
ACHIEVING THE ENERGY UNION TARGETS

Goals of European Hydropower R&I Funding



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A European Green Deal

Striving to be the first climate-neutral continent

The EU will:



Become
climate-neutral
by 2050



Protect human life,
animals and plants,
by cutting pollution



Help companies
become world leaders
in clean products and
technologies



Help ensure a
just and inclusive
transition

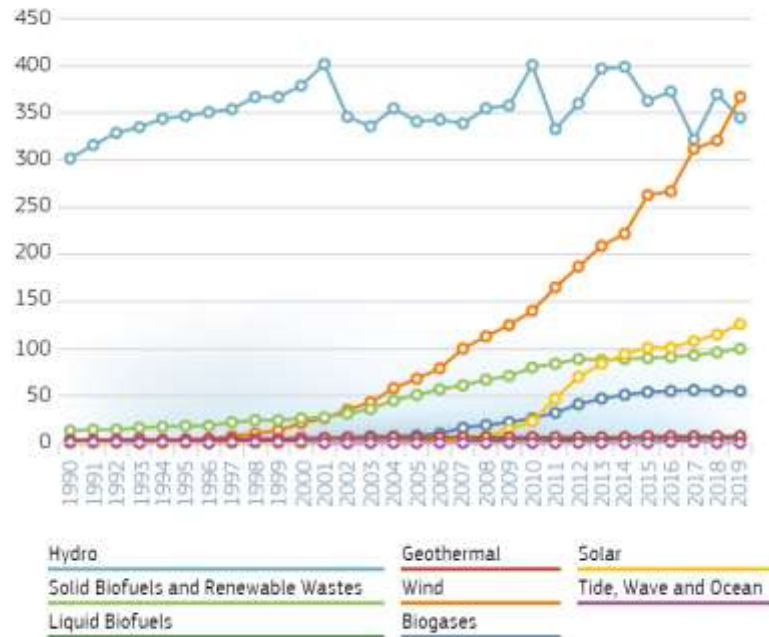
COM(2019) 640 final . The European Green Deal

COM(2020) 21 final: Sustainable Europe Investment Plan; European Green Deal Investment Plan

COM(2020) 22 final: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
establishing the Just Transition Fund

Hydropower in Europe

EU27_2020 – BY FUEL – GROSS ELECTRICITY GENERATION,
BY FUEL: RENEWABLES – 1990-2019 (TWh)



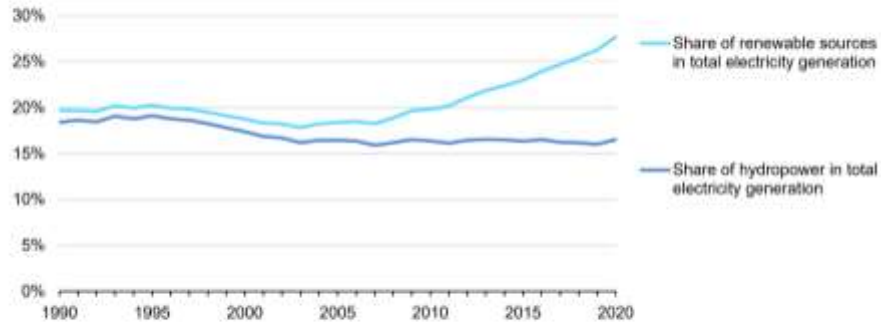
Source: Eurostat April 2021 EU energy in figures 2021

- Limited potential of additional capacities, but high potential in energy system services
- Strong technology base

- Challenges and opportunities:
 - Refurbishment
 - Flexible operation / grid balancing
 - Sustainability, e.g. water/river connectivity
- Overall R&I strategy:
 - long-term challenges require continuous efforts
 - maintain European hydropower research and industry value chains
 - Global cooperation on sustainable hydropower

Global Hydropower Developments

Figure 3.20 Shares of hydropower and total renewable sources in global electricity generation, 1990-2020

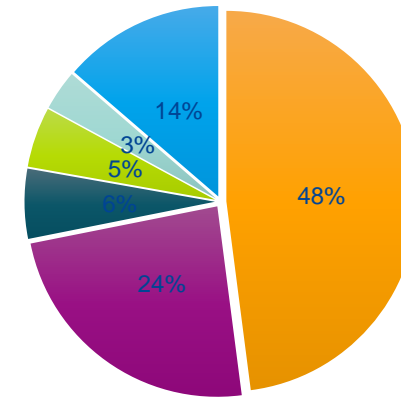


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Sources: Based on IEA (2020a), World Energy Statistics and Balances 2020 (database); IEA (2021c), Global Energy Review 2021.

Source: IEA Hydropower Special Market Report 2021

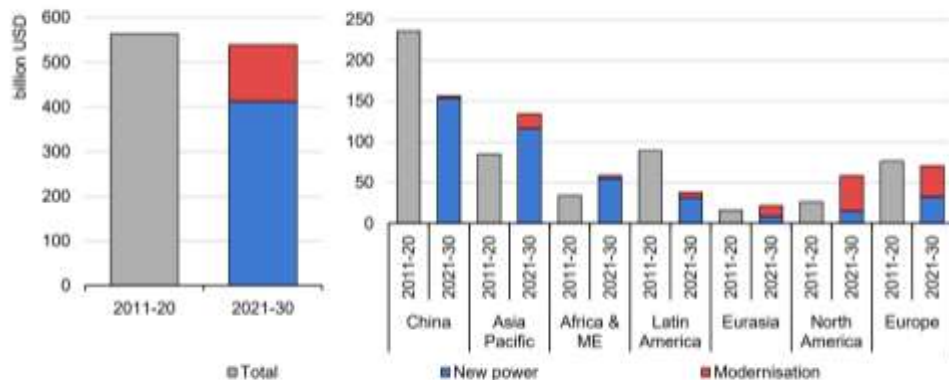
Global Exports in 2019 (878 M EUR)



■ EU ■ China ■ India ■ Brazil ■ USA ■ Other

Source: International Trade Center (ITC). Trade statistics for international business development 2020, in SWD(2020) 953 final.

Figure 3.17 Hydropower capacity investment globally (left) and by region (right), 2011-2020 and 2021-2030



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Notes: ME = Middle East.

Source: IEA Hydropower Special Market Report 2021

Research articles on hydropower 01/2016 – 08/2020



Source: ISI Web of Knowledge (jcr.clarivate.com), in SWD(2020) 953 final.

NOT LEGALLY BINDING

Cluster 5 WP

Destination - Sustainable, secure and competitive energy supply

Renewable energy

- Fostering **European global leadership** in affordable, secure and sustainable renewable energy technologies and services by improving their **competitiveness** in global **value chains** and their position in growth markets, notably through the **diversification** of the renewable services and technology portfolio
- **20 topics in 2021** (335 M€)
- **24 topics in 2022** (368 M€)
- **Issues:** disruptive technologies, cost reduction, improved efficiency, de-risking, integration, export potential, sustainability, market uptake

Energy system, grids and storage

- Ensuring cost-effective **uninterrupted** and **affordable** supply of energy to households and industries in a scenario of **high penetration of variable renewables** and other new low carbon energy supply.
- Managing smart and cyber-secure **energy grids** and optimisation the interaction between producers, consumers, networks, infrastructures and vectors
- **10 topics in 2021** (152 M€)
- **7 topics in 2022** (181 M€)
- **Issues:** energy sector integration, energy system planning and operation, active consumer, markets and energy communities, digitization

Carbon Capture, Utilization and Storage

- **Accelerating** the development of Carbon Capture, Use and Storage (CCUS) as a CO₂ emission mitigation option in **electricity generation** and **industry applications** (including also conversion of CO₂ to products)
- **2 topics in 2021** (32 M€)
- **1 topic in 2022** (58 M€)
- **Issues:** CCUS hubs, application in industry, CO₂ capture

Cross-cutting

- Geological services (2021; CSA; 20 M€)
- Stakeholder support (2021; CSA; 9.8 M€)
- Clean Energy Transition co-funded Partnership (2021-2027; 210 M€ in total)



Hydropower in Cluster 5 WP 21/22

- **HORIZON-CL5-2021-D3-03-11** Development of hydropower equipment for hidden hydropower
- **HORIZON-CL5-2022-D3-03-08** Development of digital solutions for existing hydropower operation and maintenance
- **HORIZON-CL5-2021-D3-02-15** Support to the activities of the ETIPs and technology areas of the SET Plan

Other relevant topics:

- Digital solutions addressing synergies in international renewable energy value chains
- Energy system modelling and tools
- Innovative forms of storage and their successful operation and integration into innovative energy systems and grid architectures
- Innovative plug-and play solutions for system management and renewables storage in off-grid applications

Thank you for your attention!