Forest Research

EU COST Action: Woodlands for Water

Tom Nisbet, Forest Research

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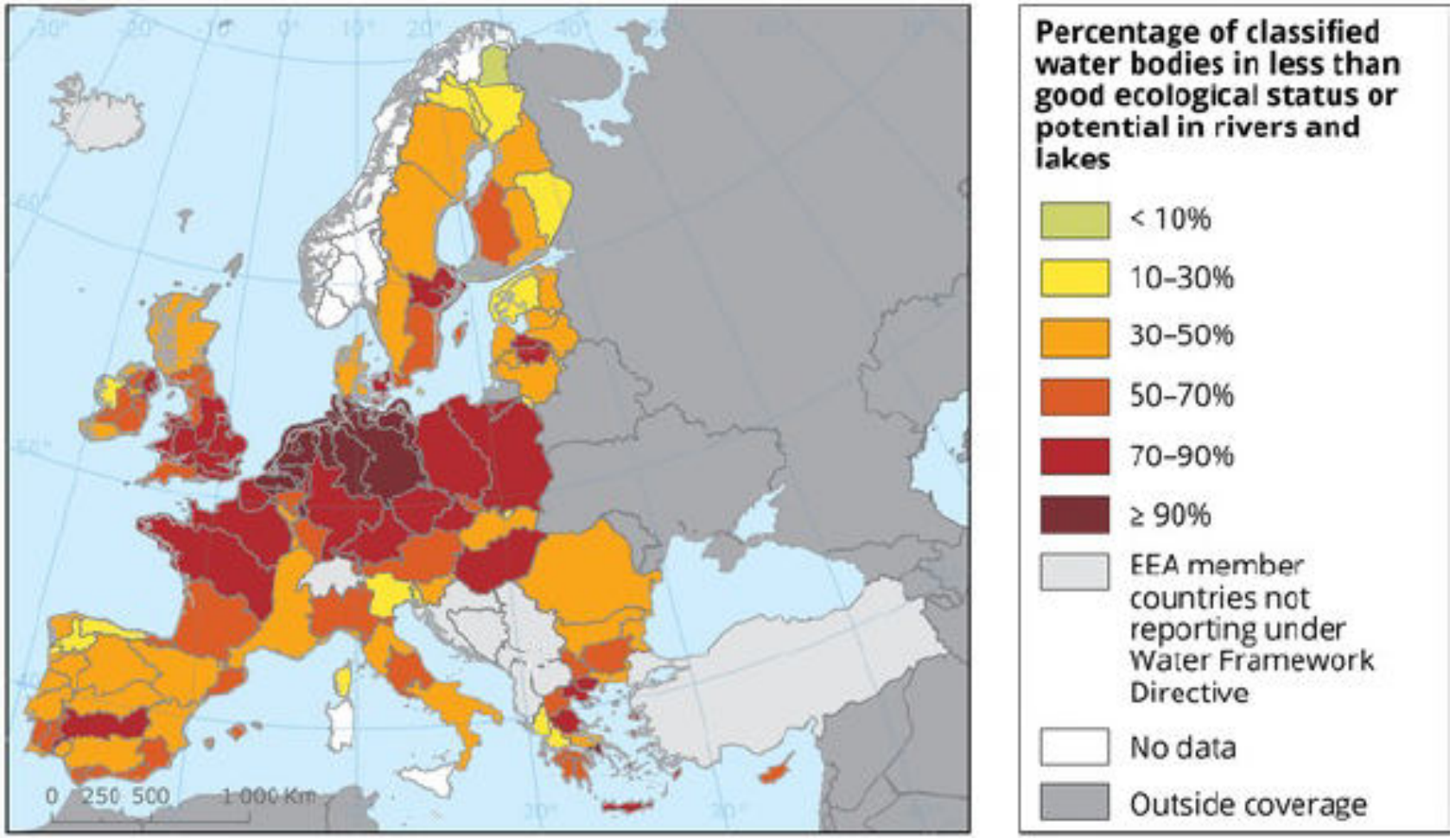
EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

Funded by the Horizon 2020 Framework Programme of the European Union

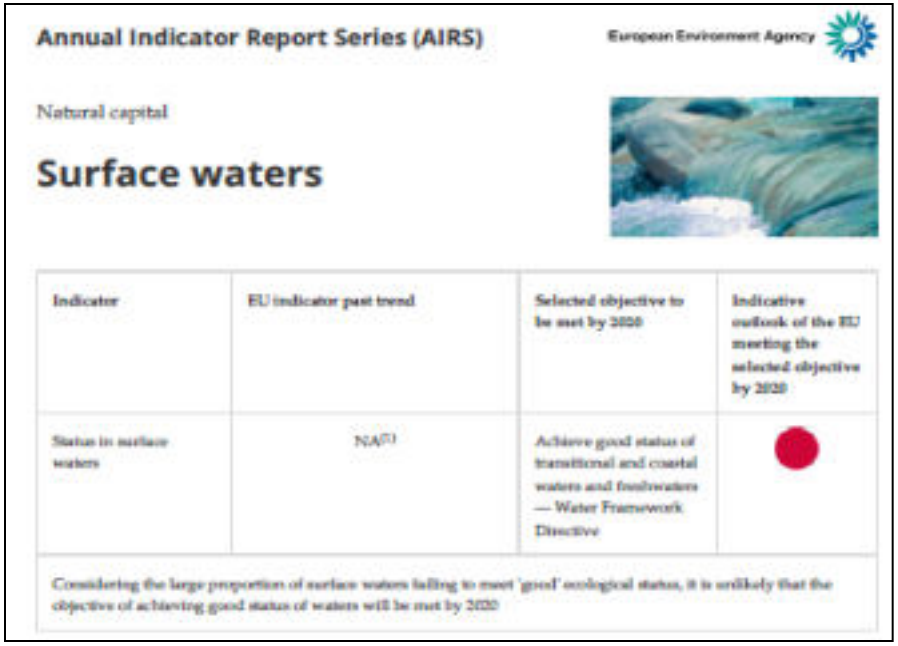
COST Action CA15204
PESFOR-W

Around 60% of surface water bodies in Europe are at less than Good Ecological Status



Impact of Diffuse Pollution

Diffuse pollution is a major problem – 38% of RWBs in EU24 fail due to diffuse pollution; 90% of RBMP's identify agriculture as primary source



Annual Indicator Report Series (AIRS)

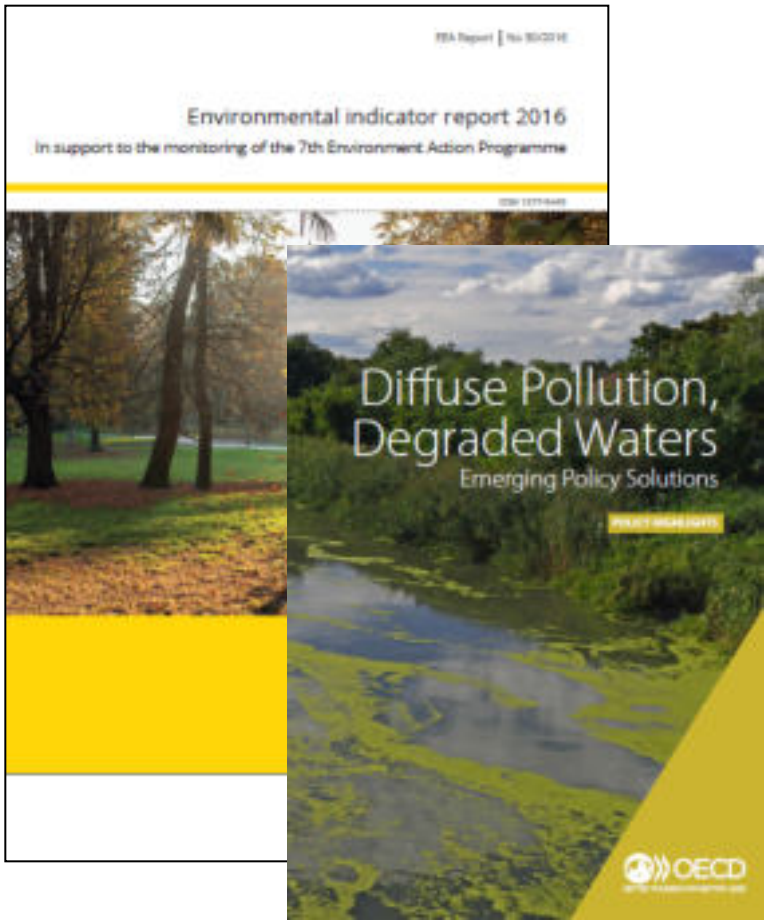
European Environment Agency

Natural capital

Surface waters

Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Status in surface waters	NA[1]	Achieve good status of transitional and coastal waters and freshwaters — Water Framework Directive	

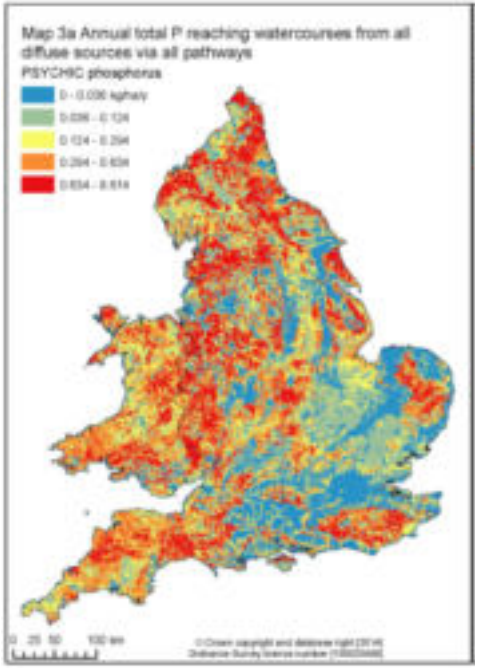
Considering the large proportion of surface waters failing to meet 'good' ecological status, it is unlikely that the objective of achieving good status of waters will be met by 2020



EEA State of Water Assessment Report due June 2018: only 1 to 2% improvement in RWB status

How can tree planting help?

- Increased recognition of need for land use change to meet water quality targets (1.5M ha in England);
- Woodland cover protects the soil, removes/reduces fertiliser and pesticide inputs, intercepts pollutants, protects river banks;
- Woodland creation provides a secure and sustainable measure;
- Careful integration of woodland with farming can reduce land take and increase acceptability;
- Target pollutants sources, pollutant pathways and water receptors.



Payments for Ecosystem Services: Forests for Water

- Four Year Research Network (October 2016-2020);
- Aim to improve Europe's capacity to use Payments for Ecosystem Services (PES) to achieve WFD targets and other policy objectives through incentives for planting woodland to reduce agricultural diffuse pollution (sediment, nitrate, phosphate, pesticides, FIOs);
- 37 countries involved

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

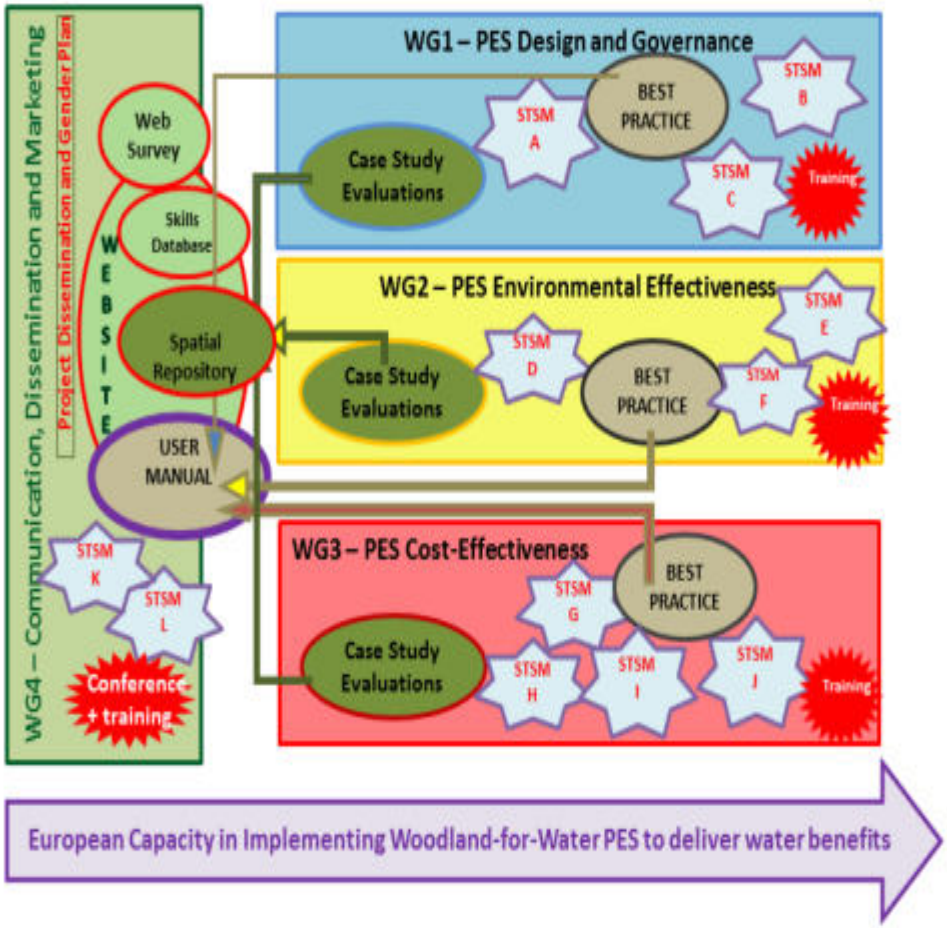
Learning from Experience

Country	Name of scheme	Aim/ Description
Denmark	Aalborg	City council converted 450 ha of farmland to forest or permanent grass to improve groundwater quality.
	Vigersted	Copenhagen Energy purchased farmland & paid the municipality to plant woodland to protect groundwater.
	Water Supply Act Reforestation Levy	Consumers pay a levy on their water bills which funds land purchase and afforestation (as well as forest management of public land).
France	Massif de la Nerthe	In partnership with the local municipality, Coca-Cola financed reforestation during 2010-2013 to reduce sediment-laden runoff in local public forests damaged by wildfires and protect mineral water supplies for bottling.
	Rennes	City council financed creation of 70 ha of woodland in a local catchment, successfully lowering nitrate concentrations by 20%.
	Vittel	Vittel paying farmers for goundwater quality protection measures including woodland planting (additional land provided in return).
Germany	Lower Saxony	Oldenburg and East-Frisia Water Association purchased land for afforestation to reduce agricultural nitrate pollution in groundwater (also payments for replacing conifers with broadleaves -mainly planting beech).
	Mangfall Valley (Munich)	Woodland creation historically by Stadtwerke München (and replacement of conifers with broadleaves) to improve public water supply).
Switzerland	Henniz SA	Henniez SA bought 200 hectares of farmland and planted forest to limit nitrate & other pollutants affecting a spring used for mineral water.
	Müsern auf der Baldegg	Müller AG (a local brewery which owns water extraction rights for a spring) provided funds in 1999 for the municipality / Baden water utility to restore nearby forests in the aftermath of hurricane Lothar.

Research Coordination Objectives

- Characterize & evaluate governance models & design structures of W4W PES schemes
- Evaluate environmental effectiveness of targeted woodland planting
- Develop User Guidance on quantifying the effectiveness of tree planting to reduce diffuse pollution
- Develop a European PES spatial repository of Case Studies
- Build capacity by facilitating interaction between multidisciplinary specialists, increasing stakeholder understanding and training in technical and economic skills – new 'PES engineers'

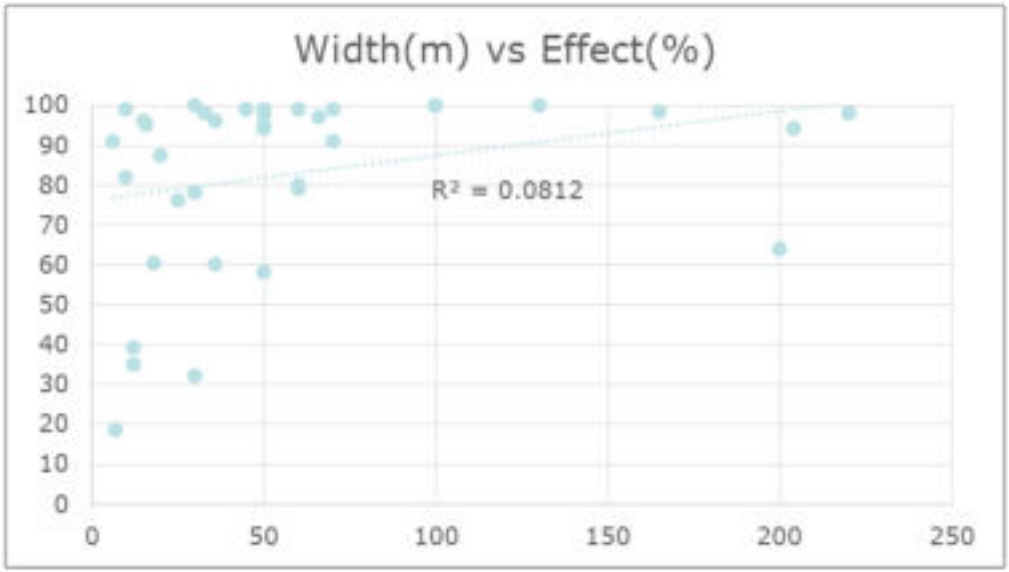
Management Committee and Four Working Groups (WG)

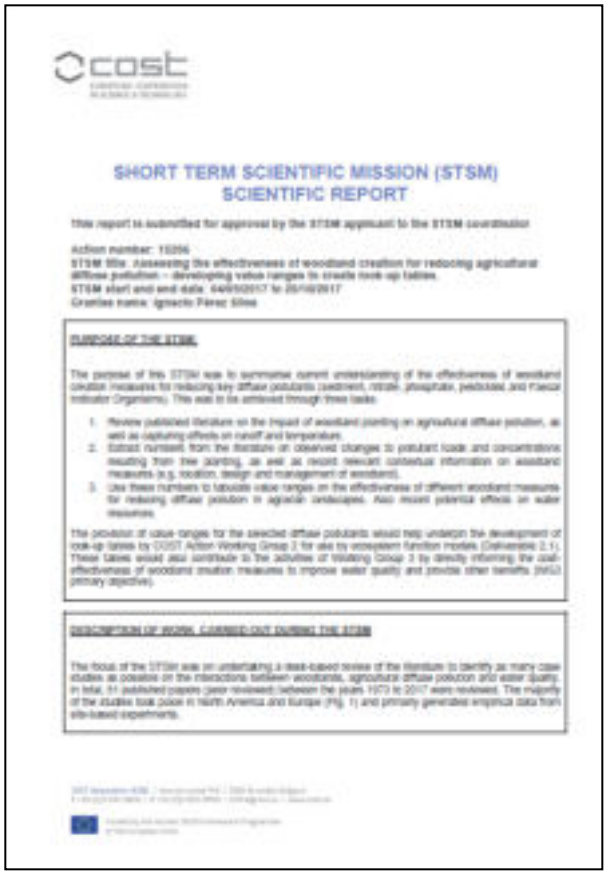


- Meetings, workshops and case study visits;
- Short-term scientific missions;
- Training schools;
- Research network, conferences and publications.

Development of look-up Tables: NO_3-N

Concentration of NO_3-N (mg/l) in surface runoff										
Climate	n	max[Initial]	min[Initial]	Av. Effect.(%)	Q1	Q2	Q3	Type of plantation/forest	n	Av. Effect.(%)
Continental	17	46.8	0.4	84.8 [18.4 - 100.0]	82	98	99	Hillside woodland	6	88.6 [64.0 - 100.0]
								Riparian woodland	9	79.8 [18.4 - 99.9]
								Shrub	2	96.0 [94.0 - 98.0]
Oceanic	8	32.5	0.1	74.2 [32.0 - 98.0]	60	77	95	Riparian woodland	7	73.9 [32.0 - 98.0]
								Shrub	1	76.0
Subtropical humid	13	13.5	1.3	82.5 [35.0 - 99.0]	80	92	96	Riparian woodland	10	89.7 [39.0 - 100.0]
								Shrub	3	58.3 [35.0 - 80.0]





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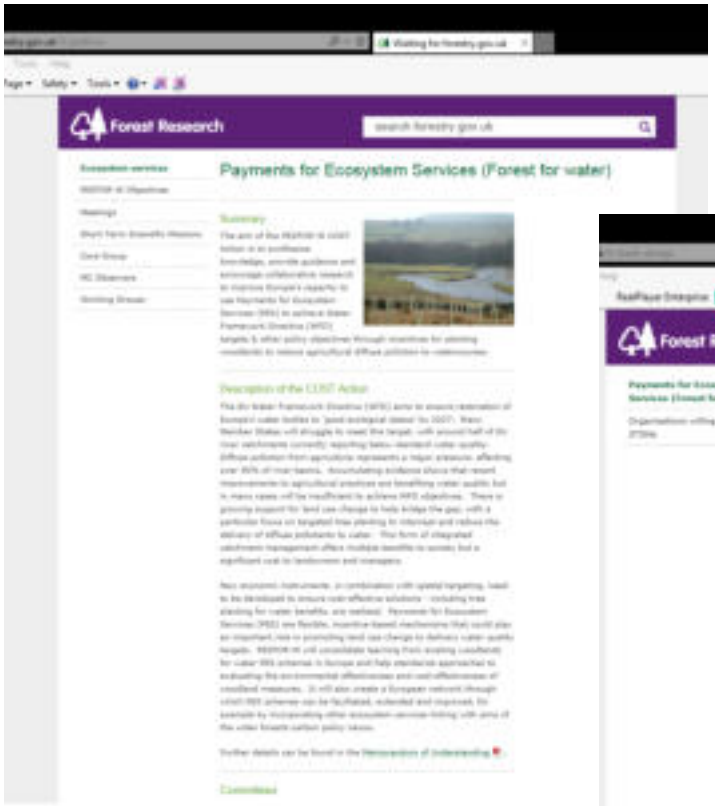
SHORT TERM SCIENTIFIC MISSION (STSM)
SCIENTIFIC REPORT

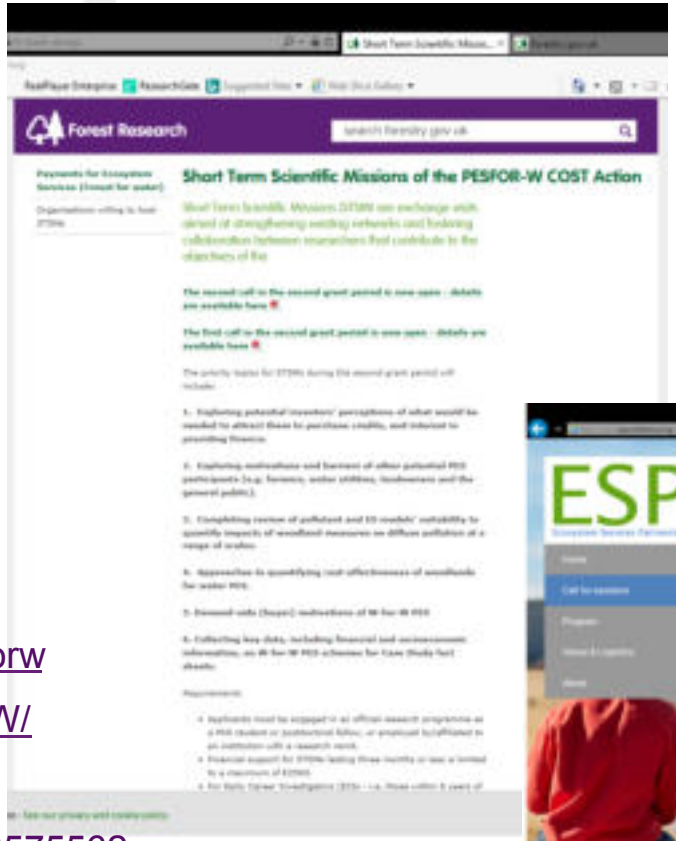
PURPOSE OF THE STSM

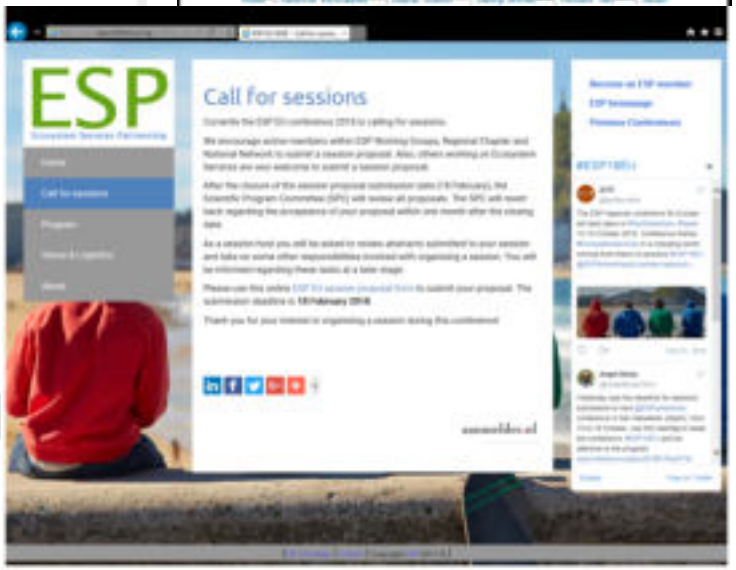
DESCRIPTION OF WORK CARRIED OUT DURING THE STSM

Where to Find Out More



http://riojournal.com/articles.php?id=13828 →





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https://www.linkedin.com/groups/8575562

https://www.researchgate.net/project/Payments-for-Ecosystem-Services-Forests-for-Water