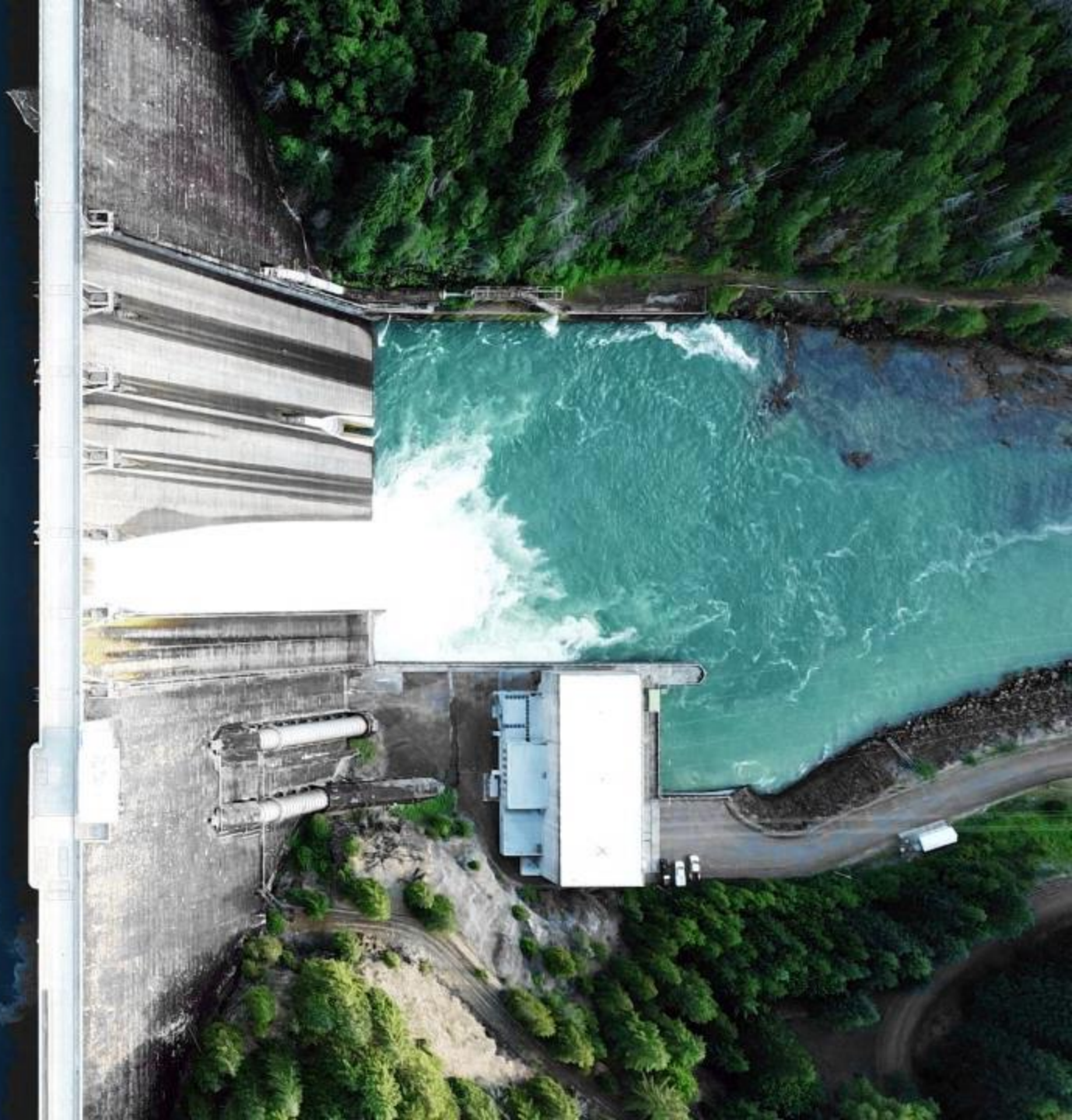


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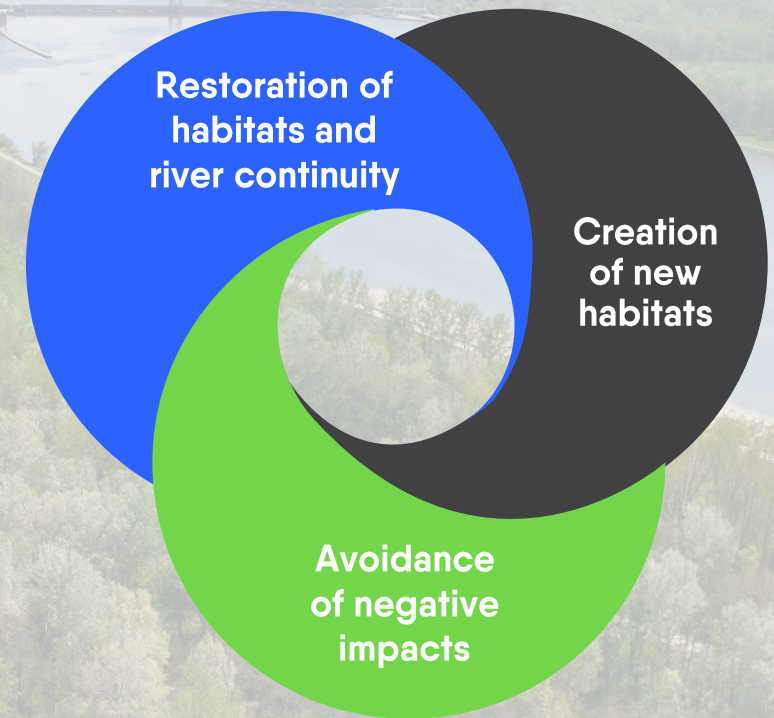
# EU Hydropower: A vital force for preserving climate and environment



# Introduction

- To address the climate crisis, the EU is actively **pursuing a significant expansion of renewable energies**, especially wind and solar power, as part of its Green Deal strategy.
- However, effectively integrating the variable electricity generation from these technologies requires **increased flexibility to ensure a balanced and reliable power system**.
- In this context, **hydropower stands out**, offering flexible electricity generation and storage on a large scale and in a sustainable manner.
- **After decades of successful operation**, many European hydropower plants are currently undergoing or are expected to be extensively refurbished in the coming years.
- These refurbishments are strategic investments that **enhance capacity and efficiency** while **minimising environmental impact** and **supporting initiatives to foster biodiversity**.

**The European hydropower sector is committed to achieve a positive net gain for biodiversity based on the following approach:**



# 5 Crucial Facts You Need to Know

**375 TWh**

**electricity generation:**

Electricity generation from hydropower is the 2nd biggest renewable electricity source in the EU and – through its flexible generation and storage capabilities – enables the integration of variable wind and solar power.<sup>1</sup>

1

**20 g  
CO<sub>2</sub>eq/kWh**

Hydropower shows the lowest life-cycle greenhouse gas emissions of all renewable energy technologies.<sup>2</sup>

2

**20,000  
hydropower  
plants**

Of the 1 million barriers in European rivers, less than 10% are used for hydropower generation.<sup>3,4</sup>

3

**Improving  
biodiversity  
and river  
connectivity**

For decades, the hydropower sector has played a vital role in improving river ecosystems to meet the objectives of the EU's water and nature legislation.

4

**Win-win for  
climate and  
environment**

Refurbishing an existing plant offers great potential to increase renewable electricity generation while implementing measures to foster biodiversity.

5



# Win-Win Projects are Implemented Across Europe

## Töging-Jettenbach (Germany)

Year of completion: **2022**  
Investment: **€ 250 million**

Renewable electricity increase:

- Capacity: **33 MW (+40%)**
- Generation: **140 GWh (+25%)**

Biodiversity enhancements:

- Restoration of **aquatic habitats**
- Restoration and creation of **grass- and wetland habitats**
- Improved river continuity through **up- and downstream migration facilities** and **reconnection of floodplains**



## Romanche-Gavet (France)

Year of completion: **2022**  
Investment: **€ 400 million**

Renewable electricity increase:

- Capacity: **15 MW (+20%)**
- Generation: **160 GWh (+40%)**

Biodiversity enhancements:

- Restoration and creation of **aquatic and terrestrial habitats**
- Improved river continuity through **dam removal** and **up- and downstream migration facilities**



# 5 Key Actions to Protect and Enhance Climate and Biodiversity

- 1** **Champion hydropower's role in achieving EU's decarbonisation targets by providing flexible renewable electricity generation and storage on a large scale.**
- 2** **Acknowledge the sector's efforts to minimise its environmental impact by avoiding negative effects, restoring existing and creating new habitats, all while increasing their connectivity.**
- 3** **Ensure a stable legislative environment to strengthen long-term visibility and investor confidence for these large capital investments.**
- 4** **Include hydropower projects alongside wind and solar PV in streamlined permitting procedures.**
- 5** **Recognise hydropower's multiple benefits beyond the electricity system such as mitigating floods and droughts, providing water for drinking, irrigation and industry as well as promoting tourism and navigation.**



## References:

<sup>1</sup> EUROSTAT 2022 – Gross production of electricity [[NRG\\_IND\\_PEH](#)]; data basis 2021;

<sup>2</sup> International Energy Agency (2023). [Energy Technology Perspectives 2023](#);

<sup>3</sup> AMBER – Adaptive Management of Barriers in European Rivers (2020), [The Barrier Atlas](#);

<sup>4</sup> Emanuele Quaranta et al., Digitalization and real-time control to mitigate environmental impacts along rivers: Focus on artificial barriers, hydropower systems and European priorities, Science of The Total Environment, <https://doi.org/10.1016/j.scitotenv.2023.162489>;

## Photo credits:

Project Examples:

Töging-Jettenbach – VERBUND

Romanche-Gavet – EDF / Christophe Huret

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