Our water need a helping Hand!

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COST Action CA15206
PESFOR-W
Payments for Ecosystem Services Forests for Water

skogforsk SLU Forest Research Aware Stories

Diffuse pollution

Only c. 40% of surface water in EU reach good ecological status. Diffuse pollution dominated by agricultural sources is a major pressure.

By planting trees and restore woodland some of this could be reduced.

Payment for water and other Ecosystem Services could be a way forward.

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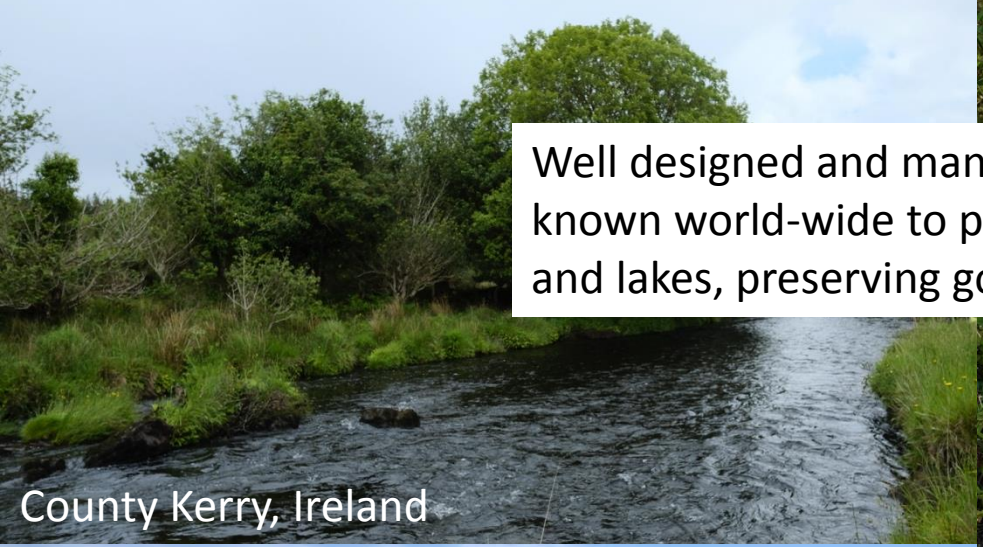
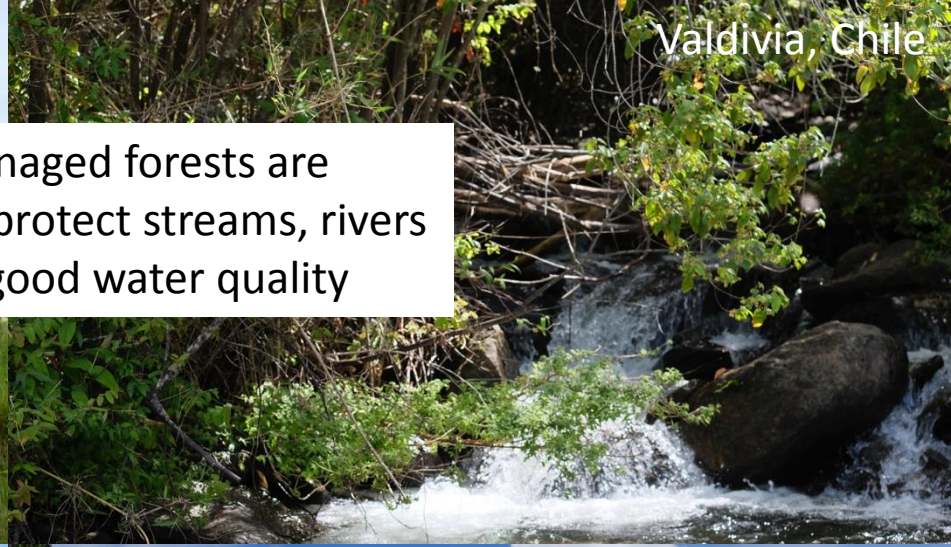




Well designed and managed forests are known world-wide to protect streams, rivers and lakes, preserving good water quality

Riparian forests

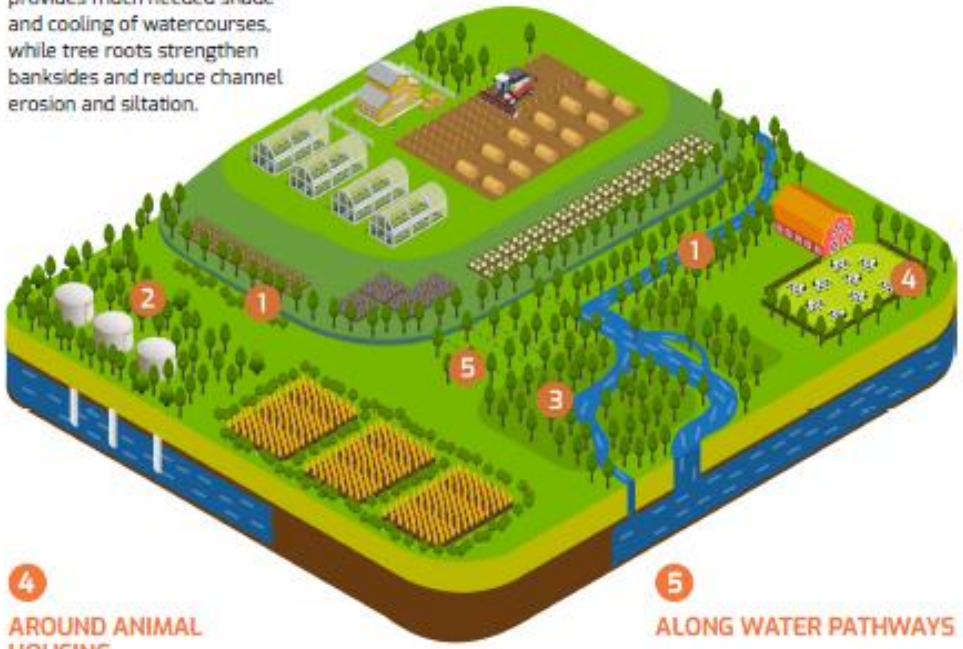
Riparian forests are especially important, providing an effective buffer for protecting waters from activities on the adjacent land.

They can be ecological hot spots connecting land and water ecosystems, as well as important for cooling and storing water in the landscape, slowing flood flows.

Further, tree species composition and density can have a large influence on the buffer function and biota in and around water.

We need to plant and integrate more trees into agricultural landscapes

Targeted planting of trees and woodland could be effective at reducing the delivery of diffuse pollutants to waters, improving water status.



For details see:
Nisbet et al. (2022)
https://doi.org/10.1007/978-981-16-6791-6_8

Making it happen

Incentivising woodland planting to deliver water benefits relies on developing a payment system for water services. Schemes can be simple or complex and large or small, depending on the location and nature of the water issue.

A key step is identifying local actors linked to or affected by the water issue, including potential buyers and sellers.

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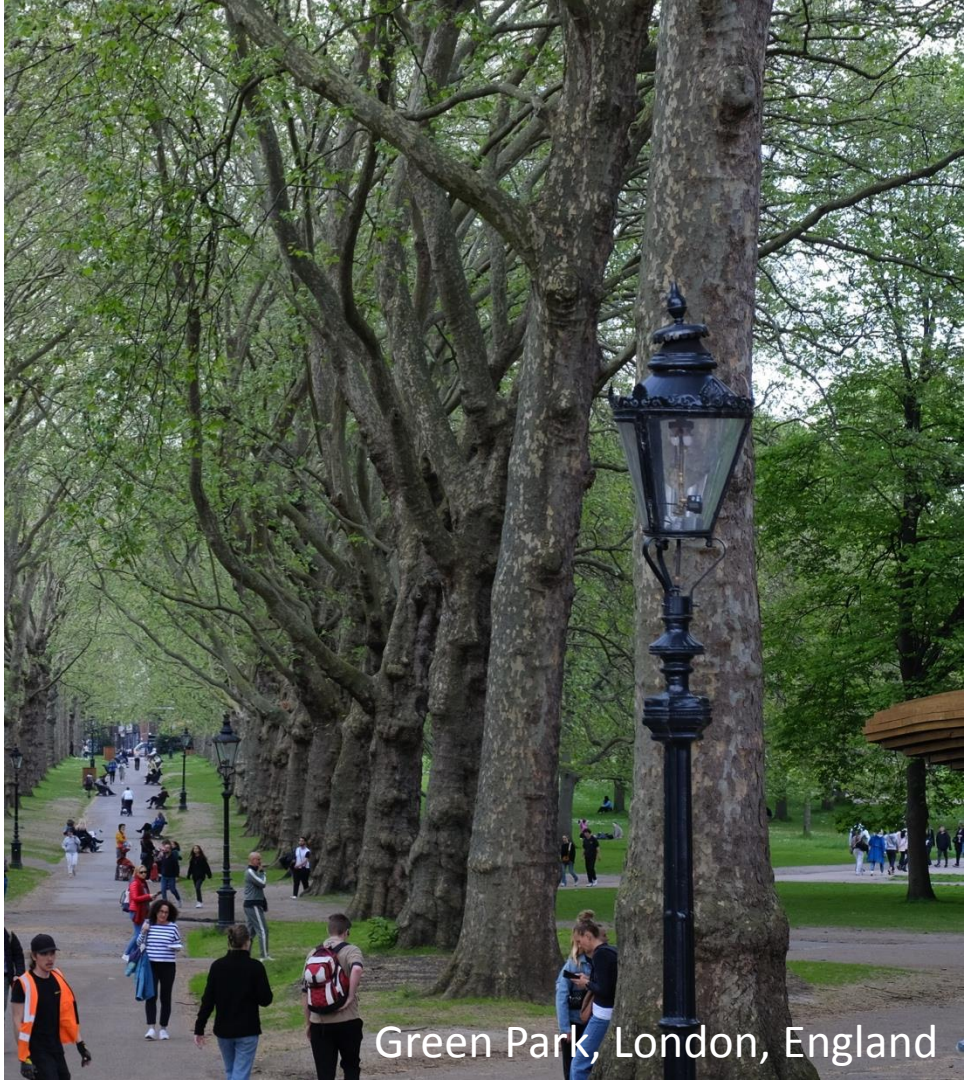
The power of case studies to lead by example

Padova, Italy

But don’t forget the urban environment

Urban trees provide a wide range of direct benefits to society, including improving air quality by pollutant capture, cooling air temperature through shading, and reducing flooding by increasing evaporation and soil infiltration.



Green Park, London, England

Storing water in the landscape

By creating new ponds and dams and meandering small rivers the residential time could be prolonged.

Beaver pond, Lithuania

Knowledge Exchange

Field-courses to forest owners, forest managers, and machine operators to highlight risks and show solutions that work to protect water.

Instruction films like Traceless: https://www.youtube.com/watch?v=xauLNORS4m0

Policy briefs and Executive Summaries for policy- and decision makers

The Balance –

a film about trees, water, and people

We are fed daily with negative images of environmental disasters, collapsing ecosystems, raging fires, floods, water shortages …, leading to a sense of hopelessness

But we can do better by drawing on positive stories of people working together to make a local difference. With the film we would like to show the art of the possibility – a bottom-up approach demonstrating the benefits of trees for water and people.

List of papers

Högbom L, Abbas D, Armolaitis K, Baders E, Futter M, Jõgiste K, Lazdins A, Lukmine D, Mustonen M, Østad K, Poska A, Rautio P, Varnagiryte-Kabasinskiene I, Vodde F, Weslien J-O, Wilhelmsson L, Zute D (2021) Trilemma of Nordic-Baltic forestry – how to imply UN sustainable development goals. *Sustainability*, https://doi:10.3390/su13105643

Högbom L, Ring E, Schelker J, von Brömssen C, Laudon H, Bishop K, Löfgren S (202x) Effects of a forest buffer on nitrogen and phosphorus concentration in stream water chemistry following final felling of a boreal forest. In Prep

Ilintsev A, Nakvasina E, **Högbom L**, Bogdanov A (2022) Influence of ruts on the physical properties of Gleyic Retisols after logging machinery passage. *Scand J For Res*, xx: xxx-xxx. https://doi.org/10.1080/02827581.2022.2085785

Ilintsev A, Nakvasina EN, **Högbom L** (2021) Modern logging and methods of protection of forest soils in the process of logging operations. *Lesnoy Zhurnal (Russian Forestry Journal)*, 2021:5: 92-116. https://doi.org/10.37482/0536-1036-5-92-116.

Labelle ER, Hansson L, **Högbom L**, Jourgholami M, Laschi A (2022) Strategies to Mitigate the Effects of Soil Physical Disturbances Caused by Forest Machinery: a Comprehensive Review. *Current Forestry Report* **8,** 20–37. https://doi.org/10.1007/s40725-021-00155-6

Nisbet TR, Andreucci M-B, Rik De Vreese R, **Högbom L**, Kay S, Kelly-Quinn M, Leonardi A, Lyubenova MI, Ovando Pol P, Quinteiro P, Pérez Silos I, Valatin G (2022). Forest Green Infrastructure to Protect Water Quality: A Step-by-Step Guide for Payment Schemes. In: Nakamura, F. (eds) Green Infrastructure and Climate Change Adaptation. Ecological Research Monographs. Springer, Singapore. https://doi.org/10.1007/978-981-16-6791-6_8

Ring E, Ågren A, Bergkvist I, Finér L, Johansson F, **Högbom L** (2020) A guide to use wet area maps in forestry. Skogforsk Report 1051-2020. https://www.skogforsk.se/cd_20200618101746/contentassets/2b2c62c4a4934838a1460cbb7b327d20/arbetsrapport-1051-2020-2.pdf

Ring E, Andersson M, Hansson L, Jansson G, **Högbom L** (2021) Logging mats and logging residues as ground protection during forwarder traffic along till hillslopes. *Cro J For Eng* **42,** 445-462. https://doi.org/10.5552/crojfe.2021.875

Ring E, Stefan Löfgren S, **Högbom L**, Östlund M, Wiklund-McKie M.-L, McKie B.G (2023) Long-term effects on water chemistry and macroinvertebrates of selective thinning along small boreal forest streams For Ecol Manage 549:121459. https://doi.org/10.1016/j.foreco.2023.121459

Ring E, Widenfalk O, Jansson G, Holmström H, **Högbom L**, Sonesson J (2018) Riparian forests along small streams on managed forest land in Sweden. *Scand J For Res* **33**, 133-146, DOI: 10.1080/02827581.2017.1338750

Shah, NW, Baillie, B, Bishop K, Ferraz S, **Högbom L**, Nettles J (2022) The effects of forest management on water quality. *For Ecol Manage*, https://doi.org/10.1016/j.foreco.2022.120397

Sonesson J, Ring E, **Högbom L**, Lämås T, Widenfalk O, Mohtashami S, Holmström H (2021) Costs and benefits of seven alternatives for riparian forest buffer management, *Scan J For Res* **36**, 135-143, DOI: 10.1080/02827581.2020.1858955

Valatin, G et al. (2017) PESFOR-W: Improving the design and environmental effectiveness of woodlands for water Payments for Ecosystem Services. *RIO Journal,* 3: e13828, https://doi.org/10.3897/rio.3.e13828

Wei X, Giles-Hansen K, Spencer SA, Ge X, Onuchin A, Li Q, Burenina T, Ilintsev A, Hou Y (2022) Forest harvesting and hydrology in boreal Forests: Under an increased and cumulative disturbance context, *For Ecol Manage*, https://doi.org/10.1016/j.foreco.2022.120468

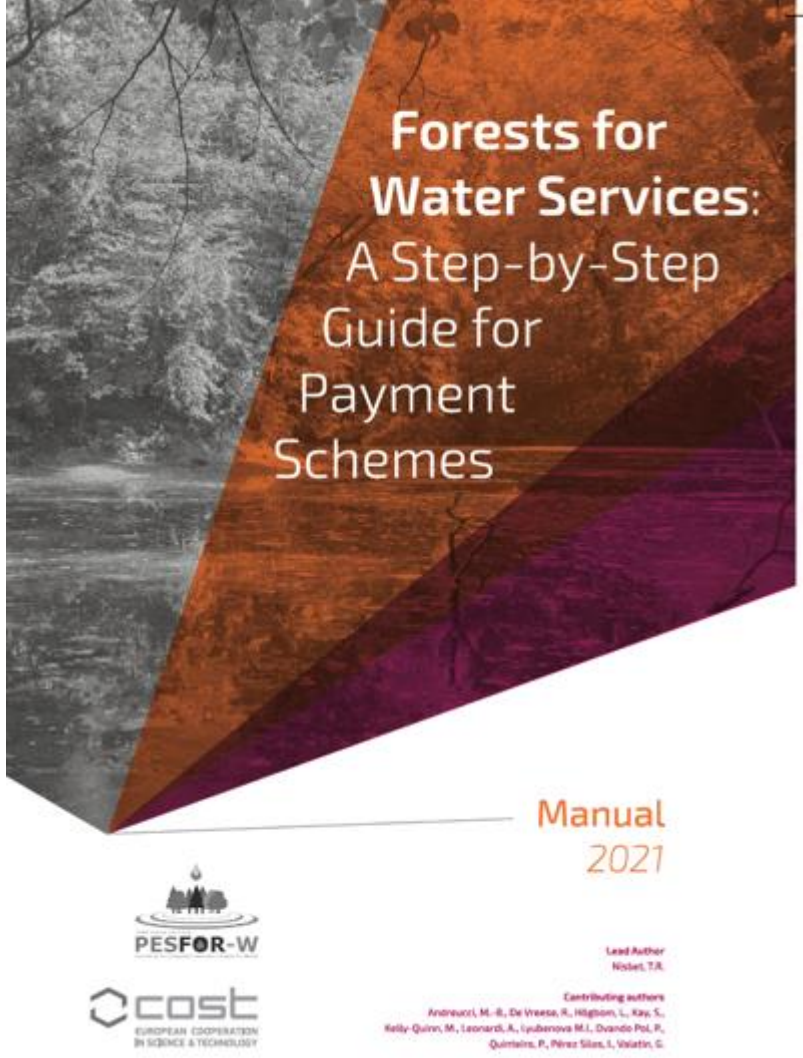
Thank you for listening!

PESFOR-W User Guide

the PesFOR-W guidelines!
Main author: Tom Nisbet, Forest Research, UK

The guide is available in several languages: English, German, Hungarian, Polish, Slovakian, Spanish, and Ukrainian

Can be downloaded from PESFor-W Homepage: https://www.forestresearch.gov.uk/research/payments-for-ecosystem-services-forest-for-water/



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