

SVC INTERNATIONALLY

International strategy & some current activities

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Starting point strategy



- a. European Energy Research Alliance (EERA) and the joint programme hydropower, aims to facilitate a new role for hydropower as an enabler for the renewable energy system by aligning and targeting research efforts in Europe. SVC partners are active and have leading roles.
- b. Hydropower Europe is a European project built on the ambition to achieve a research and innovation agenda and a technology roadmap for the hydropower sector, based on the synthesis of technical fora and transparent public debates through a forum that gathers all relevant stakeholders of the hydropower sector. The SVC partners have been active in this project both from the academic and industrial sides which can be exemplified by the Hydropower Europe workshop in Luleå summer 2019.
- c. The International Commission On Large Dams (ICOLD) is a non-governmental international organization which provides a forum for the exchange of knowledge and experience in dam engineering, where many of the partners in SVC are active. One example is the arrangement of the 14th ICOLD Benchmark workshop on numerical analysis of dams in Stockholm and the ICOLD Annual Meeting in Göteborg 2023.
- d. The partners are also active in CIGRÉ, the International Electrotechnical Commission (IEC) and the Centre for Energy Advancement through Technological Innovation (CEATI; situated in Canada).
- e. On-going EU projects include Hydroflex, AFC4Hydro, ALPHEUS, Cost Action CONVERGES, RIBES and LIFE Connects.
- f. Collaborations with Universities, including Norwegian University of Science and Technology, University Polytechnica de Cataluña, Politecnico di Torino, University of Southampton, Technische Universität Braunschweig, Universiteit Gent, Technische Universiteit Delft, Polytechnica of Bucharest, Hohai University, University of Tehran, Indian Institute of Technology, University of Liege, the Ruhr-Universität Bochum, National Chung Hsing University, University of Colorado Boulder and Technische Universität Graz.
- g. Collaboration with international companies outside this centre, Advanced Design Technology Ltd., Hydro Québec and Latvernergo AS, Norut, CIMNE and Électricité de France.
- h. Hydrocen is a Norwegian centre with a similar profile as this centre. Their main objective is to enable the Norwegian hydropower sector to meet complex challenges and explore new opportunities through innovative technological solutions. There are collaborations between stakeholders and Hydrocen partners and industrial stakeholders are part of Hydrocen.

Vision

Actions within SVC has made Sweden a world-leading research and innovation nation on sustainable hydropower with a competitive enterprise sector

Mission

- Increase the European network.
- Manifest existing collaborations and seek new collaborations outside of Europe.
- Develop new results/products of large interest for the world community.
- Increase the understanding of the role of the Swedish hydropower research and development on an international market.
- Increase the contribution to the Swedish international energy strategy.

Scientific Advisory Board



Prof. Michael McClain from IHE Delft in the Netherlands representing Work Package 1 on Environment and Society.



Prof. Anton Schleiss from the Swiss Federal Institute of Technology in Lausanne representing Work Package 2 on Civil and Hydraulic Engineering



Prof. Giovanna Cavazzini from the University of Padova in Italy representing Work Package 3 on Hydropower Technology.

Collaboration with Norwegian counterpart **HydroCen/ ReNewHydro**



Workshop in Älvkarleby 2023



Workshop in Trondheim 2024





EU-projects, examples



Design, implement and validate in full-scale water turbine an active flow control system that permit to increase efficiency and reduce the dynamics loads on the structure at any off-design operating conditions and during transient operations.

Increasing the value of Hydropower through increased Flexibility 2018-22, **LTU, UU, VFALL, STATK**

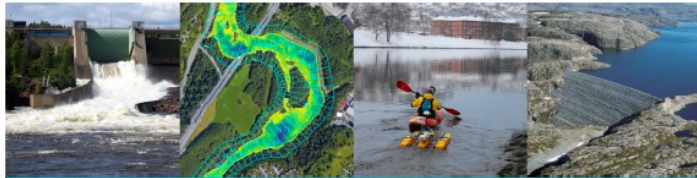


2019-23, **LTU, VFALL, STATK**



With a growing share of intermittent renewable energy sources grid stability can be maintained, and flexibility enhanced, by applying pumped hydropower energy storage.

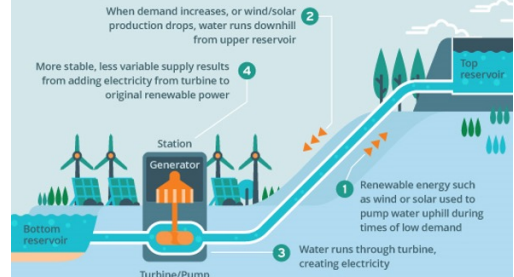
2019-23, **UU, CTH**



Increased flexibility of hydropower. Social acceptance and Mitigation of Environmental impact
A HydroFlex policy brief

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PUMPED HYDRO STORAGE - HOW IT WORKS



ARENA

EU-projects, examples

RIBES

Train 15 early stage researchers to research innovative solutions for the protection of freshwater fauna in anthropogenically altered rivers

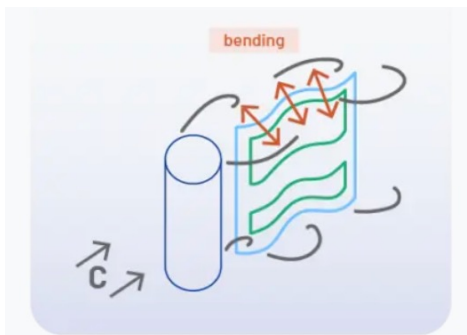
2019-23, KaU



H-HOPE

A project that addresses the development and demonstration of innovative and sustainable energy harvesting systems capable of recovering hidden hydro energy from existing piping systems, open streams and open channels.

2023-2027, UU, VFALL



Store2Hydro

2024-2028

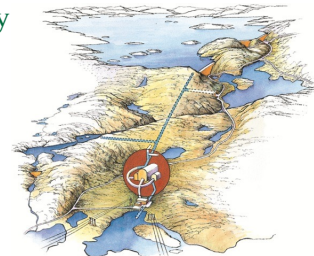
LTU, UU, VFALL

Relatively small adjustments to existing hydropower facilities would allow the electricity storage capacity to increase by 22TWh/y or more in Europe.

This can be compared to predictions of total world-wide electricity storage in batteries of 0.55TWh/y by 2025 & thermal storage of 0.88TWh/y by 2030.

Hence, while our aim is ambitious, it is achievable since 22TWh/y is only 10% of the EU 28 + Switzerland + Norway, hydropower energy

Roskrepp
Power
Plant



Organisations active on EU-level



Unifying the voices of
hydropower



The EERA Joint Programme Hydropower aims to facilitate a new role for hydropower as enabler for the renewable energy system by aligning and targeting research efforts in Europe.



EVN for Nordics in Statkraft, Birgitte Ringstad Vartdal opened the conference followed by a statement from the European Commissioner for Energy, Kadri Simson. Two panels, with panelists from a wide specter of relevant actors, addressed hydropower's contribution to the energy transition and it's role in a changing climate.

Interesting and necessary discussions today have set the starting point for the important work for the EU Hydropower Alliance. Let's power up with hydropower – together 🇪🇺



World communities, examples



IAHR

Suggestion on activities (goals)

- Form an international Scientific Advisory Board (SAB).
- Establish a firm collaboration with at least one similar centre outside of Sweden.
- Active as centre at one international conference or workshop each year (on average).
- Initiate two international mobilities a year (on average).
- Participate as centre at one workshop arranged in connection to the European Commission, EU-green week or European Hydropower days, for instance.
- Initiate five new leading positions within international organisations.
- Take part in five new internationally funded research projects.
- Identify and promote three results/products of highest international interest.
- Publish a position paper about Swedish Hydropower.
- Take three initiatives to promote the centre nationally for policy makers.



LULEÅ

UNIVERSITY

OF TECHNOLOGY