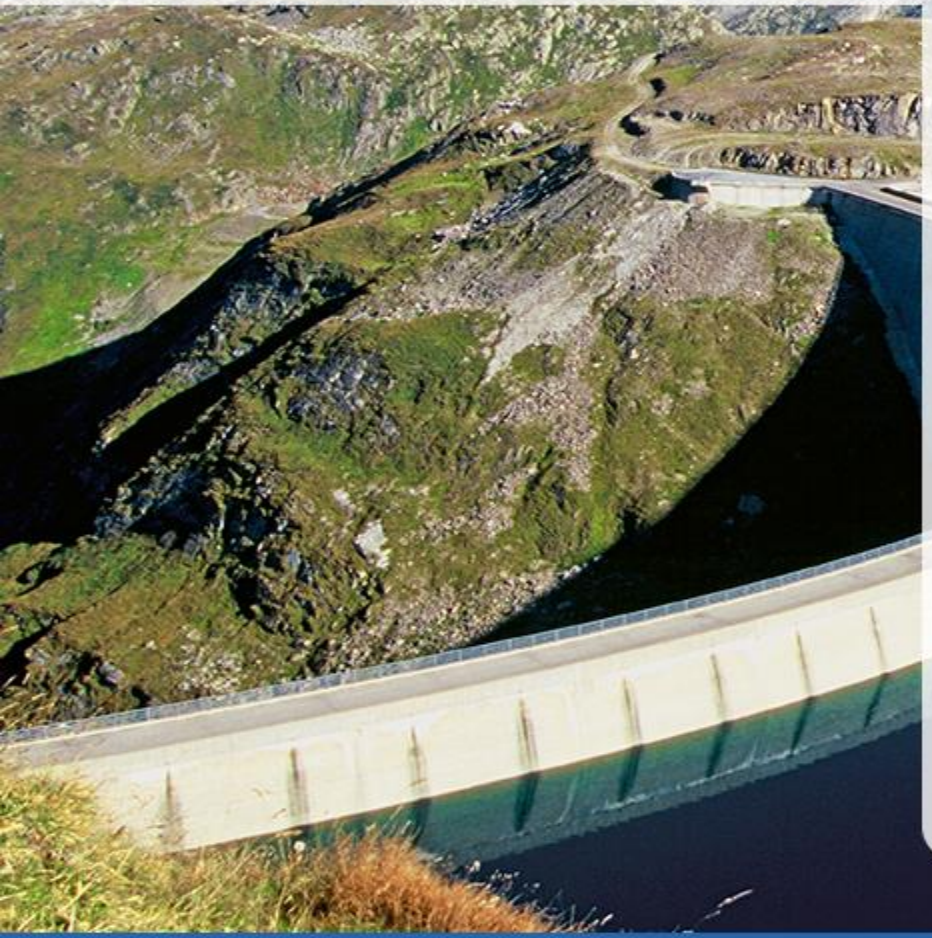
HYDROPOWER EUROPE



THE HYDROPOWER EUROPE FORUM

Anton SCHLEISS
Lead of Hydropower Europe
Jean-Jacques FRY
President of the European Club of the International Commission on Large Dams (ICOLD)
Management team of Hydropower Europe project

The HYDROPOWER EUROPE Forum is supported by a project that has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826010

www.hydropower-europe.eu

THE OBJECTIVES

- Topic : H_{2020} LC-SC3-CC-4-2018 call: Support to sectorial
- Focus area: Building a low carbon, climate resilient future
- Type of action: CSA Coordination and support action
- Dates: 2018/11/01– 2021/10/31

The forum will produce a synthesis of :

expected research developments and research needs

for the coming decades in a :

Strategic Industrial Roadmap (SIR)

and

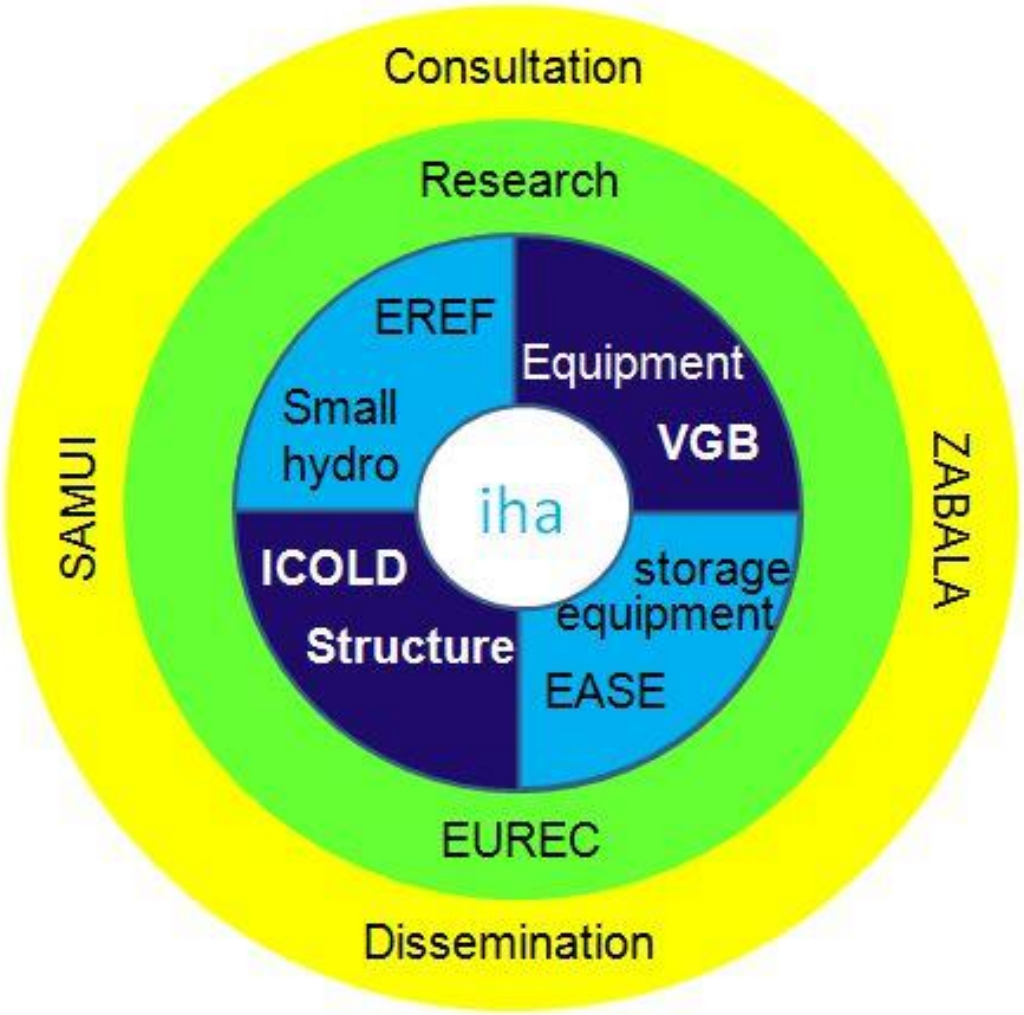
Research and Innovation Agenda (RIA)

in the hydropower sector, targeting an :

energy system with high flexibility and renewable share

THE ORGANIZATION

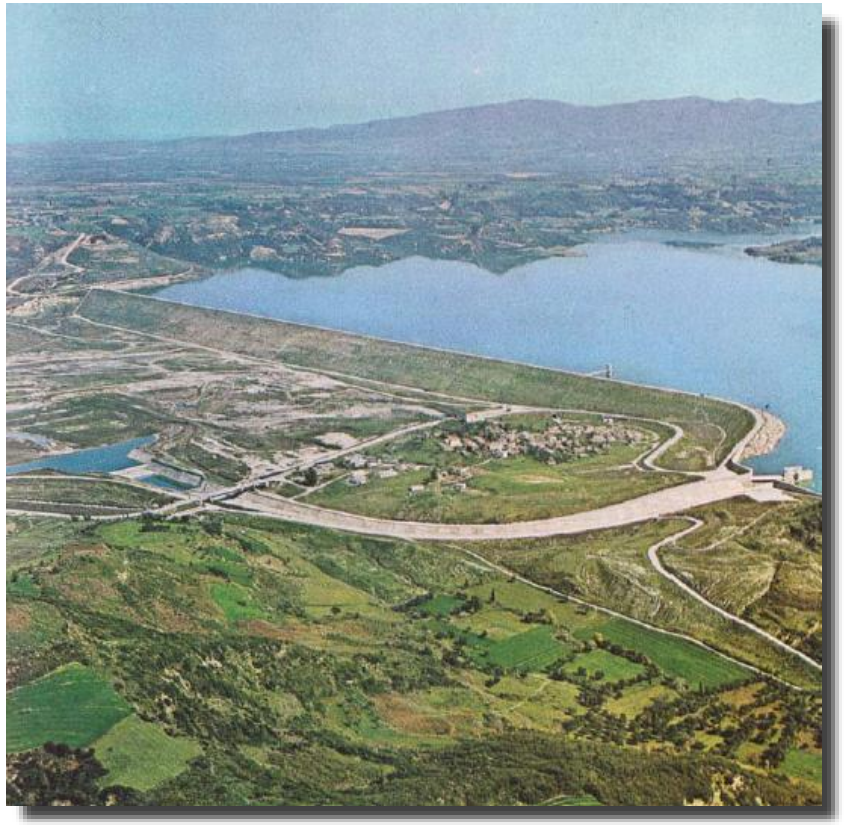
- **ICOLD Leader**
- **Coordinators:**
  - **Jean Jaques Fry**
  - **Anton J. Schleiss**
- **+ 7 core partners**
- **+ 5 Third Linked Parties**



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

Hydropower as a catalyst for the energy transition in Europe
VISION "Hydropower Europe"

1. **Increasing hydropower production** through the implementation of new environmental friendly, multipurpose hydropower schemes and by using hidden potential in existing infrastructures.



Pinios Dam, Greece, 50 m

Hydropower as a catalyst for the energy transition in Europe
VISION "Hydropower Europe"

2. **Increasing the flexibility of generation** from existing hydropower plants by adaptation and optimization of infrastructure and equipment combined with innovative solutions for the mitigation of environmental impacts.

Moiry Dam, Switzerland, 148 m

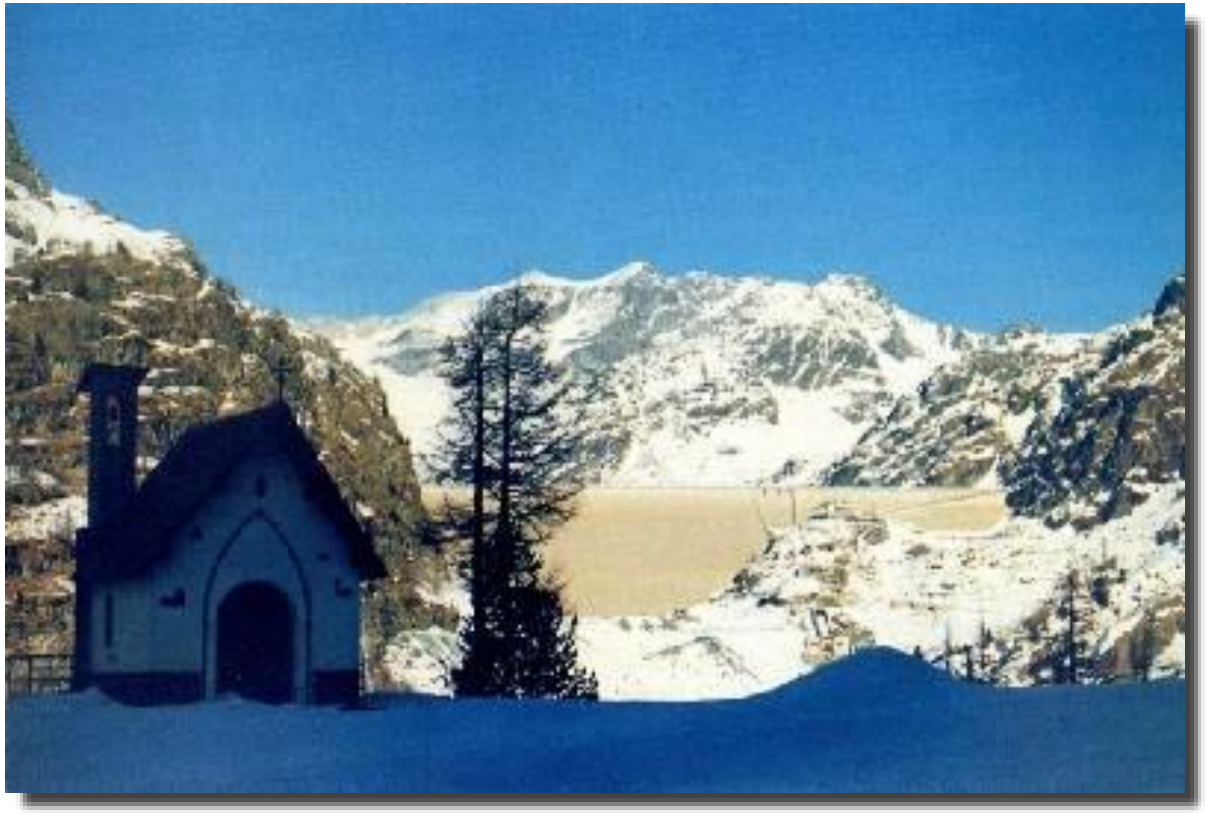
Hydropower as a catalyst for the energy transition in Europe
VISION "Hydropower Europe"

3. **Increasing storage** by the heightening of existing dams and the construction of new reservoirs, which have to ensure not only flexible energy supply, but which also support food and water supply and thus contribute to the Water-Energy-Food NEXUS and achievement of the Sustainable Development Goals of the United Nations.

Tignes Dam, France, 180 m

Hydropower as a catalyst for the energy transition in Europe
VISION "Hydropower Europe"

4. **Strengthening the contribution of flexibility from pumped-storage power plants by developing and building innovative arrangements in combination with existing water infrastructure.**



Alpe Gera Dam, Italy, 172 m

THE APPROACH

R&I Priorities

Barriers

RIA Recommandations

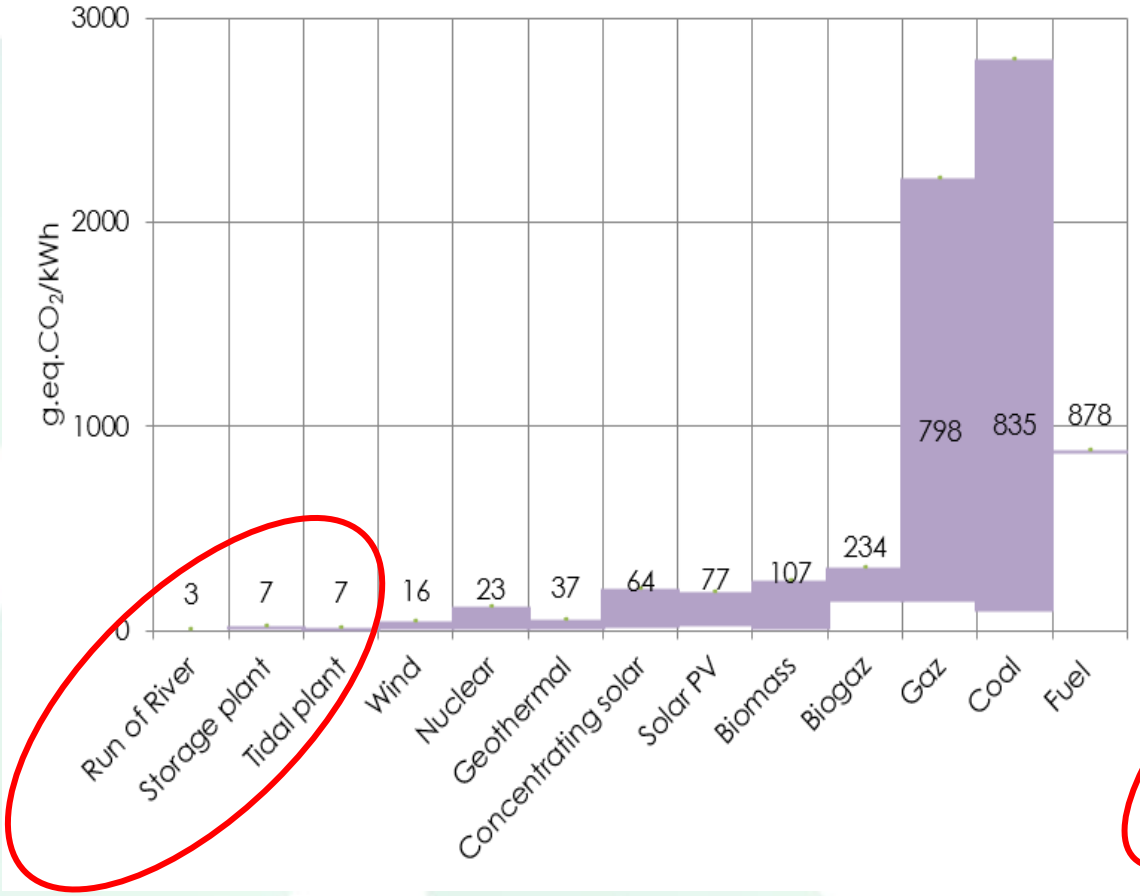
SIR Steps to new hydro deployment

The 2020 RIA

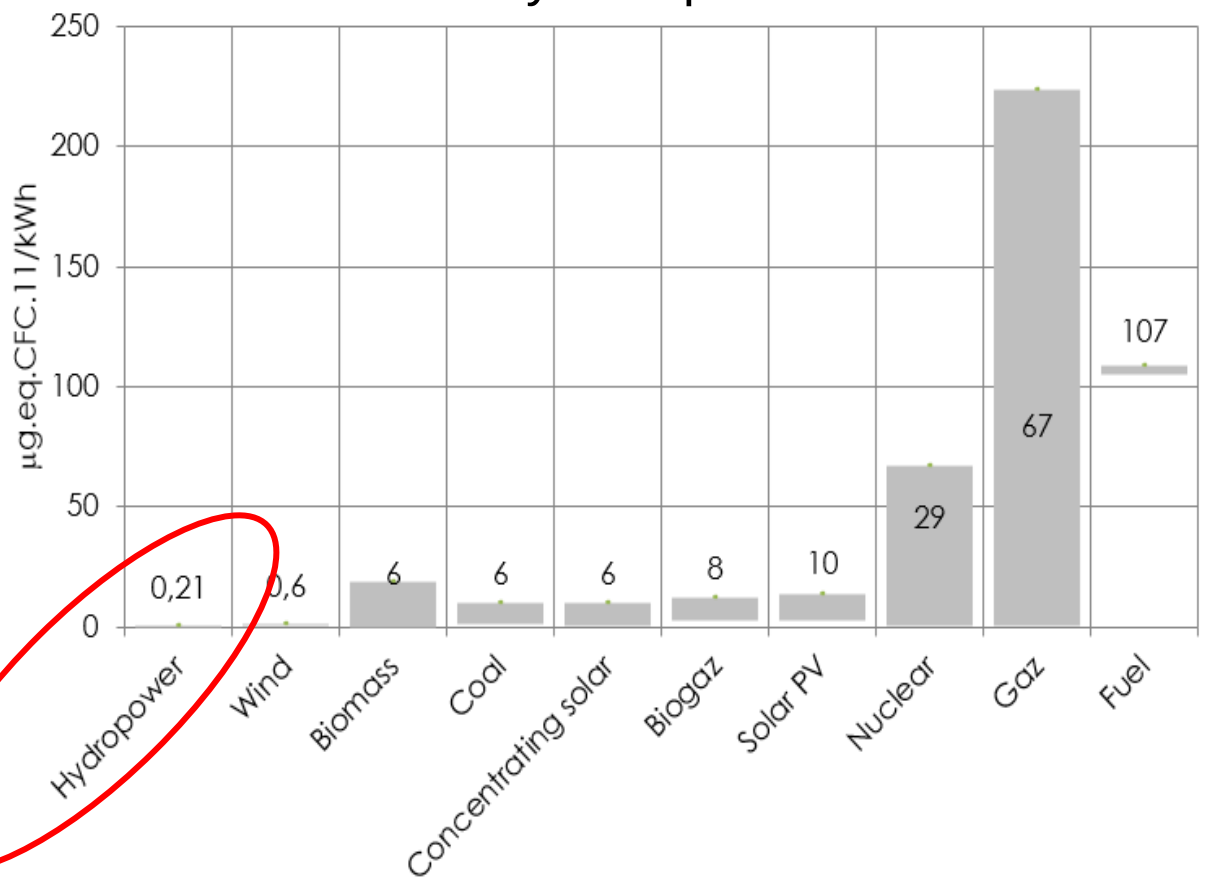
1. Enhancing power generation, flexibility and storage capacity
2. Efficiency improvement and optimization of operation of hydropower plants
3. Performance and resilience of equipment
4. Performance and resilience of infrastructures
5. Developing new concepts
6. Environmental-friendly solutions and social acceptance
7. Mitigating the impact of global warming on hydropower generation

Struggling against Global Warming

The CO2 emissions in Nordic countries



The Ozone Layer Depletion indicator



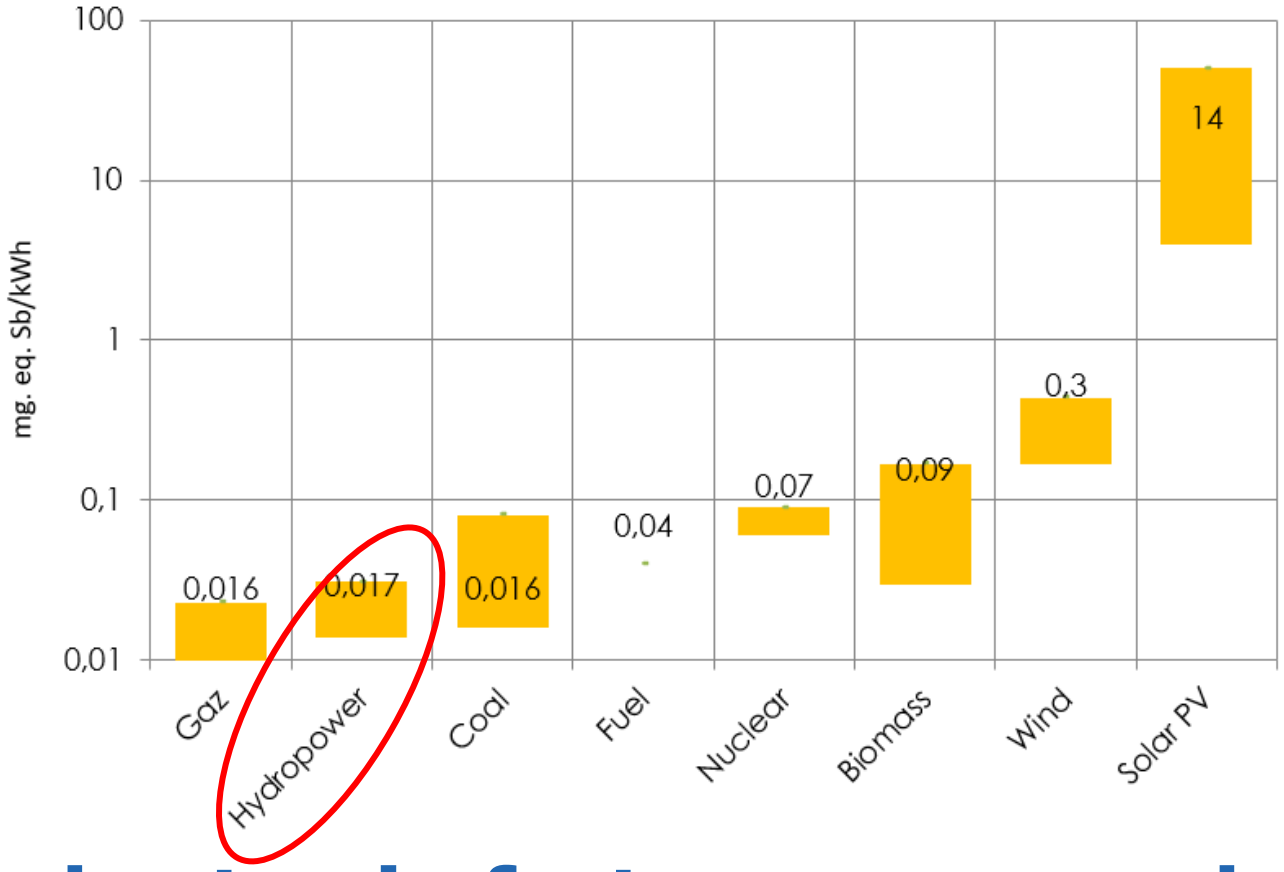
Hydropower has the best climate indicators

(CIRAIG 2014)

Minimizing energy and resource losses

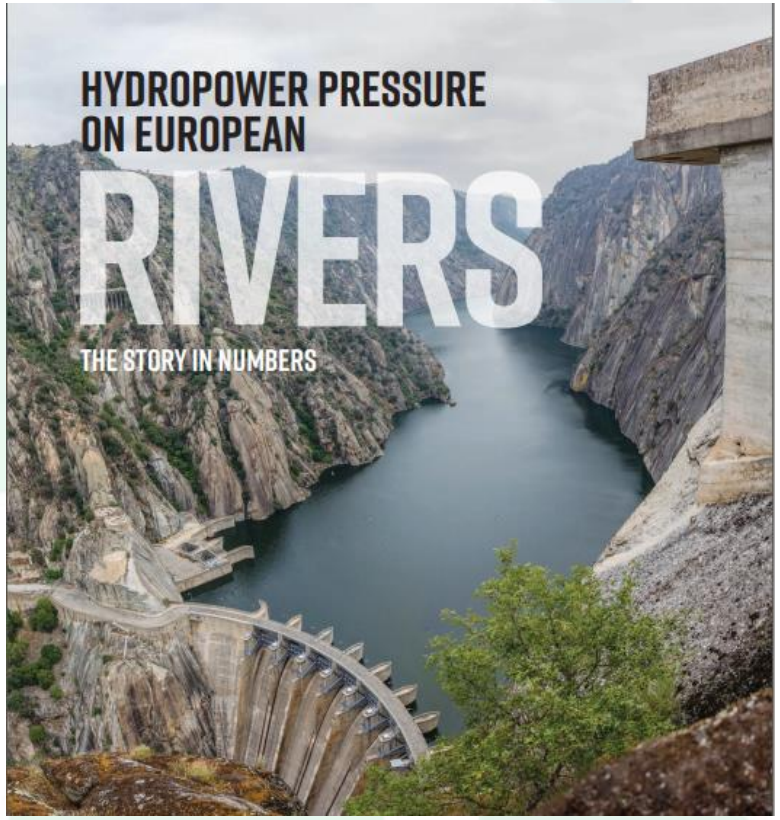
EROI or gain factor of energy

The Mineral Resource Extraction indicator



Hydropower has the best gain factor energy and mineral resource extraction indicators (CIRAIG 2014)

THE ISSUE



« The number of hydropower plants in Europe is already exceptionally high and their overlap with protected areas reveal a tremendous pressure on Europe's **biodiversity."**

"Greater efforts are needed to **restore freshwater ecosystems and the natural functions of rivers** in order to achieve the objectives of the Water Framework Directive. This can be done by removing or adjusting barriers that prevent the passage of migrating fish and improving the flow of water and sediments. To help make this a reality, **at least 25,000 km of rivers will be restored into free-flowing rivers by 2030 through the removal of primarily obsolete barriers** and the restoration of floodplains and wetlands. "

EU Biodiversity Strategy 2030

Restoring freshwater ecosystems

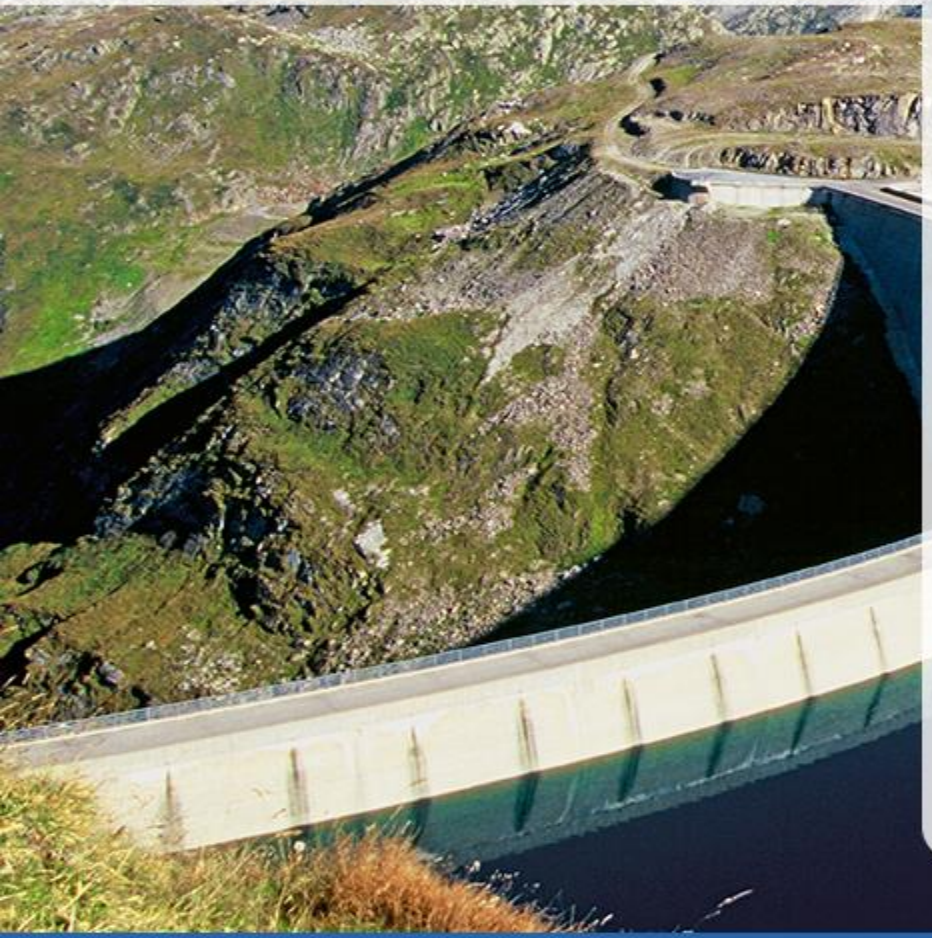
THE 2020 SIR (extract)

Environmental-friendly solutions and social acceptance

- 6.1 Barriers to large scale deployment of all sizes of hydropower
- 6.2 Hydropower for a better society
  - 6.2.1 Assessment of communities' reluctance to develop new hydro sites
  - 6.2.2 Best practices in bridging the gap between the parties
- 6.3 Sustainability (in relation to EU Biodiversity Strategy 2030)
  - 6.3.1 Compliance with the best practices
  - 6.3.2 Design and validation of eco-label indicators
  - 6.3.3 Up-scaling protection of biodiversity pathway
  - 6.3.4 Deployment of fresh water services
  - 6.3.5 Sustainable sediment management strategies

HYDROPOWER EUROPE

THE NEXT STEPS



-1- NGO are invited to introduce their views on January 2021 workshop

-2- NGO and Industry are invited to join the forum's consortium in its bid to EGD 7.1 on Biodiversity protection

Thank you for your attention

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