

Driving the large-scale deployment of innovative renewables via the Renewable Energy Directive

Successive energy crises make it clear that Europe must rapidly reduce its reliance on imported fuels and accelerate the deployment of homegrown renewables. Scaling up the next generation of innovative renewable technologies (iRETs), such as geothermal, next-generation solar and wind, as well as ocean energy, is essential to complement established renewables and deliver a future-proof energy system.

The [Renewable Energy Directive](#) (RED III) includes a target requiring that 5% of new renewable energy capacity installed by 2030 be of innovative technology, driving a market demand in the range of 45 GW.¹ Its revision is an opportunity to strengthen implementation and address key policy and funding bottlenecks slowing the industrial rollout of iRETs in Europe.

Innovative renewables can deliver on Europe's top energy priorities

- **Energy security** with home-grown power manufactured in Europe
- **Lower electricity prices** by increasing the share of low marginal cost penetration in EU electricity markets
- **Drive decarbonisation and system flexibility** by producing at different times than established renewables and directly displacing fossil fuels from the grid (both dispatchability and baseload benefits)
- **Boost the EU's industrial competitiveness** by scaling up technologies where Europe leads globally

Extend the innovation target to 2040 to unlock market visibility beyond 2030

The first renewable targets drove the large-scale deployment of established renewables in Europe by providing long-term market visibility and predictable demand. The same success can be achieved with the next generation of renewables. The 5% innovation target created an equivalent market-pull mechanism, driving a market of circa 45 GW² of innovative renewable deployment between 2024-2030, supporting the large-scale deployment of the next generation of renewables. A continuation of this market-pull mechanism in the 2030-2040 period is essential to achieve this.

¹ Assuming annual capacity growth of 10% for wind and 25% for solar between 2025 and 2030, based on FCA calculations

² Ibid.

Scaling up deployment of iRETs and related supply chains requires scaling up private investment. **Clear market signals** like the iRETs target are essential to convince private investors, utilities, and original equipment manufacturers (OEMs) to commit the upfront capital needed to drive manufacturing and deployment.

The first iRETs target has already proved to be effective in directing private investment towards the scale-up of European iRETs (successful funding round of CorPower Ocean €32 million raised,³ Siemens Gamesa's plans to commercialise large-scale wind turbines,⁴ and Drift Energy's £4.65 million funding round in 2024 to bolster green hydrogen producing vessels at sea,⁵ or Climeworks' USD 162 million equity funding round in 2025⁶).

The 5% target for innovative renewables reinforces Europe's innovation objectives. Extending the target into the 2040 framework provides both long-term market visibility and the investment signal needed to unlock more investment and accelerate scale-up.

Leverage public funding and market-based instruments to scale iRETs

Unlock large-scale investment through access to EIB de-risking instruments

A mix of public financial instruments is needed to ensure the right allocation of risks and enhance the business case for iRETs. Due to their innovative nature, iRETs involve higher risks than commercial technology. These must be effectively mitigated to attract the private capital required for scale-up and industrialisation. Blending grant funding, public equity, and public debt or guaranteed loans, is essential to reduce innovation risks, boost investor confidence, and unlock large-scale investment.

The European Investment Bank (EIB) provides de-risking instruments, such as venture debt products and loan guarantees, needed to make a business case for innovative renewable projects. However, innovative renewables, which struggle to access affordable capital in order to scale, have only marginally benefited from venture debt and not yet from loan guarantees. It is crucial to enhance the EIB offer towards innovative renewables, ensuring that it is able to take on targeted financial risk in this strategic sector for Europe's future. This could be achieved under the European Competitiveness Fund, the Industrial Decarbonisation Bank or by creating an instrument similar to the former InnovFin EDP.⁷

³ CorPower [Ocean secures €32M series B funding round](#) with investors such as SEB Greentech, Santander, Cisco Investments

⁴ [Siemens Gamesa executive reveals plan for 21MW turbine | Recharge](#)

⁵ [PRESS RELEASE: DRIFT plans first green hydrogen producing vessel with close of seed round — DRIFT](#)

⁶ [Climeworks raises USD 162M to scale up technology](#)

⁷ InnovFin EDP used the EU budget as a guarantee to enable the EIB to provide loans and other risk-sharing instruments to first-of-a-kind and pre-commercial energy projects.

Deploy market-based instruments to facilitate offtake for iRETs

[Member States](#) should implement market-based instruments to boost market creation and achieve deployment levels implied by the 5% target.

- **Net Zero Industry Act (NZIA):** the use of non-price criteria (innovation, resilience, system integration) should be further incentivised in NZIA public auctions.
- **iRET-specific support schemes:** Innovative technology-specific tenders are needed to support the development of large-scale markets for innovative technologies, as demonstrated before by established renewables. They drive cost reduction through economies of scale, as well as technology learnings, and prevent unfair competition on price with established technologies. Member States should be further incentivised to implement dedicated tenders to scale up iRETs at home.

Lifting regulatory barriers to accelerate deployments in Member States

Innovative renewables lack dedicated national frameworks, creating regulatory uncertainty or forcing projects to rely on rules designed for other technologies. This leads to project delays and financial uncertainty, making it more difficult to attract private capital and ultimately slowing deployment. Targeted regulatory measures can reduce barriers to innovation and accelerate iRET deployments:

- **Accelerated permitting processes:** iRET demonstration projects should be proportionally shorter than commercial projects and capped at 1 year.
- **Granting priority grid access** to iRET projects to ensure rapid connection of new flexible assets.
- **State aid support:** iRET demonstration projects should be exempted from state aid notification to bolster national support.
 - Under current thresholds,⁸ demonstration projects require notification regardless of size or market impact.⁹ This deters much-needed targeted national support as it forces governments to commit disproportionate resources to comparatively small projects. The entire process can take up to 2 years, resulting in project delays and increased financial risks.

⁸ Investment aid or operating aid above €30M prompts a notification process

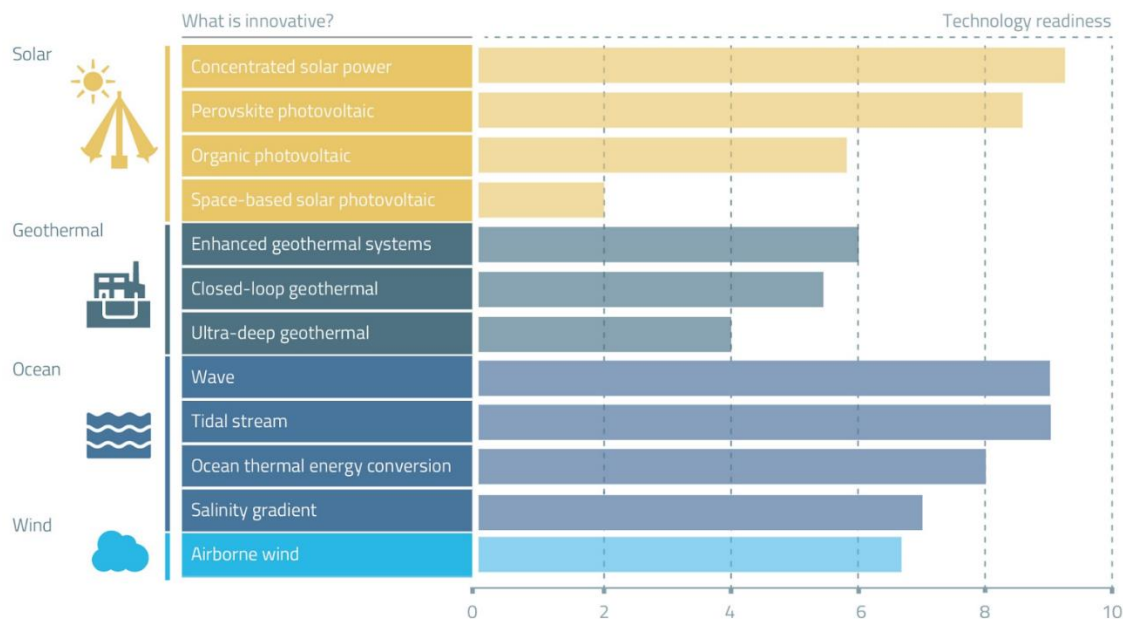
⁹ A 50 MW pilot renewable demonstration project would represent only 0,005% of Europe's existing electricity capacity.

Helping Member States operationalise the innovation target

Member States [are beginning to integrate iRETs](#) in their National Energy and Climate Plans (NECPs), but references remain high-level and lack support structures such as quantified deployment pathways, dedicated support measures, and monitoring arrangements.

To increase the practical impact of the 5% target and ensure a consistent and effective rollout across the EU, clearer guidance is needed:

- Introduce a **standardised definition** for iRETs across legislative texts: Currently three definitions exist: two in the Net Zero Industry Act (NZIA) and one in RED III. Our suggested standardised definition is: *“Innovative renewable energy technology means entirely new renewable energy technology or not fully commercial renewable energy technology improving comparable state-of-the-art technology.”*
- Provide an **indicative list of what would qualify** as iRETs, to be updated over time. This graph serves as an indicative (not exhaustive) list of what would qualify:



Source: FCA analysis and JRC Ocean Energy in the European Union, 2025.



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