ETIP HYDROPOWER

Unifying the voices of hydropower in Europe

Welcome

WEBINAR January 25, 2023

Funded by the European Union

ETIP HYDROPOWER

AGENDA

9h30	**Welcome (Greg Arrowsmith, EUREC & Anton J. Schleiss, ICOLD)**
9h40	**The vital role of hydropower to help overcome the energy crisis in Europe – Introduction to WEBINAR (Anton J. Schleiss, ICOLD)**
9h55	**Overview of ETIP HYDROPOWER (Mark Morris, Samui-Fr)**
10h10	**Vision and governance structure of ETIP HYDROPOWER; interacting with the SET Plan and cooperation with other ETIPs and associations (Shenja Ruthenberg, EASE & Andrej Misech, EUREC)**
10h25	**Implementation of working groups, and a framework for the detailed mapping of R&I actions across Europe (Lee Estrellado, vgbe energy)**
10h40	**Strategic actions and increasing public awareness (Shenja Ruthenberg, EASE & Janire Garcia, Zabala)**
10h55	**Business plan and possibilities for a sustainable associate organization (Mark Morris, Samui-Fr & Shenja Ruthenberg, EASE)**
11h10	**Roundtable discussion "What form of sustainable organisation representing the hydropower sector is required to ensure the vital role of hydropower in the energy transition in Europe?"** **Moderators: Anton J. Schleiss, Jean-Jacques Fry, ICOLD; Patrick Clerens, EASE** **Participants: Klaus Jorde, IEA; Denis Aelbrecht, EDF; Liv Randi Hultgreen, SINTEF; Ole Gunnar Dahlhaug, EERA; Toril Cristensen, EVINY; Giovanna Cavazzini, COST-Hydro; Pablo Valverde, IHA.**
11h40	**Conclusions and outlook (Anton J. Schleiss, Jean-Jacques Fry, ICOLD)**

ETIP HYDROPOWER

The vital role of hydropower to help overcome the energy crisis in Europe

Prof. Dr. Anton J. Schleiss

Hon. President of the International Commission on Large Dams (ICOLD),
Professor emeritus at Ecole Polytechnique fédérale de Lausanne (EPFL)
Coordinator ETIP Hydropower

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Energy crises and role of hydropower

- The actual energy crisis reveals the important and vital role of hydropower to ensure a safe and supply of electricity this and the next winters in Europe
- Storage and pumped-storage hydropower will be the most vital to avoid blackouts in Europe this and the next winters

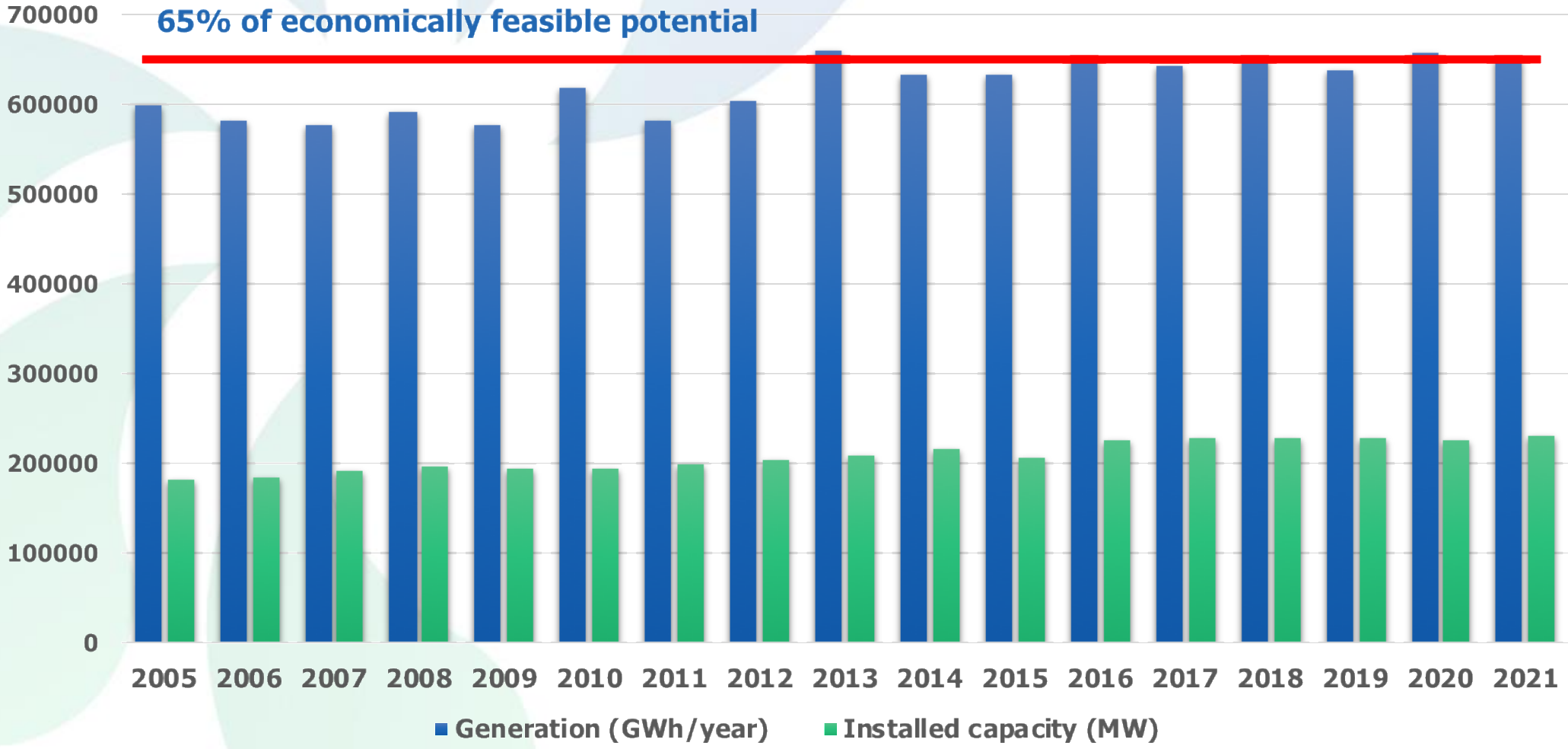
Hydropower at the source of the development of Europe in the last century

Advantages of hydropower

- Renewable energy without direct emission of CO2, excellent energy gain or pay back factor
- Excellent efficiency, production can be easy adapted to the demand (flexible peak energy)
- In-country **independent** energy creating jobs and financial resources in remote areas (taxes and concession fees)
- Improvement of infrastructures and touristic attractiveness
- Strong contribution to flood and drought protection (drinking water, irrigation, fish farming, river navigation,..)

Thissavros Dam, Greece, 172 m

Situation of Hydropower in Europe (with Turkey)



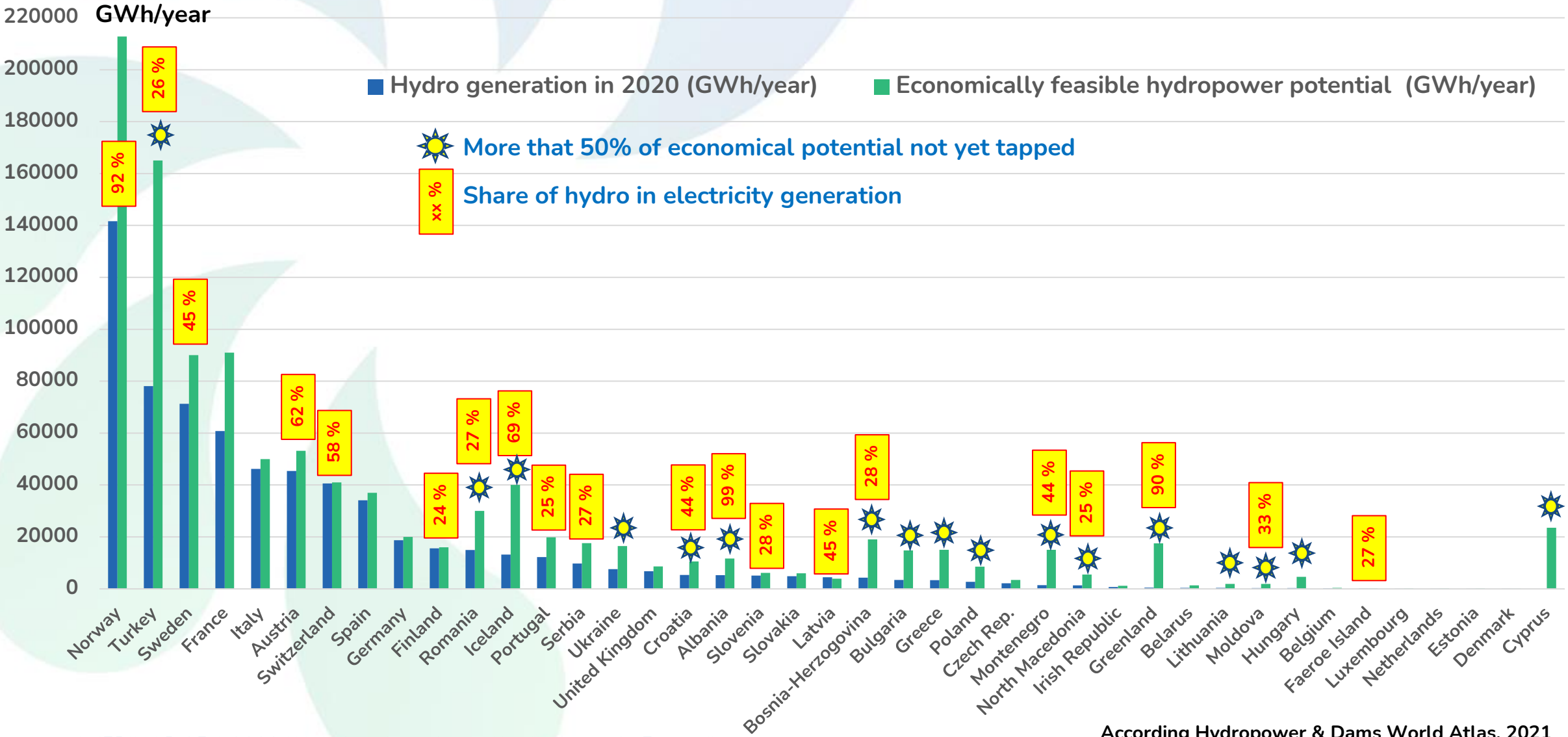
According Hydropower & Dams World Atlas 2022

Situation of Hydropower in Europe

Installed capacity in MW under construction since 2005 without Turkey

According Hydropower & Dams World Atlas 2022

Generation and Potential of Hydropower in Europe



According Hydropower & Dams World Atlas, 2021

Energy crises and role of hydropower

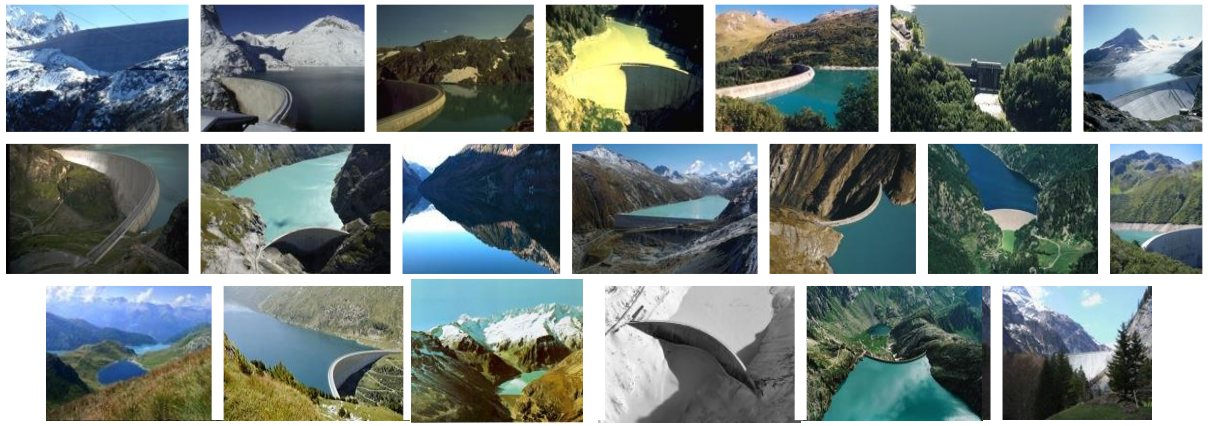
- **Storage and pumped-storage hydropower will be the most vital to avoid blackouts in Europe this winter**

  - **Example Switzerland**
    - A reserve volume of 300 GWh is kept in the reservoirs until mid of April 2023
    - Degree of filling:

      16.1. 23: 75% (min. 45%, max. 67%; mean 55%)

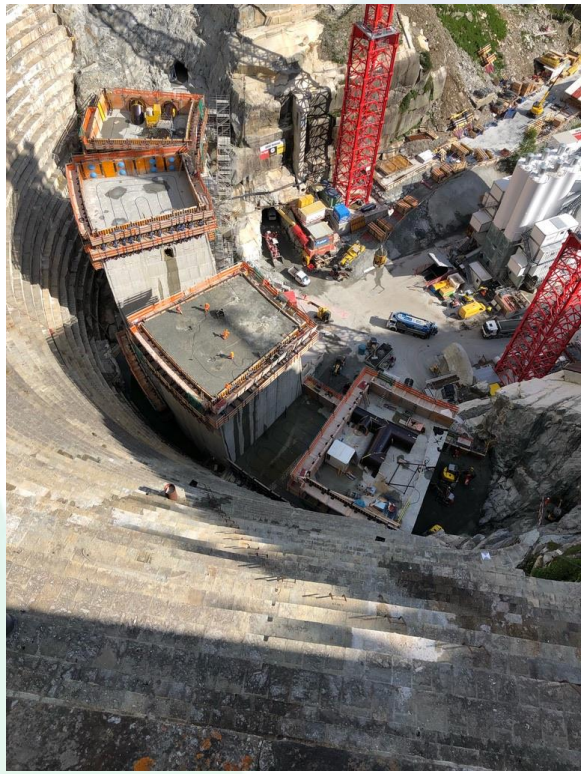
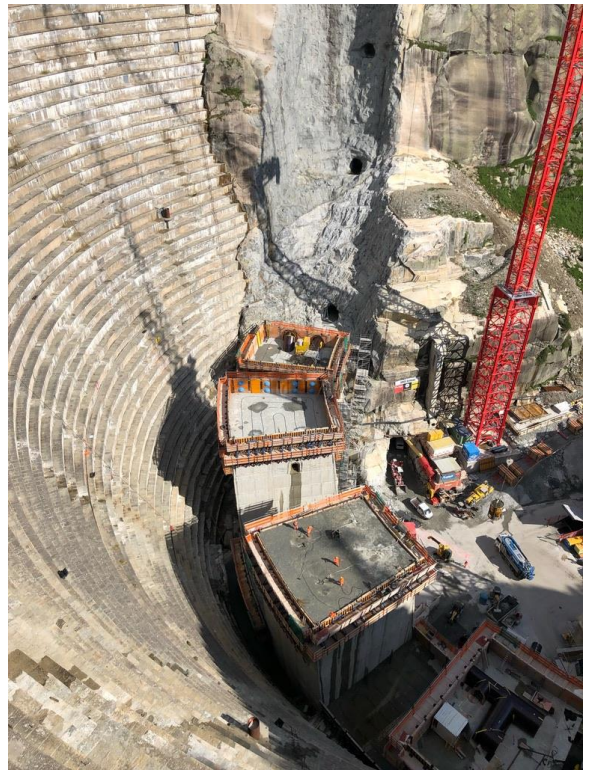
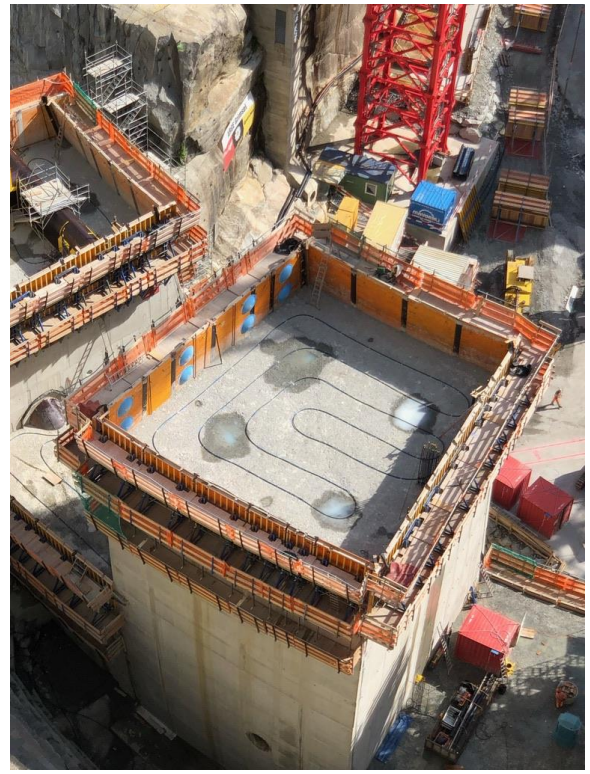
Energy safety in winter by increase of hydropower storage in Europe

- **Example Switzerland: Roundtable agreement between Swiss government, regional governments and NGO's (December 2021):**
  - Selection of 15 projects from a 33 projects which have most little impact on diversity and landscape
  - These project can increase storage for winter energy by some 2000 GWh until 2040
  - Heightening of 12 existing dams
  - Construction of three new reservoirs in valley freed by glacier retreat



Energy safety in winter by increase of hydropower storage in Europe

➢ Reconstruction of Spitallamm dam 114 m (Grimsel)

Potential of heightening of Grimsel dams Spitallamm and Seeuferegg by 23 m: 200 GWh winter energy

Climate change challenges

- Glacier retreat in Switzerland: Creation of new lakes which have to be stabilized by dams and which reservoirs can be used for hydropower and water supply

New reservoir Trift of KWO in Grimsel region in Switzerland. Planned Arch dam with glacier lake today (left) and with filled reservoir in future (right)

New Dam and Reservoir Trift in Switzerland

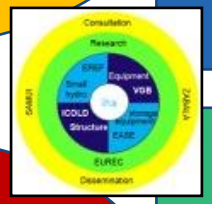
Concession project 2017:

- **Height of Trift Dam 180 m**
- **+ 215 GWh winter peak energy**
  - **Start of construction 2024??**
  - **Commissioning 2036??**

The outcomes of the Forum Hydropower Europe as a basis for ETIP HYDROPOWER

R&I Priorities

Barriers



RIA Recommandations

18 Research Themes – 80 topics

SIR

Steps to new hydro deployment

11 Strategic Direction – 40 Detailed Actions

European Commission

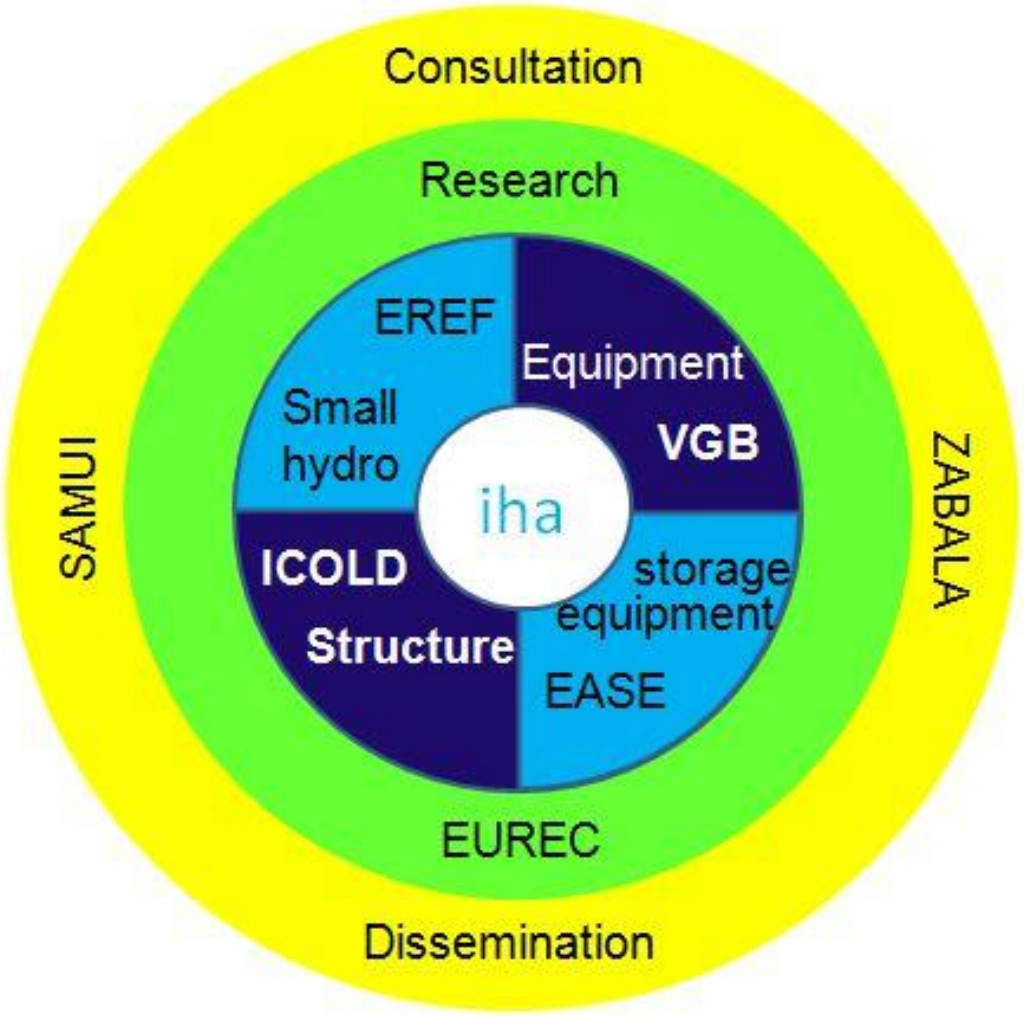
650 registered on consultation platform - 185 participants in the second on line consultation

Consortium ETIP Hydropower

- **ICOLD**

Scientific Leader

- **Coordinators:**
  - **Greg Arrowsmith (EUREC)**
  - **Anton J. Schleiss (ICOLD)**



EASE - European Association for Storage of Energy
EREF - European Renewable Energies Federation
EUREC - Association of European Renewable Energy Research
ICOLD - International Commission on Large Dams
IHA – International Hydropower Association
VGB - International Technical Association for Generation and Storage of Power and Heat

Objectives of ETIP Hydropower

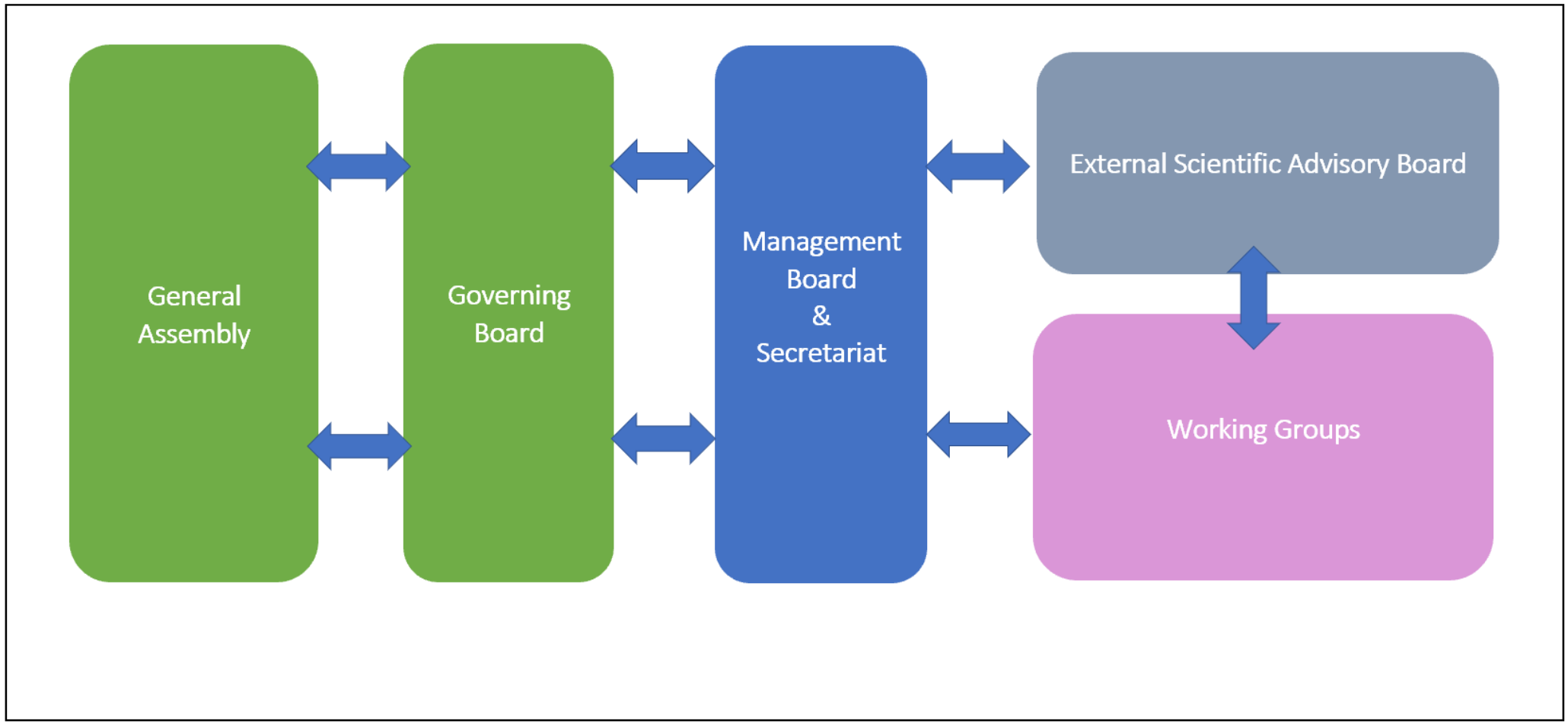
- Consolidation of the strong network of the HYDROPOWER EUROPE Forum into a sustainable association.
- ETIP HYDROPOWER will enhance and disseminate the RIA and SIR taking into consideration the future needs of the sector and the R&I targets and the emerging policy priorities.
- This will help to ensure that hydropower can play the vital role of a catalyst in the transition to a clean energy system and a reliable supplier in order to overcome the actual energy crisis as well as the achievement of climate neutrality by mid-century.

Objectives of ETIP Hydropower

ETIP HYDROPOWER will answer the following questions:

- Which **research and innovations** projects and which **strategic actions** are the most important in order that hydropower can fulfil the role of a catalyst and **safe supplier** in the energy transition?
- How **public awareness** can be increased for hydropower as an important catalyst and enabler in the transition to a **clean and safe energy system** focusing to a zero-emissions target?
- How can hydropower projects be carried out to create **win-win situations** with other renewables and other services contributing to the Water-Energy-Food Nexus and the achievement of the **Sustainable Development Goals of the United Nations**?
- What form of **sustainable associate organization** representing the hydropower sector towards EU is required to ensure the vital role of hydropower in the **safe and independent** energy transition?

Governance Transparency & Financial Independence



- Open call widely publicized for governance model (WP2)
- Identify, assess and implement business model (WP5)

ETIP HYDROPOWER

Hydropower has all the required characteristics to play an important role as a catalyst and enabler for the safe energy transition in Europe and worldwide

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Promoting future hydro in Europe

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Thank you for your attention

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