

COST Action Final Achievement Report (18/10/2016 to 17/04/2021)

CA15206: Payments for Ecosystem Services (Forests for Water)

The Action was approved by the Committee of Senior Officials (CSO) on 26-2-2016 and has the MoU reference COST 007/16.

This report was submitted on 25-05-2021 by the Action Chair on behalf of the Management Committee in fulfilment of the requirements of the rules for COST Action Management, Monitoring and Final Assessment.

Action leadership and participants

Leadership positions

| Position | Name | Contact details | Country* |
|----------|--------------------|--|----------------|
| Chair | Dr Gregory Valatin | gregory.valatin@forestresearch.gov.uk +443000675699 | United Kingdom |

| Position | Name | Contact details | Country* |
|------------|-----------------------|--|----------|
| Vice Chair | Prof Gebhard Schueler | schueler_forestclim@yahoo.de +49 6306 911 113 | Germany |

Working groups

| # | WG Title | # of participants | WG Leader | Country* |
|---|--|-------------------|---|----------------|
| 1 | PES Design and Governance | 15 | Prof Paola Gatto paola.gatto@unipd.it | Italy |
| 2 | PES Environmental Effectiveness | 15 | Dr Tom Nisbet tom.nisbet@ForestResearch.gov.uk | United Kingdom |
| 3 | PES Cost-Effectiveness | 15 | Dr Alexander Chikalanov ctmdevelopment@yahoo.com | Bulgaria |
| 4 | Communication, Dissemination and Marketing | 15 | Dr Lars Högbom lars.hogbom@skogforsk.se | Sweden |

Other key leadership positions

| Position | Name | Contact details | Country* |
|-------------------------------|---------------------|--------------------------|----------|
| STSM Coordinator | Dr Zuzana Sarvasova | sarvasova@nlcsk.org | Slovakia |
| Science Communication Manager | Dr Lars Högbom | lars.hogbom@skogforsk.se | Sweden |
| GH Scientific Representative | Prof Paola Gatto | paola.gatto@unipd.it | Italy |

* The country displayed is:

- for the Action Chair, the country that nominated that person to the Management Committee before they were elected Action Chair;
- for the Vice Chair the country that nominated the person as a Management Committee Member,
- for all other leadership positions, if the person is a MC Member the country displayed is the country of nomination, otherwise it is the country of the person's primary work affiliation.

Participants

COST members having accepted the MoU

| | | | | | | | | | |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| AT | 26/04/2016 | BE | 03/10/2016 | BA | 05/04/2016 | BG | 10/05/2016 | HR | 21/07/2016 |
| CZ | 27/05/2016 | DK | 01/04/2016 | EE | 19/08/2016 | FI | 30/03/2016 | FR | 20/04/2016 |
| DE | 30/03/2016 | EL | 09/03/2016 | HU | 27/10/2016 | IE | 29/03/2016 | IT | 12/05/2016 |
| LV | 04/08/2016 | LT | 05/11/2018 | LU | 27/07/2016 | ME | 17/09/2016 | NL | 28/09/2016 |
| MK | 11/03/2016 | NO | 15/08/2016 | PL | 14/03/2016 | PT | 28/04/2016 | RO | 09/05/2016 |
| RS | 07/04/2016 | SK | 29/04/2016 | SI | 04/05/2016 | ES | 03/05/2016 | SE | 13/09/2016 |
| CH | 30/06/2016 | TR | 22/05/2018 | UK | 29/02/2016 | | | | |

Other participants

| Institution Name | Country |
|---|-----------------------------|
| Ukrainian National Forestry University | Ukraine |
| Al-Hussein bin Talal University, Maan | Jordan |
| National Institute for Agricultural Research of Tunisia (INRAT) | Tunisia |
| Institut Agronomique et Vétérinaire Hassan II | Morocco |
| Beijing Forestry University | China |
| Ukrainian Research Institute for Mountain Forestry | Ukraine |
| European Forest Institute, Headquarter | International Organisations |
| United Nations Economic Commission for Europe / FAO | International Organisations |
| Scion (New Zealand Forest Research Institute) | New Zealand |
| University of Shiga Prefecture | Japan |

Summary

Main aim/ objective

increase Europe's capacity to use Payment for Ecosystem Services (PES) to help meet EU Water Framework Directive and wider policy goals by consolidating and developing knowledge on PES schemes involving planting Forests for Water quality benefits – especially targeted smaller-scale “Woodlands-for-water” schemes that reduce agricultural diffuse pollution

The Action addressed this as described below

The network developed well, with the Action increasing its coverage from fifteen countries initially to forty countries (33 COST countries, four Near Neighbour Countries and three International Partner Countries). Inclusiveness target countries (ITCs) constituted a majority of COST country members, with around 60% of total expenditure by the Action used for the benefit of researchers from ITCs. In total, 180 researchers from 30 countries participated in person in the events organised by the Action across 20 countries.

Information about existing woodlands for water (W-for-W) payments for ecosystem services (PES) schemes was collected from participants to develop a spatial repository, containing 59 cases from 21 countries. Along with case study factsheets, this can be found from: <https://www.forestresearch.gov.uk/research/pesforw/case-studies/>.

Each of the seven full meetings held in-person (France, Croatia, Italy, Norway, Bulgaria, Ireland, and Slovakia, respectively) and the workshop on cost-effectiveness of schemes in Denmark, included informative case study visits focused on W-for-W PES, engagement with stakeholders, and insightful presentations by external experts. Due to the Covid pandemic, the final conference was held online. This facilitated wide participation, with 261 participants from 51 countries taking part in the event, with an interactive session successfully used to help finalise the PESFOR-W Action Plan on overcoming barriers to developing new W-for-W PES schemes. (Presentations at: <https://www.forestresearch.gov.uk/research/pesforw/pesfor-meetings/>).

In total, 16 STSMs were completed, helping progress work by Working Groups on design and governance, environmental effectiveness and cost-effectiveness. (Reports: <https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/>).

A training school on Environmental Effectiveness of Woodland Measures for Reducing Agricultural Diffuse Pollution held in Portugal (Oct 2018) was a great success (rated with 4 or 5 stars out of 5 by 90% of trainees), as was the online one (Oct 2020) on cost-effectiveness (www.forestresearch.gov.uk/research/pesforw/training-schools/).

Look-up tables on the environmental effectiveness of woodland creation to reduce agricultural diffuse pollution drawing upon work of STSMs were published in the User Manual. Benefiting from stakeholder feedback to finalise, the Manual provides an accessible step-by-step guide to developing new W-for-W PES schemes and was translated into several languages (www.forestresearch.gov.uk/research/pesforw/user-manual/).

A range of other publications have been produced - including several journal articles and book chapters.

In addition to the website, social media was used extensively to communicate about the Action and its activities.

A wide range of dissemination events were undertaken. These included sessions on W-for-W PES organised at the IUFRO 125th Anniversary Conference 2017, the Ecosystem Services Partnership European Conference 2018, and the IUFRO World Forestry Congress 2019 - each of these being judged very successful.

A skills database was created with over 90 participants listed (www.forestresearch.gov.uk/research/pesfor/pesfor-w-skills-database/).

Overall the COST Action progressed very well and exceeded expectations - many thanks to all participants (especially to User Manual and spatial repository and factsheet lead authors, WG leaders, STSM coordinators, ITC conference grants coordinator and social media team, training school and other meeting organisers) for making the Action such a success, a fantastic collaborative effort.

A COST Innovators Grant application submitted focusing primarily on policy innovation aspects may allow activities by the network to continue for a further 12 months from Nov 2021.

Action website

<http://www.forestresearch.gov.uk/research/pesfor>

Achievement of MoU objectives, deliverables and additional outputs/ achievements

MoU objectives

The Action reported the following achievement of its specific objectives.

| MoU objective | Level of achievement | Further information (hyperlink or other) |
|---|----------------------|--|
| The overall research aim is to combine practical, expert knowledge from the forestry, agriculture, water and financial sectors, to improve the design and environmental effectiveness of W-for-W PES, as a means of tackling the major problem of diffuse water pollution impacting on Europe and beyond. | 76 - 100% | This objective was reflected in the focus and work of the PESFOR-W working groups, especially WG1 on 'design & governance' and WG2 on 'environmental effectiveness of woodland measures to reduce agricultural diffuse pollution to watercourses', as well as the wider activities and outputs of the Action - particularly the publication and wide distribution of the Step-by-step Guide to development of Woodlands for Water PES schemes (www.forestresearch.gov.uk/research/pesforw/user-manual/), to which members from each of the Action's four WGs contributed. The Action proved very successful in building a community of scientists, economists and other social scientists interested in the design, effectiveness, cost-effectiveness and development of W-for-W PES schemes. Stakeholder events - including those focused on the User Manual, as well as the final conference, website and social media posts, proved an excellent way to share insights gained on improving the design and effectiveness of W-for-W PES with policy-makers, regulators and practitioners. |
| To characterize and critically evaluate the governance and design of W-for-W PES schemes with regard to: i) service provision (supply); ii) policy drivers; iii) payments/markets (demand); iv) type of governance. The aim is to assess existing PES schemes and identify organizational arrangements and metrics that could increase their effectiveness. | 76 - 100% | <p>Design and governance of W-for-W PES was the primary focus of WG1. Five STSMs were successfully completed on design and governance related issues focusing on different countries and contexts (www.forestresearch.gov.uk/research/pesforw-short-term-scientific-missions/completed-stsm/):</p> <p>Klara Balikova (2019). The stakeholders perspectives related to the Payment for Ecosystem Services (PES)</p> <p>Attila Tóth (2019). Government Programmes and Woodland-for-Water PES Schemes Encouraging Afforestation in New Zealand.</p> <p>Khrystyna Vasylyshyn (2019). W-for-W PES schemes: experience in Austria.</p> <p>Martina Štěrbová (2018). Exploring and identification of key factors and approaches of existing PES schemes.</p> <p>Theresa Bodner (2017) Enlarge present knowledge of existing Swiss PES case studies, assess governance characteristics of selected cases and get insight on payment levels assessed.</p> <p>A spatial repository of case studies was developed based upon a collaboration between members of WG1 & WG4, with factsheets for selected case studies illustrating different design and governance arrangements for existing W-for-W PES (www.forestresearch.gov.uk/research/pesforw/case-studies/).</p> <p>Analysis of the 59 cases in the spatial repository highlights 21 countries with W-for-W PES schemes currently, with ten countries that do not have schemes at present (PESFORW Working Group 1 - PES Design and Governance.pdf (forestresearch.gov.uk)). A journal article on institutional factors leading to countries adopting or not adopting W-for-W PES schemes is in final stages of preparation.</p> <p>A journal article on stakeholder perceptions of W-for-W PES has been published:</p> |

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| | | <p>Báliková K., Červená T., De Meo I., De Vreese R. , Deniz T., El Mokaddem A., Kayacan B., Larabi F., Lībiete, Z., Lyubenova M.I., Pezdevšek Malovrh Š., Potocki K., Pelyukh, O., Rugani B., Sarvasova Z., Šálka, J., Stevanov, M, Stojnic, S., Jarský, V., Vuletić D., Zahvoyska, L., Paletto A.. How Do Stakeholders Working on the Forest–Water Nexus Perceive Payments for Ecosystem Services?. <i>Forests</i> 2019, 11, 12, 1-19. doi:10.3390/f11010012 IF 2.116 Hindex 60 13899341 Q1 SJR 1.329</p> |
| <p>To evaluate the environmental effectiveness of targeted woodland planting in reducing agricultural diffuse pollutants (sediment, nitrate, phosphate, pesticides and Faecal Indicator Organisms etc). This aims to address a general lack of awareness within water sectors of the potential for woodland creation to help tackle a major agricultural pressure.</p> | <p>76 - 100%</p> | <p>This was a key focus of the work of WG2 on environmental effectiveness. It was developed in part through the work of two STSMs. The first focused on 'Assessing the effectiveness of woodland creation for reducing agricultural diffuse pollution - developing value ranges to create look-up tables'. The second STSM was on 'Reviewing available pollutant models and decision support tools for informing the design and management of woodland creation measures for reducing agricultural diffuse pollution'. A series of expert workshops were also organised linked to PESFOR-W meetings.</p> <p>The resulting look-up tables were incorporated into the User Manual, together with guidance on their application. Training on the environmental effectiveness of targeted woodland planting was provided via one dedicated Training School and as part of a second on Cost Effectiveness.</p> <p>Stakeholders were informed via three separate workshops on the End User Guide held during the 6-month extension. The work on environmental effectiveness also formed a key part of a separate workshop, site visit and interaction with stakeholders on the set of Danish Case Studies, as well as informing the submitted paper on cost effectiveness. The findings are informing the development of the new Environmental Land Management Scheme in England plus wider approaches to Nature Based Solutions.</p> <p>A Paper on the effectiveness of woodland creation measures for reducing agricultural diffuse pollution of watercourses is under preparation for submission to a journal.</p> |
| <p>To develop a European repository of Case Studies that investigate lessons from existing W-for-W PES schemes, to share with practitioners, policy makers and stakeholders to promote best practice. This aims to draw together European and international examples into an open access, trans-disciplinary learning platform highlighting strengths and weaknesses.</p> | <p>76 - 100%</p> | <p>An interactive Spatial repository of W-for-W PES case studies was created based upon information provided by PESFOR-W MC members. Published at: Workbook: Spatial Repository - Payments for Ecosystem Services (Forests for Water) COST action CA15206 PESFOR-W (tableau.com) with a link from the PESFOR-W case studies web page (www.forestresearch.gov.uk/research/pesforw/case-studies/), it currently contains 59 cases from 21 countries. A map indicates the location of each case and a search facility allows cases with a particular focus or characteristics to be identified. The repository also includes links to selected case study factsheets.</p> <p>A link between the case study repository with the EU repository of Case Studies developed by the OPPLA project (https://oppla.eu/) is planned to extend outreach.</p> |
| <p>To develop User Guidance on the suitability of pollutant, ecosystem service and catchment scale models to quantify the effectiveness of tree planting to reduce diffuse</p> | <p>76 - 100%</p> | <p>A 24-page, User Manual was written by an expert group of 12 authors from nine countries. This was presented to three stakeholder groups at workshops organised in three countries and amended in light of comments received. The final document was published and presented to the Final Conference. In addition to wide circulation of a pdf version, 500+ hard copies of the English language version have been printed, most being distributed to MC members and participants at the final conference. It has also been translated into other languages, including German, Polish, Slovakian, Spanish and Ukrainian. The document provides guidance on designing appropriate and cost-effective</p> |

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| <p>pollution; and provide advice on how PES schemes linking these can be applied.</p> | | <p>forests for water payment schemes to support tree planting and forest management to protect and improve water quality. It is structured by the main steps involved in establishing a payment scheme, starting with identifying the water issues and how tree planting and forest management can help, the environmental effectiveness of targeted tree planting for reducing diffuse pollution, the suitability of pollutant and catchment scale models, managing potential disbenefits, exploring multiple benefits, followed by scheme design, monitoring and communication. The manual is applicable to all actors involved in sustainable water management, farming and forestry, from policy makers, catchment planners and land managers, to private investors, practitioners and local communities. The document provides a common language and framework to help ensure PES schemes are successful in delivering water and other ecosystem services, while minimising possible trade-offs (such as the potential for tree planting to reduce water resources). A pdf of the English language version of the User Manual, together with finalised translated versions can be found at:</p> <p>https://www.forestresearch.gov.uk/research/pesforw/user-manual/</p> |
| <p>To increase Europe's capacity to use W-for-W PES as a policy tool for delivering water benefits and meeting WFD targets, including by developing a critical mass of skilled 'experts' (both researchers and users) able to commission and deliver well-designed and cost-effective W-for-W PES schemes.</p> | <p>76 - 100%</p> | <p>Europe's capacity to use W-for-W PES as a policy tool for delivering water benefits and meeting WFD targets has been improved as a consequence of a number of strands of the Action's work:</p> <ul style="list-style-type: none"> i) The User Manual (www.forestresearch.gov.uk/research/pesforw/user-manual/) helps to increase policy-makers' (and practitioners') basic understanding of W-for-W PES as a tool for delivering water benefits and meeting WFD targets. In this way it represents a significant contribution to enhancing Europe's capacity to develop schemes. The three workshops organised with stakeholders (including public sector policy advisors) to discuss the contents of the draft manual and obtain feedback helped shape the final document as well as serve as valuable dissemination events on the insights garnered by the Action on the environmental effectiveness and design of W-for-W PES. The Guide has been well received and constitutes a core reference document where new W-for-W PES schemes are being developed in future. ii) Training schools organised as part of the Action (covered in more detail under objective 7) also helped in increasing Europe's capacity to use W-for-W PES. iii) meetings organised with local stakeholders to share experience and perspectives on the implementation of W-for-W schemes helped develop a more in-depth understanding of issues and barriers involved. iv) The skills database established by the Action (www.forestresearch.gov.uk/research/pesforw/pesfor-w-skills-database/), which identifies individuals interested in developing W-for-W PES schemes and their skills and interests, also contributes to increasing Europe's capacity to use W-for-W PES. |
| <p>To increase Europe's capacity to tackle the intractable diffuse pollution issue by providing training in technical and economic skills, particularly for Early Career Investigators (ECIs), the 'PES-engineers' of the</p> | <p>51 - 75%</p> | <p>Material on the training schools undertaken can be found on following webpages:</p> <p>www.forestresearch.gov.uk/research/pesforw/training-schools/porto-portugal-september-2018/.</p> <p>www.forestresearch.gov.uk/research/pesforw/training-schools/freiburg-germany-14-16-april-2020/</p> |

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| <p>future. Over 100 individuals (more than 50% ECIs) will be trained through Training Schools and related workshops.</p> | | |
| <p>Facilitate interaction between specialists with different skill sets (forestry, agriculture, ecology, hydrology/hydrogeology, biophysical, economics, law, etc.) needed for PES schemes and create new professional and academic networks via a LinkedIn/Facebook 'European PES Skills Directory', allowing Training School delegates and linked professionals to register their skills and contact details.</p> | <p>76 - 100%</p> | <p>The Action was very successful in developing interactions between specialists with different skill sets and backgrounds interested in developing W-for-W PES, especially in terms of the plenary sessions, stakeholder events and case study visits organised as part of the main meetings, some of the workshops (e.g. focused on the User Manual and Danish case studies), as well as Core Group meetings.</p> <p>PESFOR-W participants were drawn from 17 disciplines, with the Action (up to the time of the final conference) having involved a total of 180 participants from 30 countries, and activities having been undertaken in 20 countries (www.forestresearch.gov.uk/documents/7997/PESFORW - Update from the COST Association.pdf/)</p> <p>The European PES skills directory created (published online at: www.forestresearch.gov.uk/research/pesforw/pesfor-w-skills-database/) allowed training school participants to include their details.</p> |
| <p>To build stakeholder (regulators, governments, land owners and managers, water companies, environmental consultants etc) understanding of the potential for W-for-W PES schemes to meet WFD targets, as well as to deliver other water and wider objectives.</p> | <p>76 - 100%</p> | <p>Interactions with local and national stakeholders were programmed into each of the main meetings of the Action (apart from the inception meeting) to build greater understanding of the potential of W-for-W PES schemes designed to meet WFD targets and other policy goals. The three stakeholder workshops held in late 2020/early 2021 on the contents of the User Manual prior to its finalisation (www.forestresearch.gov.uk/research/pesforw/pesfor-meetings/) proved particularly effective at increasing understanding in this regard.</p> <p>The final conference, which included an overview of the User Manual on developing W-for-W PES schemes (www.forestresearch.gov.uk/documents/8014/PESFORW - User manual presentation Tom Nisbet.pdf), as well as the PESFOR-W Action Plan on overcoming existing barriers to the development of schemes (www.forestresearch.gov.uk/documents/7995/PESFOR-W Action Plan 18th March 2021.pdf), was very well attended, including 261 participants from 51 countries over the 2 days, with excellent feedback.</p> <p>The findings of the Action, including the look-up tables incorporated in the User Manual, have been informing the development of the new Environmental Land Management Scheme in England and wider approaches to Nature Based Solutions.</p> |
| <p>Increase Inclusiveness Target Countries' (ITCs') access to international expertise and funding, identifying and promoting excellence in science and finance across Europe via WG leadership, event</p> | <p>76 - 100%</p> | <p>Preference was given to ITCs in selecting locations for activities. Of the total expenditure by the Action, around 60% was for the benefit of researchers from ITCs (see: www.forestresearch.gov.uk/documents/7997/PESFORW - Update from the COST Association.pdf/). The User Manual has also been published in Polish and Slovak (www.forestresearch.gov.uk/research/pesforw/user-manual/) amongst other languages.</p> |

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| <p>hosting, STSM participation, and use of a Spatial Case Studies map and Glossaries on the web portal and the 'European PES Skills Directory'.</p> | | |
| <p>Improve gender balance addressing the acute gender imbalance in the forestry, agriculture, water and environmental finance sectors by targeting female representation of at least 40% in the MC, 50% in Training Schools, and positive selection of women for leadership roles as well as implementation of the Gender Action Plan.</p> | <p>76 - 100%</p> | <p>While the Action could not influence the initial selection of MC members (who subsequently made up the bulk of participants in PESFOR-W's main activities), a preference to gender balance was given in developing activities in accordance with the Gender Action Plan developed by the Action. Of the 180 researchers involved in the Action's activities, 40% (72) were women (see COST presentation:</p> <p>(www.forestresearch.gov.uk/documents/7997/PESFORW - Update from the COST Association.pdf/).</p> <p>Around half the participants in the face-to-face training school were female (see participant list at:</p> <p>www.forestresearch.gov.uk/research/pesforw/training-schools/porto-portugal-september-2018/). (While there was a lower proportion of female participants in the subsequent online training school - see participant list at: www.forestresearch.gov.uk/research/pesforw/training-schools/freiburg-germany-14-16-april-2020/), this just reflected the lower proportion of applications, as all applicants with a relevant background were accepted).</p> |

Deliverables

The Action reported the following deliverables:

| Deliverable | Timing of deliverable | Further information (hyperlink or other) |
|--|--|---|
| Report on the perceptions of investors of forestry for water benefits PES schemes | Delivered | https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/ |
| Report on the motivations of potential PES participants and on barriers to implementation of schemes. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/ |
| Report on governance and policy-maker engagement issues including how to link W-for-W PES with agri-environmental schemes. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/ |
| 'Design and Governance' chapter for the 'User Manual' on the design of W-for-W PES schemes | Delivered | https://www.forestresearch.gov.uk/documents/7984/PESFOR_COST_ACTION_manual_2021_def_singlepages_final.pdf |
| Publish look-up tables on the effectiveness of woodland measures in reducing agricultural diffuse pollution. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/ |
| Report on the suitability of pollutant and ecosystem service models to quantify woodland creation impacts on diffuse pollutant losses to water, to account for other woodland water benefits and potential disbenefits, and services such as carbon sequestration, across a range of scales. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/ |
| Methodology with Case Study worked examples, to assess the effectiveness of woodland creation measures for reducing agricultural diffuse pollution. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/user-manual/ |
| Paper on the effectiveness of woodland creation measures for reducing agricultural diffuse pollutants prepared for submission to a journal. | Not delivered, but foreseen within 2 years | |
| Practical guidance on designing/managing woodland measures to optimise their effectiveness at pollutant removal, to form a Chapter for the 'User Manual'. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/user-manual/ |
| Newsletters & trade articles on using targeted woodland creation to tackle agricultural diffuse pollution as part of integrated catchment management. | Delivered | https://twitter.com/PESFOR_W |
| 'Thought leadership' article on the cost-effectiveness of W-for-W Payment for Ecosystem Services schemes. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/ |
| Reports on demand-side and climate change investigations into W-for-W PES cost-effectiveness (STSM results) | Delivered | https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/ |
| Submission of a journal paper, newsletter & trade articles on socioeconomic evaluation and cost-effectiveness analysis of W-for-W PES. | Delivered | https://twitter.com/PESFOR_W |

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| Guidance on Best Practice for socioeconomic evaluation and cost-effectiveness analysis of W-for-W PES for a chapter of the 'User Manual'. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/user-manual/ |
| Developing a website for the PESFOR-W COST Action and preliminary plan for the spatial hub. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/ |
| Publication of factsheets on existing Case Studies on W-for-W Payment for Ecosystem Services schemes. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/case-studies/ |
| Report on 'Communicating the PES "Wow factor"' (to be included as a Chapter of the 'User Manual'). | Delivered | https://www.forestresearch.gov.uk/research/pesforw/user-manual/ |
| Publication of the Final W-for-W Payment for Ecosystem Services schemes Case Study synthesis chapter for the 'User Manual'. | Delivered | https://www.forestresearch.gov.uk/research/pesforw/user-manual/ |
| Publication of 'User Manual' providing smarter guidance on developing W-for-W Payment for Ecosystem Services schemes | Delivered | https://www.forestresearch.gov.uk/research/pesforw/user-manual/ |
| Other knowledge exchange activities on W-for-W Payment for Ecosystem Services schemes (e.g. via social media and press). | Delivered | https://twitter.com/PESFOR_W |
| Final Conference proceedings and Final Project Report providing an overview of the achievements of the COST Action and pointers for the future. | Delivered | https://twitter.com/PESFOR_W |

Additional outputs/ achievements

The following outputs/ achievements also resulted from the Action:

The Action reported 16 publications on the topic of the Action, co-authored by at least two Action participants from two countries participating in the Action, and for which the Action networking was necessary.

Co-authored Action publications - peer-reviewed

1. [doi:10.3897/rio.3.e13828](https://doi.org/10.3897/rio.3.e13828)

Title

PESFOR-W: Improving the design and environmental effectiveness of woodlands for water Payments for Ecosystem Services
Gregory Valatin; Jens Abildtrup; Cristian Accastello; Abdel Rahman Al-Tawaha; Maria-Beatrice Andreucci ; Silvia Atanasova; Mersudin Avdibegović; Nikolina Baksic; Kazimierz Banasik; Jose Barquin; Johan Barstad; Viera Bastakova; Dzenan Becirovic; Santiago Begueria; Uldis Bethers; Maria Bihunova; Bosko Blagojevic; Matthias Bösch; Thomas Bournaris; Yiyang Cao; Claudia Carvalho-Santos; Alexander Chikalanov; Maria Cunha e Sá ; Krzysztof Czyżyk; Hamed Daly; Helen Davies; Antonio Del Campo; Rudolf de Groot; Rik De Vreese; Tomáš Dostál; Abdelmohssin El Mokaddem; Leena Finér; Rhys Evans; Julien Fiquepron; Magdalena Frac; Martyn Futter; Serge Garcia; Paola Gatto; Davide Geneletti; Veronika Gezik; Carlo Giupponi; María González-Sanchís; Fernando Gordillo; Elena Gorriz; Yulia Grigороva; Katrin Heinsoo; Eduard Hochbichler; Lars Högbom; Mike Image; Jette Jacobsen; Anže Japelj; Sreten Jelic; Jürgen Junk; Csaba Juhasz; Ifigenia Kagalou; Mary Kelly-Quinn; Anna Klamerus-Iwan; Tatiana Kluvankova; Roland Koeck; Iskra Konovska; Silvija Ostoic; Janez Krc; Vasyl Lavnyy; Alessandro Leonardi; Zane Libiete; Declan Little; Antonio Lo Porto; Athanasios Loukas; Mariyana Lyubenova; Bruno Maric; Javier Martínez-López; Inazio Martinez; Alexandru Maxim; Marek Metslaid; Alison Melvin; Mihai Costică; Ivan Mincev; Zymantas Morkvenas; Radovan Nevenic; Tom Nisbet; Daire O'hUallachain; Roland Olschewski; Johan Östberg; Karolina Oszust; Paola Ovando; Alessandro Paletto; Taras Parpan; Davide Pettenella; Špela Malovrh; Špela Planinšek; Radka Podlipná; Stjepan Posavec; Kristina Potočki; Irina Prokofieva; Paula Quinteiro; Laszlo Radocz; Ratko Ristic; Nicolas Robert; Benedetto Rugani; Jelena Sabanovic; Zuzana Sarvasova; Snezana Savoska; Patrick Schleppe; Gebhard Schueler; Margaret Shannon; Martyn Silgram; Bojan Srdjevic; Gavril Stefan; Aleksandar Stijovic; Niels Strange; Sirkka Tattari; Aco Teofilovski; Mette Termansen; Bo Thorsen; Attila Toth; Ivonne Trebs; Novica Tmušić; Lampros

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- [doi:10.3897/rio.3.e13828](https://doi.org/10.3897/rio.3.e13828)
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- How Do Stakeholders Working on the Forest–Water Nexus Perceive Payments for Ecosystem Services?
Klára Báliková; Tereza Červená; [Isabella De Meo](https://doi.org/10.3390/f11010012); Rik De Vreese; [Tuğba Deniz](https://doi.org/10.3390/f11010012); Abdelmohsin El Mokaddem; [Bekir Kayacan](https://doi.org/10.3390/f11010012); Fadila Larabi; [Zane Ljubić](https://doi.org/10.3390/f11010012); Mariyana Lyubenova; [Špela Pezdevšek Malovrh](https://doi.org/10.3390/f11010012); Kristina Potočki; [Oksana Pelyukh](https://doi.org/10.3390/f11010012); [Benedetto Rugani](https://doi.org/10.3390/f11010012); Zuzana Sarvasova; [Jaroslav Šálka](https://doi.org/10.3390/f11010012); Mirjana Stevanov; Srdjan Stojnic; [Vilém Jarský](https://doi.org/10.3390/f11010012); [Dijana Vuletić](https://doi.org/10.3390/f11010012); Lyudmyla Zahvoyska;

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| <p>DOI Type Published in Published by ISSN Subject Link</p> | <p>Alessandro Paletto doi:10.3390/f11010012 Journal article Forests MDPI AG 1999-4907 Forestry https://www.mdpi.com/1999-4907/11/1/12/pdf</p> |
| <p>5. doi:10.13140/RG.2.2.30916.35207 Title Authors DOI Type Published in Published by</p> | <p>Forest for Water Services: A Step-by-Step Guide for Payment Schemes Thomas R. Nisbet; Maria-Beatrice Andreucci; Rik De Vreese; Lars Högbom; Sonja Kay; Mary Kelly-Quinn; Mariyana Lyubenova; Alessandro Leonardi; Paola Ovando; Paula Quinteiro; Ignacio Pérez Silos; Gregory Valatin doi:10.13140/RG.2.2.30916.35207 Journal article Unpublished Unpublished</p> |
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Water-Related Payment Schemes for Forest Ecosystem Services in Selected Southeast European (SEE) Countries

Authors

[Dijana Vuletić](#); Silvija Krajter Ostoić; Ljiljana Keča; Mersudin Avdibegović; [Kristina Potočki](#); Stjepan Posavec; Aleksandar Marković; Špela Pezdevšek Malovrh

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Cultural Ecosystem Services and Water Quality Improvement provided by Forest Landscapes in New Zealand. Scientific Report

Authors

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Title

People's attitudes towards deadwood in forest: evidence from the Ukrainian Carpathians
Oksana Pelyukh; Alessandro Paletto; Lyudmyla Zahvoyska

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Original title

People's attitudes towards deadwood in forest:

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| <p>13. doi:10.12899/asr-1786 Title Authors DOI Type Published in Published by ISSN</p> | <p>Comparison between people's perceptions and preferences towards forest stand characteristics in Italy and Ukraine Oksana Pelyhukh; Alessandro Paletto; Lyudmyla Zahvoyska doi:10.12899/asr-1786 Journal article Annals of Silvicultural Research CREA Forestry and Wood 2284354X</p> |
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Co-authored Action publications - other

1.

Gregory Valatin and Tom Nisbet (2018). Encouraging tree planting for water quality benefits. Forestry & Timber News, 83, October, pp48-49 & 51, <http://www.confor.org.uk/news/ftn-magazine/ftn-back-issues/>.

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Projects

The Action reported 4 project(s) and 0 proposal(s) resulting from the Action networking.

Key details of the projects are shown below:

1. Our common water (Vårt gemensamma vatten)
(National)
2. The protection of water sources of the Vittel catchment area: Monetary valuation of environmental and social benefits, and impacts on the local economy (La protection des sources d'eau sur l'impluvium de Vittel : Évaluation monétaire des services environnementaux et sociaux, et des impacts sur l'économie locale) .
(Industry - Nestlé Waters France-Belgique (42-month contract with INRA): the 2017 PESFOR-W visit to Vittel facilitated co-operation with Nestlé/Agrivair.)
3. Development of a scheme for assessment of forest ecosystem services, efficiency of their provision through the creation of belts for the purpose of purification and protection of water and other natural components in the regions
(National)
4. The effects of land-use changes on soil erosion, sediment transport, water quality and runoff conditions (Vliv změny využití území na erozní ohroženost, transport splavenin, kvalitu vody a odtokový režim)
(National)

Other outputs / achievements

The following other outputs/ achievements contributing to the COST mission resulted from the Action:

1. **Mariyana Lyubenova** and **Gregory Valatin** (2018). International Meeting “Payment for Ecosystem Services – Forest for Water (CA15206 PESFOR). Bulgarian Journal of Soil Science, v.3, issue 2, 150-153. ISSN 2534-8787.
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3. **Lyubenova, M.**, J. Petrov, R. Radev, L. Keca, A. Al-Tawaha, A. **Chikalanov**. 2019. FOREST SHELTER BELTS. ENVIRONMENTAL AND ECONOMIC BENEFITS. In: Forest ecosystem services and Payment schemes (Case study). M. Lyubenova (Ed.), St. Kliment Ohridski University Press, Sofia, 13-62. ISBN 978-954-07-4778-1.
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7. **Lyubenova, M.** 2019. Ecosystem services and benefits. Costs, Efficiency, Payments. University Publishing House "St. Kliment Ohridski ", Sofia, 250 ISBN 978-954-07-4729-3
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 33. Giulia Amato (2018). Utilities engagement on watershed investments and PES. www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Contributes towards meeting deliverable 1: Report on the perceptions of investors of forestry for water benefits PES schemes].
 34. Nikolina Baksic (2018). Reviewing available pollutant models and decision support tools for informing the design and management of woodland creation measures for reducing agricultural diffuse pollution. www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Tailored to meet deliverable 6: Report on the suitability of pollutant and ecosystem service models to quantify woodland creation impacts on diffuse pollutant losses to water]
 35. Khrystyna Vasylyshyn (2018). Existing motivations and barriers of potential PES participants in the EU (Slovak Republic as a Case Study). www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Contributes towards meeting deliverable 2: Report on the the motivations of potential PES participants and on barriers to implementation of schemes].
 36. Eulalia Baulenas (2019). Incentive-based mechanisms for W-f-W: PES schemes and carbon credits comparison and likelihood of uptake. www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Contributes towards meeting deliverable 1: Reports on demand-side and climate change investigations into W-for-W PES].
 37. Khrystyna Vasylyshyn (2019). W-for-W PES schemes: experience in Austria. www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Contributes towards meeting deliverable 3: Report on governance and policy-maker engagement issues].
 38. Klara Balikova (2019). The stakeholders perspectives related to the Payment for Ecosystem Services (PES). www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Contributes towards meeting deliverable 1: Report on the perceptions of investors of forestry for water benefits PES schemes].
 39. Amandine Pastor (2019). Assessment of payment for ecosystem services (PES) for forest of Portugal: application to post-fire soil conservation measures. www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/.
 40. Federico Pinato (2019). Facilitating access to private finance for forests. www.forestresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Contributes towards meeting deliverable 1: Report on the perceptions of investors of forestry for water benefits PES schemes].

41. Khrystyna Vasylyshyn (2019). Woodlands for water PES schemes reiew in Denmark. www.forestryresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/.
42. Giacomo Pagot (2019). Creating guidelines for the engagement of the stakeholders and the collection of qualitative data for the implementation of Water PES. www.forestryresearch.gov.uk/research/pesforw/case-studies/-short-term-scientific-missions/completed-stsms/. [Contributes towards meeting deliverable 2: Report on the the motivations of potential PES participants and on barriers to implementation of schemes].
43. Kazimierz Banasik, Leszek Hejduk, Adam Krajewski and Michał Wasilewicz (2021). The intensity of siltation of a small reservoir in Poland and its relationship to environmental changes. *Catena* 204 (2021) 105436, 1-12. <https://doi.org/10.1016/j.catena.2021.105436>.

Impacts

The Action reported the following impact(s):

| Description of the impact, i.e. what will change, and for whom, as a result of what the Action achieved | Type of impact | Timing of impact |
|---|--|----------------------------|
| Increase in woodland creation to reduce agricultural diffuse pollution to watercourses. The work of the Action has led to an increase in woodland creation for water benefits in Great Britain. | <ul style="list-style-type: none"> • Societal | Achieved |
| Increase in use of woodlands for water payments to help meet water quality targets and other policy goals. The work of the Action has influenced payments under the Countryside Stewardship (https://www.gov.uk/government/collections/countryside-stewardship) and the Environmental Land Management Scheme (https://www.gov.uk/government/publications/environmental-land-management-schemes-overview/environmental-land-management-scheme-overview) in Great Britain. | <ul style="list-style-type: none"> • Societal | Achieved |
| Agreement on joint supervision of graduate and PhD students, helping advance the skills and network of Early Career Investigators: An indirect result of joint cooperation as trainers in the WG2 Training School "Environmental Effectiveness of Woodland Measures for Reducing Agricultural Diffuse Pollution to Water – Evidence, SWAT Modelling and Decision Support Tools" organized in Porto, Portugal, 23-26.10.2018 was a meeting set up to explore cooperation on joint supervision of a PhD between Kristina Potočki (Croatia) and Claudia Carvalho-Santos (Portugal) regarding Application of SWAT to explore the climate impacts on processes in rivers. | <ul style="list-style-type: none"> • Scientific / Technological | Achieved |
| Meetings to explore cooperation possibilities on joint preparation of future Horizon Europe funding proposals on agroecology. (Indirect result from attendance and networking in MC Meetings). | <ul style="list-style-type: none"> • Scientific / Technological | Achieved |
| Beneficiaries of ITC conference grants noted impacts in terms of expanding networks of contacts, deepening knowledge and exchange of ideas, and discussions on potential collaborations (calls for projects, supervision of students, joint papers, revision of papers, etc), increased experience of presenting work to a broader audience and, in some case, improving skills at co-hosting a conference session, as well as taking research and career to a higher level. E.g. see: https://www.forestresearch.gov.uk/documents/5397/Claudia_Carvalho-Santos_Scientific_Report.pdf | <ul style="list-style-type: none"> • Scientific / Technological | Achieved |
| Increased support for developing a Woodland Water Code. The UK Government has made a commitment to supporting the development of a Woodland Water Code as part of its England Tree Planting Action Plan 2021-2024 launched in May 2021 (see p.21 of the Plan available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/987432/england-trees-action-plan.pdf). This was informed by the Action's work on developing Look-up Tables on the environmental effectiveness of woodland planting for reducing agricultural diffuse pollution of watercourses (published as part of the User Manual) and workshops held with UK policy advisors in late 2020. | <ul style="list-style-type: none"> • Scientific / Technological • Economic • Societal | Achieved |
| Increased understanding of links between woodland creation and water quality to help underpin targeting, design and evaluation of W-for-W PES Schemes. | <ul style="list-style-type: none"> • Scientific / Technological | Foreseen within two years |
| Increase in development of woodlands for water PES across Europe (facilitated by provision of look-up tables on the effectiveness of | <ul style="list-style-type: none"> • Scientific / Technological | Foreseen two-to-five years |

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| <p>woodland planting to reduce a range of diffuse pollutants and guidance on the design of schemes).</p> | | |
| <p>Increase in success in design and Implementation of appropriate and cost-effective woodlands for water PES schemes by local stakeholders as well as EU and national regulators facilitated by User Guidance on developing Woodlands-for-Water PES schemes.</p> | <ul style="list-style-type: none"> • Societal | <p>Foreseen two-to-five years</p> |
| <p>Improve Europe's water quality by reducing the major pressure of diffuse pollution from agriculture (the single most important source of water pollution in Europe) through greater implementation of well-designed and targeted Woodlands-for-Water PES schemes, helping to address an intractable issue and to reduce associated economic and human health costs.</p> | <ul style="list-style-type: none"> • Societal | <p>Foreseen five-to-ten years</p> |

Dissemination and exploitation of Action results

Dissemination and exploitation approach of the Action

The Action's dissemination and exploitation approach as well as all activities undertaken to ensure dissemination and exploitation of Action results and the outcomes of these activities are described below.

The Action's approach to dissemination and communication is outlined in its dissemination and communication plan

(https://www.forestresearch.gov.uk/documents/5375/Dissemination__Communication_plan_Oct_2018.pdf).

This includes an emphasis on tailoring communications to different target stakeholder groups involved in W-for-W PES schemes (promoters, funders, providers and beneficiaries; general public, landowners, agricultural, forestry and water sectors, decision-makers, etc). The website

(<https://www.forestresearch.gov.uk/research/pesforw/>) was used as a primary means for disseminating information about the Action, including programmes of events held, copies of presentations, contact details and opportunities such as details on applying for STSMs and ITC conference grants. Social media was used extensively both to keep stakeholders informed of the activities of the Action and to disseminate information on the Action's publications. The Action's activities and results have also been widely publicised through presentations at conferences and other events. The User Manual was written in an easily accessible style to be readily understandable to all stakeholders. A trade article on the potential for developing a Woodland Water Code was also published that created much interest in the forestry sector. A number of journal articles have also been published, submitted or in prep covering the scientific results of the Action.

Dissemination meetings funded by the Action

The Action funded Dissemination Meetings as shown below:

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| Title | IUFRO World Forestry Congress | | |
| Date | 18-09-2017 to 23-09-2017 | Country | Germany |
| Event | IUFRO 125th Anniversary Congress 2017 | | |

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|--------------|-------------------------------------|----------------|-------|
| Title | ESP Conference 2018 | | |
| Date | 15-10-2018 to 19-10-2018 | Country | Spain |
| Event | ESP Europe 2018 Regional Conference | | |

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| Title | 'Forests for Water Payments for Ecosystem Services: Evidence & prospects' at the World Forestry Congress 2019 | | |
| Date | 29-09-2019 to 05-10-2019 | Country | Brazil |
| Event | XXV International Union of Forest Research Organizations (IUFRO) World Congress | | |

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| Title | Assessing the effectiveness, design and governance of Woodlands for Water Payments for Ecosystem Services schemes: outcomes of the PESFOR-W COST Action" at Bonn conference on "Governing and managing forests for multiple ecosystem services across the globe" scheduled on Wednesday 26.02.2020 | | |
| Date | 26-02-2020 to 28-02-2020 | Country | Germany |
| Event | Governing and managing forests for multiple ecosystem services across the globe | | |

Other dissemination activities

The Action also undertook the following dissemination activities:

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| Activity | Chair invited by the Austrian Federal Ministry of Sustainability and Tourism to give a presentation on 'Cost-effectiveness of woodland measures to improve water quality: aspirations, activities and initial findings of the PESFOR-W COST Action' at a Stakeholder Dialogue & Round Table event (Slovenia, 12th June 2018). |
| Target | Participants at the PROLINE-CE & and CAMARO-D Interreg projects joint mid-term conference. |
| Outcome | Useful in raising awareness of the activities of PESFOR-W & for networking. |
| Link | https://www.researchgate.net/publication/326010220_Cost-effectiveness_of_woodland_measures_to_improve_water_quality_-_aspirations_activities_and_initial_findings_of_the_PESFOR-W_COST_Action |

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| Activity | Poster: Carvalho-Santos C, Quinteiro P, Cunha e Sá MA (2018) Pagamentos para Serviços dos Ecossistemas – Florestas para a Água PESFOR-W COST Action (CA15206), Cimeira Nacional de Inovação na Agricultura, Florestas e Desenvolvimento Rural 2018, Oeiras, Portugal, 29 October 2018. |
| Target | Participants at the Agri-Innovation event organised in Cimeira by the Portuguese Ministry of Agriculture and Rural Development, including project representatives from Operational Groups (GO) from the European Partnership for Innovation, Productivity and Agricultural Sustainability, as well as of innovation projects (H2020, FCT, PT2020, LIFE, COST). |
| Outcome | The main objectives of the Cimeira for Agro-Innovation were networking, discussion and contributing to the Agenda of the Ministry of Agriculture, Forestry and Rural Development. The poster showed the objectives and main activities of the PESFOR-W COST Action to researchers and people working in forestry, increasing their awareness of the role of forests in reducing agriculture diffuse pollution to water and for the creation of PES schemes that can be both environmentally effective and cost-effective. Useful to raise awareness about the activities of the Action with stakeholders in Portugal. |
| Link | https://agro-inovacao.iniav.pt/index.php/posters-sala-4 |

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| Activity | Presentation by the WG2 leader on 'EU Cost Action Woodlands and Water: Current initiatives and approach to PES and relevance to native woodlands' at the Native Woodland Conference in Delgany, Co. Wicklow, Ireland. |
| Target | Participants at the Native Woodland Conference in Delgany, Co. Wicklow, Ireland on 30th April 2018 |
| Outcome | The conference received appreciable media attention in the national and local print media in Ireland. |
| Link | https://www.youtube.com/watch?v=jMI7oT_79cM |

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| Activity | Presentation by the Chair on 'Woodlands for water Payments for Ecosystem Services: an overview of initial findings, activities & ambitions of the PESFOR-W COST Action' at the ESP Europe regional conference 2018, Spain (Oct 2018). |
| Target | Participants at the session on 'Forests for Water: scientific evidence and economic mechanisms for encouraging ecosystem service provision' at the ESP Europe regional conference 2018. |
| Outcome | Useful to raise awareness about the Action and highlight case study information collected for the spatial repository - leading to a request from a member of the audience working for the Swiss government for further information about the Swiss woodlands for water PES case study. |
| Link | https://drive.google.com/drive/folders/1Wk2_iAGYWTTzwJW2UglXgR4gc9SMEjZW |

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| Activity | Presentation by Attila Tóth on 'Direct Supports of the Slovak Agricultural Paying Agency as Potential Economic Mechanisms for Encouraging Ecosystem Service Provision' at the ESP Europe regional conference 2018, Spain (participation funded through an ITC conference grant). |
| Target | Participants at session B3 'Forests for Water: Scientific evidence and economic mechanisms for encouraging ecosystem service provision' at the ESP Europe regional conference 2018 (Oct). |
| Outcome | Presentation well received by session participants and fits well with the Action's interest in potential for strengthening links between woodlands for water PES and agri-environmental schemes. |

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| Link | https://drive.google.com/drive/folders/1Wk2_iAGYWTTzwJW2UgIXgR4gc9SMEjZW |
| Activity | Presentation by Claudia Carvalho-Santos on 'Forests as promoters of water ecosystem services – insights from Portugal' at the ESP Europe Regional Conference 2018, Spain (participation funded via an ITC conference grant). |
| Target | Participants at session B3 'Forests for Water: Scientific evidence and economic mechanisms for encouraging ecosystem service provision' co-organised by the Action at the ESP Europe Regional Conference 2018. |
| Outcome | Presentation stimulated a useful discussion on current evidence and evidence gaps concerning the resistance of different tree species to fire in relation to their effectiveness in improving water quality. |
| Link | https://drive.google.com/drive/folders/1Wk2_iAGYWTTzwJW2UgIXgR4gc9SMEjZW |
| Activity | Presentation on 'Optimal harvesting decision paths when timber and water have an economic value' by Paola Ovando (co-chair of session B3 on 'Forests for Water: Scientific evidence and economic mechanisms for encouraging ecosystem service provision') at the ESP Europe Regional Conference 2018, Spain (participation funded via a Dissemination meeting grant). |
| Target | Participants at session B3 on 'Forests for Water: Scientific evidence and economic mechanisms for encouraging ecosystem service provision' at the ESP Europe Regional Conference 2018. |
| Outcome | The session was judged a great success by participants and this was in no small part due to the time and effort put in by Paola Ovando (PESFOR-W WG3 vice-leader) in planning the session. Discussion at the session highlighted a number of important evidence gaps - including in relation to impacts of forests on downwind precipitation. |
| Link | https://drive.google.com/drive/folders/1Wk2_iAGYWTTzwJW2UgIXgR4gc9SMEjZW |
| Activity | Invited seminar by the Chair on 'Woodlands & the Carbon-Water Policy Nexus: A UK perspective' at Keio University, Tokyo, Japan (12th Jan 2017) included slides about the work of PESFOR-W. |
| Target | Participants of the seminar on 'Woodlands & the Carbon-Water Policy Nexus: A UK perspective' at Keio University. |
| Outcome | Useful networking and discussion during the seminar - although more wide-ranging than just about woodlands for water PES schemes and PESFOR-W. |
| Link | http://web.econ.keio.ac.jp/org/kes/en/past16.html |
| Activity | Invited seminar by the Chair on 'Realising the Economic Value of Ecosystem Services provided by Forests and Trees: a UK perspective' at Beijing Forestry University, Beijing, China (May 2017) included slides about the work of PESFOR-W. |
| Target | Participants at the seminar on 'Realising the Economic Value of Ecosystem Services provided by Forests and Trees: a UK perspective' at the Beijing Forestry University. |
| Outcome | Useful networking and dissemination in highlighting the activities of PESFOR-W to an audience in China. |
| Link | https://www.researchgate.net/publication/328902600_Realising_the_Economic_Value_of_Ecosystem_Services_of_Forests_and_Trees_-_A_UK_perspective_8th_May_2017_-_Beijing_-_May_2017 |
| Activity | Presentation by the WG3 leader and co-presenters on the 'Cost Effectiveness Assessment of Forest Ecosystem Services for Water Bodies Protection' at the MIC-VIS 2018 conference in Croatia. |
| Target | The participants at the MIC-VIS 2018 conference in Vis, Croatia. |
| Outcome | Useful to highlight work by the Action on cost-effectiveness analysis of woodlands for water measures. |
| Link | http://www.mic-vis.eu/Programme/PresentationSchedule |
| Activity | Presentation by Tomas Dostal on 'Nature-close measures in the landscape as integrated approach to |

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| | drought and flood management' at the AgroEnviron 2018 Symposium, 14-18 October 2018, Nanjing; China. (Oral presentation; abstract included in book of abstracts) |
| Target | Participants at a large international symposium (scientific congress) focused mainly on relations and processes within agricultural landscapes. (Over 450 participants from across the world). |
| Outcome | Useful for networking, scientific discussions, and discussing potential partnerships for further collaborative research, publications and projects. |
| Link | https://www.researchgate.net/publication/329189444_Nature-close_measures_in_the_landscape_as_integrated_approach_to_drought_and_flood_management |

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| Activity | Poster and oral presentation by Jacob Jerabek, David Zúmr, Josef Krása J. and Tomas Dostál on 'Monitoring of runoff processes during an artificial rainfall on a freshly tilled soil' at conference 25th poster day "Transport of water, chemicals and energy within the system soil-water-atmosphere", Bratislava, 7th Nov 2018 (with a peer reviewed paper planned to be published within the proceedings). |
| Target | The wider research community dealing with soil-plant-atmosphere systems and other conference participants. |
| Outcome | Field irrigation experiment results were presented at the 25th International Poster Day and Institute of Hydrology, Slovak Academy of Sciences. |
| Link | https://www.researchgate.net/publication/329190097_Monitoring_of_runoff_processes_during_an_artificial_rainfall_on_a_freshly_tilled_soil |

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| Activity | Presentation on PESFOR-W by WG4 Vice-leader to visitors from China (17th Oct 2019) |
| Target | Delegation from the National Development and Reform Commission (NDRC) of China |
| Outcome | The Chinese delegation was very interested in the work of the Action, the European context of applying PES, the cross-border implementation of the Water Framework Directive and the catchment-driven approach in the WFD. |
| Link | https://www.forestresearch.gov.uk/research/pesforw/pesfor-meetings/dissemination-meetings/ |

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| Activity | Invited presentation by the Chair to the Green Infrastructure Japan 2020 conference (7th Nov 2020). |
| Target | Participants at the Green Infrastructure Japan 2020 Conference (policy-makers, researchers and practitioners) |
| Outcome | Presentation very well received by audience of over 120 participants (mainly from Japan). Also invited to submit a manuscript for a book chapter. Subsequently proposed that the PESFOR-W User Manual and possibly the Action Plan could make a good Chapter. The book is expected to be published online open access by Springer in 2021 incorporating the User Manual as a chapter. |
| Link | https://www.forestresearch.gov.uk/research/pesforw/pesfor-meetings/dissemination-meetings/ |

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| Activity | Invited Keynote presentation by the Chair to the 9th New Zealand Forest Ecosystem Services Forum (1st Dec 2020) |
| Target | Policy-makers, researchers and practitioners participating in the New Zealand Forest Ecosystem Services Forum |
| Outcome | Presentation much appreciated, with recording made available online on the Scion website (https://www.scionresearch.com/about-us/news-and-events/events/past-events/forest-ecosystem-services-forum-2020) and Youtube Channel (https://www.youtube.com/watch?v=VaTO7H0fRnA). |
| Link | https://www.forestresearch.gov.uk/research/pesforw/pesfor-meetings/dissemination-meetings/ |

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| Activity | Invited presentation by the Chair to the COST Connect session on the European Green Deal (2nd July 2020) |
| Target | COST Association and European Commission colleagues developing H2020 research calls. |

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| Outcome | Dissemination of PESFOR-W participants thinking on ways in which the European Commission's draft text relating to the forthcoming call for research related to the European Green Deal could be improved. |
| Link | https://www.forestresearch.gov.uk/research/pesforw/pesfor-meetings/dissemination-meetings/ |

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| Activity | Organisation of a UK stakeholder workshop on Potential for developing a Woodland Water Code, including presentations by the Chair and WG2 leader (17th Nov 2020) |
| Target | UK forestry and water public policy advisors, regulators and intermediaries. |
| Outcome | Considerable interested generated from across the UK in the Action's work and potential for developing a Woodland Water Code drawing upon the look-up tables on the the effectiveness of woodland planting for reducing agricultural diffuse pollution of watercourses PESFOR-W has been developing. |
| Link | https://www.forestresearch.gov.uk/research/pesforw/pesfor-meetings/dissemination-meetings/ |

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| Activity | Presentation to the EURINT International Conference 2020, 15th-17th Oct, Iasi, Romania |
| Target | Participants at the EURINT International Conference 2020 held in Iasi, Romania. |
| Outcome | Publication in conference proceedings: Mihai, C., Ulman, S.R., Dobay, K.M. (2020). "Specific Payments for Ecosystem Services as Part of the Water and Forest Management in Romania". In: EU and its neighbourhood: enhancing EU actorness in the Eastern borderlands. Eurint Conference Proceedings, Iași: „Alexandru Ioan Cuza” Iași Publishing house(Eurint 2020 International Conference, 15-17 October, 2020), pp. 28-50(Web of Science Core Collection - Conference Proceedings Citation Index - Social Science & Humanities; DOAJ; RePEc; CEEOL; ISSN: 2393-2384) |
| Link | https://eurint.uaic.ro/ |

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| Activity | Presentation by WG4 leader on 'Payment for Ecosystem Services Forest – Water (PESFOR-W)' to the IUFRO Task Force 'Forests and Water interactions in a changing environment' (2020) |
| Target | Members of the the International Union of Forest Research Organisations Task Force 'Forests & Water' (https://www.iufro.org/science/task-forces/forests-water-interaction-changing-environment/). |
| Outcome | Useful to highlight the Action's work on developing the User Manual - also the final conference, which was subsequently advertised on the IUFRO website (see link below). |
| Link | https://www.iufro.org/discover/noticeboard/other-meetings-events/article/2021/03/08/virtual-conference-payments-for-ecosystem-services-forest-for-water/ |

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| Activity | R. Yousefpour, J. Abildtrup, C. Accastello, M. B. Andreucci, B. Blagojevic, A. Chikalanov, El Mokaddem, , S. Garcia**, M. Gonzalez-Sanchis, C. Giupponi, F. Gordillo; B. Kayacan, L. Keca, D. Little, M. Lyubenova, T. Nisbet, P. Ovando, A. Paletto, C. Petucco, B. Rugani, and G. Valatin "Payment for Ecosystem Service Water (PESFOR-W): Assessing the cost-effectiveness of forests and woodland for water quality service" Presentation (given by Rasoul Yousefpour) to conference on 'Governing and Managing forest for multiple ecosystem services across the globe' (Bonn 26-28 Feb 2020) |
| Target | Participants at the conference on 'Governing and Managing forest for multiple ecosystem services across the globe' |
| Outcome | Useful to highlight work by PESFOR-W on developing a framework to assess the cost-effectiveness of woodlands for water PES schemes |
| Link | https://www.eventbrite.co.uk/e/governing-and-managing-forests-for-multiple-ecosystem-services-across-the-globe-tickets-79339493561# |

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| Activity | C. Accastello, J. Abildtrup, M. B. Andreucci, B. Blagojevic, A. Chikalanov, A. El Mokaddem, J. Fiqueron, S. Garcia, M. Gonzalez-Sanchis, C. Giupponi, A. Japelj, L. Keca, D. Little, M. Lyubenova, T. Nisbet, P. Ovando, A. Paletto, C. Petucco, S. Posavec, B. Rugani, M. Termansen, G. Valatin, R. Yousefpour. "Assessing the cost-effectiveness of payments to woodland owners for water services." Presentation given by Cristian Accastello at Session B3 of the Ecosystem Services Partnership Conference, San Sebastian, Spain (15th-19th Oct 2018). |
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| Target | Participants at Session B3 of the Ecosystem Services Partnership Conference |
| Outcome | Useful to highlight work being undertaken by WG3 on cost-effectiveness of woodlands for water PES schemes, including as part of Cristian Accastello's STSM (https://www.forestresearch.gov.uk/research/pesforw/pesfor-w-short-term-scientific-missions/completed-stsms/). |
| Link | https://drive.google.com/drive/u/0/folders/1Wk2_iAGYWTTzwJW2UglXgR4gc9SMEjZW |

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| Activity | Meeting (29th March 2019) between Kristina Potočki and the local water supply distributor (Kraikom Krapina) to explore perceptions and opinions about forests for water Payment for Ecosystem Services (PES) schemes and disseminate information about PESFOR-W and the Action's objectives |
| Target | Members of the Croatian local water supply distributor (Kraikom Krapina) |
| Outcome | Collection of data for Action publications and broadening understanding of stakeholders' perceptions and needs |
| Link | https://kraikom.hr/ |

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| Activity | Presentation by Simona-Roxana Ulman on "Synergies between Water and Forest Management in Romania. A Brief Review with Focus on Specific Payments for Ecosystem Services Mechanism" MIRDEC-11th International Academic Conference on Social Science, Multidisciplinary and Independent Studies, 5th-7th February 2019, Madrid, Spain. |
| Target | Participants at the MIRDEC-11th International Academic Conference on Social Science, Multidisciplinary and Independent Studies (Global Meeting of Social Science Community) |
| Outcome | Participation in MIRDEC-11th conference was a great opportunity to take the research of an Early Career Investigator to a higher level. It included to: 1) disseminate the importance of the interactions between water and forests, in general, and to highlight the evolution of the PES mechanisms in Romania, in particular; 2) disseminate information about the PESFOR-W Cost Action and its objectives, especially those of WG1 (design and governance of schemes); 3) extend network of connections for possible collaborations; 4) obtain positive and constructive feedback, including for writing a journal article; (5) increase experience in presenting work; 6) facilitate (through the attendance at the sessions) considering new research directions linked to current interests. |
| Link | https://www.mirdec.com/madrid2019home |

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| Activity | Högbom, L., De Vreese, R., Futter, M., Nisbet, T., and Valatin, G "Payment for Ecosystem Services Forest–Water" Presentation by WG4 leader to Joint Conference on Forests and Water, Valdiva, Chile (Nov 2018) |
| Target | Participants at the Joint Conference on Forests and Water, Valdiva, Chile |
| Outcome | Useful to disseminate information about the Action to participants, and especially as the WG4 leader was one of the organisers of this high profile conference. |
| Link | https://www.researchgate.net/publication/328890402_Payments_for_Ecosystem_Services_-_Forest-Water |

Exploitation activities

The Action undertook the following activities to ensure exploitation (use, in particular in a commercial context) of the Action's achievements:

No exploitation activities were reported by the Action.

Action Success(es)

The Action's two most significant successes were the following:

- Publication of the PESFOR-W User Manual in several European languages (<https://www.forestresearch.gov.uk/research/pesforw/user-manual/>) providing a step-by-step guide for policy-makers and practitioners to developing new woodlands for water payments for ecosystem services schemes. A commitment by the UK Government to supporting development of a Woodland Water Code as part of its England Tree Planting Action Plan 2021-2024 launched in May 2021 (see p.21 of the Plan available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/987432/england-trees-action-plan.pdf) was informed by the Action's work on developing Look-up Tables on the environmental effectiveness of woodland planting for reducing agricultural diffuse pollution of watercourses published as part of the User Manual and associated workshops held with UK policy advisors.
- Publication of the spatial repository of woodlands for water payments for ecosystem services schemes and accompanying factsheets (<https://www.forestresearch.gov.uk/research/pesforw/case-studies/>) building upon the knowledge of Action participants in 40 countries. Including 59 cases, it has created a very useful resource for policy-makers and practitioners, as well as the research and the academic community more widely, with one MC Observer reporting that they will use it in teaching at their university.

Action Expenditure

The table below shows the budget allocated to the Action for each Grant Period:

| # | Grant Period | Start Date | End Date | Budget allocated to Action (EUR) |
|---|---------------|------------|-----------|----------------------------------|
| 1 | AGA-CA15206-1 | 1-11-2016 | 30-4-2017 | 70,500.00 (EUR) |
| 2 | AGA-CA15206-2 | 1-5-2017 | 30-4-2018 | 170,000.04 (EUR) |
| 3 | AGA-CA15206-3 | 1-5-2018 | 30-4-2019 | 215,862.41 (EUR) |
| 4 | AGA-CA15206-4 | 1-5-2019 | 30-4-2020 | 164,013.00 (EUR) |
| 5 | AGA-CA15206-5 | 1-5-2020 | 17-4-2021 | 111,300.45 (EUR) |