

# STUDY ON POSSIBLE POLICY ACTIONS TO ENHANCE PRIVATE CAPITAL MOBILISATION IN THE EU TO FINANCE THE CLIMATE TRANSITION

Final Report



**EUROPEAN COMMISSION**

Directorate-General for Climate Action  
Directorate D — International affairs and climate finance  
Unit D.3 — Climate finance

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# **Study on Possible Policy Actions to Enhance Private Capital Mobilisation in the EU to Finance the Climate Transition**

Final Report

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DG CLIMA

**STUDY ON POSSIBLE POLICY ACTIONS TO ENHANCE  
PRIVATE CAPITAL MOBILISATION IN THE EU TO  
FINANCE THE CLIMATE TRANSITION**

Revised Final Report, August 2025



VIEGAND MAAGØE

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## List of acronyms

Acronym	Full Term
BGK	Bank Gospodarstwa Krajowego
BPF	Brown-penalising factor (regulatory term)
CAP	Common Agricultural Policy
CBAM	Carbon Border Adjustment Mechanism
CDC	Caisse des Dépôts et Consignations
CEB	Council of Europe Development Bank
CCfD	Carbon Contract for Difference
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Use and Storage
CID	Clean Industrial Deal
CMU	Capital Markets Union
CPI	Climate Policy Initiative
CPR	Construction Product Regulation
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
CSRD	Corporate Sustainability Reporting Directive
DC	Defined Contribution (pension scheme)
DNSH	Do No Significant Harm
DPP	Digital Product Passport
EBA	European Banking Authority
EBRD	European Bank for Reconstruction and Development
ECB	European Central Bank
EC	European Commission
EEA	European Environment Agency
EFSI	European Fund for Strategic Investment
EGD	European Green Deal
EHB	European Hydrogen Bank
EIB	European Investment Bank
EIF	European Investment Fund
EIOPA	European Insurance and Occupational Pensions Authority
ELTIF	European Long-Term Investment Fund
ESG	Environmental, Social, and Governance
ESA	European Supervisory Authorities
ESMA	European Securities and Markets Authority
ESPR	Ecodesign for Sustainable Products Regulation
ETS	Emissions Trading System (EU ETS carbon market)
EU	European Union
EU ETS	European Union Emissions Trading System
EV	Electric Vehicle

<b>Acronym</b>	<b>Full Term</b>
GDP	Gross Domestic Product
GHG	Greenhouse gases
GLCF	Global Landscape of Climate Finance
GPP	Green Public Procurement
GSF	Green-supporting factor (regulatory term)
H2	Hydrogen
I4CE	Institute for Climate Economics
ICO	Instituto de Credito Oficial
IDD	Insurance Distribution Directive
IEA	International Energy Agency
IFI	International Financial Institutions
IORP II	Institutions for Occupational Retirement Provision Directive (EU pension directive)
IPO	Initial Public Offering
IPCEI	Important Projects of Common European Interest
IRA	Inflation Reduction Act
JRC	Joint Research Centre
LIFE	LIFE Programme (EU environmental funding programme)
MFF	Multiannual Financial Framework
MiFID	Markets in Financial Instruments Directive
MS	Member State(s)
NIMBY	Not In My Back Yard
NPBI	National Promotional Bank and Institutions
NZIA	Net-Zero Industry Act
PEF	Product Environmental Footprint
PEPP	Pan-European Personal Pension Product
PP4E	Private Finance for Energy Efficiency
PPA	Power purchase agreement
PPP	Polluter pays principle
PRIIPs	Packaged Retail and Insurance-based Investment Products
PV	Photovoltaic
R&D	Research and Development
RE	Renewable Energy
RRF	Recovery and Resilience Facility
SFDR	Sustainable Finance Disclosure Regulation
SFF	Sustainable Finance Framework
SEI	Stockholm Environment Institute
SIW	(InvestEU's) Sustainable Infrastructure Window
SMEs	Small and Medium-sized Enterprises
STEP	Strategic Technologies for Europe Platform
TSC	Technical Screening Criteria (for EU Taxonomy)

**Acronym**   **Full Term**

TSP	Technical Support Project
UNEP	United Nations Environment Programme
VAT	Value Added Tax
VC	Venture Capital

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## Executive Summary

This report supports the European Union's (EU) 2030, 2040 and 2050 climate goals by identifying the changes needed in private finance flows, the barriers that constrain those changes, and the policy options available to help bridge the **estimated EUR 477 billion annual financing gap** for climate transition investments<sup>1</sup>. Looking ahead, the Commission's impact assessment for the 2040 climate target estimates average annual investment needs of approximately **EUR 660 billion in the energy system and EUR 870 billion in the transport sector** between 2031 and 2050<sup>2</sup>. To guide this transformation, the report addresses three several core questions: (i) how do private finance flows need to change to achieve climate goals; (ii) what barriers exist to mobilising and redirecting finance to needed areas, and away from harmful areas; and (iii) which policies, tools, regulations can help unblock barriers and mobilise/redirect finance?

### The report's objectives are to:

1. Indicate how private finance could be reallocated across the economy to meet climate targets;
2. Identify key barriers and EU policy tools to support this shift; and
3. Recommend policy actions to scale up low-carbon finance and reduce high-carbon investments, while addressing potential social impacts.

**Barriers to private investment in climate transition are found to be multifaceted.** At the project level, low profitability, high upfront costs, and legal uncertainties deter engagement. On the financial sector's side, limited growth and integration of capital markets in EU, short-termism, and data gaps constrain flows to green assets. On the demand side, low creditworthiness among small and medium-sized enterprises (SMEs) and low-income households, over-reliance on grants, and a lack of suitable financial instruments impede project viability. These obstacles require a coordinated response to mobilise additional finance at scale.

**To support this mobilisation, the report presents a comprehensive long list of policy options across seven thematic areas:** the sustainable finance framework and taxonomy, capital markets, prudential regulation, tax policies, public co-funding and subsidies, public procurement policies and related regulations, and industrial and sectoral deep dives. The policy recommendations are based on data analysis, literature review, and expert interviews with stakeholders from the European Commission<sup>3</sup>. This analytical process highlights persistent climate transition investment shortfalls across key sectors—transport, energy, buildings, and industry—as well as in climate adaptation, where gaps are particularly acute. Related barriers to the mobilisation of private capital are described, and these findings inform a focused set of high-impact policy actions.

**Against this background, nine priority policy actions are identified and described in detail.** Each action was selected through a multi-step prioritisation process that included an assessment of a broader long

<sup>1</sup> Andersson, M., Nerlich, C., Pasqua, C., and Rusinova, D., *Massive Investment Needs to Meet EU Green and Digital Targets*, in *Financial Integration and Structure in the Euro Area 2024*, European Central Bank, Frankfurt, 2024, [https://www.ecb.europa.eu/press/fie/box/html/ecb.fiebox202406\\_01.en.html](https://www.ecb.europa.eu/press/fie/box/html/ecb.fiebox202406_01.en.html)

<sup>2</sup> European Commission (2024), *Impact Assessment Accompanying the Communication on the 2040 Climate Target – Part 1*, SWD(2024) 64 final, [https://publications.europa.eu/resource/cellar/6c154426-c5a6-11ee-95d9-01aa75ed71a1.0001.03/DOC\\_3](https://publications.europa.eu/resource/cellar/6c154426-c5a6-11ee-95d9-01aa75ed71a1.0001.03/DOC_3), Pollard & Saveyn (DG CLIMA), *Presentation to the EESC* (18 March 2024), [https://www.eesc.europa.eu/sites/default/files/2024-03/vicky\\_pollard\\_bert\\_saveyn\\_ec - eu climate target 2040 2024.03.18.pdf](https://www.eesc.europa.eu/sites/default/files/2024-03/vicky_pollard_bert_saveyn_ec - eu climate target 2040 2024.03.18.pdf)

<sup>3</sup> Expert interviews were conducted with representatives from the following Directorates-General: DG CLIMA, DG GROW, DG ECFIN, DG FISMA, and DG TAXUD.

list of policy options, informed by the same analytical foundation. The prioritised actions were evaluated based on five criteria: capital mobilisation potential, key enablers, risks and barriers, CO2 reduction potential, and implementation feasibility. Together, these actions were deemed the most impactful and actionable in addressing the EU's climate finance challenges. The final report explores the background and rationale for each policy action in depth, providing the analytical foundation to support their practical implementation.

The nine proposed policy actions within the thematic policy areas include:

- **Industrial Policy**
  - Carbon labels for carbon-intensive products
- **Public Support and Subsidies**
  - Expanded use of budgetary guarantees as a catalyst for private investments under the next Multiannual Financial Framework (MFF)
  - Crowding in private finance in green infrastructure investments
- **Sustainable Finance Framework**
  - Increase pension fund investments in green assets
  - Enhance the operative capacity and potentially complement the Platform on Sustainable Finance
- **Public Procurement**
  - Support demand creation for green products during market scale-up
- **Sectoral – Building Renovation**
  - Loan instrument for energy renovations in buildings
- **Taxation**
  - Fiscal policies for energy efficiency in buildings
  - Tax incentives for renewables and energy efficiency in transport and industry

Each prioritised action is explored in depth in the main report, supported by data and insights gathered throughout the assignment. While the early stages of the study examined a wide range of policy options, the final focus is on these nine measures—identified as the most impactful, implementable, and relevant to EU-level climate finance mobilisation efforts.

Implementing the **Sustainable Finance Framework** (SFF) remains a priority for the European Commission. Strengthening the role of public banks in blended finance and standardising green loan definitions could also help de-risk investments and attract private capital. Feedback from ESA, investors, industry, and civil society points to persistent issues: unclear definitions, fragmented rules, limited sectoral coverage, and institutional constraints. While the 2023 transition finance recommendations and the 2024 SFDR consultation reflected strong positive momentum, the subsequent 2025 Omnibus Simplification Package proposing to amend several of the core instruments draws in the opposite direction.

**Green capital markets** in the EU are expanding rapidly and demonstrating strong resilience, but national-level fragmentation remains a key barrier to further growth. Advancing structural reforms to deepen overall capital market integration, complemented by targeted measures such as improving conditions for long-term, risk-tolerant investment or facilitating risk transfer from banks to capital markets, will be critical to unlocking private capital for the green transition.

**Prudential regulation** can do even more to mobilise private capital for climate action, for instance by lengthening supervisory time horizons and embedding more forward-looking risk indicators in the rulebook. The recent review of the Capital Requirements Regulation (CRR III) and Capital Requirements Directive (CRD VI) already takes important first steps: it introduces mandatory *transition-plan* requirements for banks, strengthens climate-risk stress-testing, and expands Pillar 3 templates for more granular ESG disclosures. These amendments give supervisors explicit powers to scrutinise institutions' ESG risks as part of the regular Supervisory Review and Evaluation Process (SREP), thereby helping to capture the long-term risks and opportunities that arise from climate change.

**Tax policy** offers another lever: harmonised environmental taxes, minimum levies on polluting activities, and targeted incentives, such as research and development (R&D) tax credits or Value Added Tax (VAT) reduced rates can steer capital towards green alternatives. It should be noted that reduced VAT rates aim to support specific sectors but have mixed effectiveness. They can boost demand but may also complicate taxes and reduce revenue. Success depends on implementation and economic context. Any tax initiative will need to be designed to avoid exacerbating energy poverty, e.g. taking into account that the poorest part of the population often lives in the least energy efficient buildings.

While private finance is expected to play the leading role, **public funding** remains essential to crowd in private capital, particularly for high-risk, long-horizon, or adaptation-related projects. Simplifying access to grants and guarantees, combining finance with technical assistance, and publicising success stories can improve uptake and effectiveness.

**Public procurement** has a key role in shaping markets by guaranteeing demand for green products and technologies. This includes extending reverse auctions and expanding mechanisms like the European Hydrogen Bank (EHB) to other sectors. Cross-border coordination and demonstration projects in public spaces can further stimulate innovation and investor confidence.

Finally, **industrial decarbonisation** will require targeted public support, harmonised infrastructure regulation, and instruments that create predictable demand for low-carbon products. Measures to facilitate a just transition, particularly in regions reliant on fossil fuel industries, must also be part of the policy response to ensure social and economic resilience.

The final set of nine priority actions was informed by feedback from relevant Directorate-Generals (DG CLIMA, DG GROW, DG TAXUD, DG ECFIN, and DG FISMA) and other stakeholders, including financial market organisations and climate finance specialists. To the extent possible, we have sought to align the priority actions with and avoided duplication off existing EU initiatives and processes. At the same time the team was encouraged to be innovative and not rule out promising solutions bordering on existing initiatives and processes. Given this trade-off between alignment and innovation, it is important that the present report is seen as an inspirational catalogue rather than a challenge or critique of existing initiatives and processes.

## 1 Introduction

This report supports the achievement of the EU's 2030, 2040, and 2050 climate goals by identifying the changes required in private finance flows, the barriers constraining those changes, and the policy options available to help close the estimated **EUR 477 billion annual financing gap**<sup>4</sup> for climate transition investments. Looking ahead, the Commission's impact assessment<sup>5</sup> for the 2040 climate target estimates average annual investment needs of approximately **EUR 660 billion<sup>6</sup> in the energy system and EUR 870 billion in the transport sector** between 2031 and 2050. The analysis addresses three guiding questions: (i) how private finance flows need to change to achieve climate objectives? (ii) what barriers prevent the mobilisation and redirection of capital to needed areas—and away from harmful ones? and (iii) what policies, tools, and regulations could help overcome these barriers and scale up investment?

Although the EU has made important progress in adopting net-zero targets and introducing climate-aligned legislation, **investment levels remain significantly misaligned with long-term climate goals**. In 2022, **private sector climate investments in Western Europe amounted to approximately EUR 170 billion**, far below the estimated **EUR 930 to 1 530 billion** required annually to remain on track for climate neutrality<sup>7</sup>. Most investments have been directed towards transport, energy, and buildings. However, critical gaps persist, particularly in **grid infrastructure, industrial decarbonisation, and climate adaptation finance**, where progress is slow and uncertainty high.

While public funding plays an essential enabling role, the **scale and diversity of investment required cannot be met by public budgets alone**. A substantial share of the necessary capital will need to come from private sources, commercial banks, institutional investors, households, and corporations. Mobilising this capital will require a **strategic policy response**: one that reduces risk, improves market signals, addresses structural barriers, and enables new forms of collaboration between public and private actors.

At present, project-level debt and equity dominate the financial landscape, with commercial financial institutions providing the majority of capital - especially in the building and waste sectors. Households are key investors in electric mobility, while corporations remain underrepresented, particularly in transport. Without targeted interventions, these patterns are unlikely to change at the speed and scale required.

### The objectives of this study are:

1. To build on the Commission Communication on the 2040 climate targets and related impact assessment, indicate how the allocation of private finance should change in the overall EU economy and in key sectors to mobilise the finance needed to achieve climate neutrality as well as intermediary targets for 2030 and 2040.

<sup>4</sup> Andersson, M., Nerlich, C., Pasqua, C., and Rusinova, D., *Massive Investment Needs to Meet EU Green and Digital Targets*, in *Financial Integration and Structure in the Euro Area 2024*, European Central Bank, Frankfurt, 2024, [https://www.ecb.europa.eu/press/fie/box/html/ecb.fiebox202406\\_01.en.html](https://www.ecb.europa.eu/press/fie/box/html/ecb.fiebox202406_01.en.html)

<sup>5</sup> European Commission (2024), *Impact Assessment Accompanying the Communication on the 2040 Climate Target – Part 1*, SWD(2024) 64 final, [https://publications.europa.eu/resource/cellar/6c154426-c5a6-11ee-95d9-01aa75ed71a1.0001.03/DOC\\_3](https://publications.europa.eu/resource/cellar/6c154426-c5a6-11ee-95d9-01aa75ed71a1.0001.03/DOC_3).

<sup>6</sup> Pollard & Saveyn (DG CLIMA), *Presentation to the EESC* (18 March 2024), [https://www.eesc.europa.eu/sites/default/files/2024-03/vicky\\_polland\\_bert\\_saveyn\\_ec - eu climate target 2040\\_2024.03.18.pdf](https://www.eesc.europa.eu/sites/default/files/2024-03/vicky_polland_bert_saveyn_ec - eu climate target 2040_2024.03.18.pdf)

<sup>7</sup> Klaassen, L., & Steffen, B. (2023). *Meta-analysis on necessary investment shifts to reach net zero pathways in Europe*. *Nature Climate Change*, 13, 58–66. <https://doi.org/10.1038/s41558-022-01549-5>

2. Identify the barriers to climate-related investments and to disinvestments from harmful activities, identify EU policies and tools with the highest potential to contribute to this reallocation. These include but are not limited to sustainable finance policies, Union funding frameworks or programmes, capital market policies (including financial supervision and prudential rules) and other policies that directly or indirectly regulate financial products or instruments.
3. Provide policy actions to increase the availability of private finance to low-carbon activities and to decrease it to high-carbon ones, ideally through solutions that avoid (or cater for) the social impacts of such shifts.

This report provides a structured framework for understanding how private finance flows must evolve and identifies where public policy can make the most impact. It offers an in-depth analysis of sector-specific investment trends, financial barriers, and misaligned incentives, drawing on data and case studies across key sectors. Building on this evidence base, the report presents a long list of actionable policy options - ranging from fiscal incentives and blended finance mechanisms to regulatory reforms and institutional innovations - designed to mobilise, redirect, and scale up private capital towards climate-aligned investments. In doing so, it aims to inform a coherent and ambitious policy strategy that can close the financing gap and accelerate the EU's transition to a climate-neutral economy.

In what follows, the report starts with a description of the methodology used in devising the report. Next, the report highlights the investment gaps in climate finance (**Chapter 3**), followed by a mapping of investment barriers across the private climate finance landscape (**Chapter 4**), and identification of a broad set of policy actions which may contribute to alleviating the identified barriers (**Chapter 5**). Based on Chapter 5, a long list of policy actions is developed and then narrowed to a short list of prioritised policy actions presented in a one-page table format (**Chapter 6**). The short list of prioritised policy actions represents nine proposed actions that could have a meaningful impact on private investment mobilisation, helping the EU achieve its future climate goals. The final chapter (**Chapter 7**) concludes and gives suggestions to further work.

## 2 Methodology

This study applies a robust, multi-stage methodology to identify and prioritise policy actions that can support the mobilisation of private capital for climate investment in the EU, with a particular focus on closing the estimated EUR 477 billion annual investment gap for clean investments and addressing projected financing needs through 2040 and 2050.

### 2.1 Identification of investment gaps and barriers and development of a long list of policy options

The first task focused on mapping existing private climate finance flows and comparing them with estimated investment needs across sectors. The objective was two-fold: to quantify investment shortfalls and to identify systemic barriers to the mobilisation and redirection of private finance. Several key questions were addressed: What is the current allocation of private finance between high- and low-carbon activities in the EU, and how should this allocation evolve through 2030, 2040, and 2050 to align with net zero targets?

To the extent possible, the analysis aimed to identify the main economic sectors concerned—such as energy, buildings, transport, and industry—and the financial sources and actors with the capacity to support the transition. These include bank credit, corporate equity, institutional investment (e.g. pension funds, insurers), and companies' own capital. Care was taken to avoid double counting across actors and instruments. While recognising the importance of private finance for adaptation and resilience, the primary focus remained on financing mitigation and net zero pathways, in view of the scope and analytical challenges of the task. Where appropriate, synergies with adaptation finance have been noted.

The report relied on the following definition and analytical tools:

- **Definition of climate finance:** In the Global Landscape of Climate Finance 2023 report, the Climate Policy Initiative aligns its working definition of “climate finance” with the UNFCCC Standing Committee on Finance’s operational definition. According to this definition, “Climate finance aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts”.<sup>8</sup> In practice, Climate Policy Initiative tracking focuses on primary capital flows directed toward low-carbon, climate-resilient development interventions that yield direct or indirect greenhouse gas mitigation or adaptation benefits.
- **Quantitative data analysis:** The principal data analysed was the Climate Policy Initiative’s 2023<sup>9</sup> and 2024 Global Landscape of Climate Finance (GLCF).<sup>10</sup> This is a rich data set covering Western Europe and Eastern Europe and Central Asia separately, as well as other global regions. It includes

<sup>8</sup> Climate Policy Initiative, *Global Landscape of Climate Finance 2023*, published Nov 2023.

<sup>9</sup> Buchner, B., Naran, B., Padmanabhi, R., Stout, S., Strinati, C., Wignarajah, D., Miao, G., Connolly, J., and Marini, N., *Global Landscape of Climate Finance 2023*, Climate Policy Initiative, San Francisco, 2023, <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2023/>.

Data and literature reviewed for this report reflect information available up to September 2024. Where relevant, key updates from the October 2024 edition of CPI’s Global Landscape of Climate Finance have been incorporated.

<sup>10</sup> Naran, B., Buchner, B., Price, M., Stout, S., Taylor, M., & Zabeida, D. (2024). *Global Landscape of Climate Finance 2024: Insights for COP29*. Climate Policy Initiative. <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2024>

information on financing source, destination sector, and instrument type. This provided a database on climate investments by sector for recent years. The results were compared to data on investment needs, drawn from the European Commission (2021<sup>11</sup>, 2024<sup>12</sup>) and Klassen and Steffen (2023)<sup>13</sup>. Several data gaps were identified, in particular for climate adaptation and for climate investments in Eastern Europe.

- **Systematic literature review:** Conducted to support two objectives—(i) identifying and characterising climate finance flows in Europe and comparing them with estimated investment needs; and (ii) identifying barriers and policy options to scale up private climate finance in the EU.
  - For (i), six core studies as seen in Annex 1 was reviewed to estimate annual investment needs by sector and timeline (2030, 2040, 2050), assess public-private investment shares, and analyse recent trends in brown finance and subsidies. Findings were systematically extracted to identify sector-specific investment gaps and calculate required annual increases in both absolute and percentage terms.
  - For (ii), relevant studies were screened to identify current barriers to private finance and potential solutions. Questions considered included policy feasibility at the EU level and the degree of innovation. The results were compiled in a structured matrix covering solutions across key policy areas—sustainable finance, capital markets, taxation, public subsidies, procurement, and industrial policy.
- **Expert and stakeholder interviews:** Interviews with selected Directorate-Generals units, financial sector organisations and climate finance specialists were conducted in two separate rounds.<sup>14</sup>
  - The first round was general in nature and aimed to complement the literature review by identifying key investment barriers, gathering suggestions to overcome these barriers and mobilise private finance, and refining initial policy or instrument concepts, accounting for sectoral and contextual nuances.
  - The second round of interviews focused on validating the quality and strategic direction of the nine prioritised policy actions. This round aimed to ensure alignment with the European Commission's priorities. To this end, the Commission was asked to review the draft policy actions in advance and provide targeted feedback during the interviews.

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<sup>11</sup> European Commission (2021). *Impact Assessment accompanying the 'Fit for 55' package*. [EUR-Lex - 52021SC0621 - EN - EUR-Lex](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52021SC0621-EN-EUR-Lex).

<sup>12</sup> European Commission. (2024). Impact assessment report accompanying the document "Securing our future: Europe's 2040 climate target and path to climate neutrality by 2050 – building a sustainable, just and prosperous society". <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52024SC0063>

<sup>13</sup> Klaassen, L., & Steffen, B. (2023). Meta-analysis on necessary investment shifts to reach net zero pathways in Europe. *Nature Climate Change*, 13, 58–66. <https://doi.org/10.1038/s41558-022-01549-5>

<sup>14</sup> The interviews were conducted across units and specialist from the European Commission, including: DG CLIMA, DG GROW, DG TAXUD, DG ECFIN, DG FISMA, and RECOVER.

## 2.2 Prioritisation of the policy actions

The starting point for the prioritisation was the long list of **76 policy actions**, compiled during the initial phases of the study. These actions were identified through a triangulation of quantitative data analysis, literature review, and stakeholder consultations, as highlighted above. The long list captured a broad spectrum of instruments addressing barriers across the sustainable finance framework, capital markets, taxation, public co-funding and subsidies, industrial policy, and public procurement. Each policy proposal was categorised and documented in a structured matrix, assessing its alignment with investment barriers, its applicability at the EU level, and its degree of innovation and readiness.

In the first filtering stage, the long list of 76 policy actions was assessed internally by the study team using a set of prioritisation criteria agreed upon with DG CLIMA. These criteria included:

- Effectiveness in mobilising private capital;
- Relevance to addressing identified financing gaps;
- Legal and institutional feasibility within the EU policy framework;
- Expected co-benefits, including emissions reductions and sectoral transformation;
- Potential to be scaled or replicated across Member States.

This assessment led to the development of an initial short list of **30 high-potential policy actions**, which were further refined in consultation with the European Commission and through additional expert interviews.

A second filtering stage was conducted to narrow down the initial short list to a final set of nine priority actions. This step was informed by:

- Targeted feedback from relevant Directorate-Generals (DG CLIMA, DG GROW, DG TAXUD, DG ECFIN, and DG FISMA) and other stakeholders, including internal policy experts contributing to the analytical and policy development process;
- Strategic alignment with other EU initiatives and gaps identified in previous tasks;
- Considerations of complementarity, political momentum, and implementation readiness.

This multi-step filtering process was intended to ensure not only that actions were technically robust, but also that they to the extent possible aligned with and avoided duplication off existing EU initiatives and processes.. At the same time the team was encouraged to be innovative and not rule out promising solutions bordering on existing initiatives and processes. Given this trade-off between alignment and innovation, , it is important that the present report is seen as an inspirational catalogue rather than a challenge or critique of existing initiatives and processes.

## 2.3 Further detailing of the prioritised policy actions

Each of the selected nine priority policy actions was then developed in greater detail (see Annex III), including with information on the policy background, the different options of policy actions that the European Commission could consider, ideas for the practical implementation of the suggested options, expected implementation risks and barriers as well as a summary of the theory of change behind the

recommendation. The full recommendations were then summarized in the form of one-pagers (see chapter 6.2) that include the following components:

- The Policy Objective
- Policy Description
- Policy Option(s) for Implementation
- Implementation Partners
- Alignment with Existing EU Policy Framework
- Capital Mobilisation and CO2 Reduction Potential (where feasible)
- Key Enablers
- Risks and Barriers
- Case studies and Precedents

Overall, the selected actions form the core of the analytical results presented in the final report and provide a practical and actionable roadmap for supporting the green transition through enhanced private capital mobilisation.

### 3 Quantification of the financial shift needed, sectoral perspectives, and possible financing sources

Numerous studies point out that increased private climate investments are necessary for the European Union to reach its climate targets. The studies as seen in Annex 1 have consistently found that high additional investments are needed across all sectors. Still, gaining a better understanding of who is currently investing in which areas of climate change mitigation and adaptation, and where more financing activities (in terms of volume, actor or type of funding) is needed, is necessary to develop targeted instruments to further mobilise private finance.

#### 3.1 Stocktake of private investment flows

Comprehensive data on current levels of private climate finance is scattered, especially when looking not only at secondary / capital market data but also at real-economy data. Yet, estimates do exist. The most comprehensive analysis on global private climate finance is conducted on an annual basis by the Climate Policy Initiative (CPI), which synthesises various data sources<sup>15</sup> using a bottom-up approach. According to CPI (2024), domestic private sector climate investments in Western Europe were estimated at approximately **USD 340 billion annually** in 2021–2022, accounting for **66% of total domestic climate finance** in the region—underscoring the central role of private actors in financing the transition<sup>16</sup>. Data on climate adaptation finance by private investors is extremely scarce, making it difficult to precisely analyse trends or distributions in climate adaptation finance. Globally, only 2% of all tracked private finance is dedicated to adaptation<sup>17</sup>.

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<sup>15</sup> Data sources comprise private finance data of realised projects, including, for example, project-level data from BloombergNEF for large-scale renewable energy projects and proprietary data from the IEA on EV investments at an aggregated level.

<sup>16</sup> Naran, B., Buchner, B., Price, M., Stout, S., Taylor, M., & Zabeida, D. (2024). *Global landscape of climate finance 2024: Insights for COP29*. Climate Policy Initiative. <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2024/>

<sup>17</sup> Ibid.

**The largest shares of private climate (mitigation) finance were used to finance projects in the transport (39%) and the building and infrastructure (34%) sectors.** Within these sectors, significant private climate finance was directed towards the purchase of electric vehicles and building renovations. Energy systems finance accounted for 25% of private climate finance. However, data gaps significantly limit the informative value, particularly since private finance flows within the industrial and agricultural sectors remain largely untracked.<sup>18</sup>

**On average, private climate finance accounts for two thirds of overall climate finance, although there are differences by sector.** Energy systems and transport sectors exhibit a high share of private mitigation finance, with approximately 80% of total mitigation finance coming from private actors, whereas the waste and building sectors display a significantly smaller relevance of private finance in total finance activities (36% and 54%, respectively).<sup>19</sup>

**The landscape of private actors investing in climate projects differs by sector.** Commercial financial institutions account for 60% of private finance overall and are particularly prominent in the building (78%) and waste (65.2%) sectors. Household self-financing is significant in the transport sector (46.3%), driven by high investments in electric vehicles, with lower reliance on bank financing. Corporations contribute a substantial share of overall finance in the energy sector (30.1%), while their private finance in the transport sector is comparatively low (3.3%). Data on the activities of funds and institutional investors is scarce across all sectors except the energy system. In this sector, their investments account for less than one percent.<sup>20</sup>

<sup>18</sup> Buchner, B., Naran, B., Padmanabhi, R., Stout, S., Strinati, C., Wignarajah, D., Miao, G., Connolly, J., and Marini, N., *Global Landscape of Climate Finance 2023*, Climate Policy Initiative, San Francisco, 2023, <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2023/>, Naran, B., Buchner, B., Price, M., Stout, S., Taylor, M., & Zabeida, D. (2024). *Global landscape of climate finance 2024: Insights for COP29*. Climate Policy Initiative. <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2024/>

<sup>19</sup> Ibid.

<sup>20</sup> Ibid. It has to be acknowledged that the low relevance of these investor types might partly be attributed to the CPI methodology which does not include green bond and other sustainability fund related data, as they focus on real-economy data sources, where attributable investments have already been made. Some of institutional and fund's investment activities might hence be hard to track.

### Private finance flows by actor

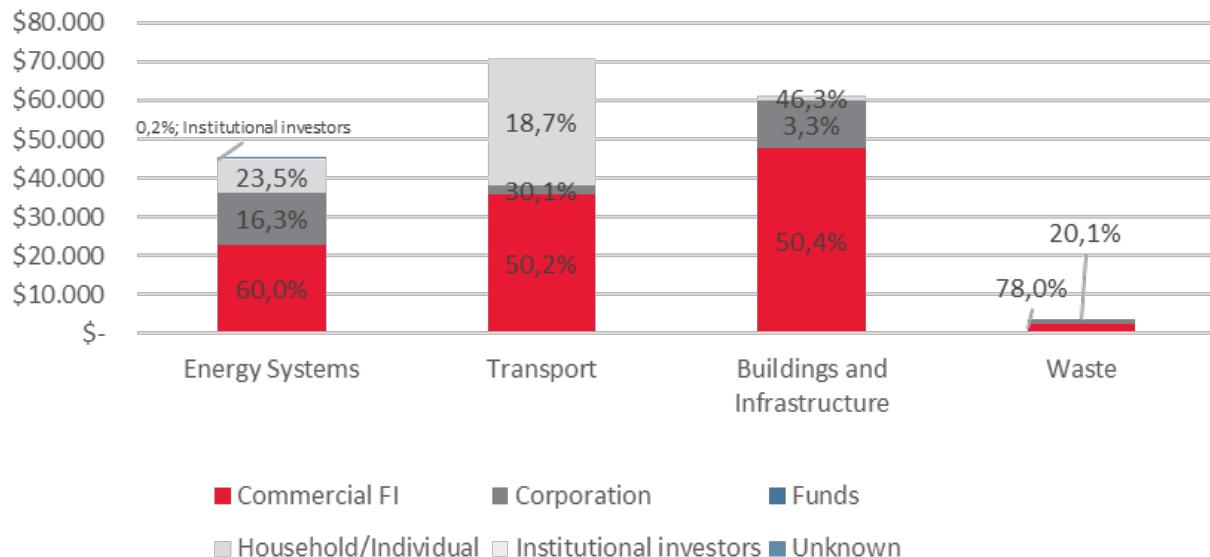


Figure 1: Private climate mitigation finance in Western Europe by actor type.

Source: Own representation, based on CPI (2024)

**Different financial instruments are used in different sectors.** Private climate finance predominantly consists of project-level market rate debt, comprising 59% of the total private finance volumes. Investments in the building and waste sectors are almost entirely financed through these instruments, at 97% and 100% respectively. Conversely, equity-type balance sheet financing<sup>21</sup> is particularly significant for investments in the energy and transport sectors, accounting for 45% and 50%, respectively. Additionally, private climate finance is primarily directed towards domestic activities, exceeding 70% (CPI, 2023).

**Although investments in brown or fossil fuels have significantly declined since 2011, the pace of this reduction is too slow to meet EU climate targets.** A meta-analysis of various modelling studies highlights that fossil investments must be close to zero today (Klaaßen and Steffens, 2023). Despite this, in 2023, Europe's investments in brown energy still reached EUR 78 billion, with EUR 69 billion allocated to fuel supply and EUR 10 billion to power generation from coal, oil, and natural gas<sup>22</sup> (IEA, 2024<sup>23</sup>). Moreover, fossil fuel subsidies remain substantial, with EUR 56 billion in 2021 and a temporary rise to EUR 123 billion in 2022 due to geopolitical events. The phase-out of these subsidies is critical, as current projections suggest excessive future production of coal, oil, and gas, exceeding levels consistent with limiting global

<sup>21</sup> Balance sheet financing is defined as direct debt or equity investment, that appears on the balance sheet of the company or financial institution.

<sup>22</sup> Recalculated using the average 2022 EUR/USD exchange rate of 1.06

<sup>23</sup> The IEA defines Europe in their World Energy Investment 2024 report as European Union and Albania, Belarus, Bosnia and Herzegovina, North Macedonia, Gibraltar, Iceland, Israel, Kosovo, Montenegro, Norway, Serbia, Switzerland, Republic of Moldova, Turkey, Ukraine and United Kingdom.

warming to 1.5°C. Additionally, European institutional investors hold EUR 523 billion<sup>24</sup> in stocks and bonds of fossil fuel companies, accounting for nearly 13% of total institutional investments in fossil fuels.<sup>25</sup>

### 3.2 Climate investment needs and gaps

**Numerous studies estimate climate investment needs at substantial volumes, with many sectors' needs increasing over time.** For this report, six studies<sup>26</sup> that assess investment needs to reach EU climate targets were analysed and compared. Aggregated climate finance needs across various sectors range from approx. **EUR 930 to 1 530 billion per annum until 2050.**<sup>27</sup> As this wide range of investment estimates indicates, the studies differ substantially with respect to the methodology used, the technologies and sectors considered as well as the assumptions made to monetarise investment needs based on technology cost assumptions. Annex 1 provides an overview of the studies including the methodologies applied and the sectors and technologies covered. A comprehensive meta-study is beyond the scope of this assignment, and the report therefore focuses on insights that can be drawn based on relative shares and within-study comparisons, rather than producing a harmonised quantitative estimate across studies.

**Looking at the sectoral distributions of investment needs, the reviewed studies agree that the largest absolute investment volumes will be needed in the transport sector** (approx. 45%-60% of overall investment needs). The second-largest investment needs are identified for the building sector (20%-30%) followed by the energy sector (10-20%).<sup>28</sup> Yet, these figures need to be considered against the fact that investment needs in industry and agriculture are likely underestimated in the reviewed studies. In the industry sector, for example, investments needed to avoid emissions through new production processes, material efficiency and circularity are often not considered.

Figure 2 displays the absolute investment needs for the energy system per sector and their development over time based on the EU Impact Assessment for the 2040 targets (EC, 2024). The numbers show that already between 2021 and 2030, the investments in the energy system need to increase by approx. 50% and need to almost double for the period 2031 to 2050 (not GDP adjusted). Relative to GDP, investment needs (excluding transport) in the 2031 to 2050 period will amount to 3% of the GDP, which is 1,5-2% points higher than average 2011 to 2020 investment levels (EC 2024).

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<sup>24</sup> Recalculated using the average 2022 EUR/USD exchange rate of 1.06

<sup>25</sup> Urgewald E.V., *Investing in Climate Chaos 2024: Institutional Investors \$4.3 Trillion Deep Into the Fossil Fuel Industry*, Urgewald, Sassenberg, 2024, <https://www.urgewald.org/en/medien/investing-climate-chaos-2024-institutional-investors-43-trillion-deep-fossil-fuel-industry>.

<sup>26</sup> The six core studies are the following:

- IC4E (2024): European Climate Investment Deficit report: an investment pathway for Europe's future.
- European Commission (2020): SWD/2020/176: Impact Assessment Report accompanying the document Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people.
- European Commission (2024): Impact Assessment Report accompanying the document Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society
- Klaassen, L., Steffen, B. (2023): Meta-analysis on necessary investment shifts to reach net zero pathways in Europe. Nat. Clim. Chang. 13, 58–66.
- McKinsey & Company (2020): Net-zero Europe. Decarbonisation pathways and socioeconomic implications.
- Institute Rousseau (2024): Road to Net Zero – Bridging the Green Investment gap

<sup>27</sup> Estimate of investment demands across different studies show high variances, due to different methodologies, assumption of cost developments, target systems, coverage years or data usage.

<sup>28</sup> Estimates and ranges cited in this paragraph are based on a comparative assessment on the six studies mentioned in footnote 31.

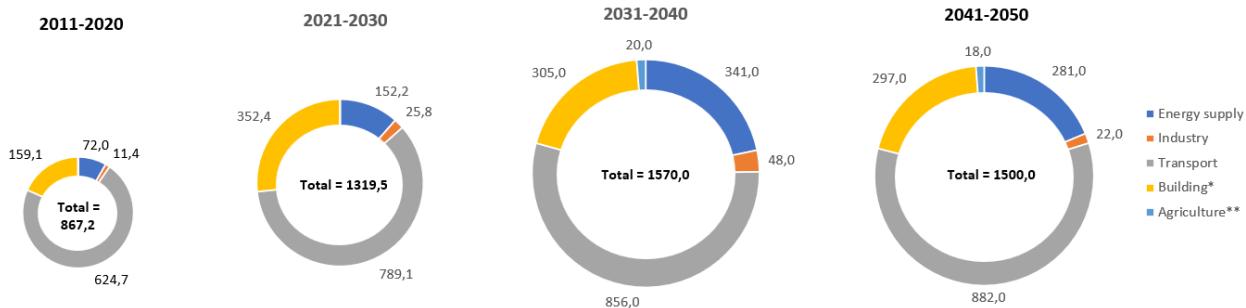


Figure 2: Investment needs in the energy system, per sector and per period, in bn EUR 2023.

Source: Own representation, data from EC 2020 and EC 2022 based on Primes modelling.<sup>29</sup> Figures from EC 2020 for investments between 2011-2020 and 2020-2031 are price-adjusted to EUR2023 based on the HICP price index. \* Building sector comprises investment needs for the tertiary and the residential sector, \*\* investment needs for the agricultural sector were not included in EC 2020

Estimates of climate adaptation needs remain limited, largely due to challenges in categorising investments as adaptation related. Most studies considered do not provide quantified investment needs for adaptation. However, a European Investment Bank (EIB) report<sup>30</sup> estimates that climate adaptation investment needs for the EU27 range between EUR 35 billion and EUR 500 billion annually. UNEP<sup>31</sup> estimates the adaptation finance gap for Europe and Central Asia combined to be under EUR 8 billion per year and further highlights that adaptation finance needs are 10 to 18 times higher than current financial flows. While these estimates vary significantly, there is broad agreement that a substantial adaptation investment gap persists.

**Few studies look comprehensively at investment needs on a *sub-sectoral* level, making it necessary to interpret the existing results with caution.**

- Based on the EU Impact Assessment for the 2040 targets (EC, 2024), the largest sub-sectoral investment requirements are in private road transport, particularly for private cars, at EUR2023 554 billion (per annum, absolute). This is followed by energy grids (EUR2023 169 billion), energy efficiency focused on energy equipment (EUR2023 142.5 billion), commercial road transport, specifically trucks (EUR2023 141.5 billion) and heating (EUR2023 101 billion, per annum, nominal).
- The assessment by the Institute for Climate Economics (I4CE) (2024) highlights for the period between 2022 and 2030 significant investment gaps in railway and electric passenger cars (EUR2022 148 billion, per annum, additional investment needed), energy-renovation of buildings (EUR2022 101 billion), building heating (EUR2022 36 billion), electricity grids (EUR2022 41.5

<sup>29</sup> European Commission, SWD/2020/176: *Impact Assessment Report Accompanying the Document "Stepping Up Europe's 2030 Climate Ambition – Investing in a Climate-Neutral Future for the Benefit of Our People"*, European Commission, Brussels, 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0176>.

European Commission, *Impact Assessment Report Accompanying the Document "Securing Our Future: Europe's 2040 Climate Target and Path to Climate Neutrality by 2050 – Building a Sustainable, Just and Prosperous Society"*, European Commission, Brussels, 2024, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52024SC0063>

<sup>30</sup> EIB (2021). The investment report 2021/2022: Building a smart and green Europe in the COVID-19 era. Luxembourg: European Investment Bank, EIB Investment Report 2020/2021: Building a smart and green Europe in the COVID-19 era

<sup>31</sup> United Nations Environment Programme. (2023). *Adaptation Gap Report 2023: Underfinanced. Underprepared*. Nairobi: UNEP, <https://www.unep.org/resources/adaptation-gap-report-2023>

billion) and renewable energy generation (EUR2022 80.6 billion) with high emphasis on wind power.

- Looking at investment needs in the energy system and parts of the transport sector, Klaasen and Steffen (2023) find that for 2021-2035 absolute investment needs are largest for onshore wind (2021-2035 average of EUR2020 33,8 billion annually), electricity grids (EUR2020 66.4 billion) and rail infrastructure (EUR2020 82.1 billion, nominal). Compared to annual investment levels between 2016 and 2020, they find that largest relative increases are needed for electric vehicle (EV) and hydrogen (H2) charging infrastructure (increase by 1700 % and 950 % needed respectively), electricity storage (increase by 830% needed), low-carbon fuel production (increase by factor 420% needed) and district heating (increase by 100% needed).

Drawing conclusions on the *investment gaps* – i.e. the delta between investment levels and investment needs – remains challenging due to the lack of data on current investment levels and varying estimations of investment needs. Investment gaps by sector are examined in a limited number of studies (IC4E, 2024; Klaassen and Steffen, 2023; EC, 2024). Different methodologies and scarcity of available data significantly limit the conclusions that can be drawn on the nature and concrete size of investment gaps that need to be closed.

Nonetheless, some “big picture” conclusions can be drawn. The sectoral studies that do exist consistently indicate significant absolute investment gaps in the transport sector, particularly in e-mobility and railway infrastructure. At the same time, current investments in the transport sector are also the highest compared to all other sectors, indicating that the investment gap could be partly closed by shifting from brown to green investments. In the industry sector, additional climate-neutrality investment needs are relatively low in *absolute* terms, yet the prevailing investment gap requires the strongest *increase* of investments compared to current levels.<sup>32</sup>

On a *sub-sectoral* level, large gaps compared to current investment levels are in particular identified for renewable energy production from onshore wind and photovoltaic (PV), low-carbon fuel production, district heating, EV and H2 charging stations and electricity storage (Klaasen and Steffen 2023) as well as in wind off-shore, electricity grids, renovation of building, heat pumps and passenger cars (IC4E 2024). It must be noted, however, that these two studies do not assess the full range of sectors and technologies needed for decarbonisation.

Based on the above, the following key points are summarised:

- Different financial actors display a different propensity to invest in different sectors, due to project economics, characteristics and investor expectation and capacity. Currently, the largest shares of private finance come from commercial financial institutions and market-rate debt investments.
- Each sector has its own finance needs and challenges, and none is neglectable or on “the right track”. However, some sectoral challenges should be highlighted:

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<sup>32</sup> European Commission, SWD/2020/176: *Impact Assessment Report Accompanying the Document “Stepping Up Europe’s 2030 Climate Ambition – Investing in a Climate-Neutral Future for the Benefit of Our People”*, European Commission, Brussels, 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0176>.

- The **transport sector** displays highest absolute investment needs, especially due to high investment needs in e-mobility and rail infrastructure. Rather than additional investments, a shift from brown to green investments is needed.
- Investment needs in the **industry sector** are comparatively small in absolute volumes, but when comparing them to current investment levels, it is one of the sectors that needs the steepest increase in investment volumes (EC, 2024). Data gaps make it challenging to evaluate current investment trends in more detail and available estimates are likely to underestimate overall investment needs in industry.
- In the **energy sector**, grid infrastructure displays both a high investment need and gap to current investment levels. Even though often discussed, investment needs in hydrogen, clean fuels infrastructure as well as carbon capture, use and storage (CCUS) are relatively small in absolute volumes. On the contrary, district heating as a key element of the energy network received little attention so far but will require additional investments of on average EUR 43.7 billion annually (Klaaßen and Steffen (2023)).
- The **building sector** faces substantial investment needs in absolute terms accounting for 20-30% of overall requirements. Significant gaps exist in building renovations and heating.

## 4 Barriers to capital mobilisation

Despite the positive trend of private sector investments in climate mitigation and adaptation, the investment gaps highlighted above indicate significant investment barriers for climate action in the EU and elsewhere in the world. An investment barrier is any obstacle or factor that restricts or discourages investors from allocating capital to a particular project, asset or market in general. Investment barriers are multifaceted, and they act on different elements of the investment value chain and financing ecosystem. Furthermore, the mechanisms through which barriers hinder private investments can greatly vary.

In this report, we distinguish between barriers on the **capital supply side**, i.e. the financial sector, the **capital demand side**, i.e. corporates and other real economy actors, as well as **project and asset level** barriers. The following analysis includes some illustrative examples, sectors, segments or economic activities where certain barriers are present. It must be noted that these examples do not represent the comprehensive set of investment barriers in each of the sectors or segments. In addition, there are more ways of grouping climate investment barriers considering the overlaps between some of the factors.

The table below provides an overview of the identified main barriers. These are then detailed further below.

**Table 1. Overview of supply side, asset-level and demand side barriers.**

Supply side barriers	Asset-level barriers	Demand side barriers
<b>Ecosystem &amp; institutional framework</b>		<b>Ecosystem and institutional framework</b>
<b>Financier/investor</b>	<b>Green asset/project</b>	<b>Corporate/household</b>
S6 - Venture and growth capital ecosystem is less mature	A1 - Low profitability, insufficient cash flows	D13 - Weak counterparties
S7 - Financial sector's limited track record in green investments	A2 - High risks and uncertainty of revenues and costs	D14 - Grant addiction
S8 - Short-termism in investment decision-making	A3 - Supply chain immaturity and technical constraints	D15 - Lack of knowledge and technical capacity to execute and finance projects
S9 - Climate risks are not fully internalised by financiers	A4 - Legal and regulatory barriers	D16 - Misaligned incentives and interests, information asymmetries
S10 - Information barriers - functioning of the transparency framework	A5 - Polluting alternative technologies remain profitable and cost-effective	D17 - Public sector promoter constraints
S11- Crowding out of green investments		
S12 Inadequate instruments and mechanisms to facilitate green investments		

## 4.1 Project and asset level barriers

**Project and asset level barriers** are factors that hinder green assets' risk-adjusted return in investment decisions. Simply put, if a green project's expected return does not match its risk profile, investment will not occur — especially when more lucrative brown alternatives exist. Risk-adjusted returns depend on a wide range of factors, including a project's profitability (revenues minus costs) and its risks over its lifetime (and associated uncertainties). Our research highlights the following barriers to climate investments:

**High-level barrier 1: Low profitability, insufficient cash flows.** *Some green projects do not generate sufficient revenues to cover costs or ensure an attractive level of profitability. Insufficient cash flows make their business model unviable for private sector investors.*

**Barrier 1.1: High technology-related operating and unit costs (cost differential between green and brown technologies).** Some green technologies are immature and are still characterised by higher operations and unit costs. For example, the main barrier to the green hydrogen market<sup>33</sup> development is the fact that low-carbon hydrogen, and its applications are currently relatively expensive compared to existing alternatives. Without supporting mechanisms, the current cost differential ("green premium") of low-carbon hydrogen limits investors' ability and appetite to invest in projects. Another example is sustainable liquid fuels, where the most striking barrier to investments is their high production costs, which are currently several times higher than those of fossil-based fuels. High unit costs are often themselves symptoms of underlying causes: limited economies of scale, immaturity of production technologies, high production and feedstock costs, underdeveloped supply chains and inadequate carbon pricing (see further barriers below).

**Barrier 1.2: High capital and financing costs.**

The high cost of capital (both equity and debt) remains a major barrier to corporate climate investment. It deters firms from pursuing capital-intensive projects because expected returns may not meet internal benchmarks. This underinvestment in green projects means fewer opportunities for private financiers to supply capital for these projects. Moreover, high capital costs leave business models more vulnerable to risks and pressure their ability to achieve acceptable risk-adjusted returns. Capital-intensive green projects (e.g. renewable energy reliant on debt financing) are especially exposed to capital costs constraints. Another example is green buildings: rising interest rates following the Covid pandemic have further eroded the affordability of green building and retrofit projects, forcing reliance on owners' equity and limiting overall uptake.

**Barrier 1.3: Significant upfront capital investment needs.** Many green projects require high upfront capital expenditures, which raise financing needs, increase associated costs, and ultimately affect affordability for end users. These investment requirements often weaken the economic feasibility of projects—particularly where future savings or revenues do not fully offset the initial costs. This is especially relevant in sectors like electric vehicles, heat pumps, and hydrogen infrastructure, where high capital intensity combines with elevated risk and limited commercial demonstration, deterring private

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<sup>33</sup> Gilles, F. and Brzezicka, P., *Unlocking the Hydrogen Economy — Stimulating Investment Across the Hydrogen Value Chain: Investor Perspectives on Risks, Challenges and the Role of the Public Sector*, European Investment Bank, Luxembourg, 2022, <https://www.eib.org/en/publications/unlocking-the-hydrogen-economy>.

investment. However, demonstration projects require large capital expenditures relative to their risk profile.<sup>34</sup>

**Barrier 1.4: Lack of scale-efficiencies, high transaction costs.** Small decarbonisation projects suffer from inefficiencies of scale. This is a typical investment barrier for residential **energy efficiency investments** in the housing sector, where projects are fragmented across multiple small beneficiaries. Whereas large projects may have positive economic returns, small individual investments tend to have much lower, even negative returns. Transaction costs for planning and financing can be disproportionately high for individual energy efficiency measures, whereas the limited project size often does not trigger full commercial attention.<sup>35</sup> Inefficiencies of scale can result from the place-based complexity of projects, as illustrated by **nature-based solutions** in Europe. Each project (e.g. wetland restoration), is designed to fit its local context, with differences in land ownership, regulation and exposure to (environmental) risks. Place-based complexity makes it difficult to scale investments through direct replication. This complexity, compounded with the small scale of projects, creates challenges for private sector investment, as the costs of due diligence can outweigh the commercial benefits.<sup>36</sup> Similarly, fragmentation increases transaction costs and reduces the competitiveness of the **forestry sector** and related industries. Fragmentation of ownership and the small size of forest holdings lead to economic inefficiencies (higher transaction and operating costs), discourage investment in sustainable forestry practices.<sup>37</sup>

**Barrier 1.5: Public goods from adaptation and mitigation projects do not generate (sufficient) revenues.** Many climate adaptation projects—and some mitigation initiatives such as nature-based solutions—primarily generate public goods whose societal benefits (e.g. flood protection, biodiversity preservation, urban cooling) are not easily monetised. These projects often do not yield short-term, project-level revenues, making them less attractive to traditional private investors seeking risk-adjusted returns. While this does not preclude private sector involvement altogether, it necessitates innovative approaches to structuring revenues—such as outcome-based payments, carbon markets, or public-private partnerships—without which these investments may struggle to attract commercial finance at scale.

**Barrier 1.6: Deficient revenue mechanisms and participation models for private sector involvement in large public projects.** The decarbonisation of the energy sector is enabled by large infrastructure projects often carried out by state-owned natural monopolies, such as electricity network expansion projects. Such infrastructure projects require large long-term investments, in which public-private partnership models provide opportunities for private sector participation. Yet, conflict of interest between private and public sector can be a barrier. Private sector investors require mechanisms that provide clarity over the revenue streams and contract terms, while governments and utilities want to ensure delivery and service quality. In the absence of adequate revenue mechanisms, private sector financing is difficult to unlock. Experience in some countries provides examples of models that have shown success in driving private

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<sup>34</sup> Ibid.

<sup>35</sup> European Investment Bank, *Greening the Financial Sector: A Central, Eastern and South-Eastern European Perspective*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/greening-the-financial-sector>

<sup>36</sup> Hudson, G., Hart, S., and Verbeek, A., *Investing in Nature-Based Solutions: State-of-Play and Way Forward for Public and Private Financial Measures in Europe*, European Investment Bank, Luxembourg, 2023, <https://www.eib.org/en/publications/investing-in-nature-based-solutions>

<sup>37</sup> European Investment Bank, *Investment Barriers in the European Union 2023: A Report by the European Investment Bank Group*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/investment-barriers-in-the-european-union-2023>

investment (concessions and build-own-operate-transfer models) can enable investment in grid infrastructure while providing certainty for investors and remaining accountable to government.<sup>38</sup>

**High-level barrier 2: High risks and uncertainty of revenues and costs:** *In addition to barriers affecting the level of revenues and costs, the expected volatility of these parameters represents another type of hindering factor. The level of cash flows and associated volatility is a function of different risks.*

**Barrier 2.1 Volatility and uncertainty of future revenues:** The power sector illustrates this barrier very well. Volatile **wholesale electricity prices** create uncertainty for renewables companies over the impact on revenues and future investment. As renewable capacity grows, power production from these sources is also reaching unprecedented levels, occasionally resulting in negative prices and increased volatility.<sup>39</sup>

**Barrier 2.2. Volatility and uncertainty of future energy and carbon prices:** For firms a major barrier to decarbonisation investments is related the uncertainty about future energy and carbon costs, especially in combination with uncertainty about regulation and taxation. These concerns affect the incentive to decarbonise both for frontrunners and laggards, expecting more stringent regulation or delays in such requirements, respectively. Uncertainty reduces willingness to invest for both groups of firms. Firms' unwillingness to investment in decarbonisation results in limited financing demand from the private financial sector.<sup>40</sup>

**Barrier 2.3. Uncertainty of future demand.** Investors may avoid allocating capital to technologies with uncertain demand. Several difficult-to-predict and uncertain factors affect future demand: technological maturity, policy support, competitive landscape, national regulation with regards to licensing and approval processes. For instance, in the case of **sustainable fuels** uncertainty remains regarding which fuels will prove to be technologically superior, especially in shipping. The first-generation biofuel liquid fuel market for road transport is well established, but the market for other modes of transport is at an earlier stage, with demand and supply centred around single early adopters and initial demonstration plants. Sustainable liquid fuel supply chains have not been formed, and intermediaries with respective business models are missing from the market.<sup>41</sup> In the case of **clean hydrogen**, despite initiatives to create offtake certainty for investors such as the European Hydrogen Bank (EHB), offtake and import arrangements secure insufficient volumes<sup>42</sup>. Demand risk is a salient bankability barrier for **renewable energy** projects. One avenue for projects to generate stable cash flows is commercial power purchase agreements (PPAs). However, the commercial PPA market is constituted by a relatively small number of corporate buyers, due to the associated complexities and counterparty risk requirements. Interest in

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<sup>38</sup> International Energy Agency (IEA), *Electricity Grids and Secure Energy Transitions*, IEA, Paris, 2023, <https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions>

<sup>39</sup> International Energy Agency (IEA), *World Energy Investment 2024*, IEA, Paris, 2024, <https://www.iea.org/reports/world-energy-investment-2024>

<sup>40</sup> Revoltella, D. (ed.), *Investment Report 2023/2024: Transforming for Competitiveness*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/investment-report-2023>.

<sup>41</sup> European Investment Bank, *Financing Sustainable Liquid Fuel Projects in Europe: Identifying Barriers and Overcoming Them*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/financing-sustainable-liquid-fuel-projects-in-europe>.

<sup>42</sup> McWilliams, B. and Kneebone, J., *Lessons from the European Union's Inaugural Hydrogen Bank Auction*, Bruegel, Brussels, 2024, <https://www.bruegel.org/analysis/lessons-european-unions-inaugural-hydrogen-bank-auction>.

commercial PPAs continues to be constrained by regulatory hurdles. In addition, few off takers are creditworthy enough to be accepted as commercial PPA counterparts by financiers.<sup>43</sup>

**Barrier 2.4. Risks and uncertainty related to changes in the regulatory, policy and legal environment.** This barrier relates to the uncertainty and potential challenges companies face due to changes in government policies, laws, or regulations related to environmental standards and clean energy initiatives. These risks can arise from shifts in subsidies, tax incentives, emission limits, or renewable energy targets, which can significantly impact the financial viability and operational strategy of green technologies.

**Barrier 2.5 Completion risk of large-scale mitigation infrastructure investments, for example electricity grids.** Completion risk is a salient barrier for grid investments and similar large scale infrastructure projects. The main phases of grid infrastructure project development (scoping, permitting and construction) are subject to delays. In the scoping phase, delays may arise from public opposition, changing legislation, difficulties securing funds, obtaining land, and incompatibility with local conditions. During the permitting phase, delays can result from complex procedures, a lack of personnel, and successful appeals against the project. In the construction phase, delays can be caused by supply chain constraints, a shortage of skilled workers, site access, and technical difficulties.<sup>44</sup> Completion risk is a prominent factor in bankability analysis of large-scale infrastructure projects.

**Barrier 2.6: Technology risk of new decarbonisation technologies.** New decarbonisation technologies are still not bankable due to their performance risk, i.e. the risk that output and outcomes of a technology will not meet expectations set out in the financing model. Performance risk is also related to construction and operation risks. Financiers usually require that a technology's performance is demonstrated in industrial-scale applications. The lack of industrial-scale projects therefore hinders investors' acceptance of new technologies. For example, technology risk is a salient barrier in **sustainable liquid fuel** production. Current commercially available production pathways primarily produce biodiesel and bioethanol for road transport. Numerous pathways are being developed for processing additional advanced and waste-based feedstocks to produce various fuels. Such novel technologies are vital for meeting the expected demand for sustainable liquid fuels but have not yet been deployed at commercial scale.

***High-level barrier 3. - Supply chain immaturity and technical constraints.*** *The business case of green technologies depends on the functioning of their direct supply chains as well as infrastructures that enable their usage.*

**Barrier 3.1: Supply chain immaturity.** The use of technological solutions depends on the readiness of the value chain. Bottlenecks in the supply chain, such as raw material sourcing, obstruct the value chains of key decarbonisation technologies and lead to higher unit costs and supply chain risks. In the case of **renewables** existing and planned capacity to source raw materials, including mining and recycling, is insufficient and too geographically concentrated to meet rising demand. For **electric vehicles**, investment is needed to diversify battery production and reduce lead times in raw materials extraction. For **clean**

<sup>43</sup> European Investment Bank, *Investment Barriers in the European Union 2023: A Report by the European Investment Bank Group*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/investment-barriers-in-the-european-union-2023>.

<sup>44</sup> International Energy Agency (IEA), *Electricity Grids and Secure Energy Transitions*, IEA, Paris, 2023, <https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions>

**hydrogen** solutions are still at nascent stage, with value chains not yet sufficiently developed to scale demand for investments.<sup>45</sup> Value chain barriers affected **green building** and **home renovations**: the difficulty of sourcing materials (during the covid pandemic), access to skilled labour for renovations, and high input costs (after the energy crisis) have set back investments. Feedstock is a key factor in the cost-efficient production of **sustainable liquid fuels**. For this reason, promoters develop their projects in proximity to low-cost and abundant supplies of electricity, carbon dioxide, and/or bio-feedstock. However, the limited number of optimal production sites means feedstock availability is a concern for the market participants (e-fuel and biofuel).<sup>46</sup>

**Barrier 3.2: Infrastructure constraints and bottlenecks limiting further penetration of green technologies.** This barrier denotes technical constraints posed by the infrastructures required for the uptake of green technologies. This is well exemplified by the relation between **renewable energy** projects and **grid capacity**. The International Energy Agency reports that least 3 000 GW of renewable power projects are waiting in grid connection queues globally – equivalent to five times the amount of solar PV and wind capacity added in 2022. This shows grids are becoming a bottleneck for transitions to net zero emissions. While investment in renewables has been increasing rapidly – nearly doubling since 2010 – global investment in grids has barely changed, remaining static at around EUR 283 billion per year.<sup>47</sup> Similar technical constraints exist in the uptake of **electric vehicles** and being limited by the **charging infrastructure**.

**High-level barrier 4. – Legal and regulatory complexity hamper green projects.**<sup>48</sup> The barrier is primarily related to the complexity inherent in the implementation of existing legal and regulatory frameworks. The challenge arises from inconsistencies, overlaps or gaps between different provisions and their practical enforcement. In the context of energy efficiency in buildings, financiers have frequently highlight barriers such as:

- The absence of clear minimum performance standards applicable to existing buildings (now directly addressed in the EPBD recast (2024));
- Insufficient harmonisation of Energy Performance Certificates (EPC) frameworks across Member States (now directly addressed in the EPBD recast (2024));
- Misalignment between EU Taxonomy criteria and EPCs (will be addressed through future alignment of the Taxonomy with the EPBD);
- Weak obligations or enforcement mechanisms concerning the requirement to obtain EPCs.

With the transposition of the EPBD recast (2023) in 2026, these barriers should largely be solved in the medium term. Simplifying and clarifying the regulatory environment, as well as ensuring coherence

<sup>45</sup> Net Zero Asset Owner Alliance & United Nations Environment Programme Finance Initiative (UNEP FI), *Unlocking Investment in Net Zero*, UNEP FI, Geneva, 2023, <https://www.unepfi.org/publications/unlocking-investment-in-net-zero>.

<sup>46</sup> European Investment Bank, *Financing Sustainable Liquid Fuel Projects in Europe: Identifying Barriers and Overcoming Them*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/financing-sustainable-liquid-fuel-projects-in-europe>

<sup>47</sup> International Energy Agency (IEA), *Electricity Grids and Secure Energy Transitions*, IEA, Paris, 2023, <https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions>; Recalculated using the average 2022 EUR/USD exchange rate of 1.06

<sup>48</sup> Note the focus here is more on lack of enablers, rather than changes in the legal environment, which is picked up under risks.

between EU-level frameworks and national implementation, is critical to overcoming these implementation complexities and effectively mobilising green investments.<sup>49,50</sup>

**High-level barrier 5. - Polluting alternative technologies remain profitable and cost-effective.** Many environmentally harmful technologies and projects are still highly profitable and cost-effective, due to the fact that such projects do not bear the total cost of externalities and are supported by direct and indirect subsidies. The European Environment Agency (EEA) reports that fossil fuel subsidies amounted to about EUR 56 billion over the period 2015-2021 and increased to EUR 123 billion in 2022 related to post-COVID recovery and Russia's invasion of Ukraine. In parallel, the International Energy Agency highlights that oil refinery margins and profits were record high in 2022.<sup>51</sup> Carbon-intensive projects thus continue to generate demand and attract investment. Even if a green technology become profitable, profit-maximising investors will be attracted to finance its brown alternative if it offers higher risk-adjusted returns.

## 4.2 Supply-side barriers (financial sector)

Financial sectors barriers are related to the capacity and willingness of financial intermediaries in the financial ecosystem to allocate capital to climate mitigation objectives. These sector barriers typically do not affect green projects' risk-adjusted returns directly, but rather constraint the available capital or hinder capital flows to green projects, affect financial institutions' ability to assess the environmental attributes of projects and counterparts. Barriers can be of legal and regulatory nature, but also result from market structures, institutional frameworks and fundamental behavioural traits of investors.

**High-level barrier 6. Venture and growth capital ecosystem is less mature, which hampers development of new climate technologies.** The EU's net zero goals depend on the successful development and scaling up of new low-carbon technologies, which requires risk capital provided by venture capital (VC) and private equity. The shortcoming of the EU's innovation capacity and underlying financial ecosystem is in the centre of the Draghi report on the future of European competitiveness.<sup>52</sup> The European venture and private equity ecosystems are not functioning up to its full potential and cannot match the large investment needs. The ecosystem is less developed compared to other advanced economies (especially in the United States). There is large gap between the US and the EU in cleantech funding activity. This gap is somewhat less pronounced in the cleantech segment versus other segments, which indicates that supporting policies have been effective in this segment.<sup>53</sup> In the first half of 2025 the European Commission launched the Startup and Scaleup Strategy to address the most pressing challenges hampering the venture and growth capital ecosystem<sup>54</sup>.

<sup>49</sup> European Investment Bank, *Greening the Financial Sector: A Central, Eastern and South-Eastern European Perspective*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/greening-the-financial-sector>

<sup>50</sup> These issues are addressed by the revised Energy Performance of Buildings Directive (EU/2024/1275, EPBD) which need to be transposed into national laws by mid-2026.

<sup>51</sup> International Energy Agency (IEA), *Oil 2023*, IEA, Paris, 2023, <https://www.iea.org/reports/oil-2023>

<sup>52</sup> Draghi, M., *The Future of European Competitiveness – A Competitiveness Strategy for Europe*, European Commission, Brussels, 2024, [https://commission.europa.eu/topics/eu-competitiveness/draghi-report\\_en](https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en)

<sup>53</sup> Ménieré, Y. and Revolletta, D., *Financing and Commercialisation of Cleantech Innovation*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/2024003-commercialisation-of-clean-and-sustainable-technologies>

<sup>54</sup> EU Startup and Scaleup Strategy - European Commission, [https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/jobs-and-economy/eu-startup-and-scaleup-strategy\\_en](https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/jobs-and-economy/eu-startup-and-scaleup-strategy_en)

**Barrier 6.1. Institutional investors are too risk averse to provide cleantech venture capital and private equity.** Cleantech venture capital and private equity funds are encountering fundraising challenges. It is difficult to raise capital from large institutional investors, such as pension funds and insurers, who are too risk averse to engage in cleantech. There are numerous factors responsible for this, some of which are institutional. For example, Invest Europe reports “that EU law requires banks and insurers to hold disproportionately high amounts of capital when making investments in long-term, diversified funds, making these investments comparatively more expensive.” Invest Europe highlights that pension funds in the United States allocate a significant 11% of their portfolios to private equity, venture capital, and infrastructure investments, which is in stark contrast to the EU, where the 2022 allocation was just above 4%.<sup>55</sup>

**Barrier 6.2 There is shortage of specialist cleantech investors.** There are not enough specialist investors in the cleantech segment due to the described fundraising challenges and the lack of specialist knowledge. An interview with the European Investment Fund (EIF) revealed that there is a lack of large-scale climate and environmental focused funds in Europe. This is the case for the energy sector, where there is the most expertise, and the dearth of knowledge is even more pronounced for other sectors.

**High-level barrier 7. The financial sector has a limited track record of green investments and green asset classes.** The limited track record of financiers in green investments presents a significant barrier to financing sustainable projects. Many financial institutions lack sufficient experience with the unique risk profiles, technologies, and market dynamics associated with green investments. Without a proven track record, financiers may be hesitant to allocate capital to sustainable investments. For example, many commercial banks face uncertainties regarding energy efficiency investments since they represent, in many cases, a relatively new asset class.<sup>56</sup>

**High-level barrier 8. Short-termism in investment decision-making does not favour green investments.** Investment decisions often focus on short-term returns, leading to a preference for projects that yield short-term financial gains. Many green investments typically offer long-term benefits but may require higher upfront costs or longer time horizons for profitability. As a result, short-term financial pressures can deter investors from financing green projects. Similarly, short-termism is also reflected in the discounting of future climate risks, even if the magnitude of such risk is sizeable. Short-termism is an inherent characteristic of financial markets, yet there are institutional factors that can alleviate or aggravate its effects.

**Barrier 8.1. Prudential and accounting frameworks disincentivise some long-term investments.** Some industry experts highlight the deficiency of prudential and accounting frameworks for long-term investors, such as insurers, pension funds, and sovereign funds, who can support projects with extended horizons, including infrastructure and energy transition. Frameworks lack sufficient specification of hold-to-maturity or hold-to-duration asset classes with criteria protecting these asset classes from short-term trading book-like shocks. Current frameworks often penalise these investors for the volatility or illiquidity

<sup>55</sup> Invest Europe, *Delivering the European Transition: Our 12 Priorities for a More Competitive Union*, Invest Europe, Brussels, 2024, <https://www.investeurope.eu/policy/forward-2024-2029/>

<sup>56</sup> European Investment Bank, *Greening the Financial Sector: A Central, Eastern and South-Eastern European Perspective*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/greening-the-financial-sector>

of assets even if those are selected on the basis of long-term yields.<sup>57</sup> Prudential and accounting regimes associate long-term with high levels of uncertainty, volatility and liquidity risks. There is a perspective in the market that long-term presents a different risk profile, which needs to be analysed and calibrated in a specific way.<sup>58</sup>

**High-level barrier 9. Long-term climate risks are not fully internalised by financiers and investors.** In recent years, substantial progress has been made in integrating climate risks into financial institutions decision-making processes either through regulatory, supervisory or voluntary market-led initiatives. However, long-term climate risks are not fully internalised by the financial sector owing to multiple factors outlined in the previous sections, such as short-term decision-making horizons, uncertainty about future carbon prices, credibility of climate and environmental commitments and policies. This leads to under-pricing of long-term climate-related risks, potentially misallocating capital toward carbon-intensive industries while underinvesting in sustainable alternatives.

**Barrier 9.1. Lack of historical data and methodological challenges:** The lack of historical data and methodological difficulties in measuring climate risk pose significant challenges for accurately assessing the financial impacts of climate change. Since climate-related risks have limited historical precedent, exhibit non-linearities (tipping points), traditional risk models struggle to capture the full scope and frequency of these events. Furthermore, the complexity of integrating long-term climate projections, varied regional impacts, and evolving regulatory landscapes adds to the methodological difficulties. This gap in reliable data and consistent methodologies hinders financial institutions from effectively incorporating climate risk into decision-making, leading to potential underestimation of future climate-related losses.

**Barrier 9.2 Prudential frameworks are not calibrated for long-term climate risks.** Prudential frameworks put emphasis on the measurement and mitigation of relatively short-term risks. Currently, there is no clear financial risk differential between environmentally harmful and sustainable assets. Current risk assessments depict the future as an occurrence of the phenomena witnessed in the past. This proves to be suboptimal to capture long-term risks such as the current climate-related financial risk.<sup>59</sup> Long-term climate risks present conceptual<sup>60</sup> and methodological challenges for prudential regulation (see also following paragraphs).

**High-level barrier 10. Information barriers (functioning of the transparency framework).** Information barriers refer to factors that influence an investor's ability and willingness to make a balanced judgement of a project risks, financial returns, societal benefits and potentially harmful effects. Information barriers are also related to factors that hinder transparency regarding financial intermediaries' activities. The previous years have seen a large number of policy interventions to close information barriers in the financial sector. While policies have addressed the information gaps, more time is needed until the full

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<sup>57</sup> This is illustrated by the recent volatility adjustments on equities in the Insurance Capital Standard.

<sup>58</sup> Eurofi, *Developing a Stronger European Investment Capacity*, Eurofi, Brussels, 2024, <https://www.eurofi.net/session/developing-a-stronger-european-investment-capacity/>

<sup>59</sup> Ibid

<sup>60</sup> A key conceptual question is whether prudential regulation should concern itself with long-term risks, considering that financial institutions can, in principle, adapt over time by reshaping their business models and investment portfolios

benefits materialise. More importantly, there are residual information barriers, and inconsistencies in the current frameworks.

**Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements.** Currently, transparency requirements still suffer from lack of detail, leading to heterogeneous interpretation and potentially misleading statements for consumers and investors. For example, there are perspectives in the industry that climate benchmarks do not adequately promote active investment strategies and investor engagement, and greenhouse gas intensity-based metrics are not effective in reducing absolute emissions. Financial institutions' disclosure requirements allow considerable flexibility in defining key concepts, which undermines comparability across institutions, their client advisory practices, and the sustainable products they manage. The flexibility in the consideration of client preferences further exacerbates this issue.<sup>61</sup> For example, the Joint European Supervisory Authorities (ESA) Opinion on the assessment of Sustainable Finance Disclosure Regulation (SFDR) highlights that "SFDR allows very different methodologies for the definition of sustainable investments, which ultimately reveals a great disparity between products with the same SFDR classification and disclosing the same level of sustainable investment. As a result, SFDR has opened the door to all kinds of greenwashing practices" (ESA, 2024).

**Barrier 10.2 High complexity and usability issues of the transparency framework.** Market practitioners report a number of complexity and usability issues with the current transparency frameworks. The availability of high-quality data is crucial to support both the use of sustainable finance tools and financial institutions' disclosure obligations, yet this remains limited. The usability and consistent application of the EU Taxonomy, alongside the SFDR, also present difficulties. Furthermore, there is a need for greater alignment and coherence across various disclosure regulations. The sequencing of policies has added to the complexity. Concerns about potential allegations of greenwashing, coupled with the need for coherent and consistent transition plans, further complicate matters. Lastly, while noting positive developments on the harmonisation of European Sustainability Reporting Standards with other international standards, the international application and interoperability challenges add another layer of difficulty for global financial institutions. The European Commission is aware of the burden posed by the current frameworks. The proposed 'simplification omnibus' aims to streamline aspects of the EU sustainable finance framework, and the upcoming review of the SFDR is expected to address key usability and coherence issues.

**Barrier 10.3 Transition activities are not sufficiently captured by frameworks.** Market practitioners believe that the current sustainable finance framework does not capture transition finance sufficiently. The absence of common EU definitions, labels or EU sectoral pathways are mentioned as main obstacles. Banks have developed methodologies to identify key sectors and set portfolio-level decarbonisation targets. The types of financial instruments for the provision of transition finance that are already available in the market are similar to those available for other forms of sustainable finance. However, when using these tools to provide transition finance, financial institutions must overcome additional hurdles due to the uncertainty linked with the forward-looking nature of integrating transition targets into these financing tools, the limited availability of credible data and the additional scrutiny companies may face, including the risk of accusations of greenwashing. The issue regarding how to represent transition finance

<sup>61</sup> Vadeloize, V, *A Guide to the Next Sustainable Finance Agenda*, Finance Watch, Brussels, 2024, <https://www.finance-watch.org/policy-portal/sustainable-finance/report-a-finance-watch-guide-to-the-next-sustainable-finance-agenda/>

efforts in a comparable way, however, remains unresolved. Banks resort to complementary indicators for a measure of efforts made by financial and non-financial undertakings in the transition path towards sustainability.

**High-level barrier 11. Crowding out of green investments.** Even when green investments of the private sector yield attractive returns, they can be crowded out by other investments, particularly when capital supply is tight, and projects are competing for a limited amount of liquidity. Crowding out can take multiple forms.

**Barrier 11.1 Private finance is crowded out by public funding.** Bankable projects that are well positioned to be financed by the private sector can be crowded out by public sector funding. This is often the case when grant funding or concessional finance is not well calibrated. An illustrative example is when affluent households, who would otherwise be able to market-based financing, benefit from energy-efficiency grants or subsidised loans. Or when a public financing institution finances a low-risk solar PV project on a concessional basis, thereby crowding out commercial banks. Crowding out can take place on case-by-case basis. However, there are sectors where the dominance of public instruments can reduce the willingness of project promoters to consider private financing. For example, the market for **nature-based solutions** in Europe is dominated by public sector funding in the form of grants.<sup>62</sup> This reflects the sentiment that nature-based solutions are contributing to public goods. This focus, although positive, may lead to a lower, or even missing, appetite for interest-bearing forms of financing. If a project owner is looking for additional financing, the wide availability of grant funding means few entities look to engage the private sector for repayable capital. Along with other barriers, this has long-term implications: it limits the project pipeline for commercial investors, crowds out a range of different types of repayable investors from the market, and leads to inefficient project pipeline building.<sup>63</sup>

**Barrier 11.2 Crowding out by higher return “brown” or risk-free investments.** Higher return investments can crowd out green investments, even if green investments generate positive returns. The same effect can be observed with risk-free investments, for example in high credit quality government bonds, crowding out higher risk green investments. Such crowding out is the result of rational investor behaviour and is closely related to project-level barriers outlined above.

**High-level barrier 12. Inadequate instruments and mechanisms to facilitate green investments.**

**Barrier 12.1 The (green) securitisation market in underdeveloped.** Securitization enables banks to both release regulatory capital and access capital markets to refinance loans for wholesale and retail clients. Through these transactions, lenders can reinvest freed-up capital into green projects, while investors in capital markets can directly support renewable financing through securitization channels. The High-Level Forum on the Capital Markets Union (CMU) noted in its June 2020 report that securitisation has an enormous potential to advance the CMU and green finance. However, Europe is currently a laggard with

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<sup>62</sup> However, as noted under other constraints, the limited scale of many nature-based solution raises costs while the broad nature of the benefits mean that these solutions tend to require public financing contributions

<sup>63</sup> Hudson, G., Hart, S., and Verbeek, A., *Investing in Nature-Based Solutions: State-of-Play and Way Forward for Public and Private Financial Measures in Europe*, European Investment Bank, Luxembourg, 2023, <https://www.eib.org/en/publications/investing-in-nature-based-solutions>

respect to green securitisation.<sup>64</sup> The topic is a current policy focus: the European Green Bond Standard regulation includes specific provisions on green securitization, and the European Commission recently initiated a targeted consultation to evaluate the effectiveness of the EU securitisation framework.

**Barrier 12.2 Mechanisms to pool capital, reduce transaction costs and transfer risks.** This barrier refers to inadequate instruments and market mechanism to resolve structural challenges of green investments, such as transaction costs and risks (as presented above as asset-level barriers). For example, few mechanisms provide readily available options to finance green buildings or renovations. Some governments and banks are experimenting with green mortgages, but uptake has so far been limited due to factors such as low customer demand and complicated application processes, as well as a lack of lending capacity or willingness by banks to offer these products. In France, for instance, a recent initiative to provide zero-interest loans for small renovations was largely snubbed by banks and consumers alike until the rules were simplified and revamped in 2024. Financial institutions often point to a lack of available data and the difficulty of finding the right balance between the financial risk and return on smaller loans.<sup>65</sup>

### 4.3 Demand-side barriers (real economy)

The demand-side barriers stem from the characteristics and limitations of end-users—such as households, SMEs, industry actors, and public sector entities—who ultimately make or implement investment decisions. Challenges such as low creditworthiness, limited technical capacity, reliance on grants, and misaligned incentives significantly affect the bankability of projects and the willingness or ability of private actors to invest. This section outlines key high-level demand-side barriers that constrain private investment uptake and identifies specific institutional, behavioural, and informational obstacles across sectors.

**High-level barrier 13. Weak counterparties represent high financial risk and have limited capacities to execute green investments.** Investment decisions usually involve an assessment of counterparty risk, i.e. the possibility that the other party involved in a financial transaction may default on their obligations. This risk can arise from insolvency, financial instability, or operational failures of the counterparty. Some green investments are within the remit of entities, such as SMEs and low-income households) which have a weak financial standing and/or a limited capacity to execute green investments.

**Barrier 13.1 Low creditworthiness of SMEs, households and other entities.** Financiers typically assess credit risk based on traditional financial metrics, which may disadvantage smaller enterprises or lower-income households. As a result, these entities face higher borrowing costs or outright rejections, making it difficult for them to invest in energy-efficient technologies, for example. In certain cases, there is correlation between the poor creditworthiness and the need for green investment: low-income households tend to live in the most energy-inefficient housing, making renovation projects with the

<sup>64</sup> Association for Financial Markets in Europe (AFME), *European Green Securitisation Regulatory State of Play*, AFME, London, 2022, <https://www.afme.eu/publications/reports/details/european-green-securitisation-regulatory-state-of-play-obstacles-to-growth-and-opportunities-for-leadership>

<sup>65</sup> International Energy Agency (IEA), *World Energy Investment 2024*, IEA, Paris, 2024, <https://www.iea.org/reports/world-energy-investment-2024>

highest impact unbankable. This investment barrier also relates specific groups such as homeowner associations or condominiums, whose participation in energy efficiency renovations is vital for ensuring proper technical quality and scope. For projects in multi-apartment buildings, from a technical standpoint it is crucial to involve homeowners or condominium associations in the definition of the projects. However, most commercial banks and financial institutions do not lend to these associations, given their uncertain legal status in some countries and their lack of a balance sheet.<sup>66</sup>

**High-level barrier 14. Grant addiction.** Grant addiction refers to the over-reliance on government subsidies or grants to fund sustainable projects, for example energy-efficient home renovations. While these grants can incentivise private climate action, they can also inadvertently create a dependency, where homeowners delay improvements in anticipation of future funding. Albeit it reflects rational behaviour, reliance on grants discourages private financing, as homeowners may not seek loans or invest personal capital for such projects. In the long run, this dependency can stifle the development of a robust market for private financing options, such as green mortgages or energy-efficiency loans, slowing the overall adoption of sustainable home improvements.

**High-level barrier 15. Lack knowledge and technical capacity to execute and finance projects.** A major obstacle to mobilising private climate investment lies in the limited knowledge and institutional capacity of project promoters. This includes both a lack of understanding of financing instruments and insufficient capability to design and implement complex green projects.

**Barrier 15.1 Lack of knowledge of how to combine public and private financing.** Project promoters often do not have the knowledge of the available public financing options, as well as the know-how to combine public funding sources with private financing. For example, investors believe there is a lack of an integrated and mature **hydrogen** financing ecosystem. Project promoters rely on public support but have insufficient knowledge of possible funding options. The offer of financing solutions and public support for hydrogen is complex and constantly evolving. Most promoters do not have a full understanding of how to optimally combine multiple sources of public and private financing to assemble workable financing structures for their projects.<sup>67</sup>

**Barrier 15.2 Limited capacity to execute green investments.** Project promoters' limited capacity to execute projects is a significant barrier to green investments. Many lack the technical expertise, project management skills, or experience needed to develop and implement complex green initiatives effectively. Additionally, limited capacity in navigating regulatory requirements or securing necessary permits can further complicate the execution process.

**High-level barrier 16. Misaligned incentives and interests, information asymmetries.** Investment decisions are also constrained by misaligned market incentives and persistent information gaps. These issues affect both supply and demand sides of capital flows and limit the effectiveness of policy signals.

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<sup>66</sup> European Investment Bank, *Greening the Financial Sector: A Central, Eastern and South-Eastern European Perspective*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/greening-the-financial-sector>.

<sup>67</sup> Gilles, F. and Brzezicka, P., *Unlocking the Hydrogen Economy — Stimulating Investment Across the Hydrogen Value Chain: Investor Perspectives on Risks, Challenges and the Role of the Public Sector*, European Investment Bank, Luxembourg, 2022, <https://www.eib.org/en/publications/unlocking-the-hydrogen-economy>.

**Barrier 16.1 Informational barriers regarding benefits and costs of green investments.** Informational barriers form a significant obstacle to SMEs' green investment propensity. SMEs often lack access to reliable, up-to-date information on the effectiveness, costs, and long-term benefits of various sustainability initiatives. In addition, uncertainty regarding regulatory initiatives or recent trends in technological advances further add to the difficulty in efficiently assessing the return on investments of sustainability projects.<sup>68</sup>

**Barrier 16.2 Misalignment of interest.** There are examples where misalignment of interest can hold back green investment. The most illustrative cases are found in energy efficient home renovations. Investment decision in energy efficient home renovations in multi-apartment buildings requires collective decision making of homeowners. Depending on local regulations, consent is often unanimous, even a minor conflict of interest can block the investment decision in home renovation. Another example of misalignment of interest: owners must shoulder the high upfront costs of energy efficiency renovations but do not benefit from cost savings. Conflict of interest disincentivise investment in home renovations.

#### **High-level barrier 17. Public sector promoter constraints**

**Barrier 17.1.** Public sector promoters, owing to limited budgets or institutional capacities, can in some cases represent obstacles to investment. More specifically, these constraints can increase the costs and risks faced by private investors when investing in projects involving the public sector. In the future, these budgetary constraints will be exacerbated by the need to invest in climate risk management and climate adaptation, which will absorb significant portions of the budget of government agencies, leaving them unable to invest in other necessary projects. While the environmental, climatic and commercial contexts have become more complex, the budgetary capacities of public sector entities have not increased to the same extent.<sup>69</sup>

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<sup>68</sup> European Investment Fund (EIF), *The European Small Business Finance Outlook 2022*, EIF, Luxembourg, 2023, [https://www.eif.org/news\\_centre/publications/eif\\_working\\_paper\\_2022\\_84.pdf](https://www.eif.org/news_centre/publications/eif_working_paper_2022_84.pdf)

<sup>69</sup> European Investment Bank, *Investment Barriers in the European Union 2023: A Report by the European Investment Bank Group*, European Investment Bank, Luxembourg, 2024, <https://www.eib.org/en/publications/investment-barriers-in-the-european-union-2023>

## 5 EU policy action with potential to alleviate identified barriers

This section presents the background reflections that underpin the development of a long list of **76 policy options to support the EU's 2030, 2040 and 2050 climate neutrality objectives**. It draws on regulatory analysis, stakeholder consultations, expert interviews, and a review of recent EU-level developments to identify key structural gaps and investment challenges. Building on this foundation, the document outlines areas where targeted policy action could significantly enhance the enabling environment for sustainable finance and green investments in the EU.

The analysis covers **seven policy areas** where targeted reforms could significantly strengthen the EU's sustainable finance landscape and unlock additional private capital for climate-related investments:

### 5.1 Sustainable finance framework/taxonomy

**Sustainable finance** refers to the integration of environmental, social, and governance (ESG) considerations into financial decision-making, with a view to fostering long-term investments in sustainable economic activities. In the climate context, this means aligning capital flows with low-carbon and resilient development. For the EU, sustainable finance is a cornerstone of achieving the European Green Deal's objective of climate neutrality by 2050, as legislated in the European Climate Law (Regulation EU 2021/1119) which also sets a binding target of at least a 55% reduction in net greenhouse gas emissions by 2030 (from 1990 levels). In essence, channelling private capital towards green and climate-friendly projects is essential to fulfil the EU's commitments under the Green Deal, the Climate Law, and the Paris Agreement.

**EU policy frameworks for sustainable finance.** Over the past years, the EU has developed a comprehensive Sustainable Finance Framework to support its climate objectives. The European Commission's 2018 Action Plan on Financing Sustainable Growth and the updated 2021 Strategy for Financing the Transition to a Sustainable Economy set out a roadmap of measures to re-orient investments towards more sustainable technologies and businesses to meet climate targets.<sup>70</sup>

**A central pillar is the EU Taxonomy**, an EU-wide classification system defining which economic activities are considered environmentally sustainable. The taxonomy establishes science-based technical criteria to label investments as "green," effectively creating a common language to guide investors toward climate-aligned opportunities. Alongside this, the Sustainable Finance Disclosure Regulation (SFDR) imposes uniform requirements on asset managers and financial institutions to disclose how they integrate sustainability in their products and portfolios. By improving transparency and comparability of ESG information, SFDR helps investors identify funds that truly support climate objectives and avoid "greenwashing," thereby attracting private funding to help Europe make the shift to a net-zero economy.

Complementing these investor-focused rules, the Corporate Sustainability Reporting Directive (CSRD) requires large companies to report on their environmental and climate impacts, risks, and performance

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<sup>70</sup> Directorate-General for Financial Stability, Financial Services and Capital Markets Union, *Strategy for Financing the Transition to a Sustainable Economy*, European Commission, Brussels, 2021, [https://finance.ec.europa.eu/publications/strategy-financing-transition-sustainable-economy\\_en](https://finance.ec.europa.eu/publications/strategy-financing-transition-sustainable-economy_en).

against unified European standards. Together, the EU Taxonomy, SFDR and CSRD (along with related tools like climate benchmark standards and green bond standards) form an integrated sustainable finance framework.

**The September 2024 report ‘The future of European competitiveness’ by Mario Draghi<sup>71</sup> and the subsequent January 2025 ‘Competitiveness Compass’<sup>72</sup>**, called for a reduction in administrative burdens for a broad range of European enterprises including in relation to the Sustainable Finance Agenda. In response, the Commission proposed on an **Omnibus Simplification Package** on 26 February 2025 that amends several of these core instruments.<sup>73</sup> The package will streamline the CSRD and certain EU-Taxonomy disclosure requirements, with the twin aims of cutting administrative costs and sharpening the focus on companies whose activities have the greatest climate impact. The Commission has proposed that the revised CSRD will apply only to undertakings with more than 1 000 employees and either at least EUR 50 million turnover or at least EUR 25 million total assets, removing around 80 % of firms originally in scope. The package also postpones the next reporting wave by two years (“stop-the-clock”) to give companies and auditors time to adapt. Similar proportionality adjustments narrow mandatory EU-Taxonomy reporting to firms with at least 1 000 employees and at least EUR 450 million net turnover, allowing other large companies to disclose voluntarily. While these simplification efforts are likely to alter the EU’s sustainable finance framework, the CSRD, EU-Taxonomy and related regulation remain a central part of the EU’s sustainable finance framework. The European supervisory authorities (EBA, ESMA and EIOPA), the EU Platform on Sustainable Finance and numerous industry and civil-society bodies have issued concrete reform proposals. Some examples of publications by official EU bodies include:

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<sup>71</sup> [https://commission.europa.eu/topics/eu-competitiveness/draghi-report\\_en](https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en)

<sup>72</sup> [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_25\\_339](https://ec.europa.eu/commission/presscorner/detail/en/ip_25_339)

<sup>73</sup> Directorate-General for Financial Stability, Financial Services and Capital Markets Union, *Omnibus package*, European Commission, Brussels, 2025, [https://finance.ec.europa.eu/news/omnibus-package-2025-04-01\\_en](https://finance.ec.europa.eu/news/omnibus-package-2025-04-01_en)

**Table 1. Key EU Institutional Publications on Sustainable Finance (2022–2024)**

Source	Title
<a href="#"><u>EBA 2022</u></a>	EBA Report: Developing a framework for sustainable securitisation.
<a href="#"><u>EBA 2023</u></a>	EBA Report: In response to the call for advice from the European Commission on green loans and mortgages, EBA/REP/2023/38.
<a href="#"><u>EC 2023</u></a>	Commission Recommendation (EU) 2023/1425 of 27 June 2023 on facilitating finance for the transition to a sustainable economy.
<a href="#"><u>EC 2024</u></a>	Summary Report of the Open and Targeted Consultations on the SFDR assessment, 14 September 2023 – 2 December 2023.
<a href="#"><u>ESMA 2024</u></a>	ESMA Opinion: Sustainable investments: Facilitating the investor journey – A holistic vision for the long term.
<a href="#"><u>JC 2023 55</u></a>	ESMA Opinion: Sustainable investments: Facilitating the investor journey – A holistic vision for the long term.
<a href="#"><u>JC 2024 06</u></a>	Joint ESAs Opinion: On the assessment of the SFDR.

Feedback from a wide range of actors, including ESA, investors, industry associations and civil society, highlights persistent challenges: unclear definitions, disjointed rules, limited sectoral coverage, and institutional constraints. Recent developments including the 2024 SFDR consultation<sup>74</sup>, the Commission’s 2023 transition finance recommendations<sup>75</sup>, and the extensive engagement through the EU Taxonomy stakeholder request mechanism<sup>76</sup> all reflect strong momentum for reform. The February 2025 Omnibus proposal underscore that further calibration is under way, but they do not in themselves resolve all structural issues<sup>77</sup>.

The following developments have intensified pressure for reform:

- **Transition finance:** The Taxonomy’s strict “substantial contribution” and “do no significant harm” criteria have limited its applicability across sectors. In response, policymakers and market actors are calling for formal recognition of transition finance – investment activities that support a credible shift towards sustainability but are not yet fully aligned.<sup>78</sup> The Commission’s 2023 recommendations<sup>79</sup> offer an initial roadmap, but more clarity on definitions, time-bound pathways and reporting requirements is needed.
- **Product categorisation and sustainability grading:** Multiple stakeholders – including ESMA and the Joint Committee of the ESAs – have proposed the introduction of product categories (e.g.,

<sup>74</sup> European Commission, *Summary Report of the Open and Targeted Consultations on the SFDR Assessment*, European Commission, Brussels, 2024, [https://finance.ec.europa.eu/document/download/0f2cfde1-12b0-4860-b548-0393ac5b592b\\_en?filename=2023-sfdr-implementation-summary-of-responses\\_en.pdf](https://finance.ec.europa.eu/document/download/0f2cfde1-12b0-4860-b548-0393ac5b592b_en?filename=2023-sfdr-implementation-summary-of-responses_en.pdf)

<sup>75</sup> European Commission, *Commission Recommendation (EU) 2023/1425 on Facilitating Finance for the Transition to a Sustainable Economy*, European Commission, Brussels, 2023, <https://securities.cib.bnpparibas/app/uploads/sites/3/2024/01/celex-32023h1425-en-txt.pdf>

<sup>76</sup> EU Taxonomy stakeholder request mechanism (cut-off date December 2023).

<sup>77</sup> European Commission, Directorate-General for Financial Stability, Financial Services and Capital Markets Union, “Omnibus package”, [https://finance.ec.europa.eu/news/omnibus-package-2025-04-01\\_en](https://finance.ec.europa.eu/news/omnibus-package-2025-04-01_en)

<sup>79</sup> European Commission, *Commission Recommendation (EU) 2023/1425 on Facilitating Finance for the Transition to a Sustainable Economy*, European Commission, Brussels, 2023, <https://securities.cib.bnpparibas/app/uploads/sites/3/2024/01/celex-32023h1425-en-txt.pdf>

sustainable, transition, neutral) and a sustainability grading system akin to the nutri-score.<sup>80</sup> These tools could make disclosures more intuitive and enhance comparability.

#### The biggest gaps with regards to policy/regulation/tools:

Several systemic issues continue to limit the effectiveness of the SFF:

- **Narrow sectoral scope:** The Taxonomy omits many economic activities, particularly in high-emitting sectors where transition investments are critical. The DNSH criteria, in particular, remain a major bottleneck for financial institutions assessing investment alignment.<sup>81</sup> Additionally, the Taxonomy has primarily been designed with larger companies in mind; SMEs often lack the resources or capacity to fully demonstrate compliance with the comprehensive criteria, further narrowing the scope of eligible investments.
- **Demand-side and information gaps:** Many non-financial companies, especially SMEs, lack the resources to align with the SFF or even to identify relevant support schemes. Existing programmes are often fragmented, slow to disburse, or poorly communicated, reducing demand for green capital.
- **Lack of deep capital markets:** Europe's green investment ecosystem faces a shortage of risk-tolerant capital and specialised investors. Venture capital in cleantech is still underdeveloped, and financial markets remain fragmented compared to global competitors.

#### Possible policies/regulations/tools to address these barriers:

- **Formalise transition finance:** The EU could create a legal framework to define transition investments, including criteria based on substantial contribution without immediate DNSH compliance. A phased approach could allow firms to demonstrate time-bound alignment with full sustainability benchmarks, supported by financial incentives.
- **Strengthen governance and stakeholder engagement:** A dedicated body – possibly an evolved EU Platform on Sustainable Finance – could oversee updates to the Taxonomy, coordinate with industry, and maintain an accessible registry of support instruments.

The EU's SFF remains a bold and necessary step toward climate neutrality, and the 2025 Omnibus package shows the Commission's willingness to recalibrate where complexity outweighs benefits. Yet the framework's full potential is still unrealised. Legal clarity, usability upgrades and stronger governance are needed to build confidence, cut transaction costs and mobilise private capital at the scale required.

## 5.2 Capital markets

**Capital markets are key to meeting the EU's climate ambitions as they are expected to act as a catalyst for mobilising and allocating financing.** Capital markets complement bank lending and public investments in financing the green transition. This catalysing effect takes place through different channels: (i) well-

<sup>80</sup> European Securities and Markets Authority (ESMA), *Opinion: Sustainable Investments – Facilitating the Investor Journey: A Holistic Vision for the Long Term*, ESMA, Paris, 2024, JC (2024) 06, [https://www.esma.europa.eu/sites/default/files/2024-07/ESMA36-1079078717-2587\\_Opinion\\_on\\_the\\_functioning\\_of\\_the\\_Sustainable\\_Finance\\_Framework.pdf](https://www.esma.europa.eu/sites/default/files/2024-07/ESMA36-1079078717-2587_Opinion_on_the_functioning_of_the_Sustainable_Finance_Framework.pdf)

<sup>81</sup> EU Taxonomy stakeholder request mechanism (cut-off date December 2023).

functioning capital markets can increase liquidity and the available pool of capital to finance green projects; (ii) deep capital markets can enhance the efficiency of the capital allocation mechanisms of the financial sector. Well-functioning capital markets are also more capable of channelling large volumes of equity-type financing to innovative projects with longer-term outlook, which are attributes necessary for financing the green transition.

The biggest gaps with regards to policy/regulation/tools:

Despite their potential, EU capital markets remain fragmented and overly reliant on banks. While interventions under the aegis of the Capital Markets Union (CMU)<sup>82</sup> has driven some improvements since 2015, structural gaps persist. According to ESMA, the EU still suffers from a low share in global equity capitalisation, a subdued Initial Public Offering (IPO) market, and fragmented asset management<sup>83</sup>. These issues especially hinder cleantech sectors, where the underdevelopment of VC limits innovation and scalability.

A key consequence of Europe's relatively shallow private capital pools is the constrained development of cleantech venture capital. EU venture capital investments, as a share of GDP, are less than one-third of US levels, with fewer and smaller funds<sup>84</sup>. Yet, venture capital is vital for developing and scaling cleantech solutions, which the EU has designated strategic in the Green Deal Industrial Plan.

Green capital markets in the EU are expanding quickly and show greater resilience and integration than conventional markets. However, fragmentation at the national level threatens further growth. Deep, integrated green capital markets require broader structural reforms that go beyond the sustainable finance segment. Policy measures that enhance overall capital market integration indirectly support the green transition by unlocking private capital.

Some targeted actions can further accelerate this progress:

- **Strengthening the EU SFF** to ensure transparency and better capital allocation to decarbonisation.
- **Improving conditions for long-term investments**, enabling institutional and retail capital to finance venture capital and private equity in innovative technologies.
- **Facilitating risk transfer from banks to capital markets**, including through sustainable securitisation.
- Where full harmonisation (e.g. of tax rules) is difficult, **special regimes for green investments** could offer pragmatic interim solutions.

Possible policies/regulations/tools to address these barriers:

<sup>82</sup> European Securities and Markets Authority (ESMA), *Position Paper on the Capital Markets Union*, ESMA, Paris, 2024, <https://www.esma.europa.eu/document/position-paper-eu-capital-markets-building-more-effective-and-attractive-capital-markets>

<sup>83</sup> Ibid.

<sup>84</sup> Arnold, N., Claveres, G., Frie, J., and Bhatia, A. V., *Stepping Up Venture Capital to Finance Innovation in Europe* (IMF Working Paper No. WP/24/146), International Monetary Fund, Washington, D.C., 2024, <https://www.imf.org/en/Publications/WP/Issues/2024/07/10/Stepping-Up-Venture-Capital-to-Finance-Innovation-in-Europe-551411>

Europe has a higher savings rate than the US, yet a much smaller stock of long-term capital relative to GDP, partly due to smaller pension fund assets<sup>85</sup>. Channelling more retail savings into EU capital markets and reallocating institutional capital are essential to supporting long-term green investments. According to Invest in Europe<sup>86</sup>, US pension funds allocate 11% of their portfolios to private equity, venture capital, and infrastructure, compared to 4.3% in the EU. Aligning EU allocations with US levels could inject EUR 124 billion into these assets. Similarly, insurers could mobilise up to EUR 443 billion by modestly increasing their allocations.

The following policy options emerge as potential interventions:

#### **Remove Regulatory Barriers for long-term investments:**

Regulatory constraints make long-term investments costlier. Industry perspectives and reports by Draghi (2024) and Letta (2024) identify EU laws requiring high capital reserves for long-term assets as a barrier<sup>87</sup>. National regulations often restrict pension fund investment flexibility<sup>88</sup>.

Priorities include:

- Reviewing prudential frameworks (CRR/CRD, Solvency II, IORP II).
- Harmonising approval of internal models for insurers<sup>89</sup>.
- Considering impacts from the Solvency II review that addresses long-term equity investment constraints.

Further analysis is recommended due to the technical complexity of these regimes.

**Strengthen Pan-European Long-Term Investment Instruments:** As EU-wide financial instruments remain underdeveloped, policy intervention could address the following:

- **The Pan-European Personal Pension Product (PEPP):** Introduced in 2022 but has low uptake. EIOPA (2024) recommends improvements such as auto-enrolment, a PEPP label, and administrative simplifications<sup>90</sup>. A green PEPP variant could be considered later.
- **European Long-Term Investment Funds (ELTIFs):** ELTIF 2.0 (2024) seeks to enhance adoption. Expanding eligible sustainable assets and launching green variants could promote uptake.

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<sup>85</sup> InvestEU, *Investing in Europe: Private Equity Activity 2022*, InvestEU, Brussels, 2023, <https://www.investeurope.eu/media/6719/investing-in-europe-pe-activity-2022-report.pdf>

<sup>86</sup> Ibid

<sup>87</sup> Letta, E., *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to Deliver a Sustainable Future and Prosperity for All EU Citizens*, European Commission, Brussels, 2024, <https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf>; Draghi, M., *The Future of European Competitiveness – A Competitiveness Strategy for Europe*, European Commission, Brussels, 2024, [https://commission.europa.eu/topics/eu-competitiveness/draghi-report\\_en](https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en)

<sup>88</sup> OECD, *Annual Survey of Investment Regulation of Pension Providers*, OECD, Paris, 2025, <https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/asset-backed-pensions/2025-Annual-Survey-of-Investment-Regulation-of-Pension-Providers.pdf>

<sup>89</sup> Letta, E., *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to Deliver a Sustainable Future and Prosperity for All EU Citizens*, European Commission, Brussels, 2024, <https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf>

<sup>90</sup> European Insurance and Occupational Pensions Authority (EIOPA), *Staff Paper on the Pan-European Personal Pension Product (PEPP)*, EIOPA, Frankfurt, 2024, [https://www.eiopa.europa.eu/publications/eiopa-staff-paper-future-pan-european-pension-product-pepp\\_en](https://www.eiopa.europa.eu/publications/eiopa-staff-paper-future-pan-european-pension-product-pepp_en)

- **European Long-Term Savings Product:** Proposed by Letta (2024)<sup>91</sup> to foster long-term savings.
- **Tax Harmonisation:** Harmonising tax treatment of financial products, such as PEPPs, even if initially limited to green products, could support adoption<sup>92</sup>.

**Tilt Retail Savings Towards Sustainability:** Policy interventions could boost sustainable retail investment:

- Make sustainable funds the default via MiFID-IDD amendments.
- Enhance Packaged Retail and Insurance-based Investment Products (PRIIPs) Key Information Document transparency to include critical sustainability information.
- Improve financial literacy and sustainability training for financial advisors.

**Sustainable Securitisation:** Securitisation bridges credit and capital markets, freeing up banks' balance sheets and broadening investor opportunities. The EU's securitisation market remains small (0.3% of GDP) compared to the US (4%)<sup>93</sup>. Sustainable securitisation accounted for only 1.4% of green issuance in the EU, versus 32% in the US<sup>94</sup>.

Recent policy actions include:

- EBA (2022) guidelines proposing a sustainable securitisation framework<sup>95</sup>.
- EU Green Bond Standard (2024) including securitisations through a use-of-proceeds approach<sup>96</sup>.
- European Commission's ongoing review of the securitisation framework.

Policy Options for Sustainable securitisation:

- **Boost Overall Securitisation:**
  - Review capital charges for simple, transparent, standardised securitisations.
  - Simplify transparency and due diligence requirements.
  - Create warehousing facilities or platforms similar to the US model.
  - Provide public guarantees for credit enhancements.
- **Strengthen Green Securitisation:**
  - Develop a dedicated green securitisation framework.
  - Include green synthetic and privately placed securitisations.

<sup>91</sup> Letta, E., *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to Deliver a Sustainable Future and Prosperity for All EU Citizens*, European Commission, Brussels, 2024, <https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf>

<sup>92</sup> The imposition of taxes and tax-beneficial treatment of personal pension products are solely within the remits of the Member States. The European Commission published a Recommendation on the tax treatment of personal pension products, including the PEPP, which provides that Member States are encouraged to grant PEPPs the same tax relief as the one granted to national PPPs. [https://www.eiopa.europa.eu/browse/regulation-and-policy/pan-european-personal-pension-product-pepp/faqs-pan-european-personal-pension-product-professionals\\_en](https://www.eiopa.europa.eu/browse/regulation-and-policy/pan-european-personal-pension-product-pepp/faqs-pan-european-personal-pension-product-professionals_en)

<sup>93</sup> Association for Financial Markets in Europe (AFME), *European Green Securitisation Regulatory State of Play*, AFME, London, 2022, <https://www.afme.eu/publications/reports/details/european-green-securitisation-regulatory-state-of-play-obstacles-to-growth-and-opportunities-for-leadership>

<sup>94</sup> Ibid.

<sup>95</sup> European Banking Authority (EBA), *Developing a Framework for Sustainable Securitisation*, EBA, Paris, 2022, EBA/REP/2022/06, [https://www.eba.europa.eu/sites/default/files/document\\_library/Publications/Reports/2022/1027593/EBA%20report%20on%20sustainable%20securitisation.pdf](https://www.eba.europa.eu/sites/default/files/document_library/Publications/Reports/2022/1027593/EBA%20report%20on%20sustainable%20securitisation.pdf)

<sup>96</sup> European Commission, *Regulation (EU) 2023/2631 of the European Parliament and of the Council of 22 November 2023 on European Green Bonds and optional disclosures for bonds marketed as environmentally sustainable and for sustainability-linked bonds (EU Green Bond Standard)*, European Commission, Brussels, 2024, <https://eur-lex.europa.eu/eli/reg/2023/2631/oi/eng>

- Enhance sustainability disclosures, especially principal adverse impact reporting.
- Establish a green securitisation platform.
- Offer credit enhancements for green securitisations.

## Other Potential Policy Areas

- **Stock Exchanges:** Create a European Deeptech Stock Exchange including cleantech listings<sup>97</sup>.
- **Insolvency Frameworks:** Harmonise national frameworks to support green investments<sup>98</sup>.
- **SME Listings:** Simplify and incentivise green SME listings under the Listing Act.
- **Corporate Governance:** Update the Shareholder Rights Directive to strengthen stewardship and ESG engagement<sup>99</sup>.
- **Sustainability-Linked Instruments:** Develop a voluntary EU-wide standard to improve credibility and avoid greenwashing.

To fully leverage capital markets for the green transition, the EU must accelerate efforts to remove structural barriers, deepen integration, and foster the development of sustainable financial instruments. Priority actions include mobilising institutional and retail savings for long-term green investments, expanding green securitisation, and supporting the creation of specialised investment vehicles. A more mature, resilient, and integrated EU capital market will not only support the financing of the climate transition but will also strengthen Europe's strategic autonomy and economic competitiveness in a decarbonising global economy.

## 5.3 Prudential regulation

**Prudential regulation in the financial sector primarily aims to ensure the safety and soundness of financial institutions**, thereby maintaining overall financial stability. Its main function is to mitigate risk by requiring financial institutions to maintain adequate capital reserves, manage liquidity effectively, and follow sound risk management practices.

**Prudential regulation affects capital allocation by influencing the cost of capital.** Higher capital requirements raise financing costs, discouraging investment in certain assets. This mechanism can steer financial flows towards sustainable activities. However, using prudential tools for sustainability goals may conflict with their core risk mitigation purpose, as sustainability and financial risk are not always aligned over conventional time horizons.

**Climate risks have relevance in prudential frameworks: both physical and transition risks are shown to affect the financial sector and have implications for financial stability.** With this consideration, the past years have seen several regulatory and supervisory initiatives to incorporate climate-related financial risk

<sup>97</sup> Letta, E., *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to Deliver a Sustainable Future and Prosperity for All EU Citizens*, European Commission, Brussels, 2024, <https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf>

<sup>98</sup> Lagarde, C., *Towards a Green Capital Markets Union for Europe*, speech at the European Commission's High-Level Conference on the Proposal for a Corporate Sustainability Reporting Directive, European Central Bank, Brussels, 6 May 2021, <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210506~4ec98730ee.en.html>.

<sup>99</sup> Recommendations are based on E3G, ShareAction, and WWF, *Investing in Europe's Prosperity: A Vision for Financing the Transition to Sustainability 2024–2030*, E3G, Brussels, 2024, <https://wwfeu.awsassets.panda.org/downloads/e3g-shareaction-wwf-report-investing-in-europes-prosperity-pdf>

in the prudential frameworks and make financial institutions accountable for the management for such risks.

These initiatives include:

- **Amendments to the Capital Requirements Regulation (CRR) and Capital Requirements Directive (CRD)** introduced explicit rules on the management and supervision of environmental, social and governance risks. With these amendments supervisors were granted the necessary powers to assess ESG risks as part of regular supervisory reviews.
- The **2021 review of the Solvency II Delegated Regulation** integrated sustainability risks into insurers' governance, risk management, and investment frameworks. The more recent **review of the Solvency II Level 1 Directive** further strengthened this approach by mandating climate scenario analysis and sustainability risk plans as part of insurers' core risk assessment processes. **The ESG risks are increasingly referred to in an explicit manner in various guidelines of the ESAs.** For example, the EBA issued guidelines on loan origination and monitoring, internal governance, remuneration policies, and supervisory review and evaluation process of credit institutions.
- **In 2020 the European Central Bank (ECB) published its guide on climate-related and environmental risks**, in which it set supervisory expectations relating to the management and disclosure of such risks. In 2022 the ECB conducted a thematic review of how supervised institutions have implemented the guidelines.

The biggest gaps with regards to policy/regulation/tools:

**Due to their special characteristics, climate risks may be underestimated within the current prudential framework favouring carbon intensive assets.** From the prudential perspective, climate risks are similar to other types of risk drivers and translate into credit, market, liquidity or operational risk for financial institutions. Yet, climate risks exhibit some specific characteristics: they are multidimensional, non-linear, uncertain in magnitude and forward-looking in nature. These characteristics could lead to their underestimation within the current prudential frameworks, which favours carbon-intensive assets. Considering this, there have been calls from civil society and academia to intervene more drastically in the prudential frameworks.

Possible policies/regulations/tools to address these barriers:

**The 2023 report of the European Banking Authority on the role of environmental and social risks in the prudential framework contains a comprehensive assessment of the subject.**<sup>100</sup> The report emphasises that climate-related risks in banking should be managed within the existing risk-based framework rather than through specialized approaches. It argues that the prudential framework already incorporates environmental risk factors through internal and external rating requirements. The following paragraphs include the EBA position on the subject.

- **Increasing time horizons and introducing more forward-looking elements in prudential frameworks:** Elements of the prudential framework, especially current Pillar 1 framework is

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<sup>100</sup> Preceding this report, the EBA carried out a public consultation on the subject and gathered a wide range of views from financial market participants, NGOs, research institutes and consultancy firms.

designed to address cyclical economic fluctuations rather than long-term environmental risks. Environmental risks are unpredictable in their timing and magnitude and may cause structural shifts and extended losses. As a result, it is questionable if the current methods for calculating risk weights and capital requirements adequately capture the full loss potential of these risks, particularly over longer time horizons. Extending the time-horizon and implementing more forward-looking elements in the Pillar 1 could capture some of the longer-term risks. Present value discounting and assigning probabilities to future climate impacts have been proposed as potential techniques to this end. However, the EBA points out time horizon adjustment in Pillar 1 should be carefully weighed as it raises some conceptual issues. In addition, it should be viewed in conjunction with Pillar 2 requirements and Pillar 2 guidance.

- **Introducing environmental adjustment factors in capital requirements:** One type of intervention attracting significant attention is the use of **green-supporting factors** (GSF) and/or **brown-penalizing factors** (BPF). GSF would allow a reduction in capital requirements for green assets, while BPF would increase capital buffers for environmentally harmful exposures. These factors are heavily debated in the industry. Proponents argue that these adjustments reflect the better risk profile of sustainable activities, especially in transition scenarios. They also highlight the forward-looking nature of these measures and their alignment with broader public policy goals. In contrast, EBA highlights that these factors lack risk sensitivity, potentially leading to miscalibrated capital requirements. There is also concern about double counting risks, overstretching the purpose of Pillar 1, and undermining international level playing field standards. Critics also suggest that such measures are suboptimal tools in supporting an effective and just transition.<sup>101</sup> Additionally, there are fears that GSF and BPF could push risky activities toward non-bank financial institutions, with a questionable impact on sustainability goals<sup>102</sup>. Notwithstanding the above, as also envisaged by the EBA, further assessment can be carried out how environment-related adjustment factors can be designed as part of a sound, risk-based prudential treatment for individual exposures, while ensuring that capital requirements remain adequate to address all risks.
- **Further incorporate environmental factors risk assessment and mitigation methodologies underlying the prudential framework.** Potential options include refining underlying risk assessment processes, including **collateral valuation** and the use of **external credit ratings**, to better account for environmental factors. For example, policymakers could encourage the integration of ESG factors into external credit ratings, aligning with the recent ESMA ongoing consultation on the Credit Rating Agencies Regulatory Framework. Further, policy intervention could aim at adapting accounting frameworks and collateral valuation standards to more accurately reflect the impact of environmental risks on asset values. This area would warrant further analysis.

<sup>101</sup> For example, a paper by Oehmke, M. and Opp, M. M., *Green Capital Requirements*, Swedish House of Finance Research Paper No. 22-16, Stockholm, 2023, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4040098](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4040098)

<sup>102</sup> It must be noted that the EU already has experience with adjustment factors, namely the SME supporting factor and the infrastructure supporting factor (ISF). There is no clear indication that these supporting factors have significantly stimulated lending. CRR III now limits the scope of the infrastructure supporting factor under article 501a to provide that assets being financed must contribute positively to environmental objectives under the Taxonomy Regulation and not significantly harm the other objectives in the Taxonomy Regulation.

- **Coordinate a general macroprudential strategy to manage systemic climate risk.** Macroprudential regulation provides a valuable tool for managing long-term climate risks within the financial system, particularly in addressing their systemic nature. A recent report by the European Central Bank and the European Systemic Risk Board mentions that targeted adjustments to systemic risk buffers—such as sectoral systemic risk buffers—and borrower-based measures for specific exposures could serve as effective policy options. However, a key challenge lies in the need for a granular, targeted approach, which risks overlapping with micro-prudential regulation. Furthermore, the implementation of macro-prudential policies remains under the jurisdiction of national competent authorities, adding a layer of complexity to coordinated action.

## 5.4 Tax policies

**There are two main ways taxation can foster private investment in climate action:** by taxing activities that contribute to climate change to discourage them, and by incentivising green investments through tax reductions. Both approaches also impact public budgets and can either support or constrain the financing of green public investments.

**Governments are facing mounting long-term pressures on public finances.** Labour taxes, which generate over half of the EU-27's revenue, are increasingly threatened by demographic ageing, while climate change and geopolitical tensions put further strain on growth and tax bases. At the same time, public spending needs are rising, notably for elderly care, net-zero transitions, and climate adaptation.<sup>103</sup>

This context strengthens the case for shifting taxation from labour to resource use and pollution. However, this shift has not materialised: in 15 Member States, labour taxes have grown relatively more important than environmental taxes since 2002.

**The polluter pays principle (PPP) is enshrined in the 2007 Treaty on the Functioning of the EU and is fundamental for the implementation of the European Green Deal.** Its impact goes beyond the economic compensation for the incurred environmental externalities and increasing public budgets (e.g., through water pricing, air pollution fees, pesticide tax, etc<sup>104</sup>). It positively affects the risk-return ratio of green projects, assets or solutions compared to brown ones, thus incentivising behavioural changes and redirecting private financial flows towards more efficient-green options. Nonetheless, according to the European Court of Auditors<sup>105</sup>, the PPP is not uniformly applied across sectors (e.g., EU ETS only covers certain sectors) or countries (i.e., the share of environmental taxes in GDP vary between 5.6% in Greece and 0.9% in Ireland), leading to gaps where polluters do not internalise environmental costs.

**There is a risk that environmental taxes, if designed successfully, are not a stable source of revenues as time will erode the tax base. Others argue that additional taxes harm EU competitiveness in international markets.** Yet, the example of the EU Emissions Trading System (ETS) suggests that this does not have to be the case. In 2022 alone, the ETS raised EUR 38.8 billion, out of which EUR 3.2 billion went

<sup>103</sup> European Commission, *EU Annual Report on Taxation 2023*, European Commission, Brussels, 2023, [https://taxation-customs.ec.europa.eu/system/files/2023-08/ART%20-%20Report%202023\\_Digital%20Version\\_1.pdf](https://taxation-customs.ec.europa.eu/system/files/2023-08/ART%20-%20Report%202023_Digital%20Version_1.pdf)

<sup>104</sup> European Court of Auditors, *Special Report 12/2021: The Polluter Pays Principle – Inconsistent Application Across EU Environmental Policies and Actions*, European Court of Auditors, Luxembourg, 2021, <https://www.eca.europa.eu/en/publications?did=58811>

<sup>105</sup> Ibid.

to the Innovation Fund and EUR 5.4 billion to the Modernisation Fund.<sup>106</sup> Different studies show that the EU ETS did not have a widespread negative impact on competitiveness as (i) while some firms faced increased costs, others benefited from free allowances, and support provided by the Innovation Funds and (ii) affected firms reacted by passing-through costs to their customers or by improving labour productivity.<sup>107</sup>

**In contrast, relying heavily on tax incentives to promote a green transformation could constrain EU public budgets if not combined with revenue generating policies.<sup>108</sup>** Despite the fact that the tax incentives granted by the USA's 2022 Inflation Reduction Act (IRA) resulted in a massive increase in clean investments<sup>109</sup>, there seems to be a consensus that such a plan would not be feasible in the EU. On the one hand, the dynamics among Member States in the EU and among states in the USA differ substantially, in terms of sovereignty, economic integration, legal system or state aid rules. These characteristics limit the implementation of a plan like the USA's IRA in the EU. On the other hand, while the EU Green Deal relies on regulation to establish several decarbonisation targets and proposes financial instruments for reaching them, the USA's IRA aims at making (new) technologies that mitigate climate change more competitive. Although both should lead to a lower carbon economy, the means of achieving their objectives are significantly different. Additionally, SMEs and early-stage start-ups cannot benefit from tax incentives to the same extent as big companies, given their lower profits.

#### Existing policies and examples:

- **Environmental taxation in the EU, beyond the EU ETS, can be classified into three main areas:** energy, transport and resource use and pollution. According to the EC, they accounted for 78 %, 18% and 3.5% of total environmental tax revenues in 2021, respectively. A study commissioned by DG TAXUD provides a thorough overview of the different taxation instruments that are used across MS.<sup>110</sup>
- The current EU taxation framework allows Member States to design their tax systems independently, provided they comply with EU rules. Adoption of tax acts at EU-level requires unanimous decisions by the EU Council, as opposed to other areas that require only 55% of Member States, representing at least 65% of the total EU population, to vote in favour (as is the case, e.g., for the single market or economic and monetary union). This requirement limits the likelihood of implementing EU-wide new environmental taxes in a geopolitical context where several Member States have concerns over the implementation of new green policies.
- The implementation of environmental taxes diverges between Member States. Environmental taxes on brown activities account for 3.2% and 15.3% of total taxes in Luxembourg and Bulgaria. The tax revenue-to-GDP ratio ranges from 20.7% in Ireland to 46.2% in France as of 2022. Environmental tax incentives for green activities are even more diverse across MS. The most

<sup>106</sup> European Environment Agency (EEA), *Use of Auctioning Revenues Generated Under the EU Emissions Trading System*, EEA, Copenhagen, 2024, <https://www.eea.europa.eu/en/analysis/indicators/use-of-auctioning-revenues-generated>

<sup>107</sup> Marin, G., Marino, M., and Pellegrin, C., *The Impact of the European Emission Trading Scheme on Multiple Measures of Economic Performance, Environmental and Resource Economics*, Springer, 71, 551–582, 2018, <https://doi.org/10.1007/s10640-017-0173-0>.

<sup>108</sup> Caselli, F., Lagerborg, A., and Medas, P. A., *Green Fiscal Rules? Challenges and Policy Alternatives* (IMF Working Paper), International Monetary Fund, Washington, D.C., 2024, <https://www.imf.org/en/Publications/WP/Issues/2024/06/21/Green-Fiscal-Rules-Challenges-and-Policy-Alternatives-550880>

<sup>109</sup> Rhodium Group, *Clean Investment Monitor*, Rhodium Group, New York, 2025, <https://www.cleaninvestmentmonitor.org/>

<sup>110</sup> European Commission: Directorate-General for Taxation and Customs Union and ECORYS, *Taxation in Support of Green Transition – An Overview and Assessment of Existing Tax Practices to Reduce Greenhouse Gas Emissions – Final Report*, Publications Office of the European Union, Luxembourg, 2021, <https://op.europa.eu/en/publication-detail/-/publication/1840d9df-5162-11eb-b59f-01aa75ed71a1>

common ones are related to the uptake of electric vehicles, energy efficiency and related R&D, and use of public transport.

- Overall, environmental taxes only accounted for 5% of total taxes in 2022 in the EU-27. A historical overview shows that environmental tax revenues as a share of GDP have decreased since 2013, and for all types of environmental taxation (energy, transport and pollution and natural resources).
- **The revision of the Energy Taxation Directive has potential to drive uptake of cleaner energy.** It is based on a new structure for minimum tax rates, depending on the energy content and environmental performance of fuels and electricity. It also broadens the taxable base by including additional products and removing certain exemptions and reductions. It was tabled in June 2021 but after continuous discussions there are still divergences and as of September 2024 no agreement has been reached.

The biggest gaps with regards to policy/regulation/tools:

**Identifying common gaps and issuing efficient environmental taxation recommendations to be taken or promoted at EU-level is challenging.** This is against the background that the tax mix, burden, structure, bases, rates and incentives vary significantly across the EU and that Member States design their tax systems independently from the EU. There may, however, be options to help align minimum taxes and, in the long-term, introduce European level taxes.

Possible policies/regulations/tools to address these barriers:

**Coordinate green taxation at the EU level.** To prevent environmental taxes at national level hindering single market principles, coordination among Member States should be promoted. This is particularly relevant for neighbouring countries given the closer links between economies and business interdependency, and thus a potential higher leakage effect. Coordination among Member States can be fostered through the set-up of a coalition of Member States' Finance Ministers to exchange on experiences and ideas. Additionally, or alternatively, a public database ("tax tracker") that maps relevant green tax policies under discussion or implemented could be established to assess the impact of specific green taxation instruments in the different countries and to promote their uptake by other countries. Publishing guidance material and developing a platform to navigate existing or in-development regulation could also facilitate harmonisation and level the playing field for Member States and businesses.

**Introduce minimum tax rates or fees to make the polluter pays principle a reality (or the reduction of certain taxes to incentivise private green investments).** Introducing minimum fees or taxes would ensure reasonable treatment of the polluter pays principle across the EU. Due to the EU unanimous voting requirement, the limited likelihood of having green taxation measures converted into EU regulation and the need for specific definitions for the scope of such measures, studies to evidence on the one hand the possible positive impact of the introduction of these instruments and on the other hand all relevant impacts for example on the economy, demand and revenues could be an important first step. Possible measures include<sup>111</sup>:

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<sup>111</sup> Such axes should be implemented in a way in which they do not affect the most vulnerable groups. However, if inevitable, strong mechanisms must be put in place to compensate for the purchasing power loss of these households.

- Carbon wealth taxes on companies and individuals
- Minimum taxes on the most energy-intensive cryptocurrencies
- Green Financial Transaction Tax
- Establishing minimum tax rates or fees for resource use and pollution

This would contribute to addressing the following barriers: 5. Polluting alternative technologies remain profitable and cost-effective & 12. Inadequate instruments and mechanisms to facilitate green investments.

**Member States could introduce selected smart, efficient and fair tax incentives and could also shift financial flows from brown or carbon-agnostic investments into green solutions.**

An assessment of the impact that the following measures could have on constrained public budgets and the benefits they might bring for each Member State could be carried out:

- Tax incentives for green R&D.
- Tax incentives on payrolls for employees in companies supporting the transition to a low carbon, circular and resilient economy.
- Tax credits for the purchase of energy-saving assets and renewable energy.
- Tax incentives for green bond issuers and investors.
- Accelerated depreciation schedule for low-carbon technologies.
- Reduced VAT rates on renewable energy and energy efficiency investments for households.<sup>112</sup>
- A corporate tax framework based e.g. taxonomy-alignment, DNSH alignment, implementation of transition plans, etc.

## 5.5 Public co-funding, subsidies, guarantees and other public instruments

**The Climate Policy Initiative (CPI) estimates that public financing for climate amounted to around a third of total climate finance in Western Europe 2022.**<sup>113</sup> Total climate financing in Western European amounted to EUR 170 billion in 2022<sup>114</sup>. Of this, the key national public sources were national development finance institutions (14%) and government (13%). The contribution of public finance differs by sector. Waste and building sectors receive most public climate finance as a share of their total (64% and 46%, respectively) (CPI, 2023). Energy systems and transport sectors receive only around a fifth of total climate financing from the public sector.

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<sup>112</sup> The VAT Directive already provides the possibility to MS to apply VAT reduced rates in (a) the supply and installation of solar panels on and adjacent to private dwellings, housing and public and other buildings used for activities in the public interest and (b) supply of electricity, district heating and district cooling, and biogas produced by the feedstock listed in Annex IX, Part A, to Directive (EU) 2018/2001 of the European Parliament and of the Council (1); supply and installation of highly efficient low emissions heating systems meeting the emission (PM) benchmarks laid down in Annex V to Commission Regulation (EU) 2015/1189 (2) and in Annex V to Commission Regulation (EU) 2015/1185 (3) and having been attributed an EU energy label to show that the criterion referred to in Article 7(2) of Regulation (EU) 2017/1369 of the European Parliament and of the Council (4) is met; and, until 1 January 2030, natural gas and wood used as firewood.

<sup>113</sup> As noted above, the study differentiates between Western Europe and Central Asia and Eastern Europe. Western Europe excludes 10 out of 27 EU countries [Bulgaria, Croatia, Cyprus, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia] but includes sizeable non-EU economies like Norway, Switzerland and the United Kingdom. Currently, CPI has not provided access to country-specific data. However, according to their figures, climate finance in Central Asia and Eastern Europe only amount to approx. 8% of that in Western Europe, suggesting it may receive less focus.

<sup>114</sup> Recalculated using the average 2022 EUR/USD exchange rate of 1.06

The EU's climate mainstreaming target commits 30% of its budget to climate action, supported by programme-specific targets. These include 37% of the Cohesion Fund and RRF, 35% of Horizon Europe, 30% of European Regional Development Fund (ERDF), 40% of the Common Agricultural Policy (CAP), and 61% of LIFE. Key funding examples include<sup>115</sup>:

- Innovation Fund: EUR 530 million to 2027 (ETS-dependent)
- Modernisation Fund: EUR 7.5 billion (2021–2023) for energy system upgrades in lower-income countries
- NextGenerationEU: EUR 578 billion (2021–2027) for climate action
- ERDF & Cohesion Fund: EUR 92 billion for climate
- InvestEU: 30% of mobilised investments (EUR 110 billion) for climate goals
- ETS aviation rules: EUR 1.6 billion by 2030 for low-carbon fuels in aviation

These instruments support a range of technologies and sectors, either by de-risking early-stage investments or by leveraging private capital at scale.

### Structuring Support Across the Investment Chain

Public financial instruments must be tailored to the maturity of green technologies and the structure of target markets. For new and emerging technologies, support tends to focus on R&D and innovation funding—often through grants or public research programmes such as Horizon Europe and national equivalents like Gassnova in Norway.<sup>116</sup>

As technologies mature, public support evolves toward budgetary guarantees, blended finance, concessional loans, and access to venture capital, with initiatives like InvestEU and the European Innovation Fund providing scale-up capital. In growing sectors, the focus shifts to reducing capital costs, supporting supply chains, and offering long-term certainty to investors—functions fulfilled by institutions like the New York Green Bank.<sup>117</sup>

In mature sectors, public finance may be used to ensure that the risk-return profile of green investments competes with high-emission alternatives. This is particularly important given the persistence of implicit subsidies for fossil fuel-related activities.

### Designing Instruments According to Project Needs

Public instruments must respond to diverse investment risks and structures. Grants are indispensable for projects with socialised benefits, particularly in adaptation, or where technology or market risks are high. Loans and equity are better suited to viable but capital-intensive projects, while guarantees offer a cost-

<sup>115</sup> European Commission, Reducing emissions from aviation European Commission, N.D., [https://climate.ec.europa.eu/eu-action/transport/reducing-emissions-aviation\\_en](https://climate.ec.europa.eu/eu-action/transport/reducing-emissions-aviation_en)

<sup>116</sup> Canadian Climate Institute. Longship: Carbon Capture and Storage in Norway's North Sea. 2024, <https://climateinstitute.ca/publications/longship-carbon-capture-and-storage-in-norways-north-sea/>.

<sup>117</sup> New York Green Bank. NYSERDA. New York State's Green Bank. Accessed May 23, 2025, <https://greenbank.ny.gov/>

effective means to crowd in private finance. Instruments that reduce fiscal burden—especially guarantees—should be favoured where feasible.

Public finance can also correct market failures or encourage private entry by offering first-loss coverage via budgetary guarantees provided by the InvestEU, technical assistance, or by filling equity gaps that deter institutional investors.

#### **The biggest gaps with regards to policy/regulation/tool:**

Despite progress, critical investment gaps remain. Adaptation investment is severely underfunded, due in part to the diffuse and public-good nature of its benefits. Infrastructure investment—particularly in energy and transport networks—requires further public backing to support services in which private capital can then operate. Public equity funding is insufficient for early stage cleantech. The fragmented and complex landscape of public financial support also impedes access, especially for SMEs and mid-sized corporates.

A major distortion arises from fossil fuel subsidies, which were estimated at over EUR 120 billion in Europe in 2022.<sup>118</sup> These subsidies undermine green investment competitiveness and represent a significant pool of resources that could be reallocated to support climate goals. One notable example is the EUR 42 billion per year in tax advantages for company cars.<sup>119</sup>

#### **Possible policies/regulations/tools to address barriers:**

##### **Deploying Public Instruments More Effectively:**

- **Addressing Under-investments in Climate Adaptation:** Adaptation investment should be supported through new or expanded programme windows. Successful case studies—particularly of clean-tech exits or public-private projects—should be publicised to demonstrate viable business models.
- **Reforming Fossil Fuel Subsidies:** Fossil fuel subsidies are a foundational barrier to effective public finance. Their removal would improve the investment environment, free up fiscal resources, and reinforce the Do No Significant Harm (DNSH) principle.

##### **State Aid Coordination:**

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<sup>118</sup> EI, IISD, ODI, E3G, and UNEP, The Production Gap Report 2021: The State of Government Plans and Production in Line with Paris Agreement Limits, 2021, [https://productiongap.org/wp-content/uploads/2021/11/PGR2021\\_web\\_rev.pdf](https://productiongap.org/wp-content/uploads/2021/11/PGR2021_web_rev.pdf)

<sup>119</sup> Transport & Environment, Fossil Fuel Subsidies for Company Cars Cost EU Taxpayers EUR42 Billion Every Year – New Study, 2022, <https://www.transportenvironment.org/articles/fossil-fuel-subsidies-for-company-cars-cost-eu-taxpayers-eur42-billion-every-year-new-study>

Recent examples of state aid include Germany's EUR 5 billion semiconductor support<sup>120</sup>, a EUR 4 billion decarbonisation package<sup>121</sup>, and France's EUR 1.5 billion scheme for biomethane production.<sup>122</sup>

These show how targeted public support can drive green innovation. However, where national fiscal space is limited, EU-level alternatives such as a second NextGenerationEU or expanded use of public guarantees should be considered.

Public funding will remain indispensable for de-risking investments, correcting market failures, and crowding in private capital. However, future efforts must focus on making funding more accessible, better targeted, and fiscally efficient. By enhancing the design and deployment of financial instruments, the EU can bridge investment gaps, accelerate private mobilisation, and ensure that climate investment reaches the necessary scale.

## 5.6 Public procurement policies and related regulatory initiatives

Public procurement policies have potential to contribute toward climate-friendly investments across various sectors of the economy. Public procurement of works, goods and services amount to around 14% of GDP in the EU. By strategically leveraging their purchasing power, governments can create significant demand for low-carbon goods and services, effectively encouraging businesses to invest in climate-friendly technologies. This approach helps to stimulate market growth for sustainable technologies and practices. By setting environmental criteria in their tenders and contracts, public entities can incentivise suppliers to innovate and develop more eco-friendly products and services. This ripple effect can lead to broader adoption of climate-conscious practices throughout supply chains, ultimately accelerating the transition to a low-carbon economy.

Governments may be able to credibly guarantee future purchases of climate friendly products. Governments can establish a mechanism to guarantee the purchase future production at pre-agreed prices. This would encourage investment today in technological investment or production capacity for future production. There are several examples of public procurement policies supporting private climate investments:

- **EU law currently requires a minimum share of public vehicles be environmentally friendly** and require procurers to source the best available energy efficiency for products, services or buildings.
- **At the national level, in Sweden, the 2017 National Procurement Strategy**<sup>123</sup> includes a goal to use public procurement to promote alternative solutions and drive innovation as well as to ensure public procurement is environmentally friendly.

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<sup>120</sup> European Commission, Commission Approves €5 Billion German State Aid Measure to Support ESMC in Setting Up a New Semiconductor Manufacturing Facility, 2024, [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_24\\_4287](https://ec.europa.eu/commission/presscorner/detail/en/ip_24_4287)

<sup>121</sup> European Commission, €4 Billion German State Aid Scheme Approved to Support Green Transition, 2024, [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_24\\_845](https://ec.europa.eu/commission/presscorner/detail/en/ip_24_845)

<sup>122</sup> European Commission, Commission approves €1.5 billion French State aid scheme to support sustainable biomethane production to foster the transition to a net-zero economy, 2024, [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_24\\_3986](https://ec.europa.eu/commission/presscorner/detail/en/ip_24_3986)

<sup>123</sup> Government Offices of Sweden. (2017). *National Public Procurement Strategy*. Ministry of Finance.

[https://www.oneplanetnetwork.org/sites/default/files/sweden\\_national\\_public\\_procurement\\_strategy\\_english\\_web.pdf](https://www.oneplanetnetwork.org/sites/default/files/sweden_national_public_procurement_strategy_english_web.pdf)

- In the United States, California's Buy Clean California Act<sup>124</sup> requires state agencies to consider the embodied carbon emissions of certain construction materials in their procurement processes, driving investments in low-carbon cement and steel production.

These examples demonstrate how public procurement can effectively channel investments towards climate-friendly solutions across various industries. The EHB is an interesting example of guaranteeing a market for future production to the lowest price bidder. This ensures investors in new technologies certainty in future market and prices for their future product, encouraging investment.

#### **The biggest gaps with regards to policy/regulation/tool:**

Over time, public procurement criteria are placing a higher weight on environmental considerations, and demonstration projects are now commonplace. Two areas identified for additional improvements are:

- Public procurement could be used more to guarantee future markets and future prices for green products. Investing in technology and expanded production facilities is a significant investment. Where there is uncertainty around the future uptake of a technology but potential widespread social or economic benefits, the private sector is likely to under-invest. This is true also if later market entrants could develop a product cheaper than early entrants. Instruments such as reverse auctions can guarantee future sales at prices and quantities agreed today. This would safeguard investors if the technology were not used later or, or if later-stage competitors can develop production capacity much more cheaply.
- Some networks still require significant public investment to increase private investment in the future. This includes electricity grids (see below for discussion on specific sectors) – and notably international interconnections – and related infrastructure such as storage mechanisms.

#### **Possible policies/regulations/tools to address barriers:**

- **Provide a reliable market for future outputs from green investments. Expand remit of existing European Hydrogen Bank (EHB) to cover other technologies at a similar development stage and status (i.e. likely future important use).** This could be of particular importance to support the development of the 50% of technologies not yet developed but required to meet climate targets. This reduces uncertainty about future markets or future prices for early movers in new technologies or expansion of output, thereby encouraging investment at early stages. The public can be guaranteed good value by using mechanisms such as reverse auctions, which offers the price to the lowest bidders.
- **Ensure access to reliable network infrastructure to build upon.** Review expenditure gaps in network infrastructure mainly financed through public funds (e.g. natural monopolies) and highlight gaps. Identify investments that could crowd in future private investments by ensuring good quality infrastructure. Examples include the power grid, to which access is required by renewable energy producers, EV charging stations, road infrastructure for automatic charging

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<sup>124</sup>California Department of General Services. (2024). *Buy Clean California Act*. State of California, [Buy Clean California Act](#)

technologies. This should be Europe-wide and consider specific areas in which investments should be made, including (but not limited to) cross-border infrastructure needs (supported by, e.g. the Connecting Europe Facility and Trans-European Networks). The assessments should take the specific focus of infrastructure investment needs for encouraging private investments in clean technologies. Member States and EU funds could use this assessment to supplement existing infrastructure investment plans.

- **Ensure contracts providing access to network infrastructure achieve a good balance between providing reliable long-term income for investors and deliver value for money for consumers.** Current volatile prices for renewable power providers creates significant project risk for potential investors. Reducing (perceived) risks of investments by providing investors with certainty that investments can generate a long-term return would encourage investments. One potential option would be increased use of medium-to-long term purchase power agreements or other instruments such as contracts for difference.
- **Demonstrate success of recent public climate investments.** Implement green demonstration projects on public buildings, charging stations or automatic charging on roads or in other public spaces. A lack of visible impacts reduces demand for green investments by households and companies. At the same time, a limited number of highly visible successes from clean tech start-ups (e.g. sell-outs to large companies or significant growth followed by IPOs) reduce appetite among potential investors (e.g. VCs).

## 5.7 Industrial policies and sectoral dives

**European industry is responsible for 20% of total EU GHG (Greenhouse gas) emissions.**<sup>125</sup> Although transport and buildings represent a higher share and require greater investments, industry demands the second-largest investment increase. This reflects not only low current investment flows but also the significant technological research and innovation needed to cut emissions, particularly in hard-to-abate sectors.

Decarbonising industry presents specific challenges. About two-thirds of industrial emissions stem from energy use, while one-third arises from process emissions, fossil resource use, or waste emissions, requiring deep changes to production methods. Additionally, decarbonising high-temperature, energy-intensive processes demands the development of new heat technologies. While many exist at demonstration stage, further development, scaling, and technology learning are needed for market deployment.

### Existing policies and examples:

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<sup>125</sup> European Environment Agency (EEA), *Greenhouse Gases — Data Viewer*, 2023, <https://www.eea.europa.eu/data-and-maps/dashboards/greenhouse-gases-viewer>

**The EU has established a wide range of instruments to support the European industry in its transition to greater sustainability.** These instruments offer financial assistance, cooperation opportunities and knowledge sharing to facilitate the adoption of greener technologies and practices. By leveraging these resources, companies can make their green industrialisation projects more attractive, allowing to increase own or external investments. Important examples include:

- **The EU-ETS** has been the most important instrument to reduce emissions in the industry sector since 2003. With the revision of the EU-ETS and introduction of the EU ETS-2, the scope of carbon pricing for industry was broadened, as free allocation allowances will be reduced for industries covered under the Carbon Boarder Adjustment Mechanism and smaller industry facilities will be covered by EU-ETS2.
- **A Carbon Boarder Adjustment Mechanism (CBAM)** It targets direct emissions from products in sectors such as electricity, cement, iron and steel, fertilisers, hydrogen, and aluminium, as well as certain indirect emissions. Importers of high-emission goods must pay a carbon price aligned with the EU ETS, adjusted for any carbon costs already paid abroad. While not directly decarbonising EU industry, CBAM helps prevent carbon leakage as free allowances are phased out<sup>126</sup>.
- **The Energy Performance of Buildings Directive (EPBD)** targets emissions from buildings, responsible for around 40% of the EU's energy consumption and 36% of its CO<sub>2</sub> emissions. Recent revisions broaden its scope to include embodied carbon from construction materials such as steel and cement, which account for a significant share of a building's total emissions. From 2028 onwards, the EPBD requires developers to report the whole-life carbon footprint of new buildings, incentivising demand for low-carbon industrial products. This regulatory shift is expected to boost market uptake, innovation, and investment in cleaner construction materials, complementing other EU instruments aimed at industrial decarbonisation.<sup>127</sup>
- **The Clean Industrial Deal is the backbone of the industrial policy for clean industry and clean technology development in Europe.**<sup>128</sup> Key elements of the plan include the Net-Zero Industry Act (NZIA), the Critical Raw Materials Act, reforms to the electricity market design, and measures to facilitate state aid and skills development. Receiving increased attention following the US IRA, the NZIA aims to boost the competitiveness of EU industries and technologies critical for decarbonisation. It seeks to strengthen European manufacturing capacity for net-zero technologies and their key components, while addressing barriers to scaling up production in Europe.
- **EU subsidy programmes to support industry decarbonisation** include the Innovation Fund, the Modernisation Fund, the LIFE program, the Just Transition Fund, the Cohesion Fund and Horizon Europe.
- **The InvestEU program** aims to mobilise over EUR 372 billion of public and private investment through budgetary guarantees of EUR 26.2 billion. The programme supports sustainable investment and innovation in high priority policy areas including through a sustainable infrastructure window (37% of the total) and a research, innovation and digitalisation window (25% of the total), which can be used to support new green technologies, among others. The

<sup>126</sup> Umweltbundesamt, *Einführung eines CO<sub>2</sub>-Grenzausgleichssystems (CBAM) in der EU*, 2023.

<https://www.umweltbundesamt.de/publikationen/einfuehrung-eines-co2-grenzausgleichssystems-cbam>

<sup>127</sup> EU/2024/1275, EPBD: [Directive - EU - 2024/1275 - EN - EUR-Lex](#)

<sup>128</sup> The Clean Industrial Deal Coalition, *The Clean Industrial Deal: A Joint Roadmap for Competitiveness and Decarbonisation*, 2025, [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_25\\_550](https://ec.europa.eu/commission/presscorner/detail/en/ip_25_550)

programme also provides additional services such as technical assistance and can make equity investments that can generate returns.

- **The EU further supports cooperation and technological knowledge exchange for industry decarbonisation across member states.** For example, Important Industrial Projects of Common European Interest (IPCEI) are collaborative projects between companies and governments in different EU countries that aim to develop cutting-edge technologies and boost European competitiveness. Further, the Strategic Technologies for Europe Platform (STEP) was set up by the EU to support the European industry and boost investment in critical technologies in Europe. It introduces a new STEP Seal – an EU label for high quality projects granting STEP projects visibility and facilitating their access to other possible sources of funding. STEP also supports projects in growing the skills necessary to develop those critical technologies.

#### The biggest gaps with regards to policy/regulation/tool:

**Existing public subsidies and de-risking mechanisms may not always be sufficient to make decarbonisation financially viable or attractive, given the complexity and scale of industrial transformation required.** The transformation of the industry to incorporate carbon neutral or non-carbon intensive technologies is complex and requires significant changes in industrial processes and energy systems.

While the EU has made significant progress in developing a regulatory framework for climate and industrial policy, and continue to do so with the **Clean Industrial Deal**, companies and investors still face gaps in clarity, coordination, and predictability, particularly with respect to industrial decarbonisation pathways. Clear, long-term policy signals are essential for shaping investment expectations and unlocking capital for climate-friendly industrial technologies. However, stakeholders often highlight uncertainty around future demand for low-carbon industrial products, such as green steel or low-emission cement, and the lack of sector-specific roadmaps with actionable investment signals.

In addition, navigating the existing landscape of public support instruments, such as guarantees, feed-in tariffs, grants, concessional loans, and tax incentives can be administratively complex, particularly for smaller market participants. For instance, SMEs and mid-sized industrial players may find their project scale incompatible with the requirements of existing funding programmes or may lack the capacity to engage with layered application processes.

While this report proposes additional policy measures, the objective is not to add further complexity, but rather to streamline and enhance the coordination, accessibility, and user-friendliness of the policy mix through more targeted and scalable mechanisms. While this report proposes additional policy measures, the objective is not to add further complexity, but rather to streamline and enhance the coordination, accessibility, and user-friendliness of the policy mix through more targeted and scalable mechanisms, including by building on existing frameworks such as the Construction Products Regulation (CPR).

#### Possible policies/regulations/tools to address these barriers:

##### **Provide more and better public financial support**

Proposals to further increase public financial support for the industry transition include:

- **Use revenue from EU ETS as collateral** to raise additional funds on the capital market to increase financial resources of the Innovation Fund and Modernisation Fund.
- **Extend the Recovery and Resilience Fund (RRF) beyond 2026** for green technologies and projects.
- **Support Member States in investing in European competitiveness** by allowing for flexibilities under the EU's fiscal governance framework. Should some RRF funds remain unspent by the deadline, they could be diverted to support cleantech manufacturing.<sup>129</sup>
- **Establish dedicated funds** for clean technology development or circular economy in industry.
- **Incorporate a Carbon Contract for Difference (CCfD) scheme** in the existing funding instruments for industry, which allows to cover higher operational costs for climate-neutral technologies. The use of CCfDs is currently focused primarily on Germany, which has initiated its own program with EU approval. The recent change to the EU Innovation Fund guidelines opens room for the inclusion of such a scheme. However, concrete steps in other Member States are not yet evident and implementation across other EU countries has not yet been widely reported. This could be fostered by the EU.
- The **Clean Transition Dialogues**, launched as part of the *EU Clean Transition/Industrial Deal*, are designed to engage energy-intensive industries and identify tailored solutions for decarbonisation, competitiveness, and investment certainty. These dialogues aim to foster better coordination across EU instruments and ensure that funding and regulatory support align with industry needs.<sup>130</sup>
- The **Construction Products Regulation (CPR)** provides a solid regulatory basis for advancing sustainability and climate performance in the construction and building materials sector. The regulation already includes provisions related to environmental performance, and recent proposals to revise it strengthen its potential to support the deployment of low-carbon and circular construction products<sup>131</sup>. Building on this framework could help scale market demand for clean industrial inputs, such as green steel, cement, and insulation materials.<sup>132</sup>

#### **Increase de-risking support and the availability of risk capital**

Options to enhance the derisking of industrial decarbonisation investments via the InvestEU facilities or other vehicles include:

- **Increasing the InvestEU guarantee:** With the InvestEU facility, a vehicle for de-risking investments via public guarantees is already available. However, the recent evaluation of the facility highlighted that its budgetary means are not sufficiently large to cover total demand. The facility offers significant flexibility in terms of funding mechanisms, intermediaries, project types, and project sizes. With an increased budget, InvestEU could play an even greater role in mobilising private capital for green investments. Expanding the facility would also offer an opportunity to refine its design based on lessons learned to date—particularly by building on the positive

<sup>129</sup> European Commission, Recovery and Resilience Scoreboard: Disbursements, 2025, [https://ec.europa.eu/economy\\_finance/recovery\\_and-resilience-scoreboard/disbursements.html](https://ec.europa.eu/economy_finance/recovery_and-resilience-scoreboard/disbursements.html)

<sup>130</sup> European Commission. (2024). *The Clean Transition Dialogues – Stocktaking: A Strong European Industry for a Sustainable Europe* (COM(2024) 163 final). Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52024DC0163>

<sup>131</sup> As part of the Clean Industrial Deal, the European Commission proposes the development of a voluntary carbon intensity label for industrial products. For cement, this label is expected to be introduced under the Construction Products Regulation (CPR), with a standardisation request.

<sup>132</sup> Regulation (EU) 2024/3110.

experience of working with implementing partners under the open architecture and umbrella framework. These refinements could help shape a potential continuation or successor initiative, further enhancing its effectiveness and alignment with market needs.

- **Public enhancement of Power Purchase Agreements for renewable energy producers<sup>133</sup>:** Provide national or pan-European guarantee schemes to back PPAs in case a counterparty becomes insolvent.
- **Provide additional risk capital earmarked for green technology innovation:** Establish a European Co-Innovation and Green Technology Diffusion Fund, with a focus on green technologies where EU companies excel and that can have significant impact within the next decade. Alternatively, launch venture capital fund specifically targeting innovative carbonisation businesses to bridge the financing gap of business models that investors perceive as risky. Yet, such an approach is likely less efficient than leveraging InvestEU.

#### **Enhance the political agenda and ambition for the green transformation of Europe's industry**

The following options have been raised by different stakeholders to improve the EU Policy Agenda for industrial decarbonisation.

- **Enhance the EU political agenda on electrification of process heat.** While the need for green hydrogen for industry decarbonisation has been addressed via the Hydrogen Bank and other support instruments, the ramp-up of technologies for direct electrification of industrial process heat need a stronger focus and policy agenda.
- **Harmonise EU regulatory framework for energy infrastructure to incentivise clean energy and electrification.** Options include: Improve harmonisation of regulations across EU member states to enhance cross-border renewable energy projects; further integrate EU energy markets to ensure efficient distribution and stable prices; propose a new governance for the integrated planning of electricity, gas and hydrogen infrastructure at local, national and EU level, including net-zero infrastructure target plans for 2050 with interim plans every five years; ensure that existing energy infrastructure is used more efficiently, for example, through dynamic grid tariffs (see more on energy investment in the energy deep-dive below).

#### **Enhance the demand for climate-friendly industrial products**

Measures to increase demand and thus stabilize price predictions could include:

- **Extend the Hydrogen Bank model to other sectors** like battery components and green steel. This approach provides predictable revenue streams, reducing investment risk and attracting private capital.
- **Develop political targets for the use of circular / green materials in total material use.** The EU Green Deal incorporates the circular economy perspective, but it could be more ambitious. To steer investor expectation, political targets for the use of green/circular materials (e.g. as the share of renewables in the mix for 2040) need to be developed. Defining gradually increasing green content quotas for key products which are also mandatory for the private sector can create substantial demand for green products and decrease revenue uncertainty.

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<sup>133</sup> PPAs are contracts between energy producers and consumers that guarantee a fixed price for electricity over a long term, providing financial stability for renewable energy projects.

- **Further extend available provisions for green public procurement (GPP)** and enhance their implementation across member states
- **Establish an officially backed certification scheme for low carbon materials.** While private product labels already exist, the CPR aims to improve their accountability and transparency. However, a formal EU-level certification—comparable to the EU organic or energy efficiency labels—could significantly boost the credibility and comparability of such labels. This would support the development of lead markets for green products by offering clear, trusted signals to consumers and investors. In addition, an official label could help raise awareness of the environmental impact of products and provide guidance on which technologies are likely to be phased out and which are worth future investment.

#### **Foster knowledge sharing for investors and technology operators**

Many necessary technologies are still in a development phase and lack operational experiences by technology operators and investors. To increase knowledge on the availability and benefits of new technologies, the following policy options were raised:

- **Establish regional innovation hubs and clusters**, e.g., an Industrial Electrification Technologies Alliance, to facilitate collaboration and resource sharing among industry stakeholders. New hub/clusters/alliances could leverage existing initiatives like the EU Heat Pump Action Plan, Heat Pump Accelerator or Circular economy initiative of Dutch banks and public authorities.
- **Create a transparent and accessible platform** to upload key information on the state of development of various technologies. The platform could help to ensure that more innovative technologies are not overlooked, and their benefits are better understood, which would help guide investment decisions of financial players.

## 6 Prioritised policy actions

The subsequent sections of the report present nine priority actions, selected from a long list of 76 policy options assessed for their potential to effectively address core investment barriers and mobilise private capital for the EU's climate transition. Each action is outlined in a dedicated one-page table. The one-page table summarises the core features of each policy action, including the objective, description, and design option(s), as well as the relevant implementation partners and its coherence with existing EU policy frameworks. It also outlines the potential to mobilise private capital and reduce CO<sub>2</sub> emissions, highlights key enablers, identifies major risks and barriers, and draws on illustrative case studies where available. This format allows for a clear and concise comparison of each action's potential impact and feasibility. The full analyses underpinning these policy actions can be found in the separate appendix.

### 6.1 Overview of the prioritised Policy Actions

The table below provides a high-level overview of the nine selected policy actions, presenting their key design elements and the investment barriers they are intended to address. This snapshot serves as a quick reference tool, allowing readers to compare the policy areas, policy actions, and intervention logic at a glance. Each policy action is numbered according to the detailed one-page summaries in the subsequent sections.

Policy Areas	Policy Actions	Policy Option
Industrial policy	#1 Carbon labels for carbon-intensive products	#1 Establish labels for homogeneous, high-volume materials (e.g. concrete, asphalt in road works) under the CPR, and whole-building GHG-performance thresholds for general-use materials (steel, cement).
Public co-funding and subsidies	#2 Expanded use of budgetary guarantees  #4 Crowding in private finance in green infrastructure investments  #6 Improving lending energy renovations of buildings	#2 Allocate a larger share of the next EU MFF to budgetary guarantees; scale up InvestEU's central and MS compartments; develop State-aid-compliant templates to ease implementation and reduce complexity.  #4 Expand the InvestEU's Sustainable Infrastructure Window and establish a new EU blended finance facility targeting immature technologies and underserved regions to scale-up much needed green infrastructure investments  #6 Support lending for energy renovations, e.g. by clarifying the role of EIB/CEB/EBRD in pre-financing of grants, by providing financial support to EIB/CEB/EBRD to make their loan products more financially attractive, or by establishing a dedicated EU-wide energy renovation loan scheme.
Sustainable Finance Framework	#3 Increase pension fund investments in green assets  #7 Establish a permanent advisory unit or Platform on Sustainable Finance	#3 Technical Support Programme aimed at: 1) Public entities overseeing public pension and reserve funds, to support the design and implementation of climate-aligned investment strategies; and 2) National regulators and pension system policymakers, to help create an enabling environment that advances sustainability in the pension sector.  #7 Level 1: Set up a dedicated, staffed secretariat to improve the Platform's administrative and operational efficiency. Level 2: Strengthen and expand the Secretariat to also provide implementation support. Level 3: Create a green finance accelerator at the EU level.
Public procurement	#5 Support demand creation for green products during scale-up	#5 Expand EU GPP by establishing a dedicated support scheme (modelled on the European Hydrogen Bank) using reverse auctions and carbon contracts

		for difference (CCfDs) to support green steel, cement, and other low-carbon construction materials.
<b>Tax policy</b>	#8 Fiscal policies for energy renovation of buildings #9 Fiscal policies for investments into renewables and energy efficiency in transport and industry	<b>#8</b> The proposal suggests: (1) commissioning EU-wide research on existing tax incentives and country-specific improvements; (2) facilitating Member State knowledge exchange via forums and an interactive database; (3) integrating tax mechanisms into the European Affordable Housing Plan to boost efficiency and affordability. <b>#9</b> The proposal suggests: (1) aligning EU tax guidance to support zero-emission fleets and charging infrastructure; (2) strengthening corporate tax incentives for clean technologies; and (3) improving knowledge on green tax measures through studies, knowledge exchange and a shared database.

## 6.2 Detailing the Policy Actions

### 6.2.1 Policy Action 1: Carbon labels for carbon intensive construction products

Element	Description
<b>Policy Objective</b>	To enhance carbon transparency and accelerate industrial decarbonisation in the construction sector by introducing a harmonised EU carbon labelling scheme for homogeneous, high-volume materials, while promoting whole-building GHG performance frameworks for more complex applications.
<b>Policy Description</b>	Rather than creating a new labelling framework, the policy proposes amending Article 22(9) of the Construction Products Regulation (CPR) to enable targeted carbon performance labelling. Initial focus is on well-regulated, standardised materials (e.g. concrete, asphalt), where data and regulatory alignment exist. For general-use materials like steel and cement in varied contexts, a building-level GHG performance approach is favoured, ensuring flexibility and practicality.
<b>Policy Option</b>	Building on Clean Industrial Deal's approach, this option introduces a dual-track strategy: <ol style="list-style-type: none"> <li><b>Track 1 – Carbon Labels</b> for standardised, high-volume materials (e.g. concrete, asphalt) in sectors like road infrastructure, where labelling is low-risk and high-impact.</li> <li><b>Track 2 – Whole-Building GHG Performance</b> for general-use materials (e.g. steel, cement), enabling emissions thresholds at the building level rather than product-specific labelling, offering flexibility while supporting the CID's goals.<sup>134</sup></li> </ol>
<b>Implementation Partners</b>	European Commission (DG GROW, DG CLIMA, DG ENV, DG ENER), European Environment Agency, JRC, EIB Group, Member States, national standardisation bodies (CEN, EOTA), NGOs, and industry stakeholders.
<b>Alignment with EU Policy Frameworks</b>	CPR, EPBD, Clean Industrial Deal (CID), European Green Deal (EGD), CBAM, ETS, GPP, and ESPR through DPP integration (only possible in track 1) in addition to Green Public Procurement.
<b>Capital Mobilisation Potential</b>	The impact of carbon labels will be greatest when integrated with demand-side measures, such as Green Public Procurement criteria. These may include mandatory technical requirements or voluntary award criteria that prioritise products with lower carbon footprints in public tenders.
<b>CO<sub>2</sub> Reduction Potential</b>	Estimated potential reduction of <b>~35 million tonnes CO<sub>2</sub> annually by 2030</b> through 10% market penetration of green steel and cement, based on Eurostat and industry data. <sup>135</sup>
<b>Key Enablers</b>	<ul style="list-style-type: none"> <li>Revised CPR (Article 22(9), Article 82), EPBD, Level(s)</li> <li>Methodologies: ISO 14025 (EN 15804), ISO 14067, EN 15804, GHG Protocol, EN 15978, Level(s)</li> </ul>

<sup>134</sup> A project-level GHG performance approach can also apply to road construction as an alternative or complement to product-level labels, particularly where product-level labels are impractical due to methodological challenges or industry structure.

<sup>135</sup> The estimated CO<sub>2</sub> reduction potential is based on (i) market data from Eurostat, FIEC, and industry sources indicating an annual consumption of approximately 324 million tons of cement and 198 million tons of steel in the EU construction sector; (ii) an assumed 10% market penetration of low-carbon variants by 2030; (iii) indicative emission savings of 0.2 tCO<sub>2</sub>/ton for cement and 1.45 tCO<sub>2</sub>/ton for steel; and (iv) a simplified attribution of impact to policy-induced carbon transparency mechanisms such as product-level labelling or GHG performance criteria. While the estimate does not assume universal adoption, it illustrates the potential scale of emissions reduction achievable through enhanced carbon transparency in material procurement.

Element	Description
	<ul style="list-style-type: none"> <li>Integration with DPP</li> <li>GPP reform to reward low-carbon products</li> </ul>
Risks and Barriers	<ul style="list-style-type: none"> <li>Opposition from industry actors fearing cost increases or exposure</li> <li>Inappropriate scope for generic materials as steel and cement may not suit all building applications</li> </ul>
Case Studies / Precedents	<ul style="list-style-type: none"> <li><b>EU Energy Label:</b> Mandatory labelling from 1995 with A-G rating scale with colour codes for electrical appliances.</li> <li><b>Voluntary labels (e.g., Ecolabel Index)</b> show widespread industry adoption potential, though often lack enforcement or standardisation.</li> </ul>

## 6.2.2 Policy Action 2: Expanded use of budgetary guarantees under the next MFF

Element	Description
Policy Objective	To mobilise large-scale private investment for the EU's green transition by expanding the use of budgetary guarantees in the next MFF.
Policy Description	Budgetary guarantees are cost-efficient financial instruments that reduce the risk for private investors by covering a portion of potential losses. Unlike grants or loans, they enable high capital leverage with limited budgetary expenditure. They address credit market imperfections, enhance investor confidence, and reduce financing costs for green projects. Lessons from the InvestEU programme and Member State examples show that guarantees can attract private finance at significantly higher leverage ratios compared to traditional grant-based models.
Policy Option	The proposal includes: (1) allocating a greater share of MFF funds to guarantees; and (2) developing standardised market-tested state aid-compliant templates to streamline implementation, while retaining the open architecture under InvestEU.
Implementation Partners	The EIB Group, International financial institutions, national promotional banks or institutions.
Alignment with EU Policy Frameworks	Builds on InvestEU's guarantee mechanism to mobilise private capital aligned with the European Green Deal and EU climate targets. State aid templates ensure compliance with the EU's competition rules.
Capital Mobilisation Potential	Assuming the InvestEU's multiplier of 14.2, reallocating just 1% of the Just Transition Fund budget (EUR 193.2 million) to guarantees, for instance through the InvestEU facility, could mobilise EUR 2.74 billion in mobilized capital. <sup>136</sup>
CO <sub>2</sub> Reduction Potential	The mobilised capital in the above example could result in 22.74 million tonnes of CO <sub>2</sub> savings <sup>137</sup> , assuming an avoidance cost of EUR 0.020/kWh <sup>138</sup> and a carbon intensity of the EU's energy mix of 0.166 kg CO <sub>2</sub> per kWh. <sup>139</sup>
Key Enablers	<ul style="list-style-type: none"> <li>- Dedicated MFF budgetary allocation</li> <li>- Broad political coalition including private sector and net-contributing Member States</li> </ul>

<sup>136</sup> Wilkinson, C., Russell, S., & Mammana, F. (2024). *Interim evaluation of the InvestEU Programme*.

[https://commission.europa.eu/about/departments-and-executive-agencies/economic-and-financial-affairs/evaluation-reports-economic-and-financial-affairs-policies-and-spending-activities/interim-evaluation-investeu-programme\\_en](https://commission.europa.eu/about/departments-and-executive-agencies/economic-and-financial-affairs/evaluation-reports-economic-and-financial-affairs-policies-and-spending-activities/interim-evaluation-investeu-programme_en)

<sup>137</sup> EUR 2.74 billion / €0.020/kWh = 137 billion kWh. And then: 137 billion kWh \* 0.166 kg CO<sub>2</sub>/kWh ≈ 22.74 million tonnes CO<sub>2</sub>

<sup>138</sup> Directorate-General for Energy. (2025). *De-risking Energy Efficiency Platform (DEEP)*. European Commission.

<https://deep.ec.europa.eu/>

<sup>139</sup> Climate Transparency. (2022). *Climate Transparency Report, Country profile: The European Union*. <https://www.climate-transparency.org/g20-climate-performance/g20report2022#1531904804037-423d5c88-a7a7>

Element	Description
	<ul style="list-style-type: none"><li>- Standardised state aid templates</li></ul>
<b>Risks and Barriers</b>	<ul style="list-style-type: none"><li>- Political resistance from Member States reliant on grants.</li><li>- Potential market distortion and moral hazard if guarantees are poorly structured.</li><li>- Underutilisation due to complex instrument design.</li></ul>
<b>Case studies / precedents</b>	<ul style="list-style-type: none"><li>- <b>InvestEU</b>: EUR 26.2 billion in guarantees expected to mobilise EUR 372 billion in investment</li><li>- <b>Romania</b>: EIB guarantees totalling EUR 98 million aim to unlock EUR 750 million in private sector loans.</li></ul>

### 6.2.3 Policy Action 3: Increase pension fund investments in green assets

Element	Description
<b>Policy Objective</b>	Strengthen the capacity of public pension funds and pension reserve funds to contribute meaningfully to the green transition by aligning investment strategies and practices with national and EU climate goals. Enhance financial resilience of pension funds against physical and transition risks.
<b>Policy Description</b>	Pension funds are uniquely positioned to drive the green transition due to their size and substantial financial influence in the market. European pension funds are increasingly contributing to climate action. Yet, there are significant challenges, gaps and different approaches in Member States. There is room to strengthen how pension funds contribute to the green transition—whether through their investments, engagement, or risk management practices. This policy recommendation aims to tackle that gap by providing technical support to practitioners and policymakers.
<b>Policy Option</b>	The proposal includes a tailor-made Technical Support Program to (1) public entities overseeing public pension funds and pension reserve funds, where applicable, to design and implementation of climate-aligned investment strategies and (2) national regulators, policymakers of pension systems and markets to create the enabling environment that facilitate progress of pension funds on the sustainability domain.
<b>Implementation Partners</b>	European Commission (DG REFORM) through the Technical Support Instrument. National ministries and regulators overseeing pensions. Public pension fund institutions and reserve funds.
<b>Alignment with EU Policy Frameworks</b>	In alignment with sustainability-related provisions in EU legislation that guide pension fund operations. Yet, the design and regulation of pension systems remain the responsibility of individual Member States.
<b>Capital Mobilisation Potential</b>	Indirect but meaningful impact due to the size of pension assets, which amount to EUR 3.6 trillion in the Eurozone (European Central Bank). A hypothetic 1% reallocation to green investments would result in EUR 36 billion mobilised.
<b>CO<sub>2</sub> Reduction Potential</b>	With the reference value of 1 000 tCO <sub>2</sub> e reduction per EUR 1 million invested in green assets (S&P Trucost) a EUR 36 billion green shift could result in approximately 36 MtCO <sub>2</sub> e reductions/year
<b>Key Enablers</b>	<ul style="list-style-type: none"> <li>- Capitalising on existing technical support delivery mechanism (Technical Support Instrument)</li> <li>- Growing demand for sustainable investments and existing good practices in some Member States.</li> </ul>
<b>Risks and Barriers</b>	<ul style="list-style-type: none"> <li>- Voluntary uptake: Technical Support Project depends on member states' interest and initiative.</li> <li>- Diverse pension market maturity, legal and institutional frameworks across the EU.</li> <li>- Implementation risks: lack of ownership, capacity, or follow-through.</li> <li>- Methodological gaps: limited harmonisation in climate investment approaches.</li> </ul>
<b>Case studies / precedents</b>	Various good practices exist in member states both on regarding supporting policies and actual green investment practices of pension funds (e.g. France, Sweden).

## 6.2.4 Policy Action 4: Crowding in private finance in green infrastructure investments

Element	Description
<b>Policy Objective</b>	To crowd in private capital for large-scale green network infrastructure—such as electricity grids, hydrogen pipelines, and district heating—through a dual-track EU-level approach: scaling up existing blended finance under InvestEU and establishing a dedicated facility for high-risk, underserved sectors and regions.
<b>Policy Description</b>	Green network infrastructure faces a range of investment barriers, including long payback periods, regulatory uncertainty, technology risks, public opposition, and a mismatch between project risk profiles and investor preference. To overcome these challenges, a dual approach is proposed: scaling up existing EU initiatives and developing a new targeted facility. Through this approach, tailored blended finance instruments—such as first-loss capital, concessional loans, and guarantees—can be strategically deployed to mobilise much-needed infrastructure investments for the EU's green transition.
<b>Policy Option</b>	The policy action proposes a dual track strategy: (1) First, expand InvestEU's Sustainable Infrastructure Window (SIW) by allocating additional guarantees to crowd in more private capital using its open-architecture model. Additionally, (2) Establish a new EU blended finance facility (or dedicated tranche under InvestEU) tailored to early-stage, high-risk technologies (e.g. hydrogen) and underserved regions (e.g. in Eastern and Southeastern Europe) with limited access to capital markets.
<b>Implementation Partners</b>	European Commission (DG CLIMA, DG ENER, DG GROW), EIB Group, EIF, international financial institutions, national promotional banks (e.g. Bpifrance, BGK, Invest-NL), regional authorities, institutional and private equity investors, technical and industry experts.
<b>Alignment with EU Policy Frameworks</b>	Aligns with the European Green Deal, EU Action Plan on Financing Sustainable Growth, EU Taxonomy Regulation, the PCI framework, and the Action Plan for Affordable Energy (notably Tripartite Contracts for high-risk clean energy). Builds on InvestEU.
<b>Capital Mobilisation Potential</b>	Assuming InvestEU's multiplier of 14.2 <sup>140</sup> , an additional EUR 500 million under Track 1 could mobilise ~EUR 7 billion in additional private and public investment <sup>141</sup> . Even with more conservative assumptions for high-risk Track 2 projects, capital mobilisation would remain significant and strategically impactful.
<b>CO<sub>2</sub> Reduction Potential</b>	The mobilised capital in the above example could result in 58.9 million tonnes of CO <sub>2</sub> savings <sup>142</sup> , assuming an avoidance cost of EUR 0.020/kWh <sup>143</sup> and a carbon intensity of the EU's energy mix of 0.166 kg CO <sub>2</sub> per kWh. <sup>144</sup>
<b>Key Enablers</b>	<ul style="list-style-type: none"> <li>- Strong governance and implementation capacity (e.g. InvestEU structure)</li> <li>- Involvement of industry and investor stakeholders in design.</li> <li>- Tailored financial instruments per project type and region.</li> </ul>
<b>Risks and Barriers</b>	<ul style="list-style-type: none"> <li>- Failure to address the private investor's risk-return mismatch.</li> <li>- National regulatory fragmentation (e.g. Taxonomy interpretation).</li> </ul>

<sup>140</sup> Wilkinson, C., Russell, S., & Mammana, F. (2024). *Interim evaluation of the InvestEU Programme*.

[https://commission.europa.eu/about/departments-and-executive-agencies/economic-and-financial-affairs/evaluation-reports-economic-and-financial-affairs-policies-and-spending-activities/interim-evaluation-investeu-programme\\_en](https://commission.europa.eu/about/departments-and-executive-agencies/economic-and-financial-affairs/evaluation-reports-economic-and-financial-affairs-policies-and-spending-activities/interim-evaluation-investeu-programme_en)

<sup>141</sup> Calculated as EUR 500 million \* 14.2 = EUR 7.1 billion

<sup>142</sup> EUR 2.81 billion / EUR 0.020/kWh = 140 billion kWh. And then: 140 billion kWh \* 0.166 kg CO<sub>2</sub>/kWh ≈ 23.3 million tonnes CO<sub>2</sub>

<sup>143</sup> Directorate-General for Energy. (2025). *De-risking Energy Efficiency Platform (DEEP)*. European Commission.

<https://deep.ec.europa.eu/>

<sup>144</sup> Climate Transparency. (2022). *Climate Transparency Report, Country profile: The European Union*. <https://www.climate-transparency.org/g20-climate-performance/g20report2022#1531904804037-423d5c88-a7a7>

Element	Description
	<ul style="list-style-type: none"> <li>- Technological and market maturity risks, as well as public opposition (NIMBY)</li> <li>- Funding gaps in initiatives (demand for InvestEU's products already exceed supply) and administrative capacity gaps in some targeted regions.</li> </ul>
<b>Case studies / precedents</b>	<ul style="list-style-type: none"> <li>- <b>EFSI/IIW</b>: EIB credit enhancement through budgetary guarantees (precursor to InvestEU) for wind and grid infrastructure in Spain/Italy</li> <li>- <b>InvestEU SIW</b>: EUR 9.9 billion budgetary guarantee for sustainable infrastructure window. Case project: Pan-EU Wind Power Package.</li> <li>- <b>Milano Transition Fund</b>: First-loss household contributions leveraging institutional capital.</li> </ul>

## 6.2.5 Policy Action 5: Support demand creation for green products during market scale-up

Element	Description
<b>Policy Objective</b>	To create predictable and scalable demand for low-carbon industrial materials by expanding the role of GPP and leveraging financial instruments like reverse auctions and CCfDs
<b>Policy Description</b>	This policy recommends expanding the remit of the European Hydrogen Bank to support the scale-up of low-carbon industrial materials. To ensure alignment between financial incentives and regulatory demand, the policy suggests using <b>product-level carbon labels</b> as criteria for Green Public Procurement (GPP), where appropriate. For homogeneous materials <b>already regulated under the CPR</b> , such as asphalt, product-level labels could be applied. For other materials like <b>concrete</b> , which may be subject to future harmonisation under CPR 2024, labelling could initially remain voluntary. For more complex materials like steel and cement, the use of <b>whole-building GHG performance thresholds</b> is recommended, enabling flexibility in material selection while ensuring decarbonisation outcomes.
<b>Policy Option(s)</b>	The proposal includes: (1) Expand EHB mechanisms to cover green industrial materials beyond hydrogen. (2) Embed GHG thresholds into GPP criteria and align them with Environmental Product Declarations. (3) implement other strategic public procurement channels such as defence contracts and Trans-European Network (Ten) infrastructure projects.
<b>Implementation Partners</b>	- European Commission (DG CLIMA, DG GROW, DG ENV, DG ENER, CINEA (including Green Assist under the InvestEU Advisory), EIB, national public procurement authorities, as well as industry, SMEs, financial sector, and civil society groups
<b>Alignment with EU Policy Frameworks</b>	Aligns with the CID, the revised Public Procurement Framework (2026), and the Construction Products Regulation (CPR), which together strengthen demand-side levers and carbon performance standards. Also, aligns with EU ETS and the CBAM, ensuring that incentives for low-carbon materials are reinforced by pricing and border measures.
<b>Capital Mobilisation Potential</b>	GPP could catalyse EUR 2–5 in private investment per EUR 1 of public procurement. Reverse auctions and CCfDs would offer revenue guarantees, enabling access to finance for early-stage producers of green construction materials.
<b>CO<sub>2</sub> Reduction Potential</b>	A 10% market penetration of green cement and steel in EU construction could reduce emissions by approx. 35 million tonnes of CO <sub>2</sub> annually equivalent to EUR 3.5 billion in carbon savings at €100/tonne. <sup>145</sup>
<b>Key Enablers</b>	- Construction Product Regulation (CPR) - Strong GPP criteria for lowering usage of high-volume materials. - Clean Industrial Deal - The European Investment Bank and InvestEU (Advisory services under Green Assist)
<b>Risks and Barriers</b>	- low uptake due to fragmented procurement practices - Lack of standardisation for low-carbon cement and steel - Market readiness gaps and uncertain supply chain maturity

<sup>145</sup> The estimated CO<sub>2</sub> reduction potential is based on (i) market data from Eurostat, FIEC, and industry sources indicating an annual consumption of approximately 324 million tons of cement and 198 million tons of steel in the EU construction sector; (ii) an assumed 10% market penetration of low-carbon variants by 2030; (iii) indicative emission savings of 0.2 tCO<sub>2</sub>/ton for cement and 1.45 tCO<sub>2</sub>/ton for steel; and (iv) a simplified attribution of impact to policy-induced carbon transparency mechanisms such as product-level labelling or GHG performance criteria. While the estimate does not assume universal adoption, it illustrates the potential scale of emissions reduction achievable through enhanced carbon transparency in material procurement.

Element	Description
	<ul style="list-style-type: none"> <li>- High upfront costs and limited investor confidence without public guarantees</li> </ul>
<b>Case Studies / Precedents</b>	<ul style="list-style-type: none"> <li>- <b>Sweden's GPP</b> strategy prioritises lifecycle assessment and has stimulated early demand for green construction materials.</li> <li>- <b>Canada's CCfDs</b> provide price certainty for carbon abatement technologies.</li> <li>- <b>California's Buy Clean Act</b> mandates embodied carbon disclosure in public tenders.</li> </ul>

## 6.2.6 Policy Action 6: Loan instruments for incentivising energy renovations

Element	Description
<b>Policy Objective</b>	To significantly scale up affordable, accessible and impactful lending for energy renovations of residential buildings, particularly those with the worst energy performance.
<b>Policy Description</b>	Deep renovations of residential buildings are key to achieving EU climate targets and addressing energy poverty. However, upfront investment costs and administrative burdens limit homeowner uptake. EU multilateral development financial institutions (EU-DFIs) — notably EIB, EBRD, and CEB — can play a central role in overcoming these barriers by offering more attractive and accessible financial products, supported by the European Commission through subsidies, grants, technical assistance and regulatory clarification.
<b>Policy Options</b>	<ol style="list-style-type: none"> <li><b>Clarify and enable pre-financing of grants by EU-DFIs:</b> Review EU rules to allow EU-DFIs to provide intermediated finance to pre-finance renovation grants, especially where national schemes reimburse only after project completion.</li> <li><b>Provide EU-level financial support to enhance EU-DFIs' offers:</b> Allocate EU budget to lower interest rates or provide grant components through EU-DFIs, allowing for capital rebates and zero-interest loans.</li> <li><b>Develop a simplified, scalable pan-EU blended renovation loan:</b> A standardised product combining long-term loans, capital rebates, and harmonised green criteria, tailored to different national contexts and intermediaries.</li> </ol>
<b>Implementation Partners</b>	European Commission (DG ENER, DG GROW, DG ECFIN, DG REGIO, DG BUDG), EIB, EBRD, CEB, , international financial institutions, national promotional banks, private financial institutions, energy agencies.
<b>Alignment with EU Policy Frameworks</b>	Reinforces EPBD and Energy Efficiency Directive requirements. Builds on InvestEU, ELENA, and PF4EE precedents. Encourages harmonisation of sustainability criteria (EIB, EIF) and links with upcoming National Building Renovation Plans (from 2025).
<b>Capital Mobilisation Potential / CO<sub>2</sub> Reduction Potential</b>	Raising the deep renovation rate by just 0.1% (~120,000 buildings/year) could save 1.28 billion kWh and 256,000 tonnes CO <sub>2</sub> annually. A well-designed EU Renovation Loan could substantially help close the €150 billion annual investment gap in buildings. Empirical data from PF4EE and future pilots can quantify impacts.

Element	Description
<b>Key Enablers</b>	<p>Establish a targeted working group or workshops involving EIB, EIF, EC services, EU-DFIs and national financial institutions.</p> <ul style="list-style-type: none"> <li>- Commission detailed impact and feasibility study.</li> <li>- Harmonise green eligibility criteria for renovation loans across EU financial instruments.</li> <li>- Expand technical assistance for banks (including private FIs) and homeowners, notably via InvestEU and ELENA.</li> </ul>
<b>Risks and Barriers</b>	<ul style="list-style-type: none"> <li>- <b>Regulatory:</b> Legal hurdles to allow EU-DFIs to pre-finance grants.</li> <li>- <b>Budgetary:</b> Competing EU funding priorities, risk of “stop-go” grant cycles.</li> <li>- <b>Operational:</b> Complex targeting, risk of overlapping with national schemes, and state aid compliance.</li> <li>- <b>Design:</b> Difficulty tailoring a pan-EU loan to diverse national contexts and needs.</li> <li>- <b>Equity:</b> Ensuring products are accessible to low-income, vulnerable households.</li> </ul>
<b>Case studies / precedents</b>	<ul style="list-style-type: none"> <li>- <b>PF4EE:</b> Blended instrument with EIB that combines loans, risk-sharing and TA.</li> <li>- <b>EU Renovation Loan (2022 Concept):</b> Blended model with long-term repayment, deferrable interest, capital rebates.</li> <li>- <b>Regulation (EU) No 964/2014:</b> Precedent for EU-supported renovation loan.</li> <li>- <b>EIF Sustainability Guarantee and EIB Green Eligibility Checker:</b> Tools for simplified green lending.</li> </ul>

### 6.2.7 Policy Action 7: Enhance the operative capacity and complement the functions of the Platform on Sustainable Finance

Element	Description
<b>Policy Objective</b>	Enhancing the Platform on Sustainable Finance by establishing a dedicated secretariat for administrative and analytical support, potentially expanding it to provide implementation assistance, or creating a “green finance accelerator” to drive innovation and foster public-private collaboration in sustainable finance.
<b>Policy Description</b>	In 2020 the European Commission established the Platform under the Taxonomy Regulation as an advisory body to the Commission. The Platform is delivering on its mandate and has been instrumental in shaping key policies. Yet, the Platform’s operating model has certain limitations due to not having permanent, dedicated support staff and own resources. In addition, the EU is confronted with a sustainable finance implementation gap. This policy recommendation is designed to effectively address the identified shortcomings and gaps.
<b>Policy Option</b>	The proposal includes three options: (1) Establish a dedicated, staffed secretariat supporting the Platform. This option focuses on enhancing the administrative and operational efficiency of the Platform (minimal intervention) (2) Further strengthen the Secretariate and expand its scope. This option suggests further enhancing the organisational structure surrounding the Secretariat and broadening its scope to include implementation support (intermediate intervention) (3) Establish a green finance accelerator in the EU (advanced intervention).
<b>Implementation Partners</b>	European Commission (DG FISMA and other DGs), the EU Platform on Sustainable Finance, other public and private sector entities in case of Option 3
<b>Alignment with EU Policy Frameworks</b>	Complementing the activities of the EU Platform on Sustainable Finance and existing schemes like the InvestEU Advisory Hub; and contributing to the implementation of the sustainable finance framework.
<b>Capital Mobilisation Potential</b>	The capital mobilisation impact of the described interventions are expected to be moderate but meaningful. Such effects are indirect and likely to materialise primarily over the medium to long term.
<b>CO<sub>2</sub> Reduction Potential</b>	Not estimated due to the indirect nature of the intervention.
<b>Key Enablers</b>	Resources allocated to the permanent advisory unit, its staff and governance structure.
<b>Risks and Barriers</b>	<ul style="list-style-type: none"> <li>- High resource demands: Substantial and sustained funding would be required; securing long-term budgets could be difficult in tight fiscal conditions.</li> <li>- Duplication of efforts: Risk of overlapping mandates with EU institutions, existing programs or national bodies already active in the space.</li> <li>- Rigidity: Such a Platform structure and organisation should be agile enough to address nascent priorities when they arise. With urgency of action, this may favour existing structures.</li> <li>- Fragmented markets: A centralised entity may struggle to serve the diverse needs of different member states effectively.</li> </ul>

	<ul style="list-style-type: none"> <li>- Bureaucratic inefficiency: Centralisation may reduce agility compared to decentralised, market-based solutions.</li> </ul>
<b>Case studies / precedents</b>	While not directly analogous, the <b>United Kingdom's Green Finance Institute</b> offers some similar services.

### 6.2.8 Policy Action 8: Fiscal policies for energy efficiency in buildings

Element	Description
<b>Policy Objective</b>	To improve the design of tax incentives for energy renovations
<b>Policy Description</b>	Tax incentives can help to make energy renovations of residential buildings more affordable for homeowners. Yet, they might not be relevant for asset-rich but income-poor households. Administrative complexity, possible market distortions and negative effects on fiscal sustainability further limit the usefulness of current tax incentives. The European Commission can support Member States in improving tax mechanisms are part of a well-diversified mix of measures to support energy renovations across social groups.
<b>Policy Options</b>	The proposal includes: (1) Research & recommendations: The European Commission could commission a study to evaluate and improve tax mechanisms for energy renovations in EU Member States, focusing on their current use, impact, and (country-specific) opportunities for enhancement. (2) Knowledge Exchange: The Commission can facilitate knowledge sharing on tax mechanisms through forums, such as the Economic and Financial Affairs Council, and by developing an interactive database. This would support Member States in adopting best practices. (3) European Affordable Housing Plan: The Plan could integrate tax mechanisms as a key tool to promote energy efficiency and sustainability while addressing housing affordability.
<b>Implementation Partners</b>	DG TAXUD, DG ECFIN, DG ENER, (selected) Member States, ECOFIN, European Energy Efficiency Financing Coalition, Task Force for the European Affordable Housing Plan, possibly European Environment Agency (regarding database)
<b>Alignment with EU Policy Frameworks</b>	Highly relevant in the context of the revised Energy Performance of Buildings Directive, the revised Energy Efficiency Directive and the upcoming European Affordable Housing Plan
<b>Capital Mobilisation Potential / CO<sub>2</sub> Reduction Potential</b>	Given the different measurement methods used by Member States and the lack of recent literature, it is highly difficult to determine the total impact that tax schemes have so far had in the EU and to project the impact profile of new / enhanced incentives. Further research is required.
<b>Key Enablers</b>	<ul style="list-style-type: none"> <li>- Further research on, and discussion of, most relevant tax incentives, including with help of a dedicated research study and targeted exchange between the Commission, Member States and experts</li> <li>- Clarifying the role of tax incentives in reaching the EU's dual target of affordable and sustainable housing</li> </ul>

<b>Risks and Barriers</b>	<ul style="list-style-type: none"> <li>- Despite research and knowledge exchange, Member States' efforts to improve tax incentives could be insufficient (i.e. not attractive and simple enough) or unsustainable (e.g. overstretching public budgets)</li> <li>- The European Commission's efforts might not lead to concrete improvements in Member States, given its limited purview on taxation</li> </ul>
<b>Case studies / precedents</b>	<p>Examples of different tax mechanisms are available in Economidou et al. 2019 and 2021. One of the tax incentives most discussed in media and literature is the <b>Italian Superbonus 110%</b>, under which homeowners could deduct 110% (from 2023: 90%) of renovation costs from their income taxes, which had motivational effects but also led to inflation.</p>

### 6.2.9 Policy Action 9: Tax incentives for renewables and energy efficiency in transport and industry

Element	Description
<b>Policy Objective</b>	To improve the design of tax incentives for the purchasing of energy efficiency and renewable energy equipment in transport and industry
<b>Policy Description</b>	<p>Tax incentives can help to make the purchasing of zero emissions vehicles and industrial decarbonisation technologies more financially viable / attractive. However, many EU Member States still maintain tax structures that encourage the purchasing of non-green equipment or fail to support green equipment. The European Commission can support Member States in improving tax mechanisms as part of a well-diversified mix of measures to support the purchasing of sustainable energy equipment.</p>
<b>Policy Options</b>	<p>The proposal includes: (1) aligning the Commission's Legislative Proposal and Recommendation on the use of taxation to green (corporate) vehicle fleets, e.g. by encouraging Member States to reform corporate car taxation, exempt zero-emission vehicles from vehicle taxes, and provide fiscal incentives for charging infrastructure; (2) Ensuring the relevance of the Commission's Recommendation on corporate tax systems to support clean business models, e.g. by providing guidance on the technologies to be promoted via tax credits or accelerated depreciation, and on how to best use different types of tax incentives for different green investment types. (3) Enhancing research and knowledge exchange by commissioning a study to evaluate and improve tax mechanisms for the decarbonisation of transport and industry. It can also facilitate knowledge sharing on tax mechanisms through forums, such as the Economic and Financial Affairs Council, and by developing an interactive database.</p>
<b>Implementation Partners</b>	DG TAXUD, DG MOVE, other relevant DGs, (selected) Member States, ECOFIN, European Energy Efficiency Financing Coalition, possibly European Environment Agency (regarding database)
<b>Alignment with EU Policy Frameworks</b>	Highly relevant in the context of the upcoming Commission recommendations and legislative proposal for the greening of corporate fleets and for using corporate tax systems to foster industrial decarbonisation.
<b>Capital Mobilisation Potential / CO<sub>2</sub> Reduction Potential</b>	Existing studies show a leverage effect of tax incentives for zero emissions vehicles in Europe, implying that improved tax incentive will lead to additional increases in this leverage effect. Data on the effects of tax incentives for the decarbonisation of industry is less readily available on an aggregated level. Further research is required.

Element	Description
<b>Key Enablers</b>	<ul style="list-style-type: none"> <li>- Further research on, and discussion of, most relevant tax incentives, including with help of a dedicated research study and targeted exchange between the Commission, Member States and experts</li> </ul>
<b>Risks and Barriers</b>	<ul style="list-style-type: none"> <li>- Green tax incentives may harm non-green industries' competitiveness, especially during the transition, highlighting the need to balance EU competitiveness amid global trade pressures.</li> <li>- The European Commission's efforts might not lead to concrete improvements in Member States, given its limited purview on taxation</li> <li>- Given that the announced recommendations and legislative proposal are due in 2025/2026, it is unclear how much additional research can be conducted and input provided.</li> </ul>
<b>Case studies / precedents</b>	<ul style="list-style-type: none"> <li>- <b>Belgium</b> is often cited as an example for successful reforms of vehicle taxation systems, as it abolished ample support to pure ICE vehicles.</li> <li>- <b>Dutch businesses</b> investing in renewable energy or energy-saving technologies can benefit from the Energy Investment Allowance, which provides a tax deduction of up to 45.5% of eligible investments.</li> </ul>

## 6.3 Implementation outlook

The following provides a qualitative assessment of the implementation outlook for the proposed nine priority policy action. It sets out the key enablers and risks, reflects on indicative timelines, and explains how the proposed measures could be deployed within existing EU frameworks.

Policy Action #1 and #5 seek to **shift purchasing decisions towards low-carbon construction products**. Policy Action #1, carbon labelling for high-volume, homogeneous products, such as concrete and asphalt used in roadworks, can advance relatively swiftly because it builds on the regulatory framework that already exists under the Construction Product Regulation (CPR), benefits from harmonised product category rules (EN 15804) and is supported by robust factory-level data via the EU emissions trading system and the Digital Product Passport. The legislative basis for action exists through Article 22(9)<sup>146</sup>, which may be amended to remove restrictions, allowing the Commission to introduce environmental sustainability labels without limitations to consumer related products. Complementary initiatives such as the Digital Product Passport (DPP) and the Carbon Border Adjustment Mechanism (CBAM) further enhance the feasibility of swift implementation. Once the delegated act establishing carbon label parameters is adopted, verified emissions data disclosed in the Declaration of Performance and Conformity can be used by contracting authorities to specify low-carbon concrete or asphalt in procurement processes without procedural delays.

The Policy Action #5 of green public procurement (GPP) incentives and carbon contracts for difference (CCfDs) offers broader systemic impact but involves a longer and more complex implementation path. It will require updates to national procurement templates, piloting of reverse-auction formats, and alignment with the forthcoming revision of the EU public procurement directives. Despite this complexity, the potential benefits are substantial: aggregated demand across Member States can generate sufficient revenue certainty to unlock private equity and long-term debt for first movers in green steel, cement, and other high-impact materials.

While carbon labelling may encounter pushback from incumbents concerned about compliance burdens and competitive exposure, the success of the GPP and CCfD toolbox hinges on Member States' administrative capacity to aggregate demand and coordinate procurement, as well as the timely scaling of low-carbon supply chains. In both tracks, the phased approach and integration with existing EU policy frameworks (CPR, ETS, CBAM, ESPR) ensure a realistic pathway for fostering carbon transparency and driving decarbonisation in construction.

The two Policy Action #2 and #4 concern **public-sector risk-sharing**. Expanding the volume of budgetary guarantees inside the next MFF is administratively the simplest finance lever to implement. The InvestEU programme, already function at scale; additional headroom can be deployed once the budget ceiling is agreed. The scale-up of the Sustainable Infrastructure Window (SIW) inside InvestEU is also relatively simple, as it only requires an additional allocation to the EU budgetary guarantees underpinning the InvestEU and a potential earmarking to the SIW. By contrast, the second track of policy action #4, a dedicated blended-finance facility targeting early-stage technologies and structurally disadvantaged regions, faces a steeper path. It will require a bespoke governance structure, a fresh budgetary line and

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<sup>146</sup> Regulation (EU) 202/3110

the calibration of instruments such as first-loss tranches or concessional loans that can accommodate technology uncertainty and market immaturity.

A third set of actions aims to **align the financial system with climate objectives through capacity-building** rather than direct capital deployment. The technical support programme for public pension and reserve funds is arguably the most straightforward of these actions. The Technical Support Instrument allows the Commission to assist national administrations without changing legislation, and the voluntary character of participation limits political friction. Implementation risks relate chiefly to variable demand across Member States and the need to tailor advice to diverse governance models. Establishing a permanent advisory platform on sustainable finance, by contrast, faces a longer implementation pathway. Converting the time-limited Platform on Sustainable Finance into a staffed, budget-secure body implies amending the Commission's governance charter, setting clear lines of accountability vis-à-vis existing agencies and ensuring a multi-annual financial envelope. While the legal obstacles are manageable, the principal challenge lies in avoiding mandate overlap and demonstrating added value for Member States whose own supervisory authorities are already investing in sustainable-finance expertise.

The final and most limited set of actions in terms of impact entails the **tax policy** recommendations. Refining tax incentives for residential energy renovations and for purchasing renewable energy and efficiency equipment in transport and industry are with the Member States' rather than the Commission's areas of competence. The Commission could, however, contract comparative best practise studies, facilitate peer learning, and provide recommendations. The most realistic next steps therefore include a comprehensive stocktake of existing schemes, the development/improvement of a public database of good practices and the alignment of upcoming EU recommendations and guidance on the use of tax incentives in sustainable housing, corporate taxation and the decarbonisation of corporate fleets.

In summary, four actions - carbon labelling, scaled-up guarantees, the pension-fund support programme and the enlargement of InvestEU's Sustainable Infrastructure Window - can be regarded as ready for near-term deployment. They exploit tried-and-tested legal bases, rely on administrative structures that already function, and face contained political risk. A second group - green public procurement with CCFDs, the permanent sustainable-finance platform and support for renovation loans - rests on solid policy foundations but entails new operational layers or scope extensions. Each will benefit from targeted preparatory studies and stakeholder engagement to manage technical complexity and resource needs. The remaining three actions - the dedicated blended-finance facility for high-risk infrastructure and the two tax-incentive packages - pose the greatest challenges: the first because it must build a bespoke governance and risk-sharing model, the latter two because they tread into areas where EU competence is very limited. They therefore warrant a phased approach beginning with detailed analytical work and coalition-building before formal proposals are tabled. This stratification does not diminish their importance; rather, it allows policymakers to sequence effort, allocate administrative resources sensibly and maintain credibility by matching ambition to institutional reality.

## 7 Conclusions and suggestions for further work

The European Union faces a challenging climate investment gap of estimated EUR 477 billion annually. Bridging this gap demands urgent and coordinated action across diverse stakeholders to scale up private finance. This includes not only mobilising new capital but also redirecting existing financial flows away from emissions-intensive activities. Public policy can play a catalytic role by derisking investments, enhancing transparency, and strengthening the enabling environment for green finance.

The report demonstrates that, while public finance will remain a cornerstone of the EU's climate strategy, the scale and speed of the transition demand a significantly greater mobilisation of private capital across all sectors. Achieving this will require tailored financial instruments, robust policy frameworks, and clear long-term signals to guide investor expectations. Private sector engagement must also be underpinned by stronger coordination between EU institutions, Member States, and financial market actors to ensure coherent and scalable investment pathways.

Through comprehensive data analysis, stakeholder consultation, and a structured evaluation of 76 potential policy interventions, this study has identified a focused set of nine high-impact policy actions. These actions span across seven key areas - Sustainable Finance Framework and Taxonomy, capital markets, prudential regulation, tax policy, public co-funding, de-risking of investments and subsidies, public procurement, and industrial policy with sectoral deep dives. Each one was each selected for its potential to directly address core market failures and structural investment barriers.

The report finds that barriers for private climate transition investments range from project-level risks and supply chain immaturity to information asymmetries, fragmented capital markets, and misaligned regulatory incentives. The proposed policy actions seek to lower investment risks, increase demand certainty, and strengthen enabling conditions for green investments. They also reflect the consensus of stakeholders and the strategic direction of the European Commission, ensuring both feasibility and alignment with broader EU goals, including the Green Deal and Fit-for-55 or most recent key policies such as the 2025 Clean Industrial Deal<sup>147</sup>.

Each policy action offers not only a conceptual pathway but also concrete implementation considerations—timelines, key enablers, barriers and risks, and governance responsibilities. Taken together, they form a strategic package that can help close the investment gap and accelerate Europe's transition to climate neutrality by 2050.

### Next Steps

To move from recommendation to implementation, each policy action is supported by an implementation roadmap detailing indicative timelines, key enablers, and foreseeable risks. These roadmaps reveal that although all actions are strategically important, their maturity and readiness for deployment varies. To guide the sequencing of effort and align political ambition with institutional capacity, a stratified implementation approach is recommended:

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<sup>147</sup> [https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal\\_en](https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal_en)

- **Ready-to-implement initiatives** include carbon labelling for homogeneous construction products, scaled-up EU budgetary guarantees, the pension-fund technical support programme, and the enlargement of InvestEU's Sustainable Infrastructure Window (SIW). These initiatives build on tried-and-tested legal mandates and functioning administrative systems, and face relatively contained political risk. They are ready for rapid deployment with minimal additional legal or operational complexity.
- **Intermediate-complexity measures** such as green public procurement (GPP) combined with carbon contracts for difference (CCfDs), the creation of a permanent sustainable finance platform, and support for energy renovation lending rest on solid policy foundations. However, they involve the expansion of scope, new governance layers, or novel operational formats. These will benefit from further preparatory studies, stakeholder consultations, and targeted pilot projects to address design and capacity challenges.
- **High-complexity measures**—namely, the dedicated blended-finance facility for high-risk infrastructure and the two tax incentive packages for energy renovations and clean energy adoption in industry and transport—face the greatest implementation hurdles. The finance facility requires bespoke risk-sharing mechanisms and robust project pipelines, particularly in less mature or disadvantaged markets. Meanwhile, the tax proposals operate near the limits of EU competence and demand intensive coordination with Member States. These actions should therefore begin with detailed analytical groundwork, coalition-building, and the development of politically viable implementation models before formal proposals are advanced.

This implementation stratification is not a ranking of importance, but rather a pragmatic sequencing tool to ensure credibility and momentum. It enables policymakers to allocate administrative resources effectively, demonstrate early wins, and maintain public trust while gradually expanding ambition.

## 8 References

Andersson, M., Nerlich, C., Pasqua, C., & Rusinova, D. (2024). Massive investment needs to meet EU green and digital targets. In European Central Bank, Financial integration and structure in the euro area 2024. [https://www.ecb.europa.eu/press/fie/box/html/ecb.fiebox202406\\_01.en.html](https://www.ecb.europa.eu/press/fie/box/html/ecb.fiebox202406_01.en.html)

Arnold, N., Claveres, G., Frie, J., & Bhatia, A. V. (2024). Stepping up venture capital to finance innovation in Europe (IMF Working Paper No. WP/24/146). International Monetary Fund. <https://www.imf.org/en/Publications/WP/Issues/2024/07/10/Stepping-Up-Venture-Capital-to-Finance-Innovation-in-Europe-551411>

Association for Financial Markets in Europe. (2022). European green securitisation regulatory state of play. <https://www.afme.eu/publications/reports/details/european-green-securitisation-regulatory-state-of-play-obstacles-to-growth-and-opportunities-for-leadership>

Buchner, B., Naran, B., Padmanabhi, R., Stout, S., Strinati, C., Wignarajah, D., Miao, G., Connolly, J., & Marini, N. (2023). Global landscape of climate finance 2023. Climate Policy Initiative. <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2023/>

Calipel, C., Bizien, A., & Pellerin-Carlin, T. (2024). European climate investment deficit report: An investment pathway for Europe's future. Institute for Climate Economics (I4CE). <https://www.i4ce.org/en/publication/european-climate-investment-deficit-report-investment-pathway-europe-future/>

Caselli, F., Lagerborg, A., & Medas, P. A. (2024). Green fiscal rules? Challenges and policy alternatives (IMF Working Paper). International Monetary Fund. <https://www.imf.org/en/Publications/WP/Issues/2024/06/21/Green-Fiscal-Rules-Challenges-and-Policy-Alternatives-550880>

Climate Transparency. (2022). *Climate Transparency Report, Country profile: The European Union*. <https://www.climate-transparency.org/g20-climate-performance/g20report2022#1531904804037-423d5c88-a7a7>

Directorate-General for Energy. (2025). *De-risking Energy Efficiency Platform (DEEP)*. European Commission. <https://deep.ec.europa.eu/>

Directorate-General for Financial Stability, Financial Services and Capital Markets Union. (2021). Strategy for financing the transition to a sustainable economy. European Commission. [https://finance.ec.europa.eu/publications/strategy-financing-transition-sustainable-economy\\_en](https://finance.ec.europa.eu/publications/strategy-financing-transition-sustainable-economy_en)

Draghi, M. (2024). The future of European competitiveness – A competitiveness strategy for Europe. European Commission. [https://commission.europa.eu/topics/eu-competitiveness/draghi-report\\_en](https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en)

E3G, ShareAction, & WWF. (2024). Investing in Europe's prosperity: A vision for financing the transition to sustainability 2024–2030. <https://wwfeu.awsassets.panda.org/downloads/e3g-shareaction-wwf-report-investing-in-europes-prosperity-.pdf>

European Commission. (2020). SWD/2020/176: Impact assessment report accompanying the document "Stepping up Europe's 2030 climate ambition – investing in a climate-neutral future for the benefit of our people". <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0176>

European Commission (2021). *Impact Assessment accompanying the 'Fit for 55' package.*  
[EUR-Lex - 52021SC0621 - EN - EUR-Lex](https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex-52021SC0621).

European Commission. (2023). Commission recommendation (EU) 2023/1425 on facilitating finance for the transition to a sustainable economy. <https://securities.cib.bnpparibas/app/uploads/sites/3/2024/01/celex-32023h1425-en-txt.pdf>

European Commission. (2023). EU annual report on taxation 2023. [https://taxation-customs.ec.europa.eu/system/files/2023-08/ART%20-%20Report%202023\\_Digital%20Version\\_1.pdf](https://taxation-customs.ec.europa.eu/system/files/2023-08/ART%20-%20Report%202023_Digital%20Version_1.pdf)

European Commission. (2024). 2040 climate target: Reducing net emissions by 90% by 2040.  
[https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2040-climate-target\\_en](https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2040-climate-target_en)

European Commission. (2024). Impact assessment report accompanying the document "Securing our future: Europe's 2040 climate target and path to climate neutrality by 2050 – building a sustainable, just and prosperous society". <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52024SC0063>

European Commission. (2024). Regulation (EU) 2023/2631 of the European Parliament and of the Council of 22 November 2023 on European Green Bonds and optional disclosures for bonds marketed as environmentally sustainable and for sustainability-linked bonds (EU Green Bond Standard). <https://eur-lex.europa.eu/eli/reg/2023/2631/oj/eng>

European Commission: Directorate-General for Taxation and Customs Union. (2023). Annual report on taxation 2023. [https://taxation-customs.ec.europa.eu/taxation/economic-analysis/annual-report-taxation\\_en](https://taxation-customs.ec.europa.eu/taxation/economic-analysis/annual-report-taxation_en)

European Court of Auditors. (2021). Special report 12/2021: The polluter pays principle – Inconsistent application across EU environmental policies and actions. <https://www.eca.europa.eu/en/publications?did=58811>

European Insurance and Occupational Pensions Authority. (2024). Staff paper on the pan-European personal pension product (PEPP). [https://www.eiopa.europa.eu/publications/eiopa-staff-paper-future-pan-european-pension-product-pepp\\_en](https://www.eiopa.europa.eu/publications/eiopa-staff-paper-future-pan-european-pension-product-pepp_en)

European Investment Bank (2021). *The investment report 2021/2022: Building a smart and green Europe in the COVID-19 era.* Luxembourg: European Investment Bank. [EIB Investment Report 2020/2021: Building a smart and green Europe in the COVID-19 era](https://www.eib.org/en/publications/eib-investment-report-2020-2021-building-a-smart-and-green-europe-in-the-covid-19-era)

European Investment Bank. (2024). Financing sustainable liquid fuel projects in Europe: Identifying barriers and overcoming them. <https://www.eib.org/en/publications/financing-sustainable-liquid-fuel-projects-in-europe>

European Investment Bank. (2024). Greening the financial sector: A Central, Eastern and South-Eastern European perspective. <https://www.eib.org/en/publications/greening-the-financial-sector>

European Investment Bank. (2024). Investment barriers in the European Union 2023: A report by the European Investment Bank Group. <https://www.eib.org/en/publications/investment-barriers-in-the-european-union-2023>

European Investment Fund. (2023). The European small business finance outlook 2022.  
[https://www.eif.org/news\\_centre/publications/eif\\_working\\_paper\\_2022\\_84.pdf](https://www.eif.org/news_centre/publications/eif_working_paper_2022_84.pdf)

European Securities and Markets Authority. (2024). Opinion: Sustainable investments –

Facilitating the investor journey: A holistic vision for the long term (JC (2024) 06).  
[https://www.esma.europa.eu/sites/default/files/2024-07/ESMA36-1079078717-2587\\_Opinion\\_on\\_the\\_functioning\\_of\\_the\\_Sustainable\\_Finance\\_Framework.pdf](https://www.esma.europa.eu/sites/default/files/2024-07/ESMA36-1079078717-2587_Opinion_on_the_functioning_of_the_Sustainable_Finance_Framework.pdf)

European Securities and Markets Authority. (2024). Position paper on the capital markets union. <https://www.esma.europa.eu/document/position-paper-eu-capital-markets-building-more-effective-and-attractive-capital-markets>

Gilles, F., & Brzezicka, P. (2022). Unlocking the hydrogen economy — Stimulating investment across the hydrogen value chain: Investor perspectives on risks, challenges and the role of the public sector. European Investment Bank. <https://www.eib.org/en/publications/unlocking-the-hydrogen-economy>

Hudson, G., Hart, S., & Verbeek, A. (2023). Investing in nature-based solutions: State-of-play and way forward for public and private financial measures in Europe. European

Investment Bank. <https://www.eib.org/en/publications/investing-in-nature-based-solutions>

Institute Rousseau. (2024). Road to net zero – bridging the green investment gap. <https://institut-rousseau.fr/road-2-net-zero-en/>

International Energy Agency. (2023). Electricity grids and secure energy transitions. <https://www.iea.org/reports/electricity-grids-and-secure-energy-transitions>

International Energy Agency. (2023). Oil 2023. <https://www.iea.org/reports/oil-2023>

International Energy Agency. (2024). World energy investment 2024. <https://www.iea.org/reports/world-energy-investment-2024>

Invest Europe. (2024). Delivering the European transition: Our 12 priorities for a more competitive union. <https://www.investeurope.eu/policy/forward-2024-2029/>

InvestEU. (2023). Investing in Europe: Private equity activity 2022. <https://www.investeurope.eu/media/6719/investing-in-europe-pe-activity-2022-report.pdf>

Klaaßen, L., & Steffen, B. (2023). Meta-analysis on necessary investment shifts to reach net zero pathways in Europe. *Nature Climate Change*, 13, 58–66. <https://doi.org/10.1038/s41558-022-01549-5>

Lagarde, C. (2021, May 6). Towards a green capital markets union for Europe. Speech at the European Commission's High-Level Conference on the Proposal for a Corporate Sustainability Reporting Directive. <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210506~4ec98730ee.en.html>

Letta, E. (2024). Much more than a market – Speed, security, solidarity: Empowering the single market to deliver a sustainable future and prosperity for all EU citizens. European Commission. <https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf>

Marin, G., Marino, M., & Pellegrin, C. (2018). The impact of the European emission trading scheme on multiple measures of economic performance. *Environmental and Resource Economics*, 71, 551–582. <https://doi.org/10.1007/s10640-017-0173-0>

McKinsey & Company. (2020). Net-zero Europe: Decarbonisation pathways and socioeconomic implications. <https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/how%20the%20european%20union%20could%20achieve%20net%20zero%20emissions%20at%20net%20zero%20cost/net-zero-europe-vf.pdf>

McWilliams, B., & Kneebone, J. (2024). Lessons from the European Union's inaugural hydrogen bank auction. Bruegel. <https://www.bruegel.org/analysis/lessons-european-unions-inaugural-hydrogen-bank-auction>

Ménière, Y., & Revoltella, D. (2024). Financing and commercialisation of cleantech innovation. European Investment Bank. <https://www.eib.org/en/publications/20240003-commercialisation-of-clean-and-sustainable-technologies>

Net Zero Asset Owner Alliance, & United Nations Environment Programme Finance Initiative. (2023). Unlocking investment in net zero. <https://www.unepfi.org/publications/unlocking-investment-in-net-zero>

Naran, B., Buchner, B., Price, M., Stout, S., Taylor, M., & Zabeida, D. (2024). *Global landscape of climate finance 2024: Insights for COP29*. Climate Policy Initiative. <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2024/>

OECD. (2025). Annual survey of investment regulation of pension providers. <https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/asset-backed-pensions/2025-Annual-Survey-of-Investment-Regulation-of-Pension-Providers.pdf>

Oehmke, M., & Opp, M. M. (2023). Green capital requirements (Swedish House of Finance Research Paper No. 22–16). [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4040098](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4040098)

Revolte, D. (Ed.). (2024). Investment report 2023/2024: Transforming for competitiveness. European Investment Bank. <https://www.eib.org/en/publications/investment-report-2023>

Rhodium Group. (2025). Clean investment monitor. <https://www.cleaninvestmentmonitor.org>

Urgewald e.V. (2024). Investing in climate chaos 2024: Institutional investors \$4.3 trillion deep into the fossil fuel industry. <https://www.urgewald.org/en/medien/investing-climate-chaos-2024-institutional-investors-43-trillion-deep-fossil-fuel-industry>.

Vandeloise, V. (2024). A guide to the next sustainable finance agenda. Finance Watch. <https://www.finwatch.org/policy-portal/sustainable-finance/report-a-finance-watch-guide-to-the-next-sustainable-finance-agenda/>

Wilkinson, C., Russell, S., & Mammana, F. (2024). Interim evaluation of the InvestEU Programme. [https://commission.europa.eu/about/departments-and-executive-agencies/economic-and-financial-affairs/evaluation-reports-economic-and-financial-affairs-policies-and-spending-activities/interim-evaluation-investeu-programme\\_en](https://commission.europa.eu/about/departments-and-executive-agencies/economic-and-financial-affairs/evaluation-reports-economic-and-financial-affairs-policies-and-spending-activities/interim-evaluation-investeu-programme_en)

## 9 Annexes

### Annex I. Overview of assessed studies on investment needs

	EC (2024)				EC (2020)				McKinsey (2021)							
<b>Methodological background</b>																
Geographical Scope	EU27				EU27				EU27							
Time span	2031-2050				2021-2050				2021-2030							
Target scenario	Scenario S3: Climate neutrality by 2050 and reduction of emissions by 90-94% until 2040				Scenario Mix				net zero by 2050, EU emission reduction targets in the interim							
Sectoral Scope	<b>Transport:</b> climate-friendly vehicles, rail transport, aviation, domestic navigation, international maritime transport				<b>Transport:</b> climate-friendly vehicles, rail transport, aviation, domestic navigation, international maritime transport				<b>Transport:</b> EV and fuel cell infrastructure							
	<b>Energy:</b> Power grids, renewable energy, non-renewable power generation, including industrial investments in the supply side				<b>Energy:</b> Power grids, renewable energy, non-renewable power generation, including industrial investments in the supply side				<b>Energy:</b> Energy generation and infrastructure							
	<b>Building:</b> renovation, new construction, heating and cooling devices energy-efficient appliances and lightning [summarizes residential and tertiary sector category used in source document]				<b>Building:</b> renovation, new construction, heating and cooling devices energy-efficient appliances and lightning [summarizes residential and tertiary sector category used in source document]				<b>Building:</b> Energy-demand in buildings, renovation and energy efficiency							
	<b>Industry:</b> additional cost of fuel switching in production, CCS				<b>Industry:</b> additional cost of fuel switching in production, CCS				<b>Industry:</b> Energy-demand related investments and investments into feedstock substitutions, CCS and Process emission avoidance							
	<b>Agriculture:</b> energy demand-related investments				<b>Agriculture:</b> energy demand-related investments				<b>Agriculture:</b> fuel switch in machinery, avoidance of process emissions							
Type of investment needs considered	Overall investment needs in the energy system for net zero pathways				Overall investment needs in the energy system for net zero pathways; Additional investment in comparison to current investment levels; Additional investments as comparison to business-as-usual scenario [not displayed here]				Overall investment needs for net zero pathways Additional investment compared to a business-as-usual scenario							
Fossil investments included	Yes, in the energy supply sector, in the energy demand sector, only additional investments were considered				Yes, in the energy supply sector, in the energy demand sector, only additional investments were considered				Yes							
Currency Unit	Billion EUR2023				Billion EUR2015				Billion EUR2020							
Methodology	Economic modelling of decarbonisation pathways based on PRIMES model				Economic modelling of decarbonization pathways based on PRIMES model. Current investments also based on PRIMES modelling				Net-zero pathway modelling based on McKinsey Decarbonisation Pathway Optimizer							
<b>Investment needs estimates</b>																
	investment needs '€/year	% of overall investment needs	investment gap, €/year	investment gap, % compared to current levels	investment needs '€/year	% of overall investment needs	investment gap, €/year	investment gap, % compared to current levels	investment needs '€/year	% of overall investment needs	additional investment need, €/year	additional investment need, % compared to business-as-usual scenario [BAU]				
	Until 2030	Until 2050	Until 2050	Until 2050	Until 2030	Until 2050	Until 2030	Until 2030	Until 2030	Until 2050	Until 2050	Until 2050				
Overall (annual)	[in bn €]	N/A	1535		N/A	N/A	1039,7	1117,35	356,4	152,2 % [C]	840	926,66667		180		
Sectoral investment needs	Energy	N/A	311	20%	N/A	N/A	119,9	158,6	11,5%	63,2	211,5 % [C]	184,8	196,66667	23%	109,8	126,4 % [BAU]
	Transport	N/A	869	57%	N/A	N/A	621,8	675	59,8%	129,6	126,3 % [C]	319,2	393,33333	43%	1,8	0,5 % [BAU]
	Building	N/A	301	20%	N/A	N/A	277,7	273,7	26,7%	152,3	221,5 % [C]	302,4	280	30%	52,2	22,9 % [BAU]
	Industry	N/A	35	2%	N/A	N/A	20,3	18,15	2,0%	11,3	225,6 % [C]	8,4	11,666667	1%	14,4	23,4 % [BAU]
	Agriculture	N/A	19	1%	N/A	N/A	/				25,2	31,166667	3%	1,8	6,1 % [BAU]	

	Rousseau (2024)				IC4E (2024)				Klaaßen & Steffen (2023)			
<b>Methodological background</b>												
Geographical Scope	EU27				EU27				EU27 + UK, Switzerland and Norway			
Time span	2024-2050				2024-2030				2024-2035			
Target scenario	Net zero by 2050, with cumulative GHG emissions staying in line with Paris Agreement				at least -55% by 2030 and -100% by 2050							

Sectoral Scope	<b>Transport:</b> road vehicles (including bikes), charging infrastructure, railway, infrastructure, sustainable aviation, zero carbon navigation	<b>Transport:</b> transport infrastructures and vehicles  <b>Energy:</b> electricity production, electricity networks, low carbon gas generation capacities, gas networks, liquid fuels generation capacities, district heating  <b>Building:</b> Housing renovation  <b>Industry:</b> Reinvestment in climate-friendly production facilities  <b>Agriculture:</b> Conversions of agricultural practices, decarbonisation of fleet, renewable energy in greenhouses  <b>Waste:</b> Recovery of municipal biowaste, reduction of plastic waste, development of WWTP sludge methanisation  <b>Carbon Sinks:</b> Nature-based solutions	<b>Energy:</b> power plants (conventional and renewable), power plants (renewable), energy networks and storage, CO2 networks and storage, conventional fuel production, and low-carbon fuel production.										
	<b>Energy:</b> electricity production, transmission and distribution		<b>Transport infrastructure:</b> public EV charging and hydrogen refuelling stations and rail infrastructure										
	<b>Building:</b> energy-efficient investment in the construction, energy renovation of buildings												
Type of investment needs considered	Overall investment needs for net zero pathways  Additional investment needs as difference between climate-neutrality pathways and business-as-usual scenario	Overall investment needs in climate neutral technologies  Additional investment needs as difference in current investment levels and needs	No comparison to installed capacity but not to a baseline scenario										
Fossil investments included	Yes	No	Yes										
Currency Unit	Billion EUR2022	Billion EUR 2022	EUR2020										
Methodology	Development of own decarbonization pathway and Business-as-usual scenario. Bottom-up approach calculation of capacity needs based on 7 EU-countries (covering 80% of GDP, and extrapolated to full-EU27	No individual modelling, monetarization of available capacity estimates from EU Scenarios, action plans and SWD, or -if official volume estimates are missing, figures from industry	Meta analysis from 56 studies to calculate technology specific investment needs, harmonized across different time spans and geographical scopes. Current investments based on installed capacities										
<b>Investment needs estimates</b>													
	investment needs '€/year	% of overall investment needs	additional investment need in €/year compared to Business-as-usual scenario [BAU]	additional investment need, % compared to business-as-usual scenario [BAU]	investment needs '€/year	% of overall investment needs	investment gap, €/year compared to current levels	investment gap, % compared to current levels 2022 [C]	investment needs '€/year	% of overall investment needs	investment gap in €/year compared to current levels	investment gap in % compared to current levels, 2016-2020 [C]	
	Until 2030	Until 2050	Until 2050	Until 2050	Until 2030	Until 2050	Until 2030	Until 2030	Until 2035	Until 2050	Until 2035	Until 2035	
Overall (annual)	[in bn €]	N/A	1520		360		813	N/A		406	99,8 % [C]		
Sectoral investment needs	<b>Energy</b>	N/A	178	12%	79	79,8 % [BAU]	225	N/A	28%	122	118,4 % [C]	204,1	/
	<b>Transport</b>	N/A	689	45%	52	8,2 % [BAU]	253	N/A	31%	147	138,7 % [C]	137,3	/
	<b>Building</b>	N/A	343	23%	142	70,6 % [BAU]	335	N/A	41%	137	69,2 % [C]	/	/
	<b>Industry</b>	N/A	24,9	2%	16	179,8 % [BAU]	N/A	N/A	N/A	N/A	N/A	/	/
	<b>Agriculture</b>	N/A	155	10%	47	43,5 % [BAU]	N/A	N/A	N/A	N/A	N/A	/	/

## Annex II. Long list of preliminary policy recommendations

*Please note that these contain some overlap by policy areas and are an intermediate step towards identification of the priority actions detailed in the report.*

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Financial sector	Prudential regulation	Financial sector - prudential regulation such that long-term investment is not penalised for its longer-term nature	1.2 - reduce financing costs by reducing capital reserve requirements; and 11.2 insofar as brown investments are shorter-term; 8.2 regulatory frameworks underrate long-term climate risks.
Financial sector	Prudential regulation-CRR, CRD	Brown penalising factor (risk-based approach) in Pillar 1/Pillar 2 capital requirements	1.2 - relatively low financing cost for brown investments; 11.2 -reduce crowding out of green investments.
Financial sector	Prudential regulation	Universal green support factor in Pillar 1/Pillar 2 capital requirements	1.2 - relatively low financing cost for brown investments; 11.2 -reduce crowding out of green investments.
Financial sector	Prudential regulation	Adjustment of existing support factors in capital requirements (Infrastructure Support Factor and SME support factor) to align with climate objectives	1.2 - relatively low financing cost for brown investments; 11.2 -reduce crowding out of green investments.
Financial sector	Prudential regulation	Finetuning capital requirements framework by incorporating climate transition risk in risk weights of assets	11.2 - reduce risk of crowding out by brown investments; 1.2 makes green investments comparatively cheaper than brown investments.
Financial sector	Financial instruments	Improve the attractiveness of the European Long-Term Investment Fund instrument. Make product more attractive by harmonising fiscal incentives. Specific recommendation: ease localisation requirement of the depository (depository to be located in the same location as the fund)	1.2. High capital and financing costs; 1.3 Significant upfront capital investment needs;
Financial sector	Financial instruments	Establish common methodology for the measurement of derivatives in key indicators under the various disclosure regulations	12.1 green securitisation market is under-developed.
Financial sector	Prudential regulation	Credit ratings: further improve transparency of climate risk integration in credit rating methodologies	1.2 - relatively low financing cost for brown investments; 8.2 regulatory frameworks underrate long-term climate risks.
Industrial policy	Increase budget of available funding options for green technology	Expand funding to industry decarbonization by using EU ETS revenue as collateral	12.2. Mechanisms to reduce transaction costs/transfer risks

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Industrial policy	Increase budget of available funding options for green technology	Extend Recovery and Resilience Fund Post-2026	1.2. High capital and financing costs
Industrial policy	Derisk investments into green industry technology	Expand and improve InvestEU programme for industry decarbonization purposes	1.2. High capital and financing costs
Industrial policy	Provide additional risk capital for green technology innovation	Establish new (VC/PE) funds to support green EU companies	6. Venture and growth capital ecosystem is less mature
Industrial policy	Enhance knowledge sharing between financial players and businesses	Establish regional/ national or EU hubs on key industries to promote the adoption of low carbon technologies	16. Incentives, information, misalignment of interest
Industrial Policy	Robust information on status of technologies	Create a transparent and accessible platform to upload key information on the state of development of various technologies	15. Lack knowledge and technical capacity to execute and finance projects
Industrial Policy	Carbon labels for different products	Develop an official label for the carbon intensity of different products [and/or climate ambition of companies]	16. Incentives, information, misalignment of interest
Industrial Policy	Use of circular / green materials	Develop political targets for the use of circular / green materials in total material use	5. Polluting alternative technologies remain profitable and cost-effective

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Industrial Policy	Regulation on energy infrastructure	Harmonize EU regulatory framework and funding for energy infrastructure to incentivise clean energy and electrification	4. Legal and regulatory barriers
Industrial policy	Carbon Contracts for Difference	EU-wide roll-out of Carbon Contracts for Difference (CCfD)	3.2. Infrastructure constraints and bottlenecks
Industrial Policy	EU fiscal framework for cleantech development	Flexibility in EU fiscal framework to redirect RRF funds to cleantech manufacturing	4. Legal and regulatory barriers
Industrial Policy	Demand creating for green products	Set mandatory green content quotas also for the public and the private sector	16. Incentives, information, misalignment of interest
Industrial Policy	Increasing availability of cost-competitive clean energy	Provide guarantees and additional support infrastructure for Power Purchasing Agreements	5. Polluting alternative technologies remain profitable and cost-effective
Industrial Policy	Fixed Premium Auctions	Expand Fixed Premium Auctions to various clean tech sectors	2.6. Technology risk of new decarbonization technologies
Industrial policy	Power purchasing agreements	Public enhancement of power purchasing agreements	2.1. Volatility and uncertainty of future revenues
Industry-transport / Public co-funding & subsidies	Subsidise greening of transport fleets	Develop or increase resources in green funds to subsidise cars/vans for households/SMEs. It will be important to ensure a progressive approach, focusing financial aid on, for example, areas with high transport poverty, while improving public transport.	Barrier 1.3, 16.1 on providing funds for high up-front costs and reducing knowledge barriers on benefits of investments.
Industry-transport / Public procurement	Green public vehicle fleets	Mandate public vehicle fleets and public transport fleets be zero-emission at early possible moment.	Barrier 9.1 on lack of historical data; Barrier 6.1 and 6.2 on difficulties mobilising institutional investors (supply side) due to demonstration projects and knowledge of green investment sectors.

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Public co-funding & subsidies	FOUNDATIONAL POLICY: Simplify and make application processes as similar as reasonably possible for public grants, loans and guarantees.	Review application process and forms for grants, including through conducting comparisons with similar programmes outside of the EU, and simplify where possible.	Barriers 15.1 and 15.2 on demand-side knowledge of access to financial support.
Public co-funding & subsidies	FOUNDATIONAL POLICY: Simplify and make application processes as similar as reasonably possible for public grants, loans and guarantees.	Take steps to align administrative processes and information requirements among different public grants and loans. Ideally, this would include both European and national processes. Alignment of information requirements in line with the EU Taxonomy could be one part of this.	Barriers 15.1 and 15.2 on demand-side knowledge of access to financial support.
Public co-funding & subsidies	FOUNDATIONAL POLICY: Simplify and make application processes as similar as reasonably possible for public grants, loans and guarantees.	Develop an online “one-stop-shop” where early-stage companies and early-stage technologies can complete information relevant for multiple different applications and ensure specific applications can be pre-populated with information from the one-stop shop.	Barriers 15.1 and 15.2 on demand-side knowledge of access to financial support.
Public co-funding & subsidies	FOUNDATIONAL POLICY: Simplify and make application processes as similar as reasonably possible for public grants, loans and guarantees.	Develop a standardised design for future public co-funding based on existing good lean administrative practices and based on existing programmes such as the RRF. This would capitalise on existing learning and experience at the EU level but also at national and sometimes local/regional levels. This should facilitate disbursement of new funds.	Barriers 15.1 and 15.2 on demand-side knowledge of access to financial support.
Public co-funding & subsidies	Expand use of public guarantees.	Expand InvestEU and other guarantee programmes (see also Industrial Policy).	1.2. High capital and financing costs; 1.3 Significant upfront capital investment needs; 2.3 Uncertainty of future demand; 7- limited track record of investment in green investments.
Public co-funding & subsidies	Increase use of state aid (subsidies)	Authorise the use of state subsidies that support green investments, provided they are well-targeted and in line with single market policies.	1.2. High capital and financing costs; 1.3 Significant upfront capital investment needs; 2.3 Uncertainty of future demand; 7- limited track record of investment in green investments.

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Public co-funding & subsidies	Address under-investment in climate adaptation.	Encourage adaptation to be embedded into public and private infrastructure. This can be achieved through a combination of regulation and additional financing options – including loans, which could be repaid thanks to saved resources (e.g. lower insurance fees thanks to lower risk).	Barrier 9 – climate risks not fully internalised by investors; barrier 1.5 – public goods not generating sufficient revenues for investors; barrier 1.4 on small-scale imperfectly replicable investments (in adaptation)
Public co-funding & subsidies	Address under-investment in climate adaptation.	Create climate adaptation specific windows within existing public funding programmes or create a new programme. Any new programme should be based on processes of existing programmes to ensure additional learning is not required by either the public or private sectors.	Barrier 9 – climate risks not fully internalised by investors; barrier 1.5 – public goods not generating sufficient revenues for investors; barrier 1.4 on small-scale imperfectly replicable investments (in adaptation).
Public co-funding & subsidies	Demonstrate success of recent climate investments.	Publicise success stories of buyouts and clean-tech scale-ups that have earned investors good returns. Efforts needed in energy; water; agri-tech; circular economy among others).	15.1 and 15.2 on demand-side knowledge of access to financial support. Barrier 9.1 on lack of historical data; Barrier 6.1 and 6.2 on difficulties mobilising institutional investors (supply side) due to demonstration projects and knowledge of green investment sectors.
Public co-funding & subsidies	FOUNDATIONAL POLICY: Combine public financial support with technical assistance.	Combine public financial support, including loans, grants and guarantees, with technical assistance, when relevant and appropriate.	Barrier 15 on a lack of demand side knowledge and technical capacity on how to execute and finance projects. Barrier 16.1 on informational barriers regarding the costs and benefits of clean investments. It may also reduce supply side barriers by providing confidence in potential projects, addressing barrier 6.1 on difficulties mobilising institutional investors.
Public co-funding & subsidies	Boost public participation in clean equity investments.	Oblige Defined Contribution (DC, sometimes known as 1bis schemes) public pension funds to invest a minimum threshold in green investments and/or prevent them investing in brown investments.	Barriers 6.1 and 6.2 on difficulties mobilising institutional investors and investor knowledge.
Public co-funding & subsidies	FOUNDATIONAL POLICY: Cut fossil fuel subsidies	Cut fossil fuel subsidies.	Almost all barriers by increasing the gap between green and brown investments.

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Public co-funding & subsidies	Local government financing agencies	Local government financing agencies that can issue bonds in the private capital market to raise funds for public green investments.	Supply side barriers - by increasing available public financing.
Public co-funding & subsidies	Ensure sufficient financing to meet just transition challenges in future MFF.	Re-finance the just transition fund and other funds that support the just transition.	Political barriers
Public co-funding & subsidies	Maintain current EU funding programmes beyond 2027.	Consider a NGEU 2.0. This could be adapted to offer Member States an alternative to state aid, particularly those that do not have fiscal space for state aid.	Supply side barriers - by increasing available public financing.
Public procurement	Demonstrate success of recent public climate investments.	Implement green demonstration projects on public buildings, charging stations or automatic charging on roads or in other public spaces.	Barrier 9.1 on lack of historical data; Barrier 6.1 and 6.2 on difficulties mobilising institutional investors (supply side) due to demonstration projects and knowledge of green investment sectors.
Public procurement	Public investment in network infrastructure	Review expenditure gaps in network infrastructure mainly financed through public funds (e.g. natural monopolies) and highlight gaps. Identify investments that could crowd in future private investments by ensuring good quality infrastructure.	Barrier 3.2 on infrastructure constraints and bottlenecks.
Public procurement	Public investment in network infrastructure	Ensure contracts providing access to network infrastructure achieve a good balance between providing reliable long-term income for investors and deliver value for money for consumers. (see also industrial policy)	Barrier 3.2 on infrastructure constraints and bottlenecks.
Public procurement	Provide a reliable market for future outputs from green investments	Expand remit of existing Hydrogen Bank to cover other technologies at a similar development stage and status (i.e. likely future important use). This could be of particular importance to support the development of the 50% of technologies not yet developed but required to meet climate targets.	Barriers 2.1 and 2.3 on uncertainty of future demand and revenues; Barrier 2.4 on future regulatory risk; Barrier 2.5 and 2.6 on technology risk and large-scale infrastructure investment risks; Barrier 3.1 on supply chain immaturity.

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Regulation	CRR, CRD	Green supporting and brown penalising haircuts and margins for market-based finance	11.2: Risk: High real risk relative to "brown" assets 1.2. High capital costs for green investments.
Sectoral - building renovation	Mortgage portfolio standard	Banks work with clients to increase the energy performance of the buildings which back their mortgages along a science-based trajectory for their portfolio, include non-compliance penalties.	Multiple - to update
Sectoral - building renovation	Renovation loan	An EU Renovation Loan	Multiple - to update
Sustainable Finance Framework	SFF	Standardisation of sustainability-linked financing (bonds, loans) in the EU by guidelines, standards, recommendations	Barrier 10, 12 - inadequate clarity on green requirements; unclear/different standards make securitisation harder.
Sustainable Finance Framework	Securitisation Regulation, GBS, SFDR	Promote and enhance sustainable securitisation. Include synthetic securitisation in the framework (EU GBP) and improve usability of Taxonomy.	Barrier 12.1 green securitisation market is under-developed.
Sustainable Finance Framework	In context of EU Taxonomy and Green Bond Standard	Adopt a (voluntary) green label for loans, or specifically green mortgages	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.3 Transition activities are not sufficiently captured by frameworks: High-level barrier 12. Inadequate instruments and mechanisms to facilitate green investments.
Sustainable Finance Framework	SFDR	Introduce a financial product categorisation system, including a sustainable and a transition finance category.	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.3 Transition activities are not sufficiently captured by frameworks: High-level barrier 12. Inadequate instruments and mechanisms to facilitate green investments.

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Sustainable Finance Framework	SFDR	Consider introducing a grading system to allow for different "shades" of green.	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.3 Transition activities are not sufficiently captured by frameworks.
Sustainable Finance Framework	EU Taxonomy	Improve Taxonomy usability for SME and early-stage financing	Barrier 16 Informational barriers on benefits and costs of green investments.
Sustainable Finance Framework	CSRD	Extend sustainability disclosures to non-listed SMEs (but approach should be proportional)	Barrier 16 Informational barriers on benefits and costs of green investments. Barrier 12 inadequate instruments and mechanisms to facilitate green investments.
Sustainable Finance Framework	Stock markets	Further ease SME listing, promote "ESG" segments in stock markets, facilitate fast-tracking of listing sustainable enterprises	Barrier 12 inadequate instruments and mechanisms to facilitate green investments.
Sustainable Finance Framework	Transition plans	Provide sectoral transition pathways, strengthen requirements on setting transition plans, promote good practices	Barrier 12 inadequate instruments and mechanisms to facilitate green investments.
Sustainable Finance Framework	EU Taxonomy, SFDR	Implement the EU Taxonomy as the only legal definition for "sustainable investments", incl. phase out the SFDR definition of sustainable investments and alignment of references in other policies (SFDR, Benchmark Regulation (BMR))	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.3 Transition activities are not sufficiently captured by frameworks.
Sustainable Finance Framework	EU Taxonomy	Increase the scope of the EU Taxonomy to cover currently non-eligible activities, including a classification tool or taxonomy for social investments	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.2 High complexity and usability issues of the transparency framework
Sustainable Finance Framework	EU Taxonomy	Continue or increase providing capacity support measures for market actors on applying the EU Taxonomy	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.2 High complexity and usability issues of the transparency framework; Barrier 15.1 Lack of knowledge of how to combine public and private financing.

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Sustainable Finance Framework	SFDR	Introduce minimum sustainability disclosures for all financial products	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.2 High complexity and usability issues of the transparency framework.
Sustainable Finance Framework	SFDR; MiFID	Broaden the scope of minimum sustainability disclosures for non-SFDR MiFID II instruments	Barrier 10.1 Lack of clarity and heterogeneous interpretation of transparency requirements, Barrier 10.2 High complexity and usability issues of the transparency framework.
Sustainable Finance Framework	EU Taxonomy; public finance	Consider developing or fostering a “One-Stop Shop” solution for NFCs to easily find suitable support schemes.	Barrier 15.1 Lack of knowledge of how to combine public and private financing; Barrier 16.1 Informational barriers regarding benefits and costs of green investments.
Tax	EU Tax Coordination public mechanism	Establishing an EU Taxshift Coalition	4. Legal and regulatory barriers
Tax	EU Tax Coordination data platform	Developing an EU Policy Tracker	16: Incentives, information, misalignment of interest
Tax	EU Tax Coordination mechanism for businesses	Establishing an Expert Group on Tax Dynamics in Business	4. Legal and regulatory barriers
Tax	Minimum green tax rates	Establishing minimum tax rates for resource use and pollution	5. Pollution alternative technologies remain profitable and cost-effective
Tax	Shift labour tax to environmental tax	Payroll tax credits for green companies	5. Polluting alternative technologies remain profitable and cost-effective
Tax	Tax incentive for low carbon technologies	Accelerated depreciation schedule for low-carbon technologies	5. Polluting alternative technologies remain profitable and cost-effective
Tax	Tax on cryptocurrencies	Minimum taxes on energy-intensive cryptocurrencies and DLT	5. Polluting alternative technologies remain profitable and cost-effective

Policy area	Policy/regulation	Specific policy or policy adjustment	Barrier addressed
Tax	Carbon wealth taxes	Carbon wealth taxes on companies and individual: e.g. EU Windfall Profit Tax	5. Polluting alternative technologies remain profitable and cost-effective
Tax	Green bond tax incentives	Tax incentives for green bond issuers and investors	5. Polluting alternative technologies remain profitable and cost-effective
Tax	VAT reduction /exemption on RE and EE investments	VAT reduction on RE and EE investments for households	5. Polluting alternative technologies remain profitable and cost-effective
Tax	Tax incentive on RE and EE investments	Tax credits for the purchase of energy-saving assets and renewable energy	5. Polluting alternative technologies remain profitable and cost-effective
Tax	Tax incentive on green R&D	Tax credits for supporting green innovative companies	5. Polluting alternative technologies remain profitable and cost-effective
Tax	Taxing building ownership	Taxing building's / apartment's owners depending on their energy efficiency	5. Polluting alternative technologies remain profitable and cost-effective
Tax	FTT	Green FTT (Financial Transaction Tax)	12.2. Mechanisms to reduce transaction costs/transfer risks

### **Annex III. Detailed descriptions of the priority policy actions**

[Separate document due to size]

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