

HOW TO BETTER USE FORESTS AND TREES FOR WATER RESOURCES

Perspectives by Policy, Practice and Science and key outcomes of the PESFOR-W final conference 17 - 18 March 2021



Photo: Unsplash

Good water quality is crucial to all of us, as it ensures covering basic needs such as freshwater provision, flow regulation and filtration. With 60% of EU surface water bodies being in poor ecological status ([EEA, 2018](#)), it gets ever more important to protect and improve water quality in order to safeguard the provision of watershed services as products of ecosystem processes that provide a range of direct and indirect benefits to us (Watershed Markets, [International Institute for Environment and Development](#)). How do forests and trees come into play? Benefits provided by watershed services are directly linked to forests, which affect global climate and rainfall patterns and offer a range of services that help protect and improve water resources, such as erosion decrease, freshwater availability, and flood control.



Looking ahead to the next decade, several policy instruments and goals have stepped into place to address this vital issue: the EU Green Deal, the ecosystem restoration targets as well as the 8th Environmental Action Programme of EU Environment ([EEA](#)). Which development and management measures can be taken to improve the ecological status of water bodies? Payments for watershed services (PWS) schemes represent an approach that provides a mechanism for enhancing the water-related ecosystem services

delivered by forests ([UNECE](#)). During the **PESFOR-W final conference on 17 – 18 March 2021**, European Cooperation in Science and Technology (COST) action results were presented. Researchers, policymakers and practitioners discussed the role of planting trees for improving water quality and shared manifold insights and experiences of woodland-for-water PES from across Europe throughout two days of interactive and interdisciplinary online discussions. The aim of the [PESFOR-W COST Action](#) is to synthesize knowledge, provide guidance and encourage collaborative research to improve Europe's capacity to use Payments for Ecosystem Services (PES) to achieve [Water Framework Directive](#) (WFD) targets & other policy objectives through incentives for planting woodlands to reduce agricultural diffuse pollution to watercourses.

What are the barriers to development of woodlands for water PES schemes? And how can they be overcome? These questions were discussed by scientists, policymakers and practitioners from all around Europe. Eager to involve participants, the online event opened a poll asking participants to rank the most critical barriers to overcome regarding woodlands for water PES schemes (53 votes). The results captured that most participants (60%) perceive a lack of adequate financial incentives for landowners to plant woodland in target locations. This is how the participants ranked the different barriers:

1. Lack of adequate financial incentives for landowners to plant woodland in target locations (60%)
2. Lack of adequate governance frameworks (49%)
3. Insufficient information on cost-effectiveness, including on the value of benefits woodlands provide (38%)
4. Lack of adequate monitoring tools (36%)
5. Lack of awareness of woodland water benefits and of environmental effectiveness (32%)
6. Non-pecuniary barriers (6%)

Before diving into different insights and reflections from policy, practice and science, Lars Högbohm ([Skogforsk, Forestry Research Institute of Sweden](#)) highlighted the vital role of long-term monitoring to ensure actions will have profound effect. EU institutions and national governments will need to establish and secure long-term financing to monitor and evaluate woodland for water PES schemes adequately.

Perspectives by Policy, Practice and Science

A practitioners' perspective on implementing payment schemes in the water sector was given by **Alessandro Leonardi (ETIFOR)**, who explained related drivers, obstacles, funding, typology and examples. For implementing PES in the water sector, linking to key policy goals, such as the [Water Framework Directive](#), [Natura 2000](#), the [EU Biodiversity strategy](#) and national norms is essential. He mentioned the alignment and integration of water and forest/land-use institutions and policies as further recommendations. The main goal of PES is not in implementing PES as such, but to use them as a tool within a set of tools to achieve better particular environmental goals. To develop and implement successful PES schemes in the water sector, it is crucial to ensure the participation of key actors and align stakeholders across silos.

A scientist's perspective by **Nihat Zal** ([EU Environment](#)) shed light on Woodlands for water PES – water and forest interactions in Europe, emphasizing the importance of forests regarding their impact on the hydrological cycle in Europe. Nihat gave insights into the role of forests as a nature-based solution for climate change adaptation regarding water retention: It is estimated that forests can decrease annual runoff between 5-10% in Europe. Looking at water retention of forests as a nature-based solution for climate change adaptation, Nihat also referred to the importance of building more synthesis at regional and global scales to provide a better overview on the role of forests in water retention ([EEA, 2015](#)).



Tamas Szedlak ([European Commission, DG Agriculture and Rural Development](#)) shared a policy perspective towards Woodlands for water PES. He highlighted ecosystem services in the [EU Forest Strategy](#) and under the [Common Agricultural Policy \(CAP\)](#). The policy framework for forest ecosystem services comprises the [EU Forest strategy 2013-2020](#), the [CAP Rural Development 2014-2020](#), the [European Green Deal 2019](#), the [EU Biodiversity Strategy 2030](#), the [EU Forest Strategy 2030-2050](#), the [CAP Strategic Plan for 2021-2027](#) as well as the [EU Bioeconomy strategy](#), the [Circular Economy Action Plan](#), the [SDGs](#) and Paris Climate Agreement commitments and [Horizon 2020 research programmes](#).

What are the implications of these policies for the provision of forest ecosystem services (FES)? The new [EU forest strategy](#) comes with the following key objectives: “Effective afforestation, forest preservation and restoration in Europe, to help to increase the absorption of CO₂, reduce the incidence and extent of forest fires, and promote the bio-economy, in full respect for ecological principles favourable to biodiversity.” Mr Szedlak further emphasised it will be crucial to follow the concept of forest multifunctionality as a guiding thought. To protect and enhance this multifunctionality and the provision of manifold ecosystem services, there is a strong need to find the right balance of carbon storage, raw material supply, biodiversity conservation and provision of other services. In a world of changing climate, mobilisation of innovation, knowledge, technical capacity and expertise, and strong coordination are key aspects. To involve opinions and reflections from citizens and stakeholders, the European Commission has launched an [online public consultation on the development of a new EU Forest Strategy](#), which will be online until 19 April 2021.

Participants also learned about the critical elements of the reform of the Common Agricultural policy (CAP): Rebalancing responsibilities between Brussels and the Member States, more targeted, result and performance-based support, a simplification and modernisation of the policy as well as the enhancement of environmental and climate ambition. In this regard, Mr Szedlak explained that at least 30% of the total European Agricultural Fund for Rural

Development (EAFRD) contribution to the CAP Strategic Plan shall be reserved for interventions addressing the specific environmental and climate-related objectives.

Key Outcomes

Throughout the 2-day event, working groups shared insights and results from the work they have been doing within the 4 year long PESFOR-W project, including governance and design, environmental effectiveness, cost-effectiveness and communication and dissemination aspects. Further outcomes discussed comprised a [user manual](#), a [spatial repository](#) and an action plan. Throughout the PESFOR-W action, a total of [16 short-term scientific missions](#) (STSMs) were supported. These included exchange visits for early career researchers, which helped strengthen networks and foster international collaborations.

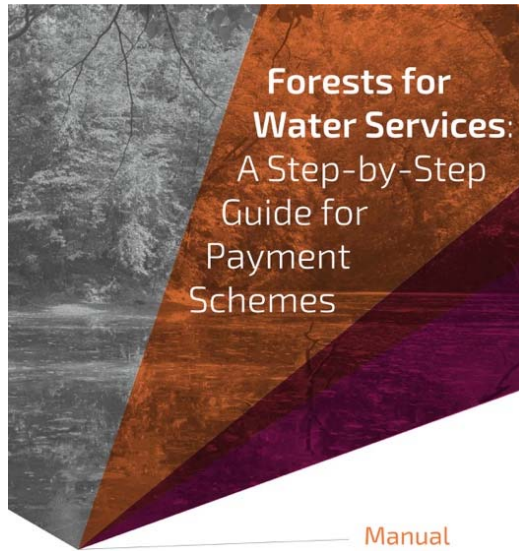
Working group results

Working Group 1, led by Paola Gatto ([University of Padua](#)), looked at **Woodlands for water PES design and governance** schemes. Activities within this working group comprised updating and extending existing knowledge on water-related PES cases in Europe and beyond and exploring conditions that explain either the emergence or absence of Woodlands for water PES, with specific attention to the enabling or inhibiting role of legal-institutional and policy settings. Why are there less Woodlands for water PES cases in Europe? Prof Gatto emphasized multiple threats to water resources as preconditions for policy interventions. Looking at the legal institutional context, the existence of a Water Act embedded in a strong regulatory framework among all countries might allow only little room for bottom-up initiatives to emerge.

Working Group 2, led by Tom Nisbet ([Forest Research, UK](#)), engaged in the **environmental effectiveness of Woodlands for water PES**, reviewing evidence and generating value ranges for diffuse pollutants with a focus on nitrate, phosphate and sediment. They populated look-up tables and embedded them into the User Manual. Within this working group, models and mapping tools have been evaluated, and training and guidance provided, including a series of workshops, two STSMs and a Training School (Portugal, 2018).

Working Group 3, led by Alex Chikalanov ([University of Library Studies and Information Technologies, Bulgaria](#)) and Paola Ovando Pol ([The James Hutton Institute, UK](#)) considered the **cost-effectiveness of woodland creation measures to improve water quality** and providing other benefits. During the action, the working group carried out 10 meetings across Europe to develop a conceptual framework for evaluating PES cost-effectiveness and to redefine and discuss definition and methods to assess the financial and social (economic) cost-effectiveness of PES to forests for water (quality). Besides publishing and submitting 24 related papers by WG3 PESFOR-W members, a training school on PESFOR-W cost-effectiveness analysis took place. Two STSMs with PhD students were carried out and a national project was implemented in Bulgaria, involving four doctoral students.

Working Group 4, led by Lars Hogböm ([Skogforsk, Forestry Research Institute of Sweden](#)), focused on **dissemination, communication and marketing of Woodlands for water PES**. To



do so, the working group developed a European PES Case Study repository promoting best practices across Europe and published the User Manual. Read on to learn more.

User Manual

As one of the key outputs of the PESFOR-W COST Action, the [8-step user manual](#) was presented: A Step-by-Step Guide for Payment Schemes related to Forests for Water Services. The guide has been translated into 8 languages so far. The English version is already available for download. What's behind the user manual? The main goal of the user guide is to provide guidance on designing appropriate and cost-effective forests for water payment schemes that support tree planting and forest management to protect and improve water quality.

There are many different scenarios, in which the user manual can provide orientation for planning and decision-making to improve water quality by developing appropriate forests for water payment schemes. Woodlands on farmed landscapes can moderate water and sediment flows and include beneficial shading. Check out the user manual to find guidance and information on where to best plant trees in order to reduce diffuse pollution. The manifold benefits of tree planting and forest management designed to protect and improve water quality are presented in detail in the user guide. During the conference, stakeholders were welcomed to give their critical reflections.

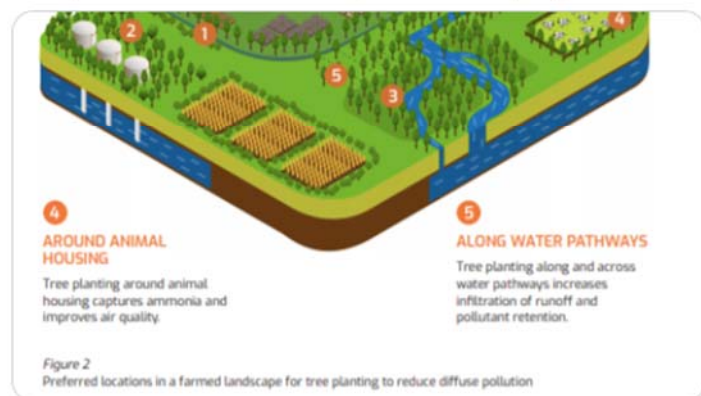


COST PESFOR-W @PESFOR_W · Mar 18

Want to know where it's best to plant trees within a farmed landscape, to reduce diffuse pollution? Download our step-by-step guide for designing forests-for-water-services payment schemes!

forestresearch.gov.uk/research/pesfo...

#ecosystemservices #reforestation #pollution #waterquality



Forests & Water and 9 others

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Spatial repository

The [spatial repository](#) invites you to explore a range of case studies on water-related ecosystem services provided by forest and tree-related ecosystems. The interactive map allows everyone interested to learn more about European case studies promoting best practices.



Source: <https://tinyurl.com/PESFOR-repository>

Action Plan

The **Action Plan** aims at developing incentives across Europe for targeted tree planting to reduce agricultural diffuse pollution of watercourses to meet Water Framework Directive (WFD) water quality goals. To overcome existing barriers, the following actions were proposed:

1. Lack of adequate financial incentives for landowners to plant woodland in target locations

- Increase public resources devoted to developing woodlands for water PES schemes, removing any existing perverse incentives for removing trees that currently provide water benefits: role for international and EU institutions, as well as national governments.
- Develop partnerships to improve water quality that seek to realise new revenue opportunities (e.g. through payment for ecosystem services schemes): role for downstream water users (industries, households), private investors and environmental agencies.
- Increase climate change mitigation investment in nature-based solutions - e.g. woodlands for water schemes ('tangible action' rather than 'warm words' – cf. emphasis stressed by Sir Ian Cheshire, UK government COP26 advisor, 10-day Challenge 11/3/21): role for governments and investors.

2. Lack of adequate governance frameworks

- Establish appropriate governance frameworks to facilitate development of woodlands for water PES schemes; recognising the importance of cultural/social enabling conditions and facilitating changes 'bottom-up'; role for EU institutions, national governments, water regulators and land managers (in partnership with other stakeholder groups).

- Create a partnership to consider establishing a Woodland Water Code to underpin development of future woodlands for water schemes (e.g. along similar lines to the [UK Woodland Carbon Code](#)): role for governments, investors, water regulators and land managers.
- 3. Lack of adequate monitoring tools and evaluation frameworks**
 - Foster standardisation of approaches to monitoring and evaluation of woodlands for water PES schemes: role for EU institutions, national governments, water regulators and land managers.
 - 4. Lack of awareness of woodland water benefits and of environmental effectiveness**
 - Commission more empirical and modelling studies on quantifying environmental effectiveness of woodlands for water schemes: role for international and EU institutions, national governments, and water-dependent industries.
 - Make wider stakeholder groups more aware of environmental effectiveness of woodland creation to help meet water-related (e.g. EU Water Framework Directive) targets: role for EU institutions and national governments, as well as the scientific community.
 - 5. Insufficient information on cost-effectiveness, including on the value of benefits woodlands provide**
 - Commission more studies on quantifying cost-effectiveness of woodlands for water PES schemes, including co-benefits: role for international and EU institutions, as well as national governments.
 - 6. Non-pecuniary barriers**
 - Simplify regulatory procedures to reduce transactions costs for participants in woodlands for water PES schemes: role for EU institutions and national governments.
 - Foster trust and good 2-way communication between stakeholder groups: role especially for intermediaries

Stay tuned for future activities on the vital role of woodlands for water PES schemes [here](#).
You can watch a recording of the event [here](#).

Further reading

- Forests and Water - Valuation and payments for forest ecosystem services: <https://unece.org/fileadmin/DAM/timber/publications/sp-44-forests-water-web.pdf>
- Payments for Watershed markets – Information From Schemes in Developing Countries: <https://watershedmarkets.org>
- Payments for Watershed Services - The Bellagio Conversations: ([https://www.researchgate.net/publication/236027847 Payments for Watershed Services The Bellagio Conversations](https://www.researchgate.net/publication/236027847_Payments_for_Watershed_Services_The_Bellagio_Conversations)).



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