Science Communication Plan of the COST Action PEN@Hydropower CA21107

Each Action MC shall adopt a Science Communication Plan including a communication, dissemination, and valorisation strategy, as well as a plan to implement this strategy. The Science Communication Plan shall reflect the MoU in particular connecting to the aims and objectives of the Action. It is recommended that the Science Communication Plan is approved by the Management Committee not later than 6 months after the start date of the Action. It is recommended that the Science Communication Plan, including progress on implementation, is discussed on a yearly basis by the Action MC and reviewed or amended where necessary. *(Annotated Rules for COST Actions, article 5)*

VERSIONS AND HISTORY OF CHANGES

Version	Date of adoption by MC	Notes (e.g. changes from previous versions)	Lead author(s)*
1.0	N/A	N/A	Steven Frigerio

** The Science Communication plan is developed, updated and its implementation monitored under the overall supervision of the Science Communication Coordinator, and in close collaboration with other relevant contributors.*

This document is based upon work from COST Action PEN@Hydropower CA21107, supported by COST (European Cooperation in Science and Technology).

COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.

www.cost.eu

1. SUMMARY

The purpose of this Communication and Dissemination Plan is to identify and enhance the channels and strategies for communicating and disseminating information within PEN@Hydropower to amplify its influence. The primary goal is to increase awareness of project activities, ensure consistent and coherent distribution of outputs, and maximize the impact of the initiative. Through these efforts, we aim to ensure timely sharing of relevant information with the appropriate audiences involved in PEN@Hydropower, utilising the most effective methods available.

This document delineates the proposed activities for communicating and disseminating the project's activities and outcomes, outlining the vision for PEN@Hydropower's entire duration, from M1 to M48. It elaborates on the dissemination and communication strategy for the initiative, detailing the tools, channels, and communication methods to be employed throughout its duration. Additionally, it identifies the target groups of the strategy and highlights key dates, milestones, and deliverables associated with planned actions and events.

The communication and dissemination activities will adapt over the course of the initiative, continually tailored to suit target audiences and monitored throughout the project's lifecycle.

This deliverable pertains to the responsibilities of the PEN@Hydropower Science Communications Coordinator with the support of the MC and Core Group members.

2. GENERAL AIM AND TARGET AUDIENCES

There are three aims for the dissemination and communication of the Action:

1. Raise Awareness and Advocate for Hydropower in Europe

    - **Promote Hydropower research** initiatives in Europe and globally.
    - **Advocate for the importance of Hydropower research** within diverse communities.

2. Expand Reach to Researchers and Practitioners:

    - **Facilitate joint activities and social interactions** to foster knowledge creation and sharing within the European hydropower and broader energy sectors.
    - **Engage researchers and practitioners to enhance idea transfer** and initiate collaboration among young researchers.

3. Inform Key Stakeholders and the Public:

    - **Ensure accessibility and promotion of educational materials** and opportunities, open-access publications, and knowledge documents to universities, research institutes, and professionals.
    - **Provide relevant information to the broader public** through the Action's website and white papers to encourage participation in discussions regarding the future role of hydropower.
    - Enhance interactions with stakeholders, including equipment manufacturers, plant operators, financial and government institutions, policymakers, universities, research institutes, engaged citizens, social media users, and bloggers.

Dissemination and Communication Plan Objectives:

1. Identify Target Groups, Tools, and Channels

    - Determine the specific audiences for dissemination efforts.
    - Select appropriate communication tools and channels for effective outreach.

2. Establish Project Identity:

    - Develop visually cohesive materials to represent the project.

3. Plan Knowledge Sharing:

    - Allocate activities and results to relevant target groups.
    - Determine appropriate channels for disseminating project knowledge.

4. Broad Audience Engagement:

    - Utilize internet platforms, promotional materials, and events to interact with a diverse audience.

The objectives will be met by communicating through various channels and platforms and adapted to the different groups of stakeholders:

Audience	Channel	Tool
Academics & Scientific Community	Online	• Website • Partner website • Social media • Blogs • Newsletter • Online Respository • Promotional videos • Event videos • COST Social Media • Webinars
	In-Person	• Conferences • Workshops • STSMs
Policymakers	Online	• Website • Newsletter • Event videos • Webinars • Online Repository
	In-Person	• Conferences • Workshops
Hydro Equipment manufacturers & plant operators	Online	• Website • Newsletter • Promotional videos • Event videos • Webinars
	In-Person	• Conferences • Workshops • Exhibitions

Associations	Online	• Social media • Website • Newsletter • Event videos • Webinars
	In-Person	• Conferences • Workshops • Exhibitions
Companies & SMEs	Online	• Newsletter • Promotional videos • Event videos • Webinars
	In-Person	• Workshops • Exhibitions
Government	Online	• Newsletter • Website • Event Videos • Webinars
	In-Person	• Conferences • Workshops • Exhibitions
EU Projects & Clusters	Online	• Website • Partner website • Newsletter • Social media • COST Social Media • Newsletter • Event Videos
	In-Person	• Workshops • Conferences
Public	Online	• Website • Newsletter • Event videos • Social media • COST Social Media • Blogs • Newsletter • Promotional Videos • Event Videos
	In-Person	• Conferences • Exhibitions

3. PLAN FOR THE COMMUNICATION OF ACTION RESULTS

Efficient communication is vital for successfully carrying out the Action and disseminating the results of PEN@Hydropower to a broad audience. We've developed an external communication strategy with the following goals: ensuring effective communication among Working Groups, timely sharing of Action objectives and networking activities, and optimising communication efforts to maximise expected results and impact.

This section covers the suitable communication tools/channels to be used for communication purposes

Website

The PEN@Hydropower website serves as a central hub for disseminating information and facilitating communication. It features news updates, general information about objectives, Working Groups, and events. Additionally, essential deliverables such as the knowledge hub and training materials are hosted on the site. Moreover, it offers a distinct portal for sharing research findings and publications with the public and stakeholders, along with details about training schools organized by the Action.

Results – 1st year		
Page Visits	Unique Visitors	Page Views
24K	23K	10K

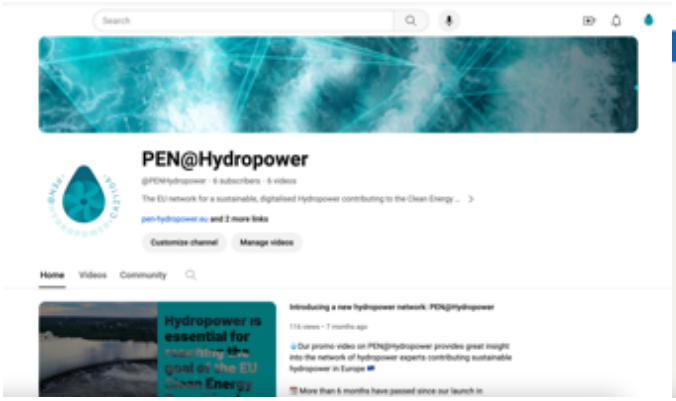
The Action will monitor these numbers and aim to achieve similar results in the following years with proper communication of updates on the website, blog postings and maintenance.

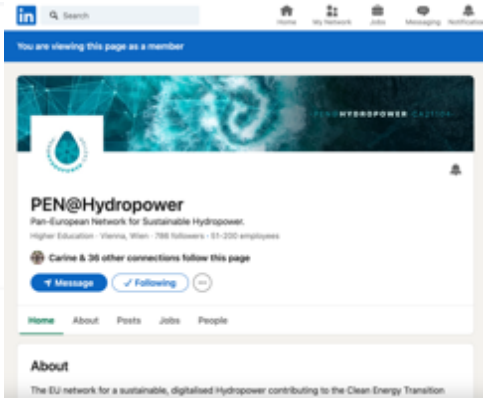
Website: www.pen-hydropower.eu

Social Media

The Action will establish a presence on Twitter, LinkedIn, and YouTube to engage various stakeholders. Twitter will disseminate updates on recent achievements, upcoming events, and opportunities such as conferences, workshops, and publications. LinkedIn will primarily focus on communicating Working Group meetings, webinar announcements, news updates, and general information about the Action, including details about Training Schools and workshops. YouTube will feature video content related to the Action, including promotional videos and recordings of webinars.

The PEN@Hydropower initiative will leverage both established and new social network channels of its partners to amplify engagement with stakeholder communities. Teams within respective regions will directly oversee social media interactions with local communities, aiming for a minimum of 500 followers and 1000 visualisations over the three main social media networks.





LinkedIn: https://www.linkedin.com/company/pen-hydropower/

Twitter: https://twitter.com/penhydropower

YouTube: https://www.youtube.com/@PENHydropower

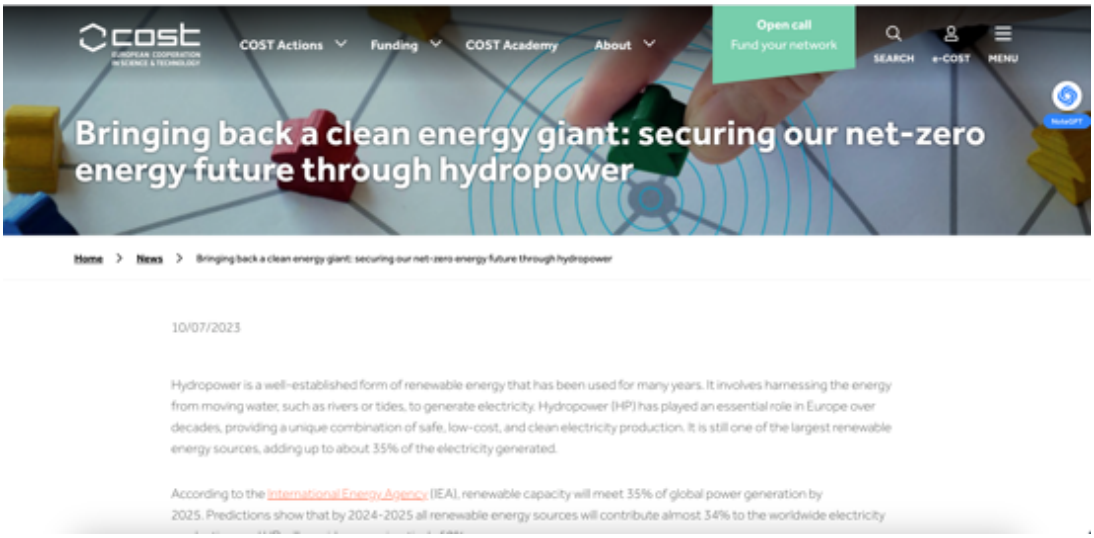
KPIs	
Followers	Views
500	1000

Social media banners and posts have also been developed for the Action including 1:1 LinkedIn and Twitter templates for announcements, and banners for social media landing pages:

Press Release

One press release was arranged at project launch of the PEN@Hydropower Action in conjunction with COST Association, with an additional release planned for the project's conclusion, both aimed at target media outlets.

Additionally, the Action may consider additional press releases following round-table discussions such as within WG3 and WG4. These Partners will disseminate press releases, including a quote from their spokesperson, to their respective in-country media contacts



KPIs	
Press Releases	WG Press Releases
2	2

Visual Identity

The Action will integrate a visual brand identity, including a project logo that provides a coherent visual representation of the Action for communication and dissemination purposes. A project logo has been designed that reflects the COST Action related to networking, hydropower and sustainability. Horizontal and vertical logos are represented below that will be used in all communication and dissemination materials. Further colour variations of the logo are available to the consortium and stored on the Teams workspace.

Templates

PowerPoint as well as Word templates for publications and headed communications will be used to for both communication a dissemination as project branding. The PowerPoint will use the visual identity elements as well as logo design to futher develop the branding of the COST Action.

Videos

Videos form a key part of the Action in communication as well as part disseminating knowledge from Work Group activities. Videos will be developed in-house using video-editing tools (Final Cut Pro) and published on all the social media networks such as YouTube, LinkedIn and Twitter. YouTube will facilitate as the repository of all media published.

Videos will follow three different strategies as identified in the table below:

Video Type	**Description**	**Target Audience**	**KPIs**
Promotional Video	Promotional video on the general COST Action	General Public	1 Promotional Video
Webinars	Video recordings of roundtable events led by thematic WGs	Government, Policy Makers, Academics	4 Webinars – roundtable events
Training School Videos	Videos that will provide a visual update on the Training School organised by the Action	Academics, companies	At least 1 per year / at least 4 total
Grants (STSMs, ITCs)	Videos promoting the available grants under PEN@Hydropower and provide first-hand experience of grantee holders	Academics	3
Workshops, exhibitions and clustering events	PEN@Hydropower will organise, participate or co-organise a number of ad-hoc events and participate in exhibitions or policy roundtables.	Academics, Policy Makers, Government, Public, Companies and SMEs	1 per year

A repository of Action videos will be published on the YouTube page:

https://www.youtube.com/@PENHydropower

Newsletter

Distributing eight newsletters regularly will keep our target audiences well-informed about the latest activities and accomplishments of the COST Action. It will also provide them with a platform to address any challenges they may encounter. Crafting these newsletters will entail compiling, editing, and arranging content from our partners into a clear and concise format. We will deliver these updates electronically. The MoU targeted 500 subscribers, however the Action has already achieved 800 subscribers with 2 newsletters distributed so far.

KPIs	
Subscribers	Newsletters
>500	8

Leaflet and Infosheet

A leaflet was produced alongside an infosheet of the Action, providing an overview of the project's objectives, scope, and benefits, as well as information on how stakeholders can get involved or support the project. Leaflets are often used to raise awareness, generate interest, and encourage engagement with the project's goals and activities. The brochure and leaflet have been uploaded onto the Action website, whilst the infosheet was distributed to MC members for further distribution and promotion.

Roll-up

Roll-ups are widely used in various settings such as trade shows, exhibitions, conferences, retail stores, and corporate events. They serve as effective marketing tools to attract attention, convey messages, and promote products or services. Roll-up banners can be customized with branding elements, logos, images, and text to create visually appealing displays that communicate key information to the target audience.

A roll-up was created at the start of the Action and has been used at Training Schools as well as ad-hoc events.

Podcasts

The COST Action will assess the effectiveness of utilising podcasts as a means of communication and knowledge dissemination within the hydropower sector. In addition to examining the technical aspects of podcast production and distribution, the initiative will explore its potential impact on engaging audiences and enhancing understanding. Furthermore, it seeks to broaden its outreach by considering collaborations with other podcasts or participating in interviews. Through these strategic endeavors, the network intends to facilitate meaningful discussions and promote sustainable practices within the hydropower industry.

KPIs	
Webinars	Participants per webinar
4	100

Webinars

We will arrange four dedicated online webinars aimed at target audiences to highlight the PEN@Hydropower Action, its activities, and resources, engaging both European and non-European stakeholders.

The roundtables will be organized to foster in-depth discussions among experts, stimulating fresh perspectives and opportunities for collaboration. Each of these activities is anticipated to attract the interest of a minimum of 100 participants, ensuring broad engagement and meaningful exchange of ideas.

Coordination of Communication Activities: Role of the Management Committee and Scientific Communication Coordinator

The Science Communication Manager is tasked with implementing, maintaining, and overseeing the Communication Strategy across various aspects, including:

- Establishing the tone for both internal and external communications.
- Planning and coordinating communication initiatives at the Action level.
- Communicating coordination efforts and outcomes to stakeholder groups.
- Disseminating scientific knowledge to the public through curated content on the PEN@Hydropower website, social media, and newsletters.
- Keeping records of communication activities.
- Serving as the primary liaison with the Cost Association for communication matters.
- Providing information to interested partners and stakeholders in an accessible format.

Beyond the task and responsibility of the Scientific Communication Coordinator, MC members are also responsible in carrying out the following tasks to effectively promote and carry out the communication activities of the Action:

- **Identifying Conferences:** Members are asked to actively search for relevant conferences and promptly share them with the communication officer.
- **Reposting LinkedIn and Twitter Posts:** They are encouraged to repost social media updates to expand the association's reach and enhance its online presence.
- **Promoting the Network Within Stakeholder Groups**: Members should disseminate the Action's initiatives within their networks and advocate for following its social media accounts.
- **Providing Opportunities for Collaboration**: They are tasked with identifying collaboration opportunities with other projects and conveying the benefits to all involved parties.

Acknowledging COST

It's crucial to consistently highlight the COST brand across various communication platforms of the Actions, including brochures, flyers, posters, websites, videos, articles in scientific journals, books, and more. Any materials funded by COST must acknowledge COST as the funding source, using a signature block that considers specific elements.

PEN@Hydropower will follow the COST Action co-branding rules as stated on the COST Action website at the following link: https://www.cost.eu/uploads/2023/10/COST_actions-guidelines_adapted_06_10_2023.pdf

4. PLAN FOR THE DISSEMINATION OF ACTION RESULTS

Dissemination deals with making Action knowledge and results public towards its target audiences, who could benefit and use them. The information is conveyed in a language that is customised to the specific target audience (e.g. scientific publication for researchers).

Our dissemination strategy is designed to enhance the networking capabilities of the Action and amplify its influence. It relies on a range of scientific dissemination tools and communication measures aimed at reaching the widest possible audience. These activities encompass several key components:

- Firstly, active participation in prestigious National, European, and International scientific conferences, events, and workshops within an interdisciplinary and transdisciplinary framework.
- Secondly, the organization and engagement in workshops and training schools that foster connections between Action members and local scientific communities.
- Thirdly, the communication of project updates, findings, publications, and news through our website and Twitter platform.
- Additionally, we aim to disseminate project results through publication in scientific journals, edited volumes, and presentations at national and international conferences. Furthermore, we facilitate short-term scientific missions (STSM) among researchers involved in the COST Action, enabling them to visit institutions or laboratories in other COST Member States.
- Lastly, knowledge transfer initiatives are employed to share insights with other projects involving PEN@Hydropower members, fostering collaboration and exchange within the broader scientific community.

Dissemination: Working Groups

The Working Groups will cover the following research topics on which dissemination material will be produced:

- Framework to enhance competitiveness, incorporating technological innovations, digitalization, and collaborative efforts among stakeholders.
- Examine EU legislative frameworks, identify policy gaps, and promote a balanced approach to hydropower production and environmental impacts.
- Assess and redefine the role of Hydropower (HP) and Pumped Hydro Storage (PHS) in the power sector for 2030-2050, focusing on flexibility, energy storage, and environmental considerations.
- Holistic assessment and new approaches to support sustainable development and adaptation of the EU hydropower potential
- Develop a holistic scientific strategy addressing climate change, flexibility, societal considerations, and the Water-Energy-Food nexus, filling a knowledge gap in the scientific community.

Conferences

PEN@Hydropower will showcase its activities through both oral presentations and posters at major International Conferences (IC) within the hydropower sector. Each Working Group (WG) is expected to deliver a minimum of three scientific contributions to highlight the

initiatives undertaken within the COST Action during these events. Throughout the project, four key international conferences, congresses, symposiums, or workgroups will be carefully chosen for participation.

Furthermore, the initiative plans to allocate approximately eight dedicated grants to support PhD students and Early Career Investigators (ECIs) from COST Inclusiveness Target Countries (ITC) in attending international science and technology conferences that fall outside the specific framework of the project.

KPIs	
Presentation at Conferences	ITC Grants
3 per WG	8

With the ongoing assistance of MC members and Core Group members, we have compiled a list of potential conferences. This list undergoes continuous updates to incorporate newly emerging conferences throughout the year, ensuring its relevance and comprehensiveness:

vgbe energy, Expert Event “Digitalisation in Hydropower”

vgbe energy, Expert Event “River management and ecology”
Technical University of Graz, Institute of Hydraulic Fluid Machinery, “Praktikerkonferenz Wasserkraft“

Société Hydrotechnique de France, “HydroES”

LEADVENT, “Hydropower Plant Digitalization Forum”

Messezentrum Salzburg, “RENEXPO Hydro”
Technical University of Graz, Institute of Electricity Economics and Energy Innovation, “Symposium Energieinnovation”
World Congress of IAHR (International Asociation for Hydro-Environment Enginneering and Research)

HYDRO

HRO CIGRHE Counseling Conference

Hydromatters

GreenPOWER

OSE Gdańsk

Aquatech China

TKZ

PEMINE

SYMAS® i MAINTENANCE

HYDROFORUM

OSG Lublin
XXV Międzynarodowe Targi Energetyki i Elektrotechniki oraz Odnawialnych Źródeł Energii ENEX
BERA (Belgian Energy Research Alliance) Board and General Assembly
ViennaHydro
EU Sustainable Energy Week

(Exhibitions – the Action will also consider exhibiting at events and exhibitions where approriate for both communication and dissemination purposes)

Scientific Journals

The dissemination of results achieved through collaborations in the COST Action prioritizes publication in top-tier scientific journals and hydropower sector magazines. These outlets primarily target the hydropower community, as well as network operators, utilities, scientific institutions, policymakers, and other stakeholders. To reach a wider audience beyond specialists, joint review articles will be published, facilitating broader dissemination of findings.

All peer-reviewed publications will adhere to "green" open access standards, ensuring they are freely and openly accessible via online repositories. This approach ensures that the data used in scientific publications is not only accessible but also reusable.

Each Working Group (WG) within the COST Action is expected to produce a minimum of two peer-reviewed publications over the duration of the project.

KPIs	
Peer Reviewed Papers	Total
2 per WG	10

Living Document – Wiki

The COST Action is committed to producing a comprehensive compendium that will serve as a foundational resource, bringing together the diverse outputs and findings from each of its Working Groups (WGs).

This compendium will represent a collective effort to capture the breadth and depth of research, innovation, and insights generated within the hydropower sector. It will not only document the tangible outcomes of the Action's activities but also provide critical analysis and synthesis of the key challenges, opportunities, and best practices relevant to the sector's evolution.

By compiling this compendium, the Action seeks to create a valuable reference document that will inform and guide stakeholders involved in shaping the future of hydropower amidst the broader context of the European energy transition towards 2050.

Training Schools

We will host four educational activities, both locally and internationally, to disseminate knowledge among young professionals and students across various degree levels, with a target of at least 20 participants per activity.

These events will be open to the public, aiming to increase awareness of our initiatives and generate interest in related topics. The activities will encompass a range of engaging formats, including open days at selected hydropower plants. We will invite experts as speakers to provide insights into the latest developments in the field. Priority will be given to COST Inclusiveness Target Countries (ITCs) and Early Career Investigators (ECIs) to both organize and participate in these activities, ensuring broad access to valuable educational opportunities.

KPIs	
Training Schools	Participants per school
>4	20

STSMs

During the duration of the COST Action, we anticipate initiating no fewer than four calls for Short-Term Scientific Missions (STSMs). These STSMs serve as valuable opportunities for PEN@Hydropower participants to undertake scientific endeavors at research institutions located in other COST countries. The primary objective of a scientific mission involves:

(i) Conducting research activities by the applicant in their home base and making necessary preparations for travel to the host institution.

(ii) Engaging in a visit to the host institution to gather essential data.

(iii) Undertaking follow-up work upon returning home to finalize research activities and prepare comprehensive STSM reports, including scientific findings and supplementary documentation, which is key to dissemination of activities under PEN@Hydropower.

Clustering Activities

PEN@Hydropower, as a hydropower project, seeks to collaborate with other initiatives and associations through mutual workshops and knowledge exchange to drive innovation and sustainability. By partnering with organizations dedicated to renewable energy, water management, and environmental conservation, PEN@Hydropower aims to share insights, best practices, and technical expertise.

PEN@Hydropower has identified possible projects and initiatives for collaboration, ranging from joint research endeavors to community engagement programs. Through workshops and joint projects, stakeholders can exchange ideas, explore synergies, and address common challenges, ultimately advancing the collective goals of clean energy production and environmental stewardship. Such cooperation enhances the effectiveness and impact of PEN@Hydropower, promoting holistic approaches to sustainable development.

A set of EU projects, platforms and initiatives have been identified at proposal stage for clustering activities, including Global Women's Network for the Energy Transition (GWNET), European Renewable Energies Federation (EREF), International Hydropower Association (IHA), International Association for Hydro-Environment Engineering and Research (IAHR) Young Professionals Congress, VGB PowerTech e.V. (VGB) in policy analysis, World Wide Fund For Nature (WWF) as well as COST Action Nexus Net.

Other initiatives and projects have been identified including:

- ETIP Hydropower
- Technical University of Graz, Institute of Hydraulic Fluid Machinery, "Praktikerkonferenz Wasserkraft"
- Société Hydrotechnique de France, "HydroES"
- LEADVENT, "Hydropower Plant Digitalization Forum"
- Messezentrum Salzburg, "RENEXPO Hydro"
- Technical University of Graz, Institute of Electricity Economics and Energy Innovation, "Symposium Energieinnovation"
- H-HOPE

- HXFLEX HYDRO
- DIWIEN
- REDAWN
- Energetyka Wodna Sp. z o.o.
- MEW24.pl
- Hyposo Project
- Laboratorium dedykowanych rozwiązań dla małej energetyce wodnej
- Program czysta Polska
- GOSPODARKA WODNA

Implementation Timeline – First 4 years

Year 1

- Launch of social media accounts
- Launch of website
- Launch of Action newsletter
- Launch of Videos
- Launch of brochure
- Dissemination in conferences, STSMs, training schools
- First Webinar

Year 2

- Launch of draft Wiki
- Develop and launch online repository
- Dissemination in conferences, STSMs, and networking activities, training schools
- Maintain social media accounts, newsletter, website.
- Second Webinar

Year 3

- Update of Wiki
- Update of online repository
- Dissemination in conferences, STSMs, and networking activities
- Dissemination in meetings, STSMs, and networking activities
- Maintain social media accounts, newsletter, website.
- Third Webinar

Year 4

- Update of Wiki
- Update of online repository
- Dissemination in conferences, STSMs, and networking activities
- Dissemination in meetings, STSMs, and networking activities
- Maintain social media accounts, newsletter, website.
- Fourth Webinar

5. PLAN FOR THE VALORISATION OF ACTION RESULTS

Valorisation deals with the exploitation of Action results by specific target audiences, creating potential significant societal, economic or policy impact. As such, this section describes how the Action plans to support the envisaged scientific, technological and/or socio-economic impacts:

1. Policy makers: Research addressing EU legislative frameworks, policy gaps, and promoting a balanced approach to hydropower production and environmental impacts would be highly relevant for policymakers involved in energy and environmental regulation at both the EU and national levels. They would benefit from insights into how to develop effective policies that balance the need for energy security and environmental sustainability.
2. Energy industry stakeholders: The research on enhancing competitiveness, technological innovations, and redefining the role of hydropower and pumped hydro storage in the power sector would be valuable for energy industry stakeholders, including hydropower operators, energy companies, and grid operators. They would be interested in strategies to optimize energy production, storage, and flexibility while minimizing environmental impacts.
3. Environmental organizations: Organizations focused on environmental conservation and sustainability would find the research on assessing and supporting sustainable development of hydropower potential relevant. They would be interested in understanding how hydropower can be developed and managed in a way that minimizes ecological disruption and maximizes benefits for local communities and ecosystems.
4. Government agencies: Beyond policymakers, various government agencies responsible for energy, environment, and climate change mitigation would benefit from research on holistic scientific strategies addressing climate change, societal considerations, and the Water-Energy-Food nexus. This research could inform policy development and resource allocation related to energy infrastructure, water management, and agricultural sustainability.