

## European Hydropower- A strategic net-zero technology

We, the undersigned, urgently call your attention to the **crucial role of hydropower in achieving the EU's climate neutrality** and emphasise the **need for its inclusion in the list of "strategic net-zero technologies" under the Net-Zero Industry Act.**

As the negotiations for the Net-Zero Industry Act approach their final phase, it is essential to recognise hydropower as a key player in the transition towards a sustainable and resilient EU power system. While hydropower is currently acknowledged in the list of "net-zero technologies" implicitly as a renewable energy source, we demand for its specific recognition as a "strategic net-zero technology" due to its unique and indispensable contributions to achieving the EU's sustainability targets.

### Renewable flexibility for a successful energy transition

For decades, hydropower has served as the bedrock of Europe's renewable energy landscape. It stands as the **second-largest renewable energy source** in the EU, generating 355 TWh<sup>1</sup> of electricity annually. However, the true strength of hydropower lies in its **unparalleled flexibility**, offering essential services for the secure and stable operation of the electricity grid. The reservoirs and related run-off river plants provide renewable electricity generation in a flexible manner both short and long term, filling the gaps when generation falls short of meeting the electricity demand. Furthermore, pumped storage hydropower (PSH) plays a pivotal role in electricity storage, absorbing excess generation in the system and avoiding curtailment. Accounting for over 90% of available EU storage capacity<sup>2,3</sup>, PSH stands as the sole mature technology capable of accommodating storage needs ranging from minutely to seasonal<sup>4</sup> timescales (refer to [Eurelectric's 1st Hydropower Short Story](#) for further insights).

The binding 42.5% renewables target in the Renewable Energy Directive commits the EU to adding 621 GW of new variable renewable electricity capacity from mainly wind and photovoltaics, equivalent to 60% of the current capacity, in less than six years. As we strive to meet this target, **flexible generation and storage capacities will only become more important. Hydropower holds immense potential to fulfil this demand.**

### Securing a European success story for the future

The need to reduce vulnerability to external disruption and ensure a secure and diverse supply of resources has proven crucial to Europe's ambition to regain its sovereignty and relevance on the global stage. Consequently, the Net-Zero Industry Act must serve not only as an opportunity to build a robust value chain in technologies where dependence on third countries is pronounced. Its aim should also be to **secure the European Union's competitive advantage in clean technologies where our value**

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<sup>1</sup> Elda by Eurelectric 2024 – <https://electricity-data.eurelectric.org/>, data basis 2023.

<sup>2</sup> European Commission, Directorate-General for Energy, Andrey, C., Barberi, P., Nuffel, L., et al., [Study on energy storage : contribution to the security of the electricity supply in Europe](#), Publications Office, 2020.

<sup>3</sup> European Parliament, ITRE Committee, [Report on a comprehensive European approach to energy storage \(2019/2189\(INI\)\)](#), 2020.

<sup>4</sup> Hunt, J. & Byers, E., [Seasonal Pumped-Storage: An Integrated Approach for Hydropower, Water Management and Energy Storage](#). In: *Colloquium CIGREE "Rotating Electrical Machines for Power Generation"*, 2017, Austria.

**chain is already notable.** Past mistakes (i.e., in solar manufacturing), which are now being painstakingly corrected, should not be repeated.

Europe has solidified its standing as a world leader in hydropower technology. Leveraging a **transparent and sustainable value chain, hydropower boasts significant autonomy from critical raw materials<sup>5</sup> and fossil fuels imports, skilled labour or technological deficits.** With this, European project developers, operators, and equipment manufacturers are strategically well positioned to take advantage of the immense opportunities arising from the substantial investments in the modernisation of existing and the development of new hydropower plants in Europe and around the world<sup>6</sup>.

### Crucial in adapting to climate change

Recent years have highlighted the importance of implementing a comprehensive water management strategy, especially considering the increasing frequency of extreme weather events resulting in either excessive or insufficient river run-offs. **Hydropower plants offer numerous benefits for climate change adaptation.**

They not only can serve to regulate flood events and strategically release water during drought periods to safeguard ecosystems and agriculture and facilitate navigation. They also play a crucial role in ensuring a reliable water supply for a wide spectrum of applications, including drinking, irrigation, industrial processes, and firefighting (refer to [Eurelectric's 3rd Hydropower Short Story](#) for concrete examples).

### Making the Green Deal a success: take a stand for hydropower

The Net-Zero Industry Act will enhance the competitiveness and resilience of the industrial base of net-zero technologies in the EU, forming the backbone of an affordable, reliable and sustainable clean power system. In this context, **we urge you**, esteemed Members of the European Parliament and Permanent Representatives of the EU Member States, **to recognise the undeniable importance of hydropower and include it in the list of "strategic net-zero technologies".**

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<sup>5</sup> European Commission, *A foresight study - Critical raw materials for strategic technologies and sectors in the EU*, 2020; International Energy Agency, *The role of critical raw minerals in clean energy Transition*, 2021; [McKinsey analysis January 2022](#).

<sup>6</sup> International Renewable Energy Agency (IRENA), [The changing role of hydropower: Challenges and opportunities](#), 2023, Abu Dhabi.