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# EU public finance landscape for cleantech

## CLEANTECH IS ESSENTIAL TO CLIMATE ACTION

Developing, demonstrating and deploying innovative cleantech<sup>1</sup> plays a crucial role in mitigating climate change.

Many of these technologies, such as heat pumps or wind power, are already on the market. Achieving the EU's 2030 climate target largely depends on deploying these technologies at speed and greatly expanding the EU's cleantech manufacturing base. However, simply manufacturing and deploying the cleantech that is on the market today will not suffice to reach climate neutrality. Doing so requires the development of innovative technologies that still require research and development, first-of-a-kind demonstration, and commercial scale-up – and at a much faster

pace than was seen in the past for technologies such as solar PV or lithium-ion car batteries.<sup>2</sup>

To meet the EU climate targets, policymakers need to support both the rapid deployment and manufacturing of cleantech, while also strengthening the EU's research and innovation ecosystem. Next to this, they need to consider a range of questions. How will their policy response deliver quality jobs for citizens? How will it bolster the EU's resilience vis-à-vis Russia or China? And finally, how will it support the EU's economic competitiveness in an era when large economies have entered a cleantech race?<sup>3</sup>

## EUROPE'S RESPONSE TO THE CLEANTECH CHALLENGE

The EU became increasingly aware of the need to support cleantech in response to the US Inflation Reduction Act (IRA). To answer this challenge and 'make Europe the home of cleantech', the EU created the **Green Deal Industrial Plan (GDIP)**.

The **Strategic Technologies for Europe Platform (STEP)**, which seeks to provide more EU-level finance for cleantech,<sup>4</sup> is the main component that involves EU-level funding.

## THE EU PUBLIC FINANCE LANDSCAPE FOR CLEANTECH

The European Investment Bank (EIB) estimates that the EU economy should increase its climate investments (including, but not limited to, cleantech) by approximately €360 billion per year, for the EU to meet its 2030 climate target.<sup>5</sup> As for cleantech, the European Commission, in its working document on the proposed Net-Zero Industry Act (NZIA), estimates an investment need of

€92 billion in total for the period between now and 2030, with public funding requirements of between €16-18 billion.<sup>6,7</sup>

To bridge this investment gap, policymakers at the EU level have a wide range of funding mechanisms at their disposal. Figure 1 gives an overview of the EU public finance landscape for cleantech.

1 Defined as 'technology that makes it possible to reduce or avoid harm to the environment, for example technology related to recycling, renewable energy, or methods of transport that do not cause pollution' by the [Cambridge Dictionary](#)

2 [Energy Technology Perspectives 2023](#), International Energy Agency (IEA), 2023.

3 [The Net-Zero Industry Act: Designing Europe's Launchpad for a Cleantech Investment Plan](#), I4CE, 2023.

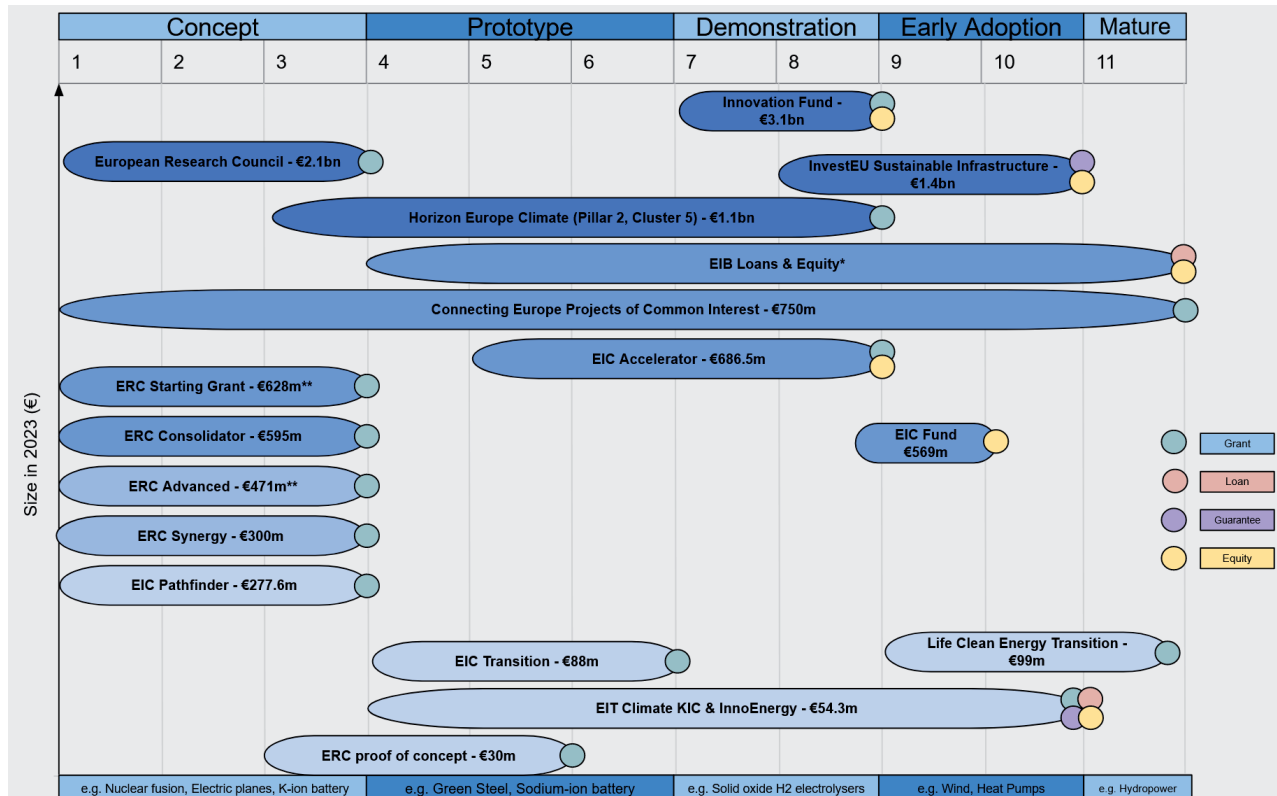
4 [Special Address by President von der Leyen at the World Economic Forum](#), European Commission, 2023.

5 [Investment Report 2022/23 - Key Findings](#), European Investment Bank, 2023.

6 [Investment needs assessment and funding availabilities to strengthen the EU's net-zero technology manufacturing capacity](#), European Commission, 2023.

7 This estimate concerns building up manufacturing for five key cleantech sectors (wind, solar PV, heat pumps, batteries and electrolysers), which will be crucial to delivering the 2030 decarbonisation target.

**Figure 1: The EU cleantech financing landscape (with reference to IEA technology readiness levels) in 2023<sup>8</sup>**



Source: Institute for Climate Economics, own elaboration.

## EU FINANCIAL INSTRUMENTS FOR CLEANTECH

### INNOVATION FUND

Size in 2023: €3.1bn<sup>9</sup>

(subject to changing ETS carbon price)

Launched in 2020, the Innovation Fund is Europe's largest fund dedicated to climate, cleantech and industrial decarbonisation. Unlike many EU funds, which are funded by the EU budget, the ETS is financed by an allocation of EU carbon allowances under the EU's Emissions Trading System (ETS), which are then auctioned on the EU carbon market to raise capital for the Fund. This means that the size of the Fund is tied to the EU carbon price and fluctuates from year to year.

The Innovation Fund disburses grants through regular calls for projects that are usually first-of-a-kind demonstration projects, to prove a technology's commercial readiness before scaling up operations and hitting the market. It may also soon begin offering new forms of subsidies for projects that produce renewable hydrogen in the EU, as part of the so-called 'Hydrogen Bank'.

### EUROPEAN RESEARCH COUNCIL

Size in 2023: €2.1bn<sup>10</sup>

The European Research Council (ERC) was established in 2007 by the European Commission to support and promote groundbreaking research and innovation in Europe.

The ERC support to researchers is split across five grants: *Starting*, for early career researchers; *Consolidator*, for researchers building a research team; *Advanced*, supporting groundbreaking, high-risk projects; *Proof of Concept*, to allow researchers to bring their innovation from research towards prototype; and *Synergy*, to fund collaboration between European research teams.

The ERC contributes to climate innovation, even if it is not specifically targeting cleantech.

<sup>8</sup> Refers to a large range of EIB financial instruments, including venture debt, investments in and intermediated loans to SMEs, and mid-cap funds; 2022 figure.

<sup>9</sup> [Innovation Fund third large-scale call for projects](#), European Commission, 2022 & [Innovation Fund third small-scale call for projects](#), European Commission, 2023.

<sup>10</sup> [ERC Work Programme 2023](#), European Research Council, 2023.

<sup>11</sup> [European Innovation Council \(EIC\) Work Programme 2023](#), European Innovation Council, 2023. Estimate based on the number of EIC challenges which are climate or cleantech focused.

<sup>12</sup> Referring to cutting edge innovations such as artificial intelligence (AI), quantum computing, nanotechnology, biotechnology and advanced robotics.

## EUROPEAN INNOVATION COUNCIL

Size in 2023: 1.6bn<sup>13</sup>

The European Innovation Council (EIC) was established in 2021 to support breakthrough technologies and companies working on solutions to support the green and digital transitions. Its principal aim is to help cleantech, deeptech and biotech<sup>12</sup> start-ups, which can be inherently risky investments, bridge the financing challenges they face as they come to market.

The EIC has several programmes which support technologies at various levels of maturity. *Pathfinder* and *Transition* both provide support, in the form of grants, to researchers and early-stage start-ups respectively. *Accelerator* aims to help start-ups scale their operations quickly, using a blended finance approach, offering grants and taking equity stakes.

## InvestEU SUSTAINABLE INFRASTRUCTURE

Size in 2023: €1.4bn<sup>13</sup>

Since 2021, InvestEU has brought together a wide range of pre-existing EU and Member State financial instruments. It is managed by the European Investment Bank, as well as Member State counterparts. Through the use of guarantees, loans, equity and other financial instruments, InvestEU provides support to businesses and SMEs, as well as researchers and infrastructure projects. The InvestEU Sustainable Infrastructure pillar specifically focuses on supporting clean transport, renewable energy, circular economy and cleantech.

Outside of InvestEU, the EIB can support cleantech innovators with a range of financial instruments. From intermediated loans and venture debt to start-ups, SMEs and mid-cap companies to the InnovFin Energy Demonstration Projects scheme (which supports renewables start-ups and scale-ups), the EIB is a valuable source of funding for European cleantech.

## HORIZON EUROPE'S ENERGY AND MOBILITY CLUSTER (PILLAR II, CLUSTER 5) (ENERGY AND MOBILITY)

Size in 2023: €1.1bn<sup>14</sup>

Horizon is the world's largest multinational research and innovation initiative, and encompasses a wide range of thematic areas, including health, climate, digital technologies and social challenges. The programme's fifth cluster of Pillar II, with a size of over a billion euros, focuses on climate research, including cleantech. Cleantech projects funded by research grants include advanced battery technologies, grid technologies and renewable hydrogen.<sup>15</sup>

## STRATEGIC TECHNOLOGIES FOR EUROPE PLATFORM (UNDER DISCUSSION)

The Strategic Technologies for Europe Platform, or STEP, was announced by the European Commission in June 2023. This platform represents a compromise position, and is far from the ambition of the original idea for a European Sovereignty Fund, presented by President Von der Leyen as the funding arm of the EU's Green Deal Industrial Plan.

The STEP proposal is not a new fund. It leverages existing financial instruments, such as the Recovery and Resilience Facility (RRF), InvestEU, Horizon Europe and the Innovation Fund. The investments will be channelled not only to cleantech, but also deeptech and biotech. STEP also introduces a 'Sovereignty Seal', namely a label supposed to facilitate access to private and public funds for highly rated, strategic projects.

STEP will, in part, mobilise existing funding mechanisms to support these goals, such as the RRF and Cohesion Funds. The European Commission, as part of the mid-term review of the 2021-2027 budget, is asking Member States for a further €10 billion 'top-up', which will be distributed among the Innovation Fund, InvestEU, Horizon Europe and the European Defence Fund.

STEP is currently under debate by the European Parliament and will pass to trilogue negotiations. The €10 billion top-up could be negotiated down to a smaller amount. With what funds are agreed spread across three broad technological priorities, it is unlikely that STEP will be sufficient to bridge the EU's cleantech financing gap. As a comparison, the German government recently chose to provide €10 billion in national subsidies for a single microchip factory.<sup>16</sup>

## THE EU HAS THE TOOLS TO INVEST IN CLEANTECH – BUT MORE FUNDING IS NEEDED WITH REGARD TO SCALE

The EU has a wide range of financial instruments to support cleantech. It is particularly well equipped when it comes to supporting early-stage researchers and innovators.

What the EU lacks, by contrast, is the financial arsenal necessary to support cleantech manufacturing at scale, which will be central to European climate action in the near future. When compared

to the US IRA or the public support China offers its cleantech industries, the EU response, including the recently announced STEP initiative, leaves much to be desired.

To face the challenges of climate breakdown and bridge the cleantech investment gap, policymakers need a better response – such as a Cleantech Investment Plan.

13 InvestEU Fund, UITP, €9.9bn over 7 years, with an estimated annual size of €1.4bn.

14 Horizon Europe to get €12.4B budget for 2023, Science Business, 2022.

15 Horizon Europe Work Programme 2023-2024, European Commission, 2023.

16 Germany, Intel Agree €10 Billion Subsidy Package for Chip Plant, Bloomberg, 2023.