

PRESS RELEASE

STOR-HY joins Brussels Hydropower Day 2025 to highlight the future of flexible and sustainable energy

STOR-HY will reduce the capital and operational costs of pumped storage projects by increasing the durability and recyclability of components and developing operational strategies for unconventional schemes.

Brussels, 16 April 2024 — Representatives of the STOR-HY project participated in the Brussels Hydropower Day 2025, which took place on 8 April in Brussels and was organised by ETIP HYDROPOWER. The event brought together key stakeholders from across Europe to discuss the essential role of hydropower flexibility and storage in promoting a climate-resilient and secure energy system.

The conference addressed the challenges and opportunities facing the sector, including environmental integration, social acceptance and climate change impacts. It also highlighted the importance of aligning hydropower development with the European Union (EU)'s Clean Industrial Deal and the upcoming Horizon Europe funding priorities.

STOR-HY, a project funded by Horizon Europe, is developing innovative technologies for pumped storage hydropower (PSH), including solutions adapted to saline environments and other harsh and unconventional operating conditions. By detecting early failure mechanisms, the project aims to postpone unnecessary maintenance and avoid unplanned outages, while optimising plant availability, offering increased storage potential, peak shaving, fast response regulation and ancillary services for grid resilience, and ensuring long-term sustainability and cost-effectiveness.

As part of the ETIP HYDROPOWER cluster, which brings together several EU-funded hydropower projects in different focus areas such as digitalisation, refurbishment, and pumped storage hydropower, STOR-HY's participation in the event is in line with its objectives, contributing to the wider sectoral dialogue on enabling grid flexibility through long-term energy storage, promoting climate resilient infrastructure, and addressing environmental and social sustainability in hydropower projects.

Key highlights of the day included insights from representatives of the European Commission (DG RTD and DG ENV) on the strategic role of hydropower in the EU's energy and industrial strategies, case studies on the operation of small and large hydropower plants under current market conditions, and presentations on hydropower's relationship with the environment, including the Nature Restoration Law, biodiversity management, and sediment flow, as well as on the impact of climate change on the hydropower sector, both on future production and on hydropower's role as a key contributor to climate change adaptation, mitigation, and water resources management.

Dr. Denis Aelbrecht, Governing Board Chair of ETIP HYDROPOWER and Head of Technology at the Électricité de France (EDF) Hydro Engineering Centre, mentioned the contribution of hydropower to flexibility and storage as part of the energy transition in partnership with environmental sustainability. Prof. Anton Schleiss, Scientific Coordinator of ETIP HYDROPOWER and Honorary President of the International Commission on Large Dams (ICOLD), stated that Europe needs more flexible and climate-proof hydropower, and that the hydropower sector must continue to work on raising social awareness and developing solutions through innovation.

Speakers and participants highlighted the urgent need for accelerated investment and streamlined permits to realise the true potential of pumped storage hydropower. Experts emphasised the critical role of PSH in energy flexibility and addressed the need to balance this with environmental sustainability. Site-specific solutions and continuous monitoring were identified as key to protecting ecosystems, as each water body requires a tailored approach—from fish migration to habitat restoration.

Whereas the impact of climate change on hydropower is uneven across Europe, with some countries set to lose up to 30% of their hydropower generation, while others could increase their generation thanks to rising inflows, experts are confident that hydropower is part of the solution. Although the construction of hydropower plants results in greenhouse gas emissions, hydropower provides low-carbon energy and contributes to flood control and drought mitigation.

One of the key messages was that flexibility is crucial to the present and future of power systems, as a fully carbon neutral system will rely heavily on short- and long-term flexibility to complement the variability of power generation and demand and to manage the increasing complexity of the system.

The STOR-HY consortium would like to thank ETIP HYDROPOWER for organising such an impactful event and looks forward to continued collaboration across the European research, policy and industry communities.



ABOUT THE PROJECT

STOR-HY is a four-year EU-funded Horizon Europe project involving 18 partners from eight countries. It aims to reduce the operating costs and environmental footprint of pumped storage plants (PSPs) by developing next-generation equipment and digital tools adapted to a wide range of conditions, including harsh fluids and unconventional schemes.

It addresses these challenges by improving the lifetime and recyclability of pumped storage plant components and by developing operating strategies for unconventional schemes through sensor-based condition monitoring systems to detect early failure mechanisms, postpone unnecessary maintenance actions, and avoid unplanned outages. Through digital operational management tools, STOR-HY will improve the efficiency, reliability, and availability of PSPs, taking into account energy and market dynamics and variable generation, thus improving the flexibility and resilience of the EU energy grid, while mitigating the effects of climate change.

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