary, the eligibility of new irrigation investments for EAFRD funding has been linked to the good quantitative status of the respective water bodies, following the conditionalities set by the EAFRD regulation (EU 1305/2013). (Buchanan et al 2019). The use of cross compliance to enforce general binding rules for water use is positive; but would be amplified through better connections between KTM on advice within RBMPs and CSPs. More use of CAP non-productive investment funding for Natura 2000 or WFD objectives could help deliver restoration, so long as the subsidies do account for the income forgone. Likewise, stronger controls on agricultural irrigation in CAP reflecting water pricing in RBMPs, would respond to concerns about water scarcity in the EU AS (European Environment Agency, 2021). EUCL relies on the new CAP, Farm to Fork, Bioeconomy, Soils, Methane and Forestry strategies to promote carbon farming initiatives and the AS to promote NbS more generally; and the Austrian NECP uses the CAP ENVCLIM measures to promote wetland sinks. There could be more attention given to a more coherent suite of advice and economic instruments to build upon the regulatory cross compliance to achieve horizontal coherence (Haensel et al., 2023).

Horizontal coherence is an aspiration in policy design but currently is less effective in **implementation** – new CSPs illustrate that whilst there could be strong coherence, often Member States are not using the instruments fully or interpreting them in ways that may not achieve multiple policy objectives. Coherent implementation of multiple policies is seen as an ongoing policy challenge for Member States, and it is generally unclear how the coherence will happen in practice. In the data, it is not exactly clear who will coordinate all these instruments and how the horizontal coherence will be delivered. There are positive procedural processes than can enhance horizontal coherence e.g. the multi-stakeholder dialogues in Netherlands and Finnish climate plan examples. As with vertical coherence, there is a strong need for data sharing, capacity building and training. It is important that water managers are more actively involved in non-water policy planning processes to get more coherence, and these actors may need new capacities, methods and tools to allow this to happen (Buchanan et al., 2019). Deeper transformation may also require changes in working culture and mindsets (Chan et al., 2020) within Agriculture and other economic development ministries. This also applies to licencing, ensuring that freshwater restoration and NbS knowledge is utilised when issuing permits or licences from other non-environmental ministries (C. Schmidt & Fokkens, 2023); something also identified in CS2 (Basque country).

Whilst horizontal coherence is essential to ensure mainstreaming and transformation, different policy cycles, particularly in terms of budgets, can create tensions and delays e.g. some of the RBMPs were delayed until the CSPs were drafted, and it was clearer which measures could be funded through eco-schemes, investments and environmental-climate measures. Furthermore, relying on another policy, where water ecosystems are not the main target, creates dependency and uncertainty. Combining objectives, instruments and implementation across different ministries, with different budgets, can be difficult especially when trade-offs are required. Attendees at round tables and the COM webinar felt the CAP budget was being protected by Member State Ministries for Agriculture and not fully utilised to promote NbS (Baldock & Bradley, 2023). Different choices by these ministries are needed to increase incentives to work at catchment scale and embed institutional arrangements for these collaborative processes to mainstream NbS.

3.3.3 Summary

It remains important to continue to deliver vertical coherence, that is to align objectives, instruments and implementation practices and actors within individual policy domains. This requires resources to develop and implement appropriate Member State level plans that promote NbS, provide investment and incentives for NbS or the capacity for cost recovery, use licencing conditions to improve freshwater outcomes, learn from projects and utilise indicators to adaptively manage the river, wetland and floodplain environments. There is a wealth of

information from demonstration projects translated into catalogues and toolkits, but more could be done to ensure these data are visible to individual policy units when revising EU or national plans, strategies or policy design.

Horizontal coherence is extremely important to mainstream freshwater NbS. There are still examples of tension between different policy objectives and implementation is dependent on indirect access to resources through funding instruments under other policy domains (e.g., DG AGRI, DG REGIO). Ensuring coherence between different policy objectives and instruments happens as part of implementation in projects and places, so horizontal coherence is delivered via governance processes in planning and delivery. Therefore, improved implementation for cross-cutting issues like NbS can be supported through working with Member State place-based and sectoral stakeholders, to build understanding and respond to their interests. Monitoring, using appropriate indicators for freshwater NbS, can help provide both evidence and information to support horizontal coherence between named individual policies at EU and Member State level.

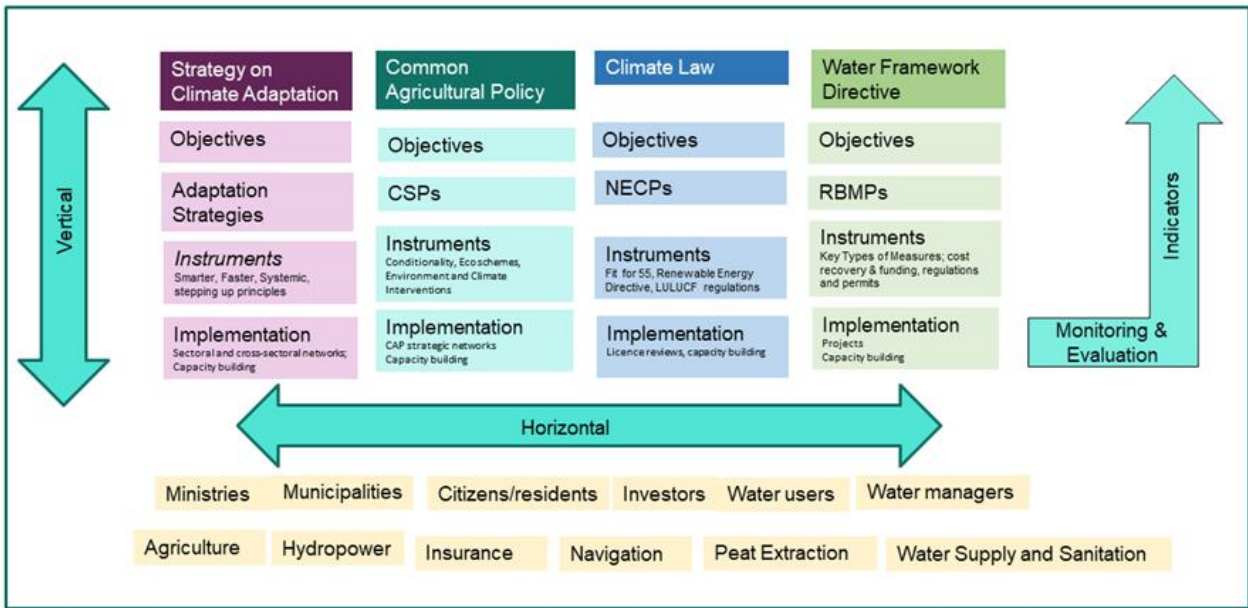


Figure 5: Coherence relationships between 4 focal policies

Overall, coherence requires energy, effort and political will and does not happen without dedicated resources. However, coherence is required to deliver the ambition of the Green Deal and should result in more effective policies that deliver their objectives. Given the severity of the climate and biodiversity crises, improving coherence is essential.

4 What is needed to mainstream freshwater restoration as NbS?

This briefing is premised on the role that policies can play in mainstreaming freshwater NbS such as are being implemented in the H2020 MERLIN project. From a review of six focal policies, there are some promising trends regarding how policy objectives, instruments and implementation are promoting freshwater NbS that should be maintained and amplified. However, there is plenty more that could be done. More visibility for freshwater restoration as NbS could be created, and the opposition between working with nature and economic sectors disrupted. In particular, the briefing highlights the need to have cross-policy coherence to provide the appropriate institutional context for a cross-sectoral and catchment scale approach to freshwater NbS, which is central to accelerating good practice across Europe. To summarise, the findings focussed on three aspects below considering whether and how policies need to be transformed through creating new practices, maintaining or disrupting current approaches.

4.1 Do the focal policy documents promote freshwater NbS?

Policies can help by making the role of freshwaters and NbS more explicit and visible in their documents, that will help raise awareness of NbS as an option to explore. This may require the creation of new language in some documents such as WFD and CAP, and to maintain the language in other policies such as AS. Creating more freshwater indicators may be useful to ensure that policies actively consider the outcomes and impacts of their actions on freshwater environments. The philosophy of NbS helps highlight the need for public-private partnerships to achieve sustainability and again, policy documents can make explicit the role for economic sectors in taking positive actions for nature. Using the IUCN Global Standard criteria when using policy to mainstream NbS disrupts the use of 'NbS' to greenwash sectoral 'business as usual' and ensure NbS contribute to nature conservation. The criteria draw attention to the full range of issues for policies to consider and highlight challenging areas that need more attention such as need to work in an integrated manner, at scale with close attention to reconciling trade-offs whilst ensuring there is biodiversity net gain.

4.2 Do the focal policy documents encourage economic sectors to implement NbS?

The Agricultural sector is clearly involved in all the focal policies, whereas the Peat Extraction sector is almost invisible. Different economic sectors have closer links to some policies than others, but all have stakes in the focal policies and therefore could be recognised more explicitly, as sectors able to play an active role in implementing NbS. More visibility for sectors such as the Peat Extraction, Navigation and Insurance sectors can be created, and the central role of the agriculture, Hydropower and WSS sectors should be maintained and amplified. Making the role of sectors visible can help mainstream freshwater management into non-environmental sectoral policies. However, highlighting these sectors may also require disrupting power asymmetries between sectors and addressing conflicts or trade-offs. Policies can create or maintain more cross-sectoral opportunities to identify and evidence common benefits from NbS.

4.3 Do focal policies work coherently to support NbS?

Here the cohesive vision of the Green Deal needs to be amplified. Whilst vertical coherence (ensuring objectives, instruments and implementation align) is designed into the focal policies, it remains challenging to deliver in Member States and regions, partly as the ambition for individual policies is increasing, and there are often complex nested governance processes involved in implementation. Planning processes need to be maintained and amplified, funding barriers disrupted, and licence reviews maintained or created to increase the potential for NbS to be considered. Capacity to work with NbS and maintain vertical coherence needs to be supported or created, including the creation of monitoring for NbS to illustrate the costs and benefits of these options. Horizontal coherence (ensuring multiple policy objectives, instruments and implementation align) is also increasingly designed into the policies, but remains challenging to deliver, as it compounds the difficulties faced by vertical coherence. However, the planning processes and portfolio of funding budgets already used by WFD, AS and NECPs illustrates that these policies already use coherence processes. The use of instruments like the Common Provisions Regulations can maintain such processes. Coherence supports integrated catchment management, when adequately resourced and supported by politicians and the public. While it is often challenging to ensure coherence among all policy areas, it is important Member States endeavour to achieve both types of coherence. This includes for example, being clear on the synergies between climate and biodiversity goals and recognising trade-offs between economic sectors.

5 Recommendations

The following findings suggest a series of possible recommendations for EU and Member State policy makers to consider, using the transformation framework of whether policy levers need to be created, maintained or disrupted.

The **timely adoption** of the EU Nature Restoration Law will mainstream restoration of freshwater habitats, free-flowing rivers, and restored wetlands that help to keep water in the landscape and respond to water scarcity concerns.

Policy narratives that place freshwaters as part of the nature-based **solutions** to climate and biodiversity crises, as well as vulnerable to these crises, need to be created or maintained. To create real change rather than a rhetorical shift, addressing all eight criteria of the IUCN Global Standard is required, which requires disrupting some current dynamics and creating new collaborations.

Non-environmental policy documents should disrupt the narrative that climate and biodiversity actions are an **impediment** to businesses and society, although trade-offs and uneven distribution of costs and benefits will continue to be challenging.

The focus on the **business case for NbS** and restoration should be maintained and amplified – both a stronger focus on opportunities from NbS but also more information on the impacts of doing nothing or continuing with activities that contribute to climate change and biodiversity loss, so that mainstreaming environment objectives are seen as positive.

All **economic sectors should be visible** in policy documents in terms of the positive roles they could play to deliver NbS and their responsibility to steward freshwater resources for economic and social sustainability. This may require creating new networks and capacity, and disrupting narrow visions of who has a stake in freshwater restoration.

Public funding for public goods should be maintained. Funding to set up and support public-private partnerships where coordination should be created or amplified. Increasing the conditionality of CAP funding to cover measures for flood and drought prevention can help mainstream NbS.

Having a dedicated **budget commitment for Nature restoration and harm prevention** in the next multi-annual financial framework would be useful to avoid having to access to funding by working through other policies managed by non-environmental Ministries, potentially with other priorities.

WFD Cost recovery should be maintained but could be more strongly enforced in for all sectors including Agriculture (European Court of Auditors, 2021) and other policies could also adopt these principles. Increased use of fees and taxes could help leverage private finance or business contributions to NbS.

Subsidies and funds which are harmful to water resilience should be disrupted and **phased out**, so EU funding is not used for efficiency measures (e.g. modernisation of irrigation) do not increase production of water-intensive crops in areas at risk of water stress and continue the phase-out of CAP payments for land drainage for agriculture.

Plans with binding commitments, targets and clear accountability for actions shared between EU and Member States give the COM more levers to meet their policy objectives. CAP strategic plans provide a model for other policies. However, the Member States should use the CSP to support NbS at catchment scale. Opportunities to create menus of NbS measures in non-environmental plans should also be taken. These commitments should be monitored to ensure delivery, following the example of the EU Biodiversity Strategy action tracker.

Plans help with vertical and horizontal coherence. Member States strategic plans provide the direction of travel for municipal and regional strategies and plans, often with corresponding financing e.g. Emscher Master Plan (Urban Governance Atlas, 2023). Therefore, these EU and Member State plans and associated guidance documents can and should be used to create or maintain **the ambition** for regional and local implementation.

Planning processes are important. Explicit support for [capacity building](#) at all levels of government for integrated planning and delivery should be created or maintained. This may involve disrupting silo mentality or competition for power and resources between different ministries or agencies; and therefore may need strong political direction.

Capacity building can be supported through [planning networks](#). CAP strategic networks are broadening to include a variety of voices, and this should be maintained and enhanced. It would be useful to create equally broad networks to support Member States NRPs. Making use of stakeholder involvement in Member States planning and regulatory cycles, copying the COM inter-service steering group process, would help with alignment.

Strategic planning could help with continuity for [NbS demonstration projects](#), through using the learning within the planning process and continuing to monitor the impacts (see below) post-project. Political will is required for mainstreaming NbS and having good practice examples to illustrate how NbS can work in local context creates momentum for change.

The [catchment-based planning and implementation of](#) measures is important to allow freshwater NbS to deliver Green Deal goals. Integrated water management approaches need to be mainstreamed across all the focal policies, building on the blueprint provided by the WFD. Flood prevention measures should be harmonised with drought prevention measures. Increasing the resource going into such voluntary instruments within CAP rural development incentives might help, but an alternative approach to create mandatory instruments, such as collective action for landscape scale delivery, for all Member States to include within their list of eco-schemes.

[Licence and permit reviews](#) can be used to create horizontal coherence and to maintain vertical coherence. As with planning, a broad range of consultees for planning conditions can help ensure that opportunities to mainstream NbS are not missed. This interaction can help build capacity and shared understanding, as well as create an arena for alternatives to business as usual to be discussed.

[Monitoring and evaluation of policies](#) can be a leverage point to embed NbS. Monitoring needs to consider all aspects of policy performance, including coherence. This requires disrupting policy siloes to enable ecosystem restoration across policy sectors. For example, the European Commission will check whether Member States CSPs do not decrease the status of water bodies nor promote mal-adaptation practices (e.g. intensification of water consumption) to align CAP, WFD and the AS.

Explicit attention to freshwater habitats (floodplains, wetlands, rivers) that complement the WFD monitoring should be addressed within the proposed guidance on Member State NR Plans and through the creation of [freshwater indicators](#) used to assess progress within major policies e.g. CAP, AS, EUCL.

Investment in [long-term monitoring](#) results of NbS projects to build time series of data can create the case for upscaling NbS and provide evidence to economic sectors, reducing uncertainty about the consequences of using NbS over traditional practices; and provide evidence for licence reviews.

Finally, sharing these data to support mainstreaming of NbS in policy requires maintaining or creating opportunities for [deliberative interpretation](#) between policy entrepreneurs and researchers. This may require disrupting traditional notions of knowledge transfer and investing time and energy in knowledge co-production.

6 Next Steps

This briefing identifies specific targeted actions that can be developed in the rest of the project. The preceding findings are the starting points for policy levers within the ‘routemap’ which will highlight opportunities to mainstream NbS and transform implementation of freshwater restoration across Europe. These suggestions need to be co-constructed with those who can activate these levers. There are multiple windows of opportunity that can be used to discuss opportunities for NbS, involving the sectors and policy coherence.

Policy windows of opportunity

- Proposals for the post-2027 EU multiple annual financial framework are expected to be published by the European Commission in mid-2025. The main window of influence for these decisions starts with the EU elections (May 2024) and is greater once the new EU Commissioners take office (November 2024). The Green Deal objectives and commitments will be coupled to this new budget. The Green Deal objectives have targets for 2050.
- The exact process for implementing the proposed Nature Restoration Law is not clear due to ongoing trilogue negotiations, but the draft proposals suggested that EU countries are expected to submit National Restoration Plans to the Commission within two years of the Regulation coming into force. This means that Member States will work on plans from 2024 onwards. A working group within the EEA is already collating guidance on monitoring these plans.
- The Commission will conduct the initial performance review of each CAP strategic plan in 2025 and, if necessary, request specific follow-up actions from member states. Simultaneously, the Commission will publish a green paper on the future resilience of the farming sector in December 2023 and will present their legislative proposal for the next CAP post 2027. Preparation for the next CAP is beginning now (Baldock & Bradley, 2023).
- Recommendations to Member States on Adaption Strategies have just been published (July 2023) including references to NbS (European Commission., 2023). Recommendations to Member States on their NECPs are due in December 2023. Therefore, there is less opportunity to influence these plans, but we can build on these recommendations. The European Climate Risk Assessment, due March 2024 could consider making freshwaters and NbS more visible. Member States will be revising their NECP and AS before 2030.
- Member States will continue to implement RBMPs to bring water bodies to the appropriate status. The commission will be reviewing the third River Basin Management Plans and second Flood Risk Management Plans shortly with feedback expected in 2024. Preparations for the 4th round of RBMPs may begin in 2024-5.

The briefing will be further discussed with interested policy makers at the EU, Member State and CS levels to explore where there are clear cooperation points to pursue as part of the upcoming sectoral strategies (D4.5) due in January 2025 and routemaps (D4.7) due July 2025. We will focus on specific aspects of policy coherence, working at a catchment scale, and identifying cross-sectoral opportunities.

We will also continue to build on the emerging issues coming from the MERLIN CSs, including the upscaling and mainstreaming recommendations within the regional scalability plans (D2.4) due in September 2024. The learning from the cases will be developed for the briefing on ‘leaving no one behind’ (D4.9) due August 2025, where the implications of NbS for regional development, can be further discussed. This can help identify recommendations for regional actors.

The findings will also be discussed with researchers doing policy analysis within the Green Deal Horizon 2020 cluster and other researchers working on policy levers e.g. from Network Nature. The proposed policy review by Water Europe for a Water-Smart Strategy for 2024-2029 (Water Europe., 2023) is another activity to complement. The EU is not only mainstreaming NbS within Europe but plays a role in global processes such as the Kunming-Montreal Global Biodiversity Framework (2022). Here, such mainstreaming can be addressed through supporting the work programme of IPBES.

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8 Further policies arising from our data relevant to MERLIN NbS

These are policies that were mentioned in the data including the templates, round tables and COM webinars as well as further reading completed for this deliverable. The list complements the list of policies identified by participants in the scoping phase (see section 9). It therefore is a longer list than those in Table 5, which only includes those formally connected within policy documents).

7th and 8th Environment Programme (2020 & 2022)

Action plan on the Sendai Framework for disaster risk (2016)

Basque Country's Nature conservation Law (2007)

Bathing Water Directive (2006)

Biodiversity Strategy for 2030 (2020)

Blueprint to safeguard Europe's water resources (2012)

Carbon Farming Initiative (2021)

Carbon Removals Certification Framework (2022)

Circular Economy Action Plan (2020)

Cohesion Policy (2021-2027)

Commission Delegated Regulation 2020/474/EU on 20 January 2020 on the European Hull Data Base

Communication 'Addressing the challenge of water scarcity and droughts' (COM(2007) 414 final

Convention concerning the Regime of Navigation on the Danube (1948)

Convention of Biological Diversity Aichi Targets (2011-2020)

Directive 2005/44/EC on harmonized river information services (RIS) on the EU's inland waterways

Directive 2008/68/EC on the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods

Directive 2009/100/EC on the European Parliament and of the Council of 16 September 2009 on reciprocal recognition of navigability licenses for inland waterway vessels

Directive 2010/35/EU on the European Parliament and of the Council of 16 June 2010 on transportable pressure equipment and repealing Council Directives 76/767/EEC, 84/525/EEC, 84/526/EEC, 84/527/EEC and 1999/36/EC

Directive 2016/1629/EU on the European Parliament and of the Council of 14 September 2016 laying down technical requirements for inland waterway vessels, amending Directive 2009/100/EC and repealing Directive 2006/87/EC

Drinking Water Directive (2020)

Environmental Impact Assessment (EIA) Directive (2011)

Environmental Quality Standards Directive (2000)

EU Missions: Adaptation to Climate Change: Restore the Ocean and Waters by 2030, 100 Climate-Neutral and Smart Cities by 2030, A Soil Deal for Europe (2030)

Europe 2020 strategy and, in particular, to the resource efficiency roadmap (COM (2011) 571)

European Agricultural fund for rural development (EAFRD) (2021-2027)

European Bauhaus Initiative (2015)

European regional development fund (ERDF) (2021-2027)

Farm to Fork Strategy (2020)

Fertilizer Product Regulation (EU 2019/1009)

Floods Directive (2007)

Flora-Fauna-Habitats directive (FFH) (1992)

Framework Agreement on Sava River Basin (2002)

Global Biodiversity Framework of the Convention on Biological Diversity (CBD) (2020)

Green Infrastructure policy (2023)

Groundwater Directive

Guidance on the requirements for hydropower in relation to EU Nature Legislation (2018)

Horizon 2020 (2014-2020) and Horizon Europe (2020-2027)

Interreg funding mechanism(ongoing)

IPCC Guidance on National Greenhouse Gas Inventories (2006)

IUCN Resolution: Securing a future for global peatlands (2016)

Kyoto Protocol (1997)

LIFE Climate Change, Nature and biodiversity funding (2021-2027)

Manifesto for Water Justice (2021-2027)

Nagoya protocol (2010)

NAIADES I-III Action Programme (2021)

Natura (2000)

Nitrates Directive (1991)

Paris Agreement (UN Framework Convention on Climate Change) (2015)

Ramsar Convention (Convention on Wetlands) (1975)

Recovery and Resilience Facility (2021)

Regulation No 1177/2010/EU on the European Parliament and of the Council of 24 November 2010 concerning the rights of passengers when traveling by sea and inland waterway and amending Regulation (EC) No 2006/2004

Regulation No 181/2008/EC laying down certain measures for implementing Regulation (EC) No 718/1999 on an EU fleet capacity policy to promote inland waterway transport

Regulation No 2016/1628/EU on the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC

Regulation No 2016/679/EU on the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC

Regulation No 2018/1725/EU on the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation No 45/2001/EC and Decision No 1247/2002/EC

Regulation No 546/2014/EC amending Regulation (EC) No 718/1999 on an EU fleet capacity policy to promote inland waterway transport

Regulation No 718/1999/EC on an EU fleet capacity policy to promote inland waterway transport

Regulation No 789/2004/EC on the transfer of cargo and passenger ships between registers within the EU

Renewable Energy Directive (2018)

Revised Convention for Navigation on the Rhine (1868)

Section 2 of EU Regulation 1315/2013 deals with inland waterway infrastructure. The Regulation provides for the harmonisation of the Water Framework Directive and the Nature Directives (92/43/EEC, 2009/147/EC) at EU level

Soil Framework directive (2023)

Soil Thematic Strategy (2006)

Solvency II (2016)

Strategic Environmental (SEA) Directive (2001/42/EC) for qualifying plans, programmes and policies and required by the Environmental Impact Assessment (EIA) Directive (85/337/EEC)

Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (2013)

Sustainable and Smart Mobility Strategy (2020)

Sustainable Development Goals (2015)

Sustainable Finance Action Plan (SFAP) (2018)

Task Force on Climate-related Financial Disclosures (2017)

Taskforce on Nature-related Financial Disclosures (TNFD) (2023)

Taxonomy Regulation for environmentally sustainable investment (2020)

TEN-T policy, based on Regulation No 1315/2013/EU of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU.

The Non-Financial Reporting Directive (2014)

The UN Decade on Ecosystem Restoration (2021-2030)

UN Convention to Combat Desertification (1994)

United Nations Economic Commission for Europe (UNECE) Water Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE, 1992).

United Nations Environment Assembly of United Nations Environment Programme 4th Session (UNEA4) on resolution on Conservation and Sustainable Management of peatlands (2019)

Urban Wastewater Treatment Directive (1991)

Water Blueprint (2012)

9 Long list of sectoral policies related to NbS from scoping process

Action plan on the Sendai Framework for Disaster Risk Reduction (2016)
 Bathing Water Directive (2006)
 Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)
 Biodiversity strategy for 2030 (2020)
 Bioeconomy strategy (2012) and its update (2018)
 Birds Directive (1979/2009)
 Climate Law (2021)
 Climate, Energy and Environmental Aid Guidelines (2021)
 Common agricultural policy (2013)
 Council Regulation (EEC) No. 2919/85 (1985)
 Council Regulation (EEC) No. 3921/91 (1991)
 Cross-compliance policy (2023)
 Drinking Water Directive (2020)
 Environmental Quality Standards Directive (2000)
 EU Circular Economy Action Plan (CEAP) (2015)
 EU energy policy frameworks (2022)
 EU Environmental Impact Assessment (EIA) Directive (2011)
 EU forest strategy (2013)
 EU Inland Navigation Policy (2006-2020)
 EU solvency II directive (2009)
 EU Strategy for Energy Integration (2020)
 EU's Clean Energy Package (2019)
 European Agreement on Main Inland Waterways of International Importance (AGN) of 1996.
 European Green Deal (2019)
 European Landscape Convention (Florence, 2000)
 European Parliament resolution of 14 September 2021 towards future-proof inland waterway transport in Europe (2021/2015(INI))
 European Standard for Qualifications in Inland Navigation (ES-QIN) (2019)
 Farm-to-fork strategy (2020)
 Fit for 55 (2021)
 Floods Directive (2007)
 Green infrastructure strategy (2013)
 Groundwater Directive (2006)
 Habitats Directive (1992)
 Insurance Distribution Directive (2016)
 LULUCF Regulation (2018)
 Marine Strategy Framework Directive (MSFD)
 Natura (2000)
 Nature Restoration Law (2023)
 Navigation And Inland Waterway Action and Development in Europe) Program (2006-2013)
 Nitrates Directive (1991)
 Renewable Energy Directive (2018)
 Roadmap to a Resource Efficient Europe (2011)
 Soil Framework Directive (2023)
 Soil Thematic Strategy (2006)
 Strategic Environmental Assessment (2001)
 Strategy on adaptation to climate change (2013, 2021)
 Sustainable Finance Action Plan (SFAP) (2018)
 Taxonomy Regulation (2020)
 Trans-European transport network (TEN-T) (2021)
 Urban agenda for the EU (i.e. Pact of Amsterdam, 2016)
 Urban Wastewater Treatment Directive (1991)
 Urban Water Agenda (2030)
 Water blueprint (2012)
 Water Framework Directive (2000)
 White Paper: 'European transport policy for 2010: Time to decide (2001)

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