Agora Energiewende

IMPULSE

# Investing in the Green Deal

## How to increase the impact and ensure the continuity of EU climate funding

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**Impulse**
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# Preface

Dear reader,

Europe's transition to climate neutrality requires investments into clean technologies, the transformation of Europe's industrial base and the build-out of energy infrastructure fit for net zero. At least 2.7 percent of EU GDP of additional investments, or 462 billion euros in 2023 prices will be needed every year throughout this decade.

Most investments will come from private sources, incentivised by a mix of regulation, market signals and enabling measures. However, public funding plays an important role. It facilitates private investments, supports clean energy infrastructure build-out or provides support for lower-income households to switch to climate-friendly technologies.

EU funding constitutes only a small fraction of public spending in Europe, compared with national budgets. Nevertheless, it plays an important role. First, the share of transition-related funding in the EU budget is higher than in national budgets. Second, EU funding can prioritise projects that are particularly important from a continent-wide perspective. Third, it can – to some extent – address distributional concerns that arise from different income levels within the European Union.

The next multi-year EU budget will run from 2028 to 2034 and potential priorities will be discussed from the start of the new policy cycle. In this report, we describe the status quo of EU climate funding, assess upcoming challenges, and offer recommendations to increase the impact and ensure continuity of EU climate funding.

We wish you a pleasant read!

Frauke Thies
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## Key findings at a glance

1 **A successful implementation of the EU Green Deal requires addressing the looming climate funding cliff after the EU Recovery and Resilience Facility ends in 2026.** Significant investments – most of them from private sources – will be required to decarbonise buildings, transport and industry, and to build energy infrastructure fit for net zero. Complementary public funding corresponding to around 1.1 percent of EU GDP annually would ensure the necessary investments over this decade.

2 **Governments should urgently identify national investment needs and develop financing strategies for implementing the Fit for 55 package.** More clarity about focus and scale of needed investments and the expected contribution of private investments as well as national and EU funding would enhance the impact of EU climate spending.

3 **InvestEU and future carbon market revenues can help cover short-term funding needs.** The EU should replenish the InvestEU fund and equip it with guarantees to support the upscaling of smaller-scale cleantech manufacturers. 'Frontloading' of expected national carbon pricing revenues from the ETS 2 could provide interested governments with more than 36 billion euros for urgently needed investments in clean heating and transport solutions by 2027.

4 **To ensure continuity of funding in the medium term, the EU should establish a dedicated fund to support the implementation of the Green Deal.** A fund worth 0.17 percent of EU GDP annually, or 260 billion EUR over the 2028–2034 period, would fill the gap left by the Recovery and Resilience Facility. We recommend a mix of new own resources, such as a methane fee or a financial transaction tax, to raise the required finance.

# Contents

# Glossary

| Term | Explanation |
|---|---|
| **CAP** | Common Agricultural Policy |
| **CCS** | Carbon capture and storage |
| **CEF** | Connecting Europe Facility |
| **CF** | Cohesion Fund |
| **CFDs** | Contracts for Difference |
| **CRMA** | Critical Raw Materials Act |
| **EIB** | European Investment Bank |
| **ERDF** | European Regional Development Fund |
| **ESF+** | European Social Fund |
| **ETC** | European Territorial Cooperation |
| **ETS** | EU Emissions Trading System |
| **GDIF** | Green Deal Implementation Fund |
| **GDP** | Gross Domestic Product |
| **GHG** | greenhouse gas |
| **GNI** | Gross National Income |
| **JTF** | Just Transition Fund |
| **LULUCF** | Land Use, Land Use Change and Forestry |
| **MFF** | Multiannual Financial Framework |
| **NGEU** | NextGenerationEU |
| **NORs** | New Own Resources |
| **NZIA** | Net Zero Industry Act |
| **OECD** | Organisation for Economic Co-operation and Development |
| **RRF** | Recovery and Resilience Facility |
| **RRPs** | Recovery and Resilience Plans |
| **SCF** | Social Climate Fund |

# Executive summary

Implementing the European Green Deal is a core task for the 2024–2029 EU policy cycle. Effective climate action in line with the EU's goal to be climate neutral by 2050 is critical for safeguarding the bloc's strategic priorities such as security, competitiveness, social justice, and environmental sustainability. The transition will require major investments in all sectors of the economy, particularly in buildings, transport, industry, and energy. It is estimated, that at least 462 bn euros (in 2023 prices) – corresponding to 2.7 percent of EU GDP — of additional private and public investments will be needed every year throughout this decade.

The amount and type of public funding required depends on the sector and existing incentives for private investments. Overall, public grants of around 1.1 percent of the EU GDP will be needed in the 2028–2034 EU budget cycle.

EU funding plays an important role in supporting investments into Europe's transition to climate neutrality. In the current EU budget that runs from 2021–2027, the different funds provide an estimated amount of 391 billion euros in grants, covering public climate investment needs in this period.

Both EU and national public climate funding face various short-term challenges which could lead to a climate funding cliff after 2026:

- → the resources for repaying the common debt issued to set up the NextGenerationEU budget have not been secured;
- → the EU has not agreed on a successor to the NextGenerationEU budget once it comes to an end in 2026;
- → several Member States will be under pressure to consolidate their public budgets under the newly reformed EU fiscal rules.

To avoid the looming climate funding cliff, swift adoption of the New Own Resources package proposed by the European Commission is a top political priority. If Member States fail to reach an agreement, cuts to funding for climate and other joint policy objectives in the next EU budget seem almost inevitable to cover 22–27 billion euros annual debt repayment.

Furthermore, mobilising the necessary investments requires both increasing the impact of EU climate funding and ensuring its continuity at an adequate level.

### Increasing the impact of EU climate funding

The impact of EU climate funding can be significantly increased through better and more granular information about national climate investment needs. National climate investment needs assessments should thus become obligatory and be undertaken according to a common EU methodology. Such assessments would serve as the basis for developing national climate investment plans that identify sector-specific funding gaps and develop strategies for closing them. We recommend amending the Energy Union Governance Regulation by a clear obligation on Member States to undertake a national climate investment needs analysis and to develop complementary climate investment plans.

The availability of such plans would facilitate the coordination of EU climate spending across programmes and budget lines and provide more scope for consolidating and simplifying the EU budget. They would allow for a more meaningful ex-post analysis of the effectiveness of climate investments and also help avoid public spending that is potentially moving countries away from achieving their climate targets. National climate investment plans should thus be available before the next multiannual EU budget is adopted so that governments have more clarity than they do today about the amount and type of EU-level climate funding that would be most useful to them.

## Ensuring the continuity of an adequate level of EU climate funding

To ensure the continuity of EU climate funding in the short term, we recommend frontloading national revenues from the upcoming carbon market for buildings and transport (ETS 2) and an early replenishment of the InvestEU Fund.

*Frontloading of national ETS 2 revenues.* A temporary off-budget facility at the EU level would enable the frontloading of national ETS 2 revenues for interested Member States. The facility would reinforce the frontloading element foreseen in the Social Climate Fund. It would issue debt today to finance the disbursement of grants and recoup an agreed amount of revenues directly from the ETS 2 auctioning platforms in the future. The facility could generate at least 36.2 billion euros in total before 2028 for much-needed early investments in clean heating and mobility solutions. These investments would contribute to moderating ETS 2 allowance prices, thereby reducing the pressure on vulnerable households and companies and minimising the need for compensation payments. The advantage of frontloading future ETS 2 revenues via a dedicated EU facility is that the debt issued for this frontloading would not count as national debt.

*Early replenishment of the InvestEU Fund.* InvestEU is a unique EU financing mechanism designed to boost private investments with de-risking measures and a wide network of implementing partners. The EU budget enabled an initial guarantee of 26.2 billion euros that are estimated to trigger around 372 billion euros in additional investment over the 2021–2027 budget period. The guarantees underlying InvestEU will be depleted by 2025.

Against this background, we recommend that Member States shift some of their national allocations from budget lines under shared management to the member state compartment of the InvestEU Fund. Such allocation is possible for up to three percent of the initial allocation of funds under shared management. Doing so could provide an additional budget guarantee of around 21.5 billion euros and leverage around 245 billion euros in additional investments. Additional investment support from InvestEU should focus on cleantech manufacturing in Europe.

To ensure continuity of EU climate funding at adequate level in the medium term, we recommend establishing a *Green Deal Implementation Fund* which would start in 2028. Such a fund should be endowed with 260 billion euros in current prices for the 2028–2034 budget period, equal to approximately 0.17 percent of annual EU-wide GDP. The potential name or institutional set-up of this fund are less important than the considerations on scope, required budget and financing sources developed in the report. Our objectives for this fund include support for cleantech manufacturing in line with the Net-Zero Industry Act (NZIA) targets, suggesting some overlap with the European Competitiveness Fund envisioned in the Political Guidelines of Commission President-elect Ursula von der Leyen. Our financing scenarios indicate the feasibility to finance such a fund with a balanced mix of new own resources such as a methane fee or financial transaction tax. Using a limited amount of joint EU debt would significantly reduce the amount of new own resources needed annually.

# 1 Introduction

The new EU policy cycle will be characterised by the implementation of the European Green Deal and its Fit for 55 package. The Green Deal comprises over 50 legislative acts aimed at aligning European economic growth, competitiveness and job creation with a reduction in greenhouse gas emissions of at least 55 percent by 2030 and climate neutrality continent-wide by 2050 at the latest.

The Green Deal will also help meet other strategic objectives of the Union related to its security and global competitiveness. As Russia's full-scale invasion of Ukraine has demonstrated, European dependence on fossil fuel imports is a major strategic weakness when it comes to European security and economic stability. The Green Deal and accompanying initiatives such as REPowerEU, the Net Zero Industry Act and the Critical Raw Materials Act will reduce such vulnerabilities. Furthermore, innovative clean technologies will reinforce a competitive edge in critical sectors of the future global economy. Macroeconomic modelling also suggests that a successful transition pathway will spur economic growth. For instance, real EU gross domestic product (GDP) in 2040 will be around two percent higher than in a Baseline scenario that is not compatible with climate neutrality in 2050, with middle-income countries likes Poland benefitting disproportionately[1].

It is estimated, that at least 462 bn euros (in 2023 prices) – corresponding to 2.7 percent of EU GDP – of additional private and public investments will be needed every year throughout this decade[2]. The majority of investments will come from private sources, incentivised by the progressive implementation of Green Deal-related policies that transform and create markets. However, public funding continues to be important where market-driven incentives are absent or insufficient. We estimate that at least 1.1 percent of EU annual GDP in public funding is required to support the transition. This does not include public funding needed to achieve climate and biodiversity-related objectives in the land use and agriculture sectors, for research and development or to adapt to the growing impacts of the climate crisis. These latter areas are outside the scope of this study.

The EU budget, the Multiannual Financial Framework (MFF), is small compared to national budgets, with planned spending of less than one percent of EU GDP in 2023. The total public budget of national and regional governments in Europe amounted to around 45 percent of EU GDP in that year. However, the EU budget plays a much larger role when it comes to funding in support of Europe's climate objectives. In 2023, EU climate funding met around 30 percent of public climate funding needs in Europe.

One important priority of the new European Commission that will take office in November 2024 will be to develop a proposal for a multiannual EU budget from 2028 to 2034. This is a critical period for EU climate policy and for the implementation of the Fit for 55 policy package. In 2030, the share of renewable power in the mix will be around 70 percent, with significant challenges for power system transformation and related investments. As of 2035, almost all new vehicles sold in the EU will be battery electric and the overall share of light electric vehicles in circulation is projected at around 25 percent, which presupposes significant investments in an EU-wide charging network. By 2030, fossil gas use in Europe will be halved[3].

All of this requires reliable public funding commitments. And the EU's next multiannual budget – because it covers a period of several years and accounts for a comparatively high proportion of climate-related funding – will need to make essential

1 Agora Energiewende (2024a)
2 see footnote 1
3 Agora Energiewende (2023a)

contributions. The Commission's proposal for the period 2028–2034 will be a litmus test of whether the EU is serious about rapidly reducing greenhouse gas emissions.

Against this background, this report develops recommendations for increasing the impact and ensuring the continuity of EU climate funding.

Section 2 describes the status quo; it outlines climate investment needs in different sectors and for different transition challenges and provides an overview of the EU climate funding landscape in the 2021–2027 budget period.

Section 3 explains why there will be a sharp reduction in available EU climate funding after 2026, a 'climate funding cliff', based on where we are today.

Section 4 and Section 5 develop recommendations for the future of EU climate funding. We first address the need to improve the quality of climate spending in order to increase the impact of every euro of public funding spent on climate objectives (Section 4). We then develop concrete short-term and medium-term recommendations for EU climate funding that would help avoid the climate funding cliff and ensure the continuity of EU climate funding in the 2028–2034 budget period (Section 5).

# 2 Public funding needs under the Green Deal and available EU climate funding

It is estimated, that at least 462 bn euros (in 2023 prices) – corresponding to 2.7 percent of EU GDP – of additional private and public investments will be needed every year throughout this decade. These headline figures hide the fact that public climate funding needs are very different in different sectors.

Section 2.1 shows how much public funding will have to contribute to cover climate investments in different sectors. Section 2.2 provides an overview of climate funding that is available in the current EU budget framework. Readers familiar with these EU climate funding basics may wish to proceed directly to Section 3 on the looming climate funding cliff.

## 2.1 Climate investments in different sectors require different shares of public funding

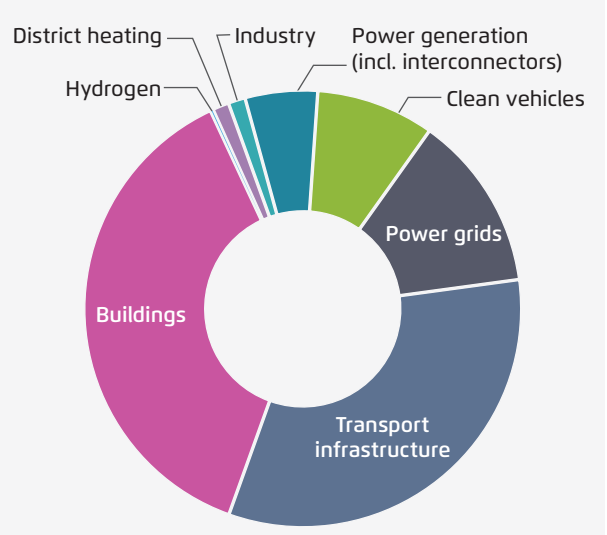
Transition investments in different sectors entail different public funding needs. It is important to acknowledge that the nature of investment needs varies greatly across sectors and will change over time. Some sectors and technologies will require larger shares of public funding in the form of grants than others that are characterised by solid business cases and incentives for private investments.

Figure 1 depicts the estimated relative shares of public climate spending needs in the EU by sector for the period 2023–2050. The figures include both direct grants and public funding to enable private investments. They show that the bulk of public funding is likely to be needed in the buildings, transport, energy generation, industrial and heating sectors.

**The buildings sector (energy retrofits, heating and cooling):** For buildings, the need for public grants reflects a number of unique economic challenges to financing the required investments in thermal and energy supply retrofits. These include the challenge of affordability for less affluent households, the large disconnect between public and private payback periods, 'split incentives' between landlords and tenants, and the high absolute cost of deep retrofit projects. Public grants will play a key role in enabling medium and deep energy performance retrofits of existing buildings, particularly since the Energy Performance of Buildings Directive requires Member States to retrofit up to 16 and 26 percent of existing buildings by 2030 and 2033 respectively.

**Heating and cooling networks:** Heating and cooling networks will require significant investments to decarbonise. Approximately 31 percent of EU energy demand comes from hot water and space heating, much of which is or could be supplied by highly efficient district heating systems. District heating and cooling systems will need to be expanded and

Public climate spending needs* in the EU, 2023–2050 → Fig. 1




Agora Energiewende (2024). *Public climate spending needs include public CapEx and the share of private CapEx covered by public grants and other subsidies

converted to non-fossil energy sources. According to business association Euroheat, up to 144 billion euros would need to be invested by 2050 to align with the EU's climate neutrality goal[4]. These transitions will typically entail an additional cost – known as the 'green premium' – that would need to be covered. These are normally capital-intensive investments.

**Scaling up clean power generation:** The main challenge here, from a public funding perspective, is to reduce the cost of deploying clean power generation technologies. Renewable energy projects such as solar PV or wind farms harvest energy from the sun or weather for free, with operating costs essentially being maintenance costs. The initial investment needed to build a wind park or install ground-mounted PV constitutes the lion's share of the investment. Ensuring the lowest possible cost of capital for such projects is key to keeping the overall costs of clean power as low as possible. The costs of the initial investment correlate strongly with the perceived risks and depend on several factors, including the regulatory environment (i.e. the speed at which permits are granted), the availability of revenue stabilisation instruments such as contracts for difference (CFDs) and expectations about future power price trends. Public funding can play an important role in reducing project risk, be it by backing CFDs, investing public equity in projects or offering financial guarantees to facilitate the flow of public finance.

Beyond de-risking, it is important for lending for such projects to be available at the most competitive rates possible. This is also an issue related to the opportunity cost of finance. Currently, the higher interest rates associated with the European Central Bank's efforts to fight inflation have reduced the competitiveness of such projects.

Some Member States also face higher lending rates than others due to higher benchmark interest rates in their national markets (e.g. higher sovereign debt rates). In such circumstances, financial instruments that can lower the average capital costs of investments in clean energy infrastructure can be very valuable.

**Clean energy, transport, hydrogen and carbon capture and storage (CCS) infrastructure:** Europe will need to invest significantly in deploying and expanding such networks in order to meet its climate targets for 2030 and beyond. One challenge for these project types will be not only the cost of capital itself but also the scale of capital that needs to be raised in a short period. In some situations, the amounts of investment required will be beyond the capacity of network operators or even commercial banks to bear on their balance sheets. Moreover, some investments of this kind will be perceived as risky given the lack of experience of their technologies and the key role played in their success by future and therefore uncertain public sector decisions. In such cases, public funds will be important, whether in the form of de-risking via guarantees, public equity or underwriting complex insurance liabilities related to projects.

For some infrastructure projects of this type, public grants will also be crucial in shoring up their business cases to ensure likely profitability. This will be true for example of many green hydrogen production projects that involve a 'green premium' with respect to grey hydrogen. For instance, the first hydrogen bank auctions for clean hydrogen production run by the European Innovation Fund found the average *green premium* to be about 0.48 cents per kilowatt hour for green hydrogen[5]. It will also be true of major new carbon capture projects. The largest CCS project in Europe for example – the Northern Lights carbon storage project in Norway – required 80 percent of its funding to be provided via a state grant in order to secure its 'go-ahead'[6].

4 Euroheat & Power (2023)

5 Cf. European Commission website: https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund/competitive-bidding_en

6 EFTA Surveillance Authority (2020) https://www.eftasurv.int/newsroom/updates/esa-approves-norwegian-full-scale-carbon-capture-and-storage-eu21bn-aid-meet

In various locations in Europe, especially in rural or less densely populated areas, electric vehicle charging infrastructure may also struggle to achieve economic viability without subsidisation. Much of the charging infrastructure may initially make losses. In principle, the lack of charging infrastructure acts as a barrier to electric vehicle uptake. Thus, in the context of a large-scale transition to EVs, infrastructure for charging may need to lead demand for charging, thus reducing initial profitability.

**Zero-emission vehicles:** Public grants are likely to be necessary to support the mass deployment of EVs themselves on an EU scale. Currently, many EU Member States offer bonuses to EV or hydrogen vehicle purchasers. Though mass production of zero-emission vehicles due to new EU carbon dioxide regulations on cars and vans should reduce the need for such subsidies for new purchasers over time, this process will take several years.

The additional costs to owners of second-hand vehicles should not be underestimated as a social consideration. Most vehicles purchased and owned by households in the EU are second-hand, a trend that is most pronounced in Member States with lower per capita GDP. Second-hand EVs currently entail associated costs that can be higher than for internal combustion vehicles, such as battery rental or replacement, installation of home-charging infrastructure and potentially higher insurance costs. Given enough time, one might expect such costs to reduce as markets mature, yet this cannot be taken for granted in the short run. For this reason, some EU Member States have felt compelled to support second-hand EV purchasers and renters in order to facilitate a functioning primary and secondary market for EVs or hydrogen vehicles. For instance, the French government currently offers between 1 000 and 3 000 euros to buyers of a second-hand fully electric or hydrogen vehicle, depending on the income of the purchaser[7]. Aid also exists for the installation of home-charging equipment.

**Energy-intensive industry:** A major challenge when it comes to meeting the EU's 2030 and 2050 climate targets is the need to decarbonise energy-intensive industries such as cement, steel and chemicals. These sectors are covered by the EU Emissions Trading System (ETS) and the Carbon Border Adjustment Mechanism (CBAM). Therefore, it is expected that carbon pricing will help make cleaner production technologies more competitive. However, carbon pricing will not resolve all the financing issues for these sectors: we estimate that 35 to 50 percent of energy-intensive industrial assets will need major re-investment decisions from now until the early 2030s. That is basically the cycle that will take EU industry to 2050, so it will need to be transformative. For sufficiently transformative investments to occur, we estimate that the carbon price needs to stay solidly above 120 euros per tonne over this period. However, the reality is that carbon prices are highly uncertain, subject to political decision-making and not viewed as a viable business case by lenders to capital-intensive projects[8].

Some sectors will therefore require carbon price de-risking instruments such as carbon contracts for difference (CCfD) to enable very capital-intensive and first-of-a-kind projects to become bankable, since carbon prices are not currently at the level needed to ensure that such projects are economically viable. There will need to be very significant investments in public infrastructure to help industry to decarbonise, such as carbon capture and storage (CCS), expansion of local electricity distribution networks and the development of hydrogen production, storage and transport. Many of these projects are highly capital intensive: they will also be perceived as risky by lenders due to uncertainties surrounding the technologies and business models and may not be immediately competitive at prevailing carbon prices. Finally, given the capital intensity of heavy industry transformation projects, the viability of such projects will be very sensitive to interest rates.

7 Cf. French Administration website https://www.service-public.fr/particuliers/actualites/A14391?lang=en

8 Agora Energiewende (2021a) and own calculations

**Electrification of final energy applications:** For a range of sectors beyond energy-intensive industry, the direct or indirect electrification of end-use technologies will be necessary. For instance, the European Commission's 2040 climate target scenario assessment suggested that approximately 50 percent of industrial energy consumption (i.e. including the roughly 40 percent of industrial energy consumed by non-energy-intensive activities) would need to be electrified by 2040 to achieve a 90 percent greenhouse gas (GHG) reduction goal[9]. This compares to an electrification share of only around 20 percent today.

**Clean-technology manufacturing (scale-up and commercial deployment):** The EU will also need to invest significantly in expanding its domestic manufacturing capacities for clean technologies. This will be necessary for reasons of industrial and energy sovereignty and resilience, to deliver green jobs and investment to Europe and to promote the next wave of innovations capable of lowering the cost of the transition.

Cleantech manufacturing will require different forms of financial support. In a recent study performed by Agora Energiewende and Agora Industry in partnership with Roland Berger[10], we estimated public funding needs for scaling EU manufacturing to the levels necessary to be consistent with EU goals. The totals are between 10 and 30 billion euros from 2024 until 2027 and between 32.9 and 94.5 billion euros from 2028 until 2034.

Some cleantech manufacturing projects are economically viable on paper provided that demand resulting from Green Deal regulations is in place. However, a key challenge for many such projects is to raise capital for commercialising production following successful pilot projects.

In other situations, cleantech manufacturing is generally not cost effective in Europe compared to international competitors: import restrictions (which are currently absent) and public funding support would be needed to make such projects economically viable.

**Circular economy infrastructure and technologies:** The Green Deal also includes a wide range of measures to develop a more circular economy and reduce material waste in Europe. One of the key challenges facing implementation is the lack of sufficiently advanced collection, sorting and recycling technologies and related infrastructure[11]. Existing advance disposal fees and extended producer responsibility schemes help pay for existing infrastructure but do not necessarily cover the full costs of deploying the most advanced collection, sorting and recycling systems that would be needed to align with the Second Circular Economy Package and the Green Deal.

**Carbon removals in the land-use sectors:** The EU's new Regulation on Land Use, Land Use Change and Forestry (LULUCF) requires Member States to contribute to a collective target of 310 megatonnes of carbon dioxide equivalent ($MtCO_2eq$) of net carbon removals by 2030, an ambitious goal given current trends towards declining carbon sinks in the land-use sector. Investment in maintaining or enhancing existing natural sinks and establishing additional ones is therefore crucial. Since obligations are placed not on private actors but on Member States to meet binding national targets, there are currently no market incentives for private landowners and land managers to undertake the necessary investments in and changes to agricultural and forestry practices. In this context, significant public support, in the form of grants to landowners and land managers, would be required to counter the declining trend in the LULUCF sector. Due to long lead times (especially in the forestry sector), this support urgently needs to be provided in the short term.

9 Cf. European Commission website: https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2040-climate-target_en

10 Agora Energiewende and Agora Industry (2023)

11 Material Economics (2019)

**Other carbon removals:** In February 2024 the European Commission published its Industrial Carbon Management Strategy, which outlined the EU's objective of developing direct carbon removals to help achieve the EU's climate targets. In addition to natural sinks (described above), the EU strategy envisages a significant market developing for carbon removal technologies, such as direct air capture and storage. It remains unclear how these technologies will be paid for.

These results underscore the importance of public funding for the implementation of the Green Deal across a range of sectors to tackle specific kinds of funding challenges. It is therefore important to be wary of reductive and simplistic claims about the 'right way' to finance climate action. For instance, any suggestion that private finance can always substitute public finance risks overlooking the complexities of the different categories of investment described above.

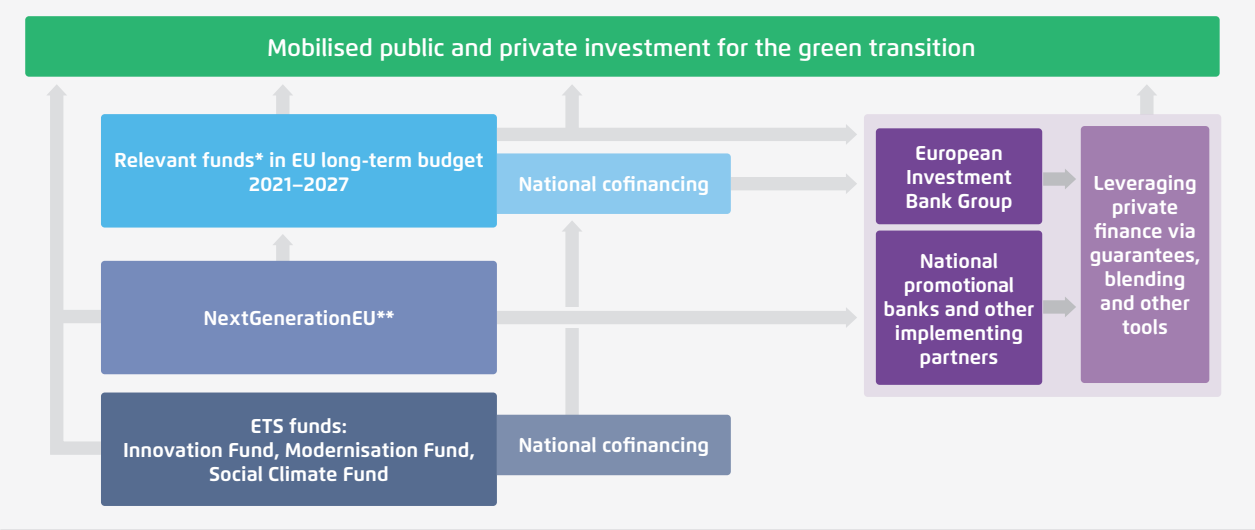
Such considerations also underline the need for comprehensive funding solutions that extend across different economic sub-sectors and require different kinds of funding support. The need for better governance and coordination of climate investment funds at the EU and national levels is discussed in Section 4.

## 2.2 The status quo of EU climate funding

EU funding to support investments in Europe's transition to climate neutrality is available via different instruments (see Figure 2). The first is the EU's long-term budget, the Multiannual Financial Framework (MFF). The second is the NextGenerationEU (NGEU) instrument which was set up to boost economic recovery after the Covid-19 pandemic and financed with debt issued by the EU, a novelty for the EU budget. The third element comprises off-budget instruments financed from revenues of emissions allowances issued under the EU Emissions Trading System. These are the Innovation Fund and the Modernisation Fund and, from 2026, a new Social Climate Fund (SCF). It is also important that several EU funds foresee some leveraging of private investments with available public funding. Such efforts are typically undertaken in collaboration with the European Investment Bank (EIB) and national promotional banks.

In general, EU climate financial support can take the form of grants, back-to-back loans, guarantees and other leveraging instruments. The governance and management of the funds differ across programmes. Management of the funds can be the direct

The EU climate funding landscape, 2021–2027 → Fig. 2




Agora Energiewende (2024). *Funds considered: InvestEU, ESF+, ERDF, CF, ETC, CEF, JTF **Funds considered: RRF (national recovery plans, RePowerEU) and MFF top-ups, excluding rescEU

### Infobox 1: The Common Agricultural Policy (CAP)

With total funds of 378 billion euros, the CAP accounts for the biggest share of the MFF. Officially, 40 percent of the CAP is supposed to contribute to the EU's climate mainstreaming target[12]. However, there is little evidence that CAP funds have made a significant contribution to climate change mitigation in agriculture[13]. For the previous MFF (2014–2020), the European Court of Auditors fundamentally questioned whether the Commission's approach of designating agriculture funding as 'climate-related' would give any indication of real-world reductions in greenhouse gas emissions from agricultural activities[14]. The situation in the current budget period still needs a thorough review. The contribution of the land-use sectors to climate neutrality will come under increasing scrutiny in the coming years. The funding needs for a transformation of agriculture and forestry are contingent on several factors. This includes the expected contribution of the land-use sectors to achieving climate neutrality and the allocation of costs for the transformation between public budgets and economic operators. Given that answers to these questions have not yet been sufficiently defined, and in view of the lack of studies on investment needs, the CAP and the land-use sectors are not included in the scope of this paper.

responsibility of the European Commission or shared with Member States and regional authorities, and the direct beneficiaries can range from companies to national or local governments. Some programmes, such as cohesion policy funds, have a 'cofinancing requirement' that requires Member States to match EU funding with a certain amount of national funds[15].

## Multiannual Financial Framework

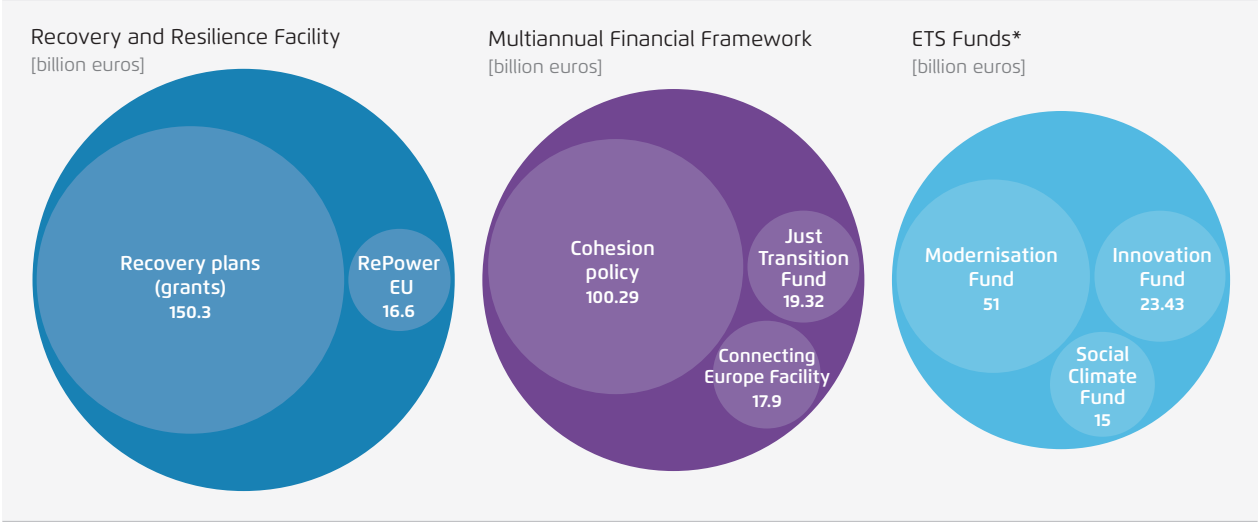
In terms of annual spending volume, the EU's MFF is the main EU-level funding instrument for climate action. The MFF comprises around one percent of EU gross national income (GNI). The current MFF runs from 2021 to 2027 and amounts to 1 294 billion euros at current prices[16]. 30 percent of MFF funding is supposed to support the achievement of climate objectives.

The MFF is particularly important when it comes to the climate finance efforts of lower-income Member States. This is due to its high share of investment-related expenditure in comparison to national budgets and its climate mainstreaming target of 30 percent. The most important budget lines from a climate perspective are linked to the EU's regional and cohesion policy, namely the European Regional Development Fund (ERDF), the Cohesion Fund (CF), the European Social Fund (ESF+) and the European Territorial Cooperation (ETC). A Just Transition Fund (JTF) was set up to support regions most impacted by the transition away from fossil fuel production and use. Other relevant financial envelopes are the Connecting Europe Facility (CEF) that supports the building of cross-border infrastructure in the transport, energy and digital sectors, the InvestEU Fund, the LIFE Programme for Environment and Climate Action, and Horizon Europe, the main funding instrument for research and innovation[17]. It is unclear to which extent the EU's biggest budget line, the 378 billion euros spent on the EU's Common Agricultural Policy

12 European Commission, SWD (2022) 225 final
13 European Court of Auditors (2022); Alliance Environnement (2019)
14 European Court of Auditors (2020)
15 Agora Energiewende (2021b) offers a detailed description of available EU climate funding in the current EU budget period.
16 This includes an 83-billion-euro top-up from NextGenerationEU.
17 Since this paper does not cover research and development or environmental and biodiversity targets, we do not consider LIFE and Horizon Europe in our analysis.

## Grants allocated to climate investment in different EU instruments and programmes, 2021–2027

→ Fig. 3




Agora Energiewende (2024). Excludes Common Agricultural Policy and Horizon Europe. * In 2021–2027 alone.

(CAP), contributes to climate protection (see Infobox 1). More clarity in this regard would be useful but is beyond the scope of this paper.

### NextGenerationEU

The *NextGenerationEU Fund (NGEU)* was established to support economic recovery after the Covid-19 pandemic. It is a temporary fund that is legally tied to the MFF and was financed by the issuance of common EU debt. It topped up various MFF budget lines and established the Recovery and Resilience Facility (RRF). The RRF is by far the biggest budget line under NGEU. It distributes up to 338 billion euros in grants and 385.8 billion euros in loans to Member States without a co-financing requirement. 37 percent of RRF funding is earmarked for achieving climate objectives. As a precondition for accessing funding from the RRF, Member States had to develop national Recovery and Resilience Plans (RRPs).

The RePowerEU Plan of 2022 that was adopted in response to the energy crisis that followed Russia's full-scale invasion of Ukraine foresaw top-ups and revisions of these RRPs to help eliminate Europe's dependence on Russian fossil fuels[18]. The RRF is a one-off instrument that will expire by the end of 2026. All funds not spent by then will be 'lost' under current rules.

### ETS Funds

Several EU funds are financed with revenues from the auctioning of allowances under the ETS. These funds are not part of the MFF structure and are therefore called 'off-budget'. ETS-related funds are the Innovation Fund[19], the Modernisation Fund[20] and, from 2026 onwards, the new Social Climate Fund (SCF)[21]. The exact funding available through these funds depends on the price of ETS allowances when these are auctioned. The Innovation Fund aims to boost innovation and commercialisation of clean technologies in their early stages by directly

18 Regarding the energy security benefits of investing in saving energy and faster scaling of renewables, see Agora Energiewende (2022)

19 Cf. European Commission website https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund_en

20 Cf. European Commission website https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/modernisation-fund_en

21 Cf. European Commission website https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/social-climate-fund_en

supporting projects of successful applicants with grants. The Modernisation Fund supports 13 lower-income Member States in their efforts to modernise energy systems and improve energy efficiency. They also finance measures to address energy poverty and ensure a just transition in carbon-dependent regions. The SCF is designed to address the regressive effects of the new ETS 2 that will enter into force in 2027. The ETS 2 will price fuel combustion in the buildings and road transport sectors, inter alia, and will thus directly impact vulnerable groups with energy and transport poverty risks. In addition, some Member States will be more affected than others, as they have lower financial means at their disposal to counteract these effects. The SCF is a solidarity-based instrument that redistributes ETS 2 revenues among Member States to finance the necessary structural investments and compensation measures. Member States will have to adopt Social Climate Plans for that purpose and provide 25 percent co-financing. The overall volume of the SCF is capped at 65 billion euros.

## EU financing mechanisms to mobilise private investments

Several financing mechanisms are in place to leverage public EU funding and mobilise private climate investment. This is done with the help of 'implementing partners' such as national promotional banks and, most notably, the European Investment Bank (EIB). The InvestEU Fund is the most relevant mechanism from a climate perspective. It uses the InvestEU Fund's resources to provide 26.2 billion euros in guarantees that implementing partners use to de-risk (mostly) private sector investments. The InvestEU mechanism can also be used by reallocating funding from other EU budget lines under shared management. The InvestEU Fund has an overall climate spending target of 35 percent, and 60 percent for its sustainable infrastructure window. Funding available for issuing new guarantees will be exhausted by 2025. Operation of the InvestEU Fund is supported by an advisory hub that provides technical support and a dedicated portal to connect with investors and project developers.

Another financing mechanism similar to InvestEU is the Just Transition Mechanism (JTM). One of its pillars is designed to mobilise and de-risk private and regional public investments channelling funds from the EU budget, InvestEU and the EIB. The aim is to complement the JTF in its efforts to support investments in those regions most impacted by the transition away from fossil fuel production and use.

## Grants available for climate investment

Grants are fully financed from common EU financing and the most relevant component of EU climate funding. Figure 3 shows the respective amounts of grants available at EU level for climate investments in the current budget period 2021–2027. In total, we estimate that there are 394 billion euros (at current prices) in available grants[22]. The one-off RRF accounts for roughly 40 percent of all these grants. Altogether, EU grants cover roughly a third of the lower bound estimates of the EU-wide public investment gap for clean energy, resource and energy efficiency investment.

22 We do not consider CAP, LIFE and Horizon Europe funds. For details of how the calculation was performed, see Annex I and Agora Energiewende (2023b)

# 3 The looming EU climate funding cliff after 2026

Public climate funding in the EU is facing various short-term challenges that will lead to a climate funding cliff after 2026:

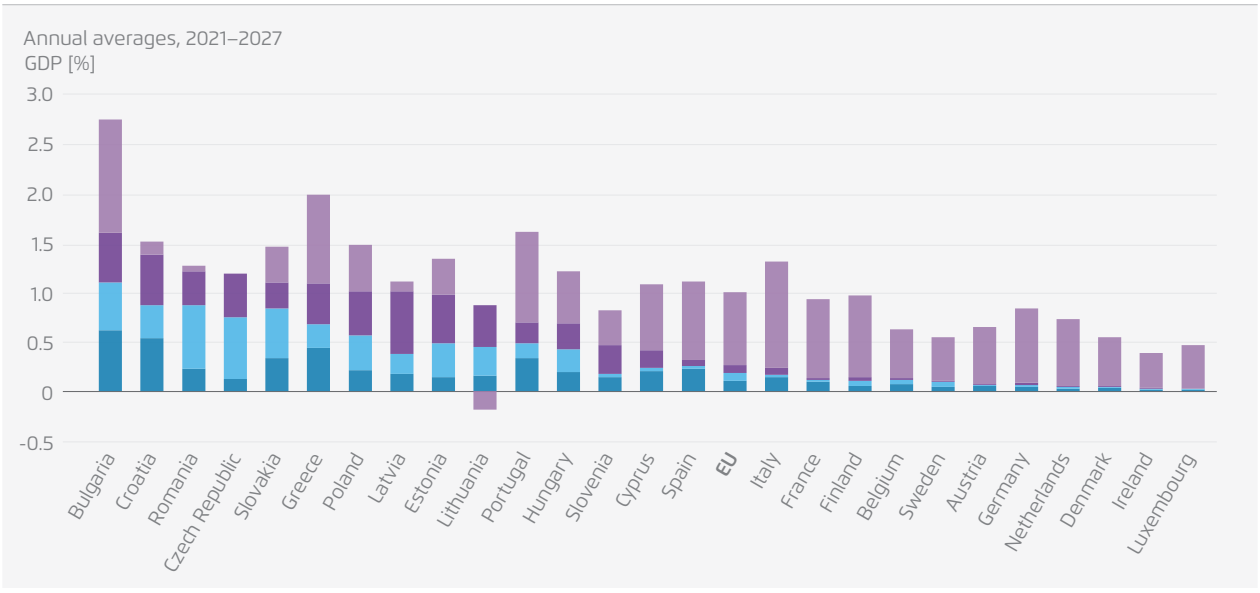
- → resources for repaying the common EU debt issued in order to set up NextGenerationEU have not yet been secured;
- → no successor to NextGenerationEU is in sight; and
- → the newly reformed EU fiscal rules will reinforce pressure to consolidate the public budgets of several Member States.

**In 2028, the EU will have to start repaying the common debt issued to finance NextGenerationEU.** Annual debt servicing is estimated to reach between 22 and 27 billion euros per year by 2030 and then gradually decline towards 14 billion euros by 2058, the last year of repayment[23]. However, the funding sources for debt repayment have not yet been secured. In a 2020 Interinstitutional Agreement, the European Parliament, the Council and the Commission agreed on a roadmap for the introduction of *New Own Resources* (NORs) to cover the debt repayment[24]. However, the Commission's (revised) proposal for establishing these NORs[25] has yet to be adopted.

23 Claeys et al. (2023)
24 Official Journal of the European Union, L 433 of 16 December 2020, 28–46.
25 The revised package comprises a share of 30 percent of most ETS 1 and ETS 2 revenues and 75 percent of CBAM revenues to be transferred to the EU budget. It also proposed temporary national contributions, based on statistics relating to the gross operating profit of corporations in Member States, to be replaced by a permanent measure later on (European Commission, 2023a).

## Annual public spending needs to support clean energy, resource and energy efficiency investment and available EU grants

→ Fig. 4




Agora Energiewende (2023). Note: Scope excludes agriculture, public transport infrastructures and clean tech manufacturing

If Member States fail to reach any agreement on NORs for debt repayment, then the repayment debate will become enmeshed with the debate on the 2028–2034 multiannual EU budget that will start in mid-2025. Major cuts to funding for climate and other joint policy objectives would then seem almost inevitable, as the required 22–27 billion euro annual debt repayment would weigh on an annual EU budget envelope of around 150 billion euros. **A swift adoption of the NOR package is thus an absolute political priority.**

**The temporary Recovery and Resilience Facility (RRF) set up by NextGenerationEU accounts for about 40 percent of EU grants for climate action in the 2021–2027 budgetary period.** The RRF is a temporary funding instrument. Under current rules, it can pay financial contributions to Member States until 31 December 2026, but not thereafter. If there is no successor to the RRF with similar financial firepower, **EU climate funding will see a shortfall of about 170 billion euros over the next budget period 2028–2034**[26]**.**

Figure 4 shows the contribution of the RRF to Member States' climate funding in the current budget period. It gives a clear sense of the significantly larger climate funding burden on national budgets if a successor to the RRF were not available. Rising national revenues from the ETS 1 and ETS 2 (including the establishment of the Social Climate Fund) are not sufficient to cover the gap. Indeed, we expect EU public spending needs for clean energy and energy and resource efficiency to be at least ten percent higher in the next EU budget period than in the current budget period, which means the real shortfall will exceed 170 billion euros.

**Newly reformed EU fiscal rules will reinforce pressure to consolidate the public budgets of several Member States.** This will reduce the scope for governments to implement Green Deal legislation. Recent crises have stretched national budgets and increased public deficits. The newly reformed EU fiscal rules will reinforce pressure to consolidate the public budgets of several Member States. There is evidence that public investments, such as those in climate action, are prone to the biggest spending cuts in times of debt consolidation[27].

The reformed fiscal rules unfortunately do not provide for a meaningful carveout for climate investments. Suggestions for a 'green golden rule' were not picked up in the new fiscal framework[28]. Instead, the new framework only allows for national co-financing of EU programmes to be excluded from the next expenditure indicator[29]. This means that Member States' spending to match EU programmes does not in principle count towards their national deficit limits. This increases fiscal space for this type of EU-linked spending if certain conditions apply. It makes EU-level climate funding programmes with national co-financing requirements more attractive for Member States. However, it does not create more fiscal space to support climate investments for highly indebted countries with public debt levels above 90 percent of GDP. This group of countries accounts for 40 percent of EU greenhouse gas emissions. In other words, a reduction in fiscal space at national level poses a clear risk to the achievement of Green Deal targets. The social and political costs of cuts to public budgets may further hamper public acceptance of climate policy.

Against this background, the following sections develop short- and medium-term options for ensuring the continuity of public climate funding in Europe.

26 This accounts for the new resources from the SCF and for future inflation (two percent p.a.), as well as a higher GDP/GNI that an extension of the RRF would reflect.

27 European Investment Bank (2024)

28 See for example Darvas (2022)

29 The next expenditure indicator is used to formulate a multiannual fiscal adjustment trajectory in line with debt sustainability considerations and, where relevant, with the achievement of EU treaty targets for deficit and debt levels. However, the exemption does not automatically create more fiscal space for all Member States when they are co-financing EU programmes: it must still satisfy safeguards on debt and deficits. The debt safeguard for instance requires the government debt ratio to decrease by a minimum annual average of one percent of GDP over the adjustment period if the debt ratio exceeds 90 percent of GDP. Spending more on co-financing EU climate programmes could push the country out of a trajectory compatible with the safeguards, in which case additional fiscal adjustments – new taxes or spending cuts - would be required. Therefore, the carveout may not save countries that want to spend more on climate action but have high debt and deficits from making some tough choices.

# 4 Improving the impact of EU climate spending

Efforts to improve the impact of EU climate spending should constitute one element of a strategy to reduce the climate funding gap in the coming decade.

Critics of the quality of EU (climate) spending stress the slower than planned spending of available funds, the failure to use available funding in the first place, debatable national spending choices and cumbersome application processes and bureaucracy. Such issues weigh more heavily in some spending programmes than others[30]. Examples are frequently used as an argument against increasing the amount of available climate funding.

Climate spending in the current EU budget is mainly achieved through 'climate mainstreaming'. This means that each programme must dedicate a specific proportion of its funds to achieving climate objectives. The methodology used to identify 'climate-related' spending was originally based on the OECD Rio Marker System. It weights expenditures as 100, 40 or 0 percent climate relevant depending on their expected capacity to reduce greenhouse gas emissions. Following several critical reviews[31], the methodology was improved for the current MFF, though some limitations remain.

Leaving aside the technical challenges involved in effective climate mainstreaming, it seems important to stress that climate mainstreaming cannot be a substitute for a dedicated EU climate funding strategy. The current structure of the MFF reflects funding priorities from 20 years ago. There is no dedicated budget line for climate spending in the MFF, despite the central importance of the EU Green Deal. Climate mainstreaming will at best lead to a bottom-up piecing together of climate-relevant spending activities under programme objectives that have historically been established for other purposes.

Against this background we recommend anchoring EU climate spending – even if disbursed across many different budget lines – in a robust assessment of national climate investment needs and related national climate investment plans. This would result in several benefits in terms of the coordination of EU climate funding, the effective use by national and regional authorities of available EU climate funds and ex-post tracking of the effectiveness of EU climate funding.

## 4.1 Development of national climate investment plans based on identified needs

The lack of granular information about national climate investment needs is in our view the single most important barrier to enhancing the impact of EU climate spending. Several studies outline aggregate climate investment needs for the EU-27[32]. Based on the data available, however, it is currently not possible to break down investment needs country-by-country or sector-by-sector for different countries, or to reliably calculate the required public funding contribution to meet identified investment needs. This makes it very challenging to calibrate EU funding strategies with respect to substantive priorities and geographic distribution to ensure that these most effectively advance shared EU objectives on climate action.

National investment needs assessments should become obligatory and be undertaken according to a common EU methodology and then used as the basis for developing national climate investment plans that identify sector-specific funding gaps and develop strategies for closing them. Some Member States already undertake national investment needs analyses that could provide useful insights, including for other countries and for the EU as a whole; however, these are currently the exception rather than the

30 European Court of Auditors (2020; 2022; 2023)
31 See, e.g. European Court of Auditors (2020)
32 Agora Energiewende (2024a), European Commission (2024), Institute for Climate Economics (2024), Institut Rousseau (2024)

norm in Europe. Furthermore, some sectoral EU initiatives, such as for trans-European infrastructure, have also resulted in specific investment needs assessments. At this point, however, it is important for assessments of climate investment needs to become more accurate, granular and comprehensive[33].

We therefore recommend that Member States, insofar as they have not yet done so, undertake a national climate investment needs analysis based on a common methodology and develop related national climate investment strategies on that basis. National climate investment strategies should be available before the next multiannual EU budget is adopted so that governments have more clarity than they do today about the amount and type of EU-level climate funding that would be most useful to them.

The assessment of national climate investment needs and the development of related investment strategies are already provided for in Article 7 of the Energy Union Governance Regulation, according to which 'Member States shall provide a general overview of the investment needed to achieve the objectives, targets and contributions set out in the national plan [i.e. their integrated national energy and climate plan], as well as a general assessment on the sources of that investment.'

Arguably, this obligation is less concrete than would be desirable. However, while it should be strengthened in the upcoming review of the Energy Union Governance Regulation, there is nothing to stop Member States from developing national climate investment needs analyses and corresponding national climate investment strategies that are fit for purpose. Indeed, undertaking such analyses would – in our view – significantly strengthen the negotiating position of governments in upcoming debates on the future EU budget.

In December 2022, the European Commission issued guidance to Member States on elements that should be addressed when updating their NECPS by June 2023 (draft plans) and June 2024 (final plans)[34]. Among other things, the guidance calls on Member States to '(p)rovide a detailed financing plan addressing the investment needs for each of the five dimensions, through the cost-efficient use of public budget support and the mobilisation of private investment, including via financial instruments and innovative financing schemes.' Box 8 in Section 3.6.1 of the Guidance note sets out good practices to describe the estimated investment needs, also with a view to facilitating comparison between national investment needs assessments.

A quick analysis of draft and final NECPs available at the time of writing this report shows that most plans do not include a climate investment needs assessment[35]. Where investment needs are addressed, this is done in a superficial way using information of a more anecdotal nature that does not add up to a comprehensive picture. The French NECP includes relatively detailed sectoral information, drawing heavily on analyses done by the think tank I4CE. The Danish NECP indicates that Denmark will conduct a climate investment needs assessment in 2025. Most NECPs describe available EU climate funding in some detail, which adds little value from an EU perspective. No NECP includes a detailed climate financing plan that would also provide information about national climate funding.

Against this background, we recommend that the Commission propose to amend the Energy Union Governance Regulation by a clear obligation on Member States to undertake a national climate investment needs analysis and to develop complementary climate financing plans. The Commission should also develop more detailed guidance and perhaps an interactive tool to support national administrators assess climate investment needs and develop climate financing plans. The Commission, the EIB or external

33 See also Institute for Climate Economics (2024)

34 See Commission Notice 2022/C495/02, OJ 495/24 from 29.12.2022.

35 The Spanish NECP is a notable exception: while it offers little information on underlying methodology, it does include a sectoral breakdown of investment needs and distinguishes between the public and private financing sources required for meeting those needs. Nonetheless, it does not include a climate financing plan.

experts could also support interested Member States in undertaking such efforts. The broader availability of national climate needs assessments would ensure that future debates on EU climate funding focus on the most relevant public funding priorities from a Member State perspective. The availability of national climate needs assessments would also improve the impact of EU climate spending more generally, as we argue in the following sub-section.

## 4.2 National climate needs assessments help improve the impact of climate spending

EU climate funding is currently made available via different budget lines and funding instruments that often come with their own specific rules on how to access available funding and on the respective roles and responsibilities of the Commission, EIB and national governments[36].

The existence of national climate investment needs assessments would greatly **facilitate the coordination** of EU climate spending across programmes and budget lines even if the future EU budget were to retain its current structure. However, robust national climate investment needs assessments that are consistent with respective national obligations under EU climate and energy laws would also **provide more scope for consolidating and simplifying EU budget lines,** thereby reducing the need to earmark specific funds for specific spending purposes. The budget could become simpler, more policy- rather than programme-based, and arguably more impactful[37].

Robust national climate needs assessments would also allow for a more meaningful **ex-post analysis of the effect and effectiveness of those climate investments** that have been made. Insights could then be used as the basis for updating climate needs assessments, which should happen regularly in any case – if only to reflect the latest technology and cost developments and experience of the crowding-in of private finance through public funding or other targeted incentives. This would constitute a major improvement compared to the current climate mainstreaming approach that relies on ex-ante assumptions about how much EU spending contributes to the achievement of climate objectives that are often overstated[38].

National climate investment needs assessments would also help identify planned **EU spending that is potentially moving countries away from achieving their climate targets.** The European Climate Law already obliges the Commission to assess the consistency of draft budgetary proposals with the EU's climate-neutrality objective and the EU's 2030 and 2040 climate targets before adopting such proposals[39]. This consistency requirement is also reflected in the current EU budget by the decision that the entirety of NextGenerationEU and parts of the MFF must respect the 'do no significant harm' principle. France has established an interesting approach to evaluating any potential negative impacts of public spending on climate targets. Known as the green budgeting approach, this involves evaluating budget lines according to six key environmental criteria based on a traffic light system. The impacts are assessed relative to an assumed counterfactual scenario in which the reported expenditure does not take place[40].

Robust climate investment needs assessments, and particularly national climate financing plans based on such assessments, would also improve the consistency between climate funding made available through the EU budget and actual investment needs. It would thus arguably **strengthen the national absorption capacity of EU funding.** The inability of Member States to fully spend EU climate funding made available to them before it expires is often used as an argument against increasing climate funding in the EU budget.

36 See Agora Energiewende (2021b)
37 See von der Leyen (2024), p.29.
38 See European Court of Auditors (2022)
39 See Article 6.4 European Climate Law.
40 See Ministère de l'action et des comptes publics (2023)

# 5 Ensuring the continuity of EU climate spending

EU-level funds currently cover a third of the EU-wide climate public funding gap. However, as shown in Section 3, the EU could see available climate funding drop sharply by at least 170 billion euros over the next budgetary period. This upcoming climate funding cliff is particularly worrying in view of the reformed EU fiscal rules that will oblige several countries in Europe, which account for about 40 percent of EU greenhouse gas emissions, to reduce their levels of government debt. The required cuts to national budgets will not stop at climate funding programmes, particularly not in the context of new competing short-term spending priorities for defence, security and industrial competitiveness.

Against this background, this section develops recommendations on how the continuity of EU climate spending could be ensured in both the short and medium term. In the short term, we recommend frontloading of national ETS 2 revenues (Section 5.1) and early replenishment of the InvestEU Fund (Section 5.2). In the medium term we recommend establishing a dedicated Green Deal Implementation Fund (Section 5.3) and some more general adjustments to the allocation and governance of EU climate funding (Section 5.4).

## 5.1 Frontloading of national ETS 2 revenues (short term)

The EU Emissions Trading System (ETS) is a cornerstone of European climate policy. For the past 20 years, the ETS has ensured a year-on-year gradual reduction of greenhouse gas emissions from around 10 000 installations in the energy sector and manufacturing industry, and from intra-EU flights and flights departing to Switzerland and the UK.

The Fit for 55 policy package now establishes a new and separate emissions trading system for heating in buildings and for transport and small industry, known as ETS 2[41]. As of 2027, suppliers of fossil fuels will have to buy emissions allowances equivalent to the emissions resulting from the fuels they sell. The ETS 2 cap is set to bring down emissions by 42 percent by 2030, based on 2005 levels.

From the outset of the debate on an ETS for buildings, transport and small industry, concerns were raised about the potential social and distributional impacts of an EU-wide carbon price in these sectors, particularly if the pricing of ETS 2 allowances were determined solely by supply and demand[42]. Against this background, a share of the revenues from allowances auctioned under the ETS 2 will be channeled into the Social Climate Fund, a newly established instrument to support vulnerable households and micro-enterprises facing higher energy costs due to the new carbon pricing system. Furthermore, governments are obliged to use the remaining ETS 2 revenues for climate action and social measures.

Assuming an ETS 2 carbon price of 60 euros per tonne of carbon dioxide ($tCO_2$), overall ETS 2 revenues would total 362 billion euros from 2026 to 2032, of which 275 billion euros would be national ETS 2 revenues and around 87 billion euros would go to the Social Climate Fund[43]. However, without early investments in clean heating and mobility solutions, allowance prices could reach EUR 200–300/$tCO_2$ according to some estimates, which would add more than 500 euros per year in heating costs to an average EU household with a gas boiler[44].

Overall revenues from the ETS 2 would be (more than) able to offset the energy cost increases faced by lower income households and vulnerable small companies.

41 https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/ets2-buildings-road-transport-and-additional-sectors_en
42 See Agora Energiewende and Ecologic Institute (2021)
43 Keliauskaitė et al. (2024)
44 See Keliauskaitė et al. (2024); Agora Energiewende und Agora Verkehrswende (2023)

However, ETS 2 revenues used for compensation payments would then no longer be available to support necessary investments in clean heating and mobility solutions. Experts therefore underscore the need for early investments in clean heating and mobility solutions to keep future ETS 2 allowance prices at moderate levels and to maintain social acceptance of accelerated climate action in these sectors. Put differently, **frontloaded ETS 2 revenues that are used today to support low-income households and vulnerable companies investing in clean heating and mobility solutions will limit the need for future compensation spending;** this would be an effective use of the overall limited revenues from the ETS 2.

The newly established Social Climate Fund already provides for some frontloading of ETS 2 revenues that are channeled through the instrument (see Table 1).

Allocation of ETS 2 revenues to the Social Climate Fund → Table 1

| Year | Amount allocated to SCF |
|---|---|
| 2026 | EUR 4 bn |
| 2027 | EUR 10.9 bn |
| 2028 | EUR 10.5 bn |
| 2029 | EUR 10.3 bn |
| 2030 | EUR 10.1 bn |
| 2031 | EUR 9.8 bn |
| 2032 | EUR 9.4 bn |

Art. 30d.4 Directive (EU) 2023/959, OJ L130/134 of 16.5.2023

However, the amount of ETS 2 revenues that will become available through the Social Climate Fund and the relatively moderate frontloading built into the Fund does not seem sufficient to scale early investments in clean heating and mobility solutions to ensure that future allowances prices under the ETS 2 are moderated, even if priority is given to supporting low-income households and vulnerable companies in making such investments.

Against this background, **we recommend establishing a temporary ETS 2 facility to support frontloading of future national ETS 2 revenues for interested Member States.** A Member State would have the right to request a payment from this facility corresponding to a discounted value of a limited amount of their respective future national ETS 2 revenues from the period 2030–2035. The facility would issue debt to finance the disbursement of these grants and then recoup the agreed amount of revenues directly from the auctioning of ETS 2 allowances in the future. Payments from the recommended facility should be undertaken in line with the investment priorities set out in national Social Climate Plans and could start as soon as these plans have been adopted, i.e. in the second half of 2025. Overall, this could result in additional public funds of at least 36.2 billion euros between 2025 and 2027, thereby making a significant contribution to a continued high level of EU climate funding until the next EU budget cycle.

**The advantage of frontloading future ETS 2 revenues via a temporary EU facility is that debt issued for the frontloading would not count as national debt,** i.e. this would be a particularly interesting option for EU countries that will need to reduce their national debt levels under the reformed fiscal pact (see Section 3 above). The proposed mechanism would differ from "back-to-back' loans by the RRF, which count towards national debt levels. Instead, Member States would grant the facility the right to collect a specific amount of ETS 2 auctioning revenues in the future. The common debt issued by the facility would be guaranteed by the headroom of the EU budget in a pro-rata fashion, meaning that one Member State could not be held liable for another Member State's debt portion. The frontloading approach recommended here would differ from the frontloading of ETS allowances used to finance the REPowerEU plan (see Box 2).

The recommended approach to frontloading of future ETS 2 revenues would not distort price formation in the emissions trading market. However, it would require uncertainties about future ETS 2 allowance prices to be addressed. The prices – and to some extent also the quantity – of ETS 2 allowances depend on future demand and are not precisely known in advance. That said, the risks associated with repaying the debt by frontloading future revenues can be

## Infobox 2: On the frontloading of ETS allowances for financing REPowerEU

In 2022, the RePowerEU plan provided 20 billion euros in grants to Member States to finance short-term investment programmes in the aftermath of Russia's full-scale invasion of Ukraine. These funds were generated by frontloading the sale of allowances from the well-established EU emissions trading system for energy and industry. Allowances were sold that would otherwise have been auctioned at a later stage, with revenues feeding into the EU Innovation Fund or Member States' budgets.

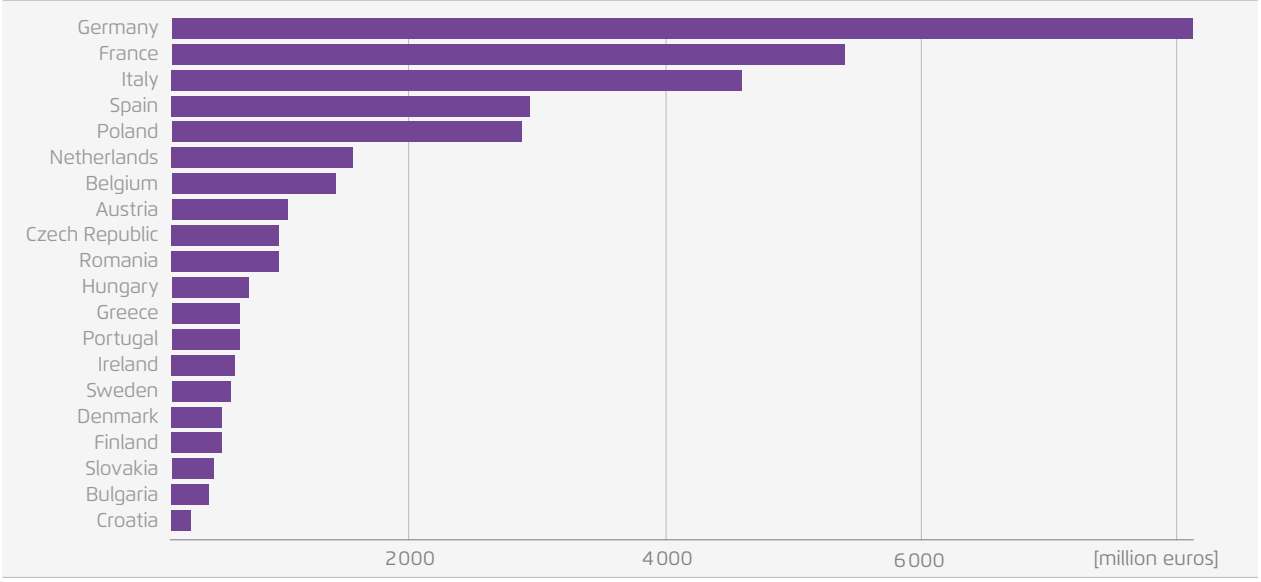
This frontloaded sale led to a short-term increase in the supply of ETS allowances in the market, thereby depressing their price. This affected national ETS revenues overall. Though Member States did receive fresh grants under the REPowerEU plan, they earned lower revenues at the same time from auctioning their own share of allowances. It is estimated that the frontloading reduced ETS allowance prices for 2023 and 2024 by between EUR 10 and EUR 20/t$CO_2$, thus reducing national ETS revenues by an estimated 11 to 22 billion euros over a span of two years[46]. In other words, the short-term gains from frontloading may have been fully offset by parallel short-term losses in the ETS allowance market overall. In addition, the frontloaded allowances could probably have been sold at a higher price later. The ETS 2 revenue-frontloading scheme recommended here avoids this risk.

limited by making conservative assumptions about ETS 2 allowance prices and the amount of expected future revenues that can be frontloaded.

When limiting the amount of frontloading to a maximum of 30 percent of the available ETS 2 allowances, assuming an average price of (only) EUR 40/t$CO_2$ between 2030 and 2035 at current prices and a 2.7 percent interest rate, the recommended ETS 2 frontloading facility could still make 36.2 billion euros available from 2025 to 2027, thus plugging a significant part of the public funding gap for buildings and

45 Our own analysis based on Bloomberg NEF's EU ETS Carbon Pricing Model suggests a negative impact close to 20 euros per allowance in 2023 and 2024. See also: https://www.reuters.com/markets/commodities/analysts-cut-eu-carbon-price-forecasts-weak-economies-increased-supply-2022-11-03/.

Maximum grant payable to member states in 2025–2027 under 30 percent cap → Fig. 5




Agora Energiewende (2024)

transport that will arise once the RRF has ended and before the Social Climate Fund has been able to make significant contributions. If the future ETS 2 price were on average EUR 150/t$CO_2$ between 2030 and 2035, the suggested revenue frontloading would constitute only eight percent of Member States' future carbon price revenues. Figure 5 illustrates what this example of revenue frontloading would mean by country.

## 5.2 Reinforcing InvestEU to support cleantech manufacturing and other spending areas (short term)

The incoming European Commission, under the leadership of Ursula von der Leyen, is determined to make effective use of all available financial resources from NextGenerationEU and the current MFF[46]. For some budget lines of the MFF this seems challenging, as spending levels are low to date compared to the overall available budget. This applies particularly to the MFF funds under Heading 2 on Cohesion, Resilience and Values. By the end of 2023, only 33 percent of the ERDF's and the Cohesion Fund's bugdet had been committed for spending and only around three percent had been effectively spent[47].

The slow spending of these funds is partly a result of the overlap with the RRF. While funds from the RRF must be effectively spent by 31.12.2026, it is possible for Member States to spend Cohesion funds up to three years after they have been committed from the budget (N+3 rule). Funds under the RRF furthermore require less national co-funding than Cohesion funding and are thus more attractive from a Member State perspective. Against this background, Member States had a strong incentive to prioritize the use of RRF funding in support of projects that would otherwise have been supported by regional development and cohesion funding.

However, with only three and a half years left until the end of the current EU budget cycle and growing fiscal constraints on national co-financing for available EU-level funding, several Member States will struggle to commit and effectively spend their national allocations under the Cohesion Fund or the European Regional Development Fund. It therefore seems important to consider an early repurposing of some of these funds to other spending priorities well before the current budget comes to its end in order not to lose the contribution these funds could make to achieving EU climate objectives.

One interesting option to explore in this regard is to shift a limited number of national allocations from funds under shared management to the member state compartment of the InvestEU Fund. Though the InvestEU Fund is part of the MFF, it follows a different spending logic than other EU budget instruments. InvestEU seeks to crowd-in private finance by providing a framework for debt financing, risk sharing, and equity and quasi-equity instruments backed up by a guarantee from the EU budget and in cooperation with implementing partners. The InvestEU Fund is demand driven, meaning that private actors such as SMEs can directly apply for funding via local intermediaries. The majority of the InvestEU budget (75 percent) is implemented through the European Investment Bank and the remainder through national promotional banks. The MFF and the RRF earmark 9.4 billion euros for InvestEU. This allows the EU budget to provide a guarantee of 26.2 billion euros, which is designed to ultimately trigger an estimated 372 billion euros in additional investment over the period 2021–2027[48].

Current expectations are that InvestEU guarantees will be depleted by 2025. A swift replenishment would enable the InvestEU Fund to operate for the remainder of this budget cycle, possibly even with enlarged financial firepower. **Member States could decide to shift some of their national allocations from budget lines under shared management to the member state compartment of the InvestEU Fund.**

46 See von der Leyen (2024) p.12.

47 Cf. European Commission website: https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/programme-performance-statements/regional-policy-performance_en#budget-performance--implementation

48 Agora Energiewende (2021b)

The European Regional Development Fund, initially furnished with 191 billion euros, and the Cohesion Fund, with initially 43 billion euros, seem particularly suitable for this purpose. According to budget rules, such reallocation is still possible for up to three percent of the initial national allocation of funds under shared management[49].

A reallocation to InvestEU of three percent of the Cohesion Fund and ERDF would replenish the former by around 7.7 billion euros[50]. This could provide an additional budget guarantee of around 21.5 billion euros and leverage an estimated 245 billion euros in additional investments. Larger shifts of national allocations to InvestEU would require an amendment to the relevant rules governing the EU budget.

Climate spending areas suitable for InvestEU-type derisking measures include cleantech manufacturing, energy efficiency investments and investments in renewable energies or electricity infrastructure.

**Cleantech manufacturing.** The need to ramp up manufacturing capacity to ensure the competitiveness and resilience of cleantech supply chains is acknowledged in the Net Zero Industry Act (NZIA), the Critical Raw Materials Act (CRMA) and the EU's Green Industrial Plan. Meeting NZIA manufacturing targets by 2030 requires large-scale financing support. Different types of guarantees can make a viable contribution when it comes to the scaling of clean technologies in the short term:

→ *Loan guarantees* involve the public guarantor assuming some of the financial risk faced by a private credit institution that hands out loans to cleantech innovators. This is especially helpful in order to de-risk finance for first-of-a-kind projects in early innovation stages but is also a good option for large-scale energy infrastructure projects or long-term energy storage systems. There are many examples of companies that have profitable projects on paper but cannot find bank lenders or sufficient venture capital because they are too small and revenue negative during the early phase of the innovation cycle. Loan guarantees can counter this capital market failure.

→ *Manufacturing guarantees* address capital market failures during later growth stages. Cleantech manufacturers must typically provide project developers that purchase their equipment with guarantees from a bank. If the manufacturers then fail to deliver the equipment, this enables their clients to recoup the down-payments they have made by claiming the guarantee from the manufacturer's bank. Rules on prudential risk mean that banks usually require 100 percent collateral in cash from companies without a long track record. This collateral ties up a lot of capital that is already expensive for the companies in question and poses a barrier to scaling. Manufacturing guarantees help overcome this barrier[51].

→ *Counter guarantees* can be claimed by commercial banks that provide manufacturing guarantees to companies, typically with high collateral requirements. The EIB has recently launched a five billion-euros counter-guarantee scheme for wind turbine manufacturers that is expected to trigger up to 80 billion euros in new wind energy investments[52].

Guarantees under InvestEU would also be suitable to leverage private investments into energy efficiency improvements, into renewable energies or into energy infrastructure (for example to charge electric vehicles).

**Considering the scale and scope of climate investments that could be triggered by a replenished InvestEU Fund, we recommend that Member States ascertain how much EU funding under shared management they could reallocate to InvestEU.** Undertaking such replenishment seems to be a no regret

49 Article 14 Regulation (EU) 2021/1060 of 24 June 2021 laying down common provisions for the management of several EU funds.

50 This equals the three percent of the overall amount indicated in the financial programming for the 2021-2027 budget period, minus those payments made until the end of 2023.

51 Cleantech for Europe (2023)

52 See https://windeurope.org/newsroom/press-releases/eib-delivers-its-bit-of-the-wind-power-package-with-counter-guarantees-for-wind-energy-manufacturing

option, particularly for those Member States that will find it difficult to develop a sufficient volume of projects suitable for government grants. An additional advantage of transferring national allocations to InvestEU is the well-established governance framework and the technical expertise in selecting suitable investments that will lighten the administrative burden at national level.

## 5.3 Establishment of a fund to implement the Green Deal (medium term)

Europe has established a comprehensive framework for its transition to climate neutrality. Adequate public funding, including from the EU, is an essential element of this framework. Our short-term recommendations would help ensure an adequate level of EU climate spending, particularly in the years 2025–2027, i.e. before the next EU budget cycle begins (2028–2034).

To ensure the continuity of EU climate funding in the next EU budget cycle too, we recommend establishing a Green Deal Implementation Fund that would enter into effect in 2028. Such a fund should be endowed with 260 billion euros at current prices for the next budget period, equivalent to approximately 0.17 percent of EU-wide GDP annually. This amount relates only to the distribution of grants. Back-to-back loans to Member States could be envisioned as part of a bigger financing package.

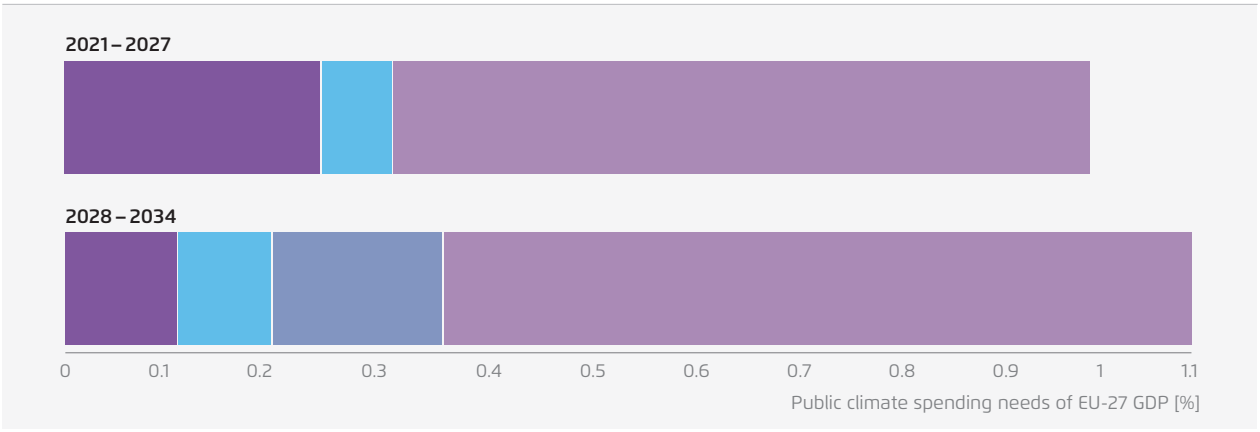
The potential name or institutional set-up of the proposed Green Deal Implementation Fund are less important than the following reflections on its proposed scope, required budget and potential sources. We are offering these reflections and recommendations in the spirit of helping to structure a well-informed debate on the future of EU climate funding. The EU legislator will decide if some of the climate funding priorities described here are, for example, picked up in the envisioned proposal of a European Competitiveness Fund[53].

### 5.3.1 Size and scope

According to our calculations, the amount of 260 billion euros for the next budget period would be sufficient to meet four objectives:

53 See von der Leyen (2024), p.12.

The Green Deal Implementation Fund in relation to other EU funding instruments and public climate spending needs → Fig. 6




Agora Energiewende (2024)

- → To plug the funding gap of 170 billion euros (at current prices) left by the discontinuation of the RRF.
- → To maintain EU cofinancing for one third of total public spending needs for clean energy, resource and energy efficiency investments in the EU (such funding is currently spread across several budgets under shared management).
- → To make available 50 billion euros (at current prices) to support EU strategic cleantech manufacturing in 2028–2034 (i.e. 7.1 billion euros on average per year).
- → To enable supporting investments in the residential sector and select infrastructure.

The scale of the proposed fund is based on estimates of public spending needs that do not cover other important policy areas such as climate change adaptation, biodiversity conservation and non-energy investment in the agricultural and land-use sectors.

The fund's proposed budget for **cleantech manufacturing** would make it the main source of funding for the sector, freeing up future resources in the EU Innovation Fund that supports the decarbonisation of EU industry and deployment of innovative technologies.

As regards the **residential sector**, over 40 billion euros from the RRF has been used for thermal retrofits of buildings in the EU in this budget period so far. This highlights the considerable importance that Member States attribute to this area. In the future, public funding for building renovation will become even more important. First, the new Energy Performance for Buildings Directive and the ETS 2 will create additional incentives for private households to invest in clean heating solutions, while dedicated public funding will accelerate such investments. Second, as shown in a companion report to this study[54], public funding in support of building renovations has a particularly positive effect on the economy and employment. Third, EU financing for social and affordable housing will feature prominently in the work of the new European Commission[55].

The fund should also support **select infrastructure projects, particularly projects with transboundary relevance.** These are essential when it comes to implementing the objectives of the Green Deal. Whether it is the electrification of transport, for hydrogen, for CCS or for the industrial transformation. Furthermore, Member States that have access to Cohesion policy and the Modernisation Fund can use such funds to also support select investments into national or local infrastructure projects.

We also recommend that **disbursement of funding from the Green Deal Implementation Fund should be performance-based,** building on the approach taken by the RRF, where disbursement is linked to achieving pre-defined milestones and targets. The above recommended national climate and investment plans and financing strategies would enable such performance-based approach.

### 5.3.2 Financing scenarios

The proposed Green Deal Implementation Fund (GDIF) would be equipped with funds equivalent to 0.167 percent of annual EU-wide GDP. In the following, we consider two scenarios for financing the GDIF – one in which common debt is issued and one without debt. For illustrative purposes, the GDIF is assumed to remain in place for two MFF periods (2028–2041). All calculations are based on conservative assumptions and lower-bound estimates of revenues.

The two scenarios are **calculated according to a baseline scenario.** The baseline scenario assumes that future MFFs will maintain their (effective) climate share of 0.1 percent of annual EU GDP. It further assumes that a share of ETS allowances that is currently allocated to the Innovation Fund,

54 Agora Energiewende (2024a)

55 See von der Leyen, p.19.

Modernisation Fund and Social Climate Fund will continue to be allocated to the future EU budget, irrespective of whether these off-budget instruments continue. Lastly, we assume that the revised new own resource package proposed by the Commission[56] will be adopted and cover all legacy debt payments related to NGEU.

In our **scenarios for financing the fund,** we consider a mix of financing sources that could be paid directly into the GDIF or cover debt service payments These are ETS allowances, new own resources and GNI-based contributions (see Annex II for further explanation and details). Regarding **ETS allowances**, we propose that in both scenarios ETS 1 and ETS 2 revenues amounting to 0.03 percent of GDP should be transferred annually from Member States to the GDIF. Modelling suggests that carbon pricing revenues up to 2041 will be sufficient to cover this relatively small revenue transfer[57]. We assume no ETS revenues for the period after 2041.

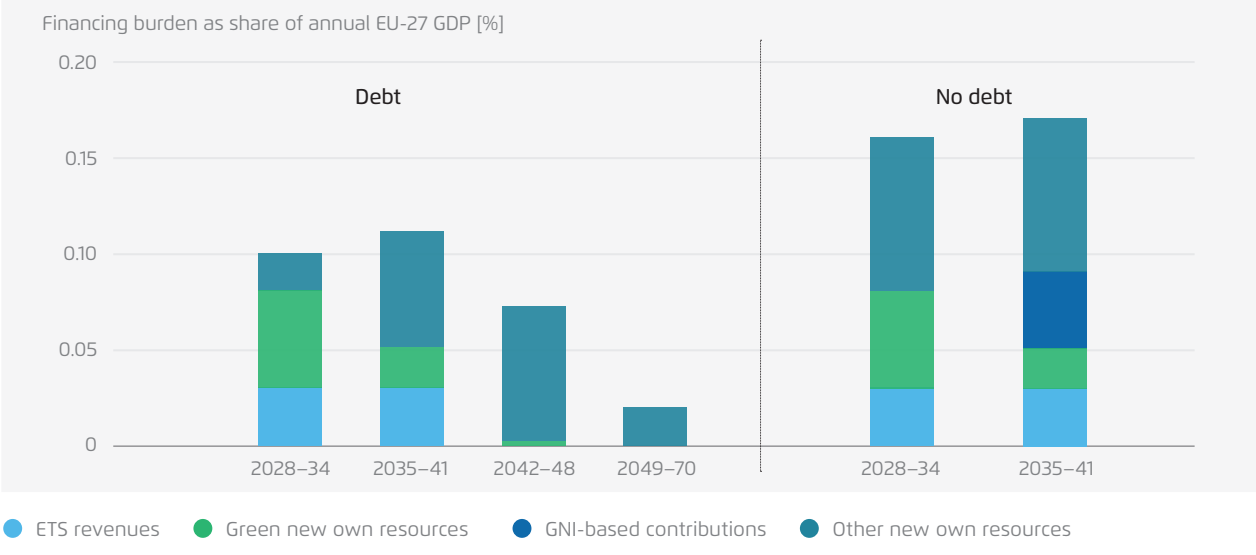
As far as **new own resources (NOR)** are concerned, we consider both 'green NORs' and 'other NORs' (see Annex for details). Green NORs have a climate-related steering effect. The behavioural or technological changes incentivised by these resources will by design erode their financing base. Such resources should therefore be complemented by other, longer-lasting NORs. When it comes to green NORs, we consider two statistical-based own resources on e-waste and food waste, as well as a fee on upstream methane emissions in the oil and gas sector for both importers and domestic producers. In the case of other NORs, we consider shares of an EU-wide digital service tax and a financial transaction tax.

Revenues from green NORs will be directly channelled into the GDIF in both scenarios. Green NOR revenues are assumed to decline over time to an almost negligible level after 2041. We also cap the revenue share used from other NORs at a maximum of 50 percent. In the debt scenario, these revenues will only be used for debt service payments. In the no-debt scenario, these funds will flow directly into the GDIF. In both scenarios, all NORs will be adopted by 2028.

56 European Commission (2023c)
57 Agora Energiewende (2024a)

## Debt vs no debt-financing scenarios

→ Fig. 7




Agora Energiewende (2024)

Lastly, **GNI-based contributions** will fill funding gaps left open in the no-debt scenario.

Figure 7 depicts both financing scenarios, their respective financing burdens and their composition as a percentage share of annual GDP. 'Financing burden' in this case means the actual financial payments that flow into the GDIF or are needed for debt servicing in every budget period. The chart does not show the debt-financed part available for expenditure, which amounts to 0.085 percent and 0.119 percent of GDP respectively.

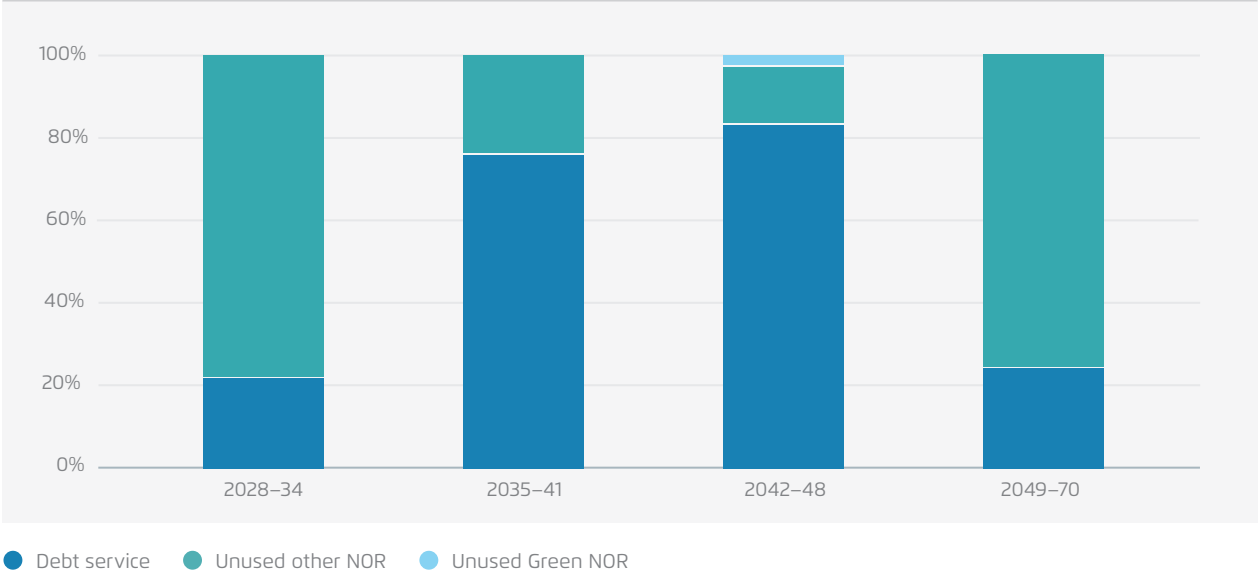
In the **debt scenario,** the periodic financing burden for the next two MFF periods is much smaller than in the no-debt scenario, with 0.1 percent and 0.11 percent of annual GDP respectively, as opposed to 0.167 percent GDP. However, debt service payments in this scenario persist until well beyond 2041.

As Figure 11 illustrates, revenues from a maximum 50 percent of other NORs are more than sufficient to cover projected debt service payments in each period, allowing reasonable room for manoeuvre.

In the **no-debt scenario,** 50 percent of the revenue from other NORs is insufficient to cover the entire funding needs of the GDIF. Additional GNI-based contributions from Member States will be needed to fill this gap. At 0.003 percent of GDP, the amount remains small in the first MFF period but increases to almost 0.04 percent of GDP in the second.

**These calculations demonstrate that the issuance of new common debt is feasible.** In comparison to previous debt issuance, only a moderate amount of debt, representing 0.085 percent and 0.119 percent of GDP, would be required. This would keep the fund's financing burden at lower levels by stretching the financing over time and taking advantage of inflationary dynamics. In addition, Member States' fiscal space would not be affected at a time of growing constraints and competing spending priorities. As with every fiscal projection, some uncertainty remains surrounding GDP growth, tax revenue and interest rate projections for a time horizon of that scale. However, our lower-bound and conservative estimates of other NOR revenues point to considerable

Debt service as share of earmarked New Own Resources (NOR) revenues → Fig. 8




Agora Energiewende (2024)

room for manoeuvre to cover not only debt repayment but also to compensate for a potential shortfall in green NOR revenues (see Figure 8).

## 5.4 Strengthening the post-2027 EU climate funding landscape (medium term)

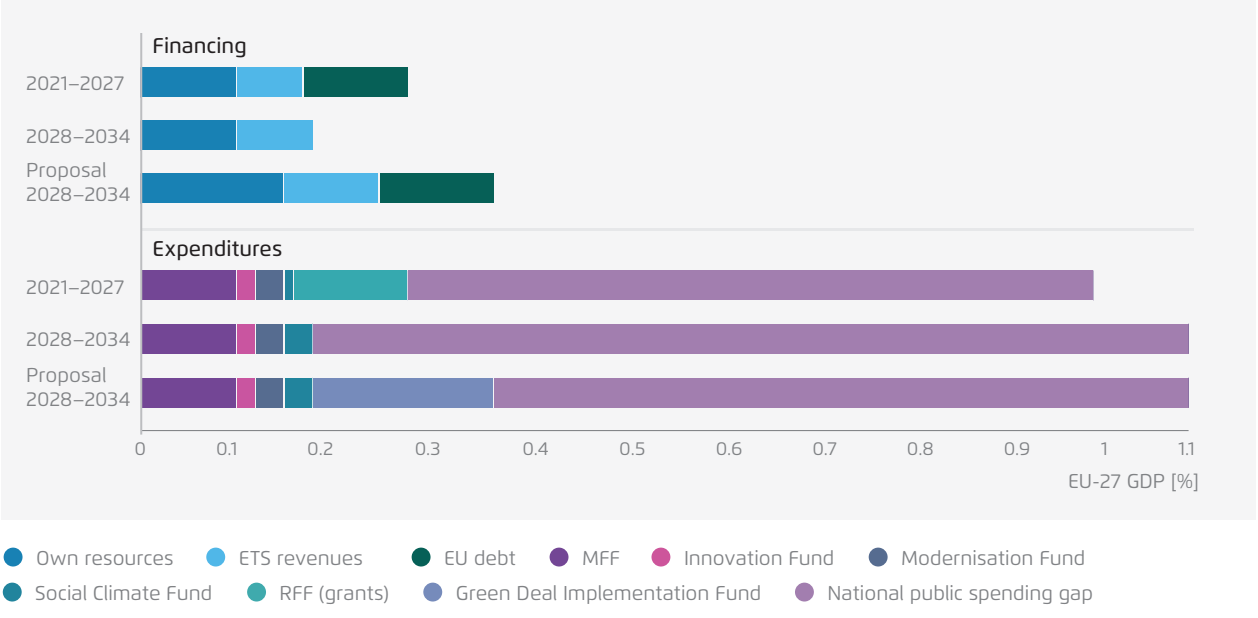
The post-2027 EU climate funding landscape is currently characterised by increasing climate investment needs, an EU climate-funding cliff following the end of the RRF and increased fiscal constraints on national budgets.

Figure 9 visualises what EU-level climate funding would look like with and without our recommendations for a Green Deal Implementation Fund. The financing side depicts the financial resources deployed for EU-level climate grants. The expenditure side shows the EU instruments via which climate funds are spent and the remaining national public spending gap. In addition to agreeing on the overall size of the next EU budget, discussion of the post-2027 EU climate funding landscape will need to address at least three more general challenges: the first relates to the future of climate mainstreaming, the second to distributional questions resulting from changing income levels between Member States, and the third to the overall structure of the future budget.

### 5.4.1 Climate mainstreaming

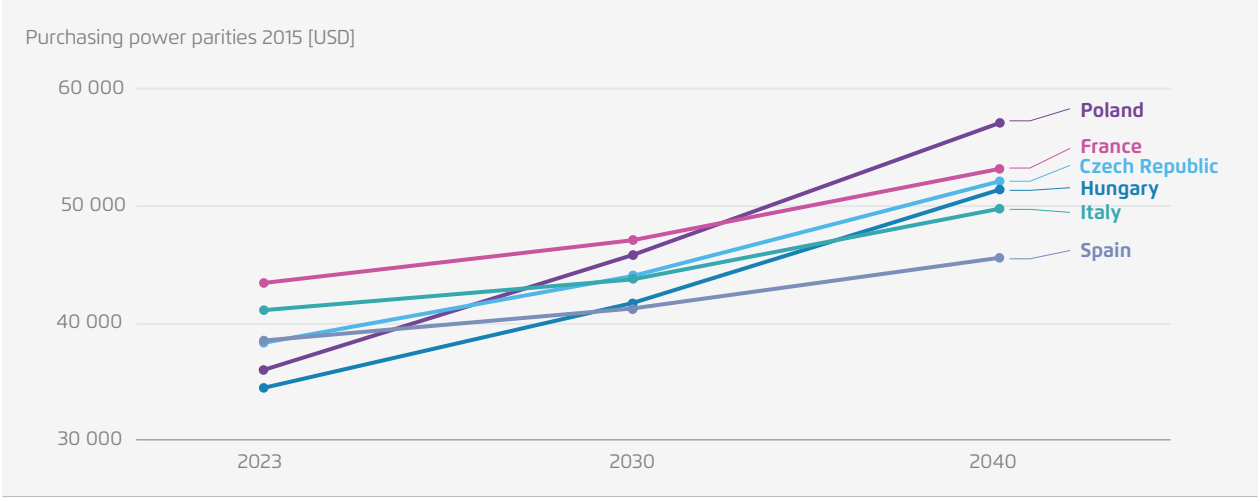
Our proposal for a Green Deal Implementation Fund would allow the current climate finance contribution of the EU budget to be maintained in the context of the growing climate investment needs arising from the Fit for 55 policy package. The overall larger EU budget envelope compared to the 2021–2027 MFF also means that **no increase of the climate mainstreaming target beyond the current 30 percent level across budget lines would be required to maintain current levels of EU climate funding.**

EU grant-based instruments for climate action and funding sources in current (2021–2027) and next (2028–2034) EU budget periods → Fig. 9




Agora Energiewende (2024)

## Gross domestic product per capita in the OECD's long-term projections → Fig. 10




OECD (2023), Economic Outlook: Long-term baseline projections, December 2023

By contrast, maintaining the same level of climate-related spending from a significantly reduced EU budget envelope would require the climate mainstreaming target to be further increased; something we would regard as challenging in practice given that questions are already raised today about the effective delivery of the current 30 percent climate mainstreaming target. And even if Member States were to develop national climate investments needs analyses (as we highly recommend) that did result in better identification of projects that contribute to objectives that go beyond climate protection, it seems difficult to argue in favour of prioritising climate spending objectives for more than a third of EU-spending in view of the other important priorities in the areas of security, social matters, digitisation and industrial competitiveness.

### 5.4.2 Distributional challenges arising from changing income levels between Member States

The projected income levels of countries in Europe suggest that no country will be worse off than today but that some will grow faster than others, with relative changes in the order of 'richer' and 'poorer' countries.

Figure 10 shows GDP per capita projections for various Member States according to the OECD's Economic Outlook[58]. These indicate that today's lower-income countries, such as Poland, the Czech Republic or Hungary, have significantly larger growth potential than for example France, Italy or Spain. As a result, GDP per capita in Poland is projected to already exceed GDP per capita in Spain or Italy within this decade, and even to surpass France's GDP per capita by the beginning of the 2030s. The future EU budget, including for climate-related spending, will have to take these changing realities into account.

This will have consequences for the Modernisation Fund for example, which will make around 64 billion euros available if an average ETS price of EUR 80/t$CO_2$ is assumed until 2030. The currently applied allocation key takes 2010 as a reference year, which means that Central and Eastern European Member States are the largest beneficiaries of this fund. It can be regarded as positive that these countries are well covered to realise the investments needed to decarbonise their energy systems[59].

58 OECD (2023)
59 Agora Energiewende (2023b)

However, any successor to the Modernisation Fund will have to account for the projected changes in income levels in the next decade.

Distributional changes will also be relevant to a potential Green Deal Implementation Fund that succeeds the RRF. This is because Member States' relative national climate funding gaps will change to differing degrees once the RRF comes to an end. National funding voids left by the RRF will partially be filled by the SCF (see Figure 11). However, the extent to which this happens will differ from country to country on account of the funds' different allocation keys. What is more, countries with access to cohesion funds will have additional leeway to narrow funding gaps that others will not have.

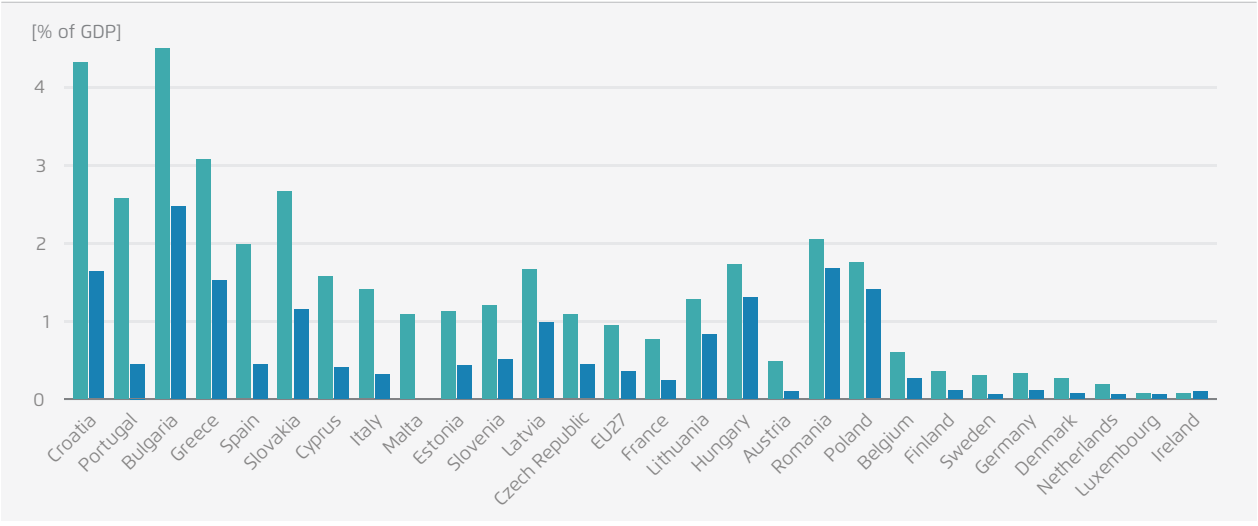
For instance, the countries with the largest climate funding gaps as a percentage of GDP are concentrated for the most part in Southern Europe (see Figure 4). Bulgaria will receive the most funds from the SCF as a share of its GDP. This is reasonable given that it will be among those Member States experiencing the largest funding gaps after 2026. However, Bulgaria will also be well supported by other instruments such as the Modernisation Fund until 2030. This will not be the case for countries like Spain and Italy, even though they have equally large climate funding gaps. While the SCF will fill much less of their post-RRF funding voids, they will also have no access to the Modernisation Fund. The allocation key of the GDIF should take these changing comparative funding gaps and income levels into account.

### 5.4.3 Governance of future EU climate funding

In her political guidelines, Commission President elect Ursula von der Leyen indicates that she will propose a new long-term EU budget in 2025 that will be more focused, simpler in the way it works and more impactful, particularly by leveraging further national, private and institutional financing[60]. Will this also affect the future of EU climate funding? As described above, the current landscape of EU climate funding is characterised by a combination of a climate mainstreaming obligation across a broad range

60 von der Leyen (2024), p.29.

Total climate funding from RRF (grants only) and Social Climate Fund by Member State* → Fig. 11




Agora Energiewende (2024) based on European Commission data. * ordered from highest to lowest difference between the two funds.

of different budget lines in the 2021–2027 MFF on the one hand and several off-budget climate-funding instruments – financing from revenues from the EU ETS – on the other. Based on current decisions, the ETS-related funds will expire in 2030 (Innovation Fund, Modernisation Fund) and 2032 (Social Climate Fund) respectively.

One question that will arise along with the need to change national allocation keys is whether there is scope for merging these off-budget instruments into one larger off-budget fund that could be combined with the Green Deal Implementation Fund recommended in this report. It seems that several off-budget instruments could be simplified and consolidated if Member States were to develop robust national climate investment needs assessments and related climate financing plans that take EU-level funding opportunities into account. Consolidating and simplifying a larger EU climate-funding instrument, combined with robust national investment needs assessments, would give rise to greater budgetary flexibility to respond to technological developments, emerging barriers to the transition or a changing economic context. If established 'off budget', outside the MFF structure, it could also ensure the continuity and forward visibility that investors in Europe's energy transition need.

Considering how critical an adequate amount of EU climate funding is for the success of Europe's transition to climate neutrality, we envision a debate on consolidation and simplification of EU climate funding in the context of a clear political commitment to maintain the current share of EU climate funding in support of national climate investment needs.

# Annex I – Composition of public spending needs and calculations of EU climate funding

## Composition of public spending needs

The private and public investments needed to reduce carbon emissions and the public spending associated with investment support programmes and infrastructure build-up are essential inputs to the macroeconomic modelling. In most cases, the climate investment data come from the sectoral modelling conducted by Agora Energiewende (2023a). More specifically, it covers power generation and interconnectors, residential and non-residential buildings, district heating, manufacturing and hydrogen production. The investment needs for other sectors, namely power grids and the transport sector, come from our own analysis and a review of existing studies on the topic. As far as transport infrastructures are concerned, the EU-wide investment needs come from the European Commission[61] and, in the absence of country-level estimates, the overall figure is divided between individual Member States on the basis of their share of EU transport emissions.

For the purposes of this study, public climate spending needs constitute that proportion of the total climate investment needs that are borne by the public sector. This includes investments in public-owned buildings and infrastructures and subsidies provided to the private sector to adopt clean technologies and invest in infrastructures. The public climate spending needs are calculated by applying coefficients to the sectoral investment gaps, following Baccianti (2022) and Agora Energiewende (2023a). These public sector shares are lowest in the case of power generation and highest in the case of residential and public transport infrastructure investments. The EU (weighted) average of the overall public shares is one third of total capital expenditures, while national figures may differ.

## Remarks on calculations of EU climate funding

In general, please refer to the technical document of the Agora Climate Funding Tracker[62] for details of our assumptions and the methodology applied in estimating EU climate funds and national public spending gaps.

If not stated otherwise, all prices throughout the text are current prices. While MFF legal texts refer to the percentage of GNI when defining key figures such as the MFF budget size, we use percentages of GDP for methodological simplicity. The difference between the two metrics in the EU is small and hence negligible for the purpose of this analysis. The assumed average price of ETS allowances for the period 2023–2030 is EUR 90/t$CO_2$eq , if not stated otherwise. We only use conservative lower-bound estimates for all variables. In all periods, the ETS national revenues are calculated using estimates of the number of auctioned permits and prices in the existing EU ETS and the planned EU ETS for road transport and buildings. The calculations are based on projections by Bloomberg New Energy Finance and its carbon pricing model, and on our own assessment. When it comes to the repayment common debt in the financing scenario in Section 5, we replicated the existing composition in maturities of EU bond issuances and considered a 2.75 percent interest rate to determine the debt service costs and duration.

More specifically, Figure 9 shows the size of the grants available for climate action from the most relevant EU financial instruments, together with their funding sources. For the period 2021–2027, the displayed amounts for the MFF, Innovation Fund, Modernisation Fund, RRF and SCF come from the

61 European Commission (2020)

62 Agora Energiewende (2023b)

EU Climate Funding Tracker, divided by the forecast of EU-27 GDP in 2024. The financing side directly follows the way each instrument is funded, for instance debt issuance for the RRF and ETS revenues for the Innovation Fund and Modernisation Fund. The total public spending gaps are fixed at one percent of GDP for the period 2021–2027, as discussed in the text, while the national gaps simply represent the residual proportion after the climate-relevant EU-funded instruments have been deducted.

For the 2028–2034 period, one projection is shown alongside the reform proposal. Based on current legislation, this projection assumes that the MFF will remain the same size in proportion to GDP and that the RRF will be discontinued. In this period, the public spending gap will equal the same one percent of GDP relative to the spending necessary to decarbonise the economy plus an additional amount of nearly 0.1 percent of GDP of funding needed to deliver on the shares of domestic production of cleantech manufacturing as indicated in the Net Zero Industry Act[63]. Note that the MFF and the three ETS-based funds are the same size in the two scenarios for 2028–2034.

63 see Agora Energiewende and Agora Industry (2023)

# Annex II – Financing sources for a Green Deal Implementation Fund

This section elaborates on possible financing sources for the Green Deal Implementation Fund (GDIF) proposed in Section 5. We consider a mix of three vital revenue types for the EU budget: GNI-based national contributions, common debt issuance and new own resources. We discuss their relevance to the EU budget and own resource system below. We then look more closely at NORs and discuss the selection criteria and estimates we used for NORs.

## GNI-based national contributions

GNI-based national contributions are by far the biggest revenue item of the EU's own resources. They also fulfil an important balancing function for the EU budget by guaranteeing the MFF's 'headroom' and compensating for unexpected revenue shortfalls.

Simply put, the MFF's headroom is the difference between planned expenditures and potentially available revenues. This headroom is backed by the EU's entitlement to Member States' additional GNI-based contributions. It serves not only as a 'buffer' for unforeseen costs but also as a guarantee to cover the EU's borrowing operations. This means that the EU's common debt is backed by its entitlement to Member States' GNI-based contributions. To cover the common debt issued to finance NextGenerationEU, the EU has temporarily increased the revenue ceiling, and thereby the headroom, by 0.6 percentage points, to two percent of EU GNI. New common debt issuance therefore requires the headroom to be sufficiently high.

Moreover, GNI-based contributions function as a tool to balance the budget, which is relevant to the introduction of NORs. GNI-based contributions will offset unexpected revenue shortfalls from other sources such as NORs. In turn, if NORs generate more revenue than anticipated, Member States will spend less on their GNI-based contributions.

## Common debt issuance

There is a good case for issuing more debt at EU level to help bridge the climate funding gap. This is evidenced by the need to frontload climate investments on a large scale for a decisive transitionary period. Issuing more debt will ensure investments can be financed in a smooth and efficient manner by stretching out payments beyond the transitionary period. As for corporate finance, debt issuance can reconcile temporary mismatches between expenditure and revenue generation. Climate investments undertaken now will have a greater impact than they would if postponed into the future. Thus, every euro spent today generates more added value and is worth more than a euro spent in 20 years' time, even if inflation is factored in. Accordingly, one can argue that this increased 'bang for the buck' is in the interest of future taxpayers who would assume a share of the financing burden. Issuing common debt at EU level also makes sense because debt servicing costs are lower in some countries and many Member States are subject to fiscal constraints. This comes on top of the potential co-benefits of common debt issuance for the EU's and Eurozone's financial and macroeconomic stability through the provision of safe assets.

## New own resources

NORs, in their true sense, comprise any new revenue sources that accrue to the EU budget. This definition may include, but is not confined to, quasi-fiscal measures tied to national taxation legislation or implementation (harmonised EU-wide). The plastics contribution is to date the only NOR in place but does

not constitute a quasi-fiscal measure. As Member States face increasing budget constraints, there will be scope for introducing fiscal measures in under-taxed or over-polluting sectors or in the presence of other negative externalities. In several cases, EU-wide adoption is required to be effective and can come with additional co-benefits[64]:

**Increased efficiency and effectiveness of revenue generation**: Certain fiscal measures with a significant cross-border dimension can be implemented much more efficiently and effectively at EU level. National enforcement may for instance be hindered by tax competition and tax avoidance, leading to rates being set at suboptimal levels. This may be triggered by the high cross-border mobility of taxed subjects. Introducing NORs in such cases can tap into sources of public revenue that would otherwise be inaccessible or come at the cost of inefficiencies.

**Increased budget autonomy and legitimacy:** Introducing more NORs would diminish the extent to which revenue is decoupled from expenditure in the EU budget. This would decrease the EU budget's exposure to the volatility of national political cycles. This increased budget autonomy could help bring about the European added value the EU seeks to deliver. It can also work to weaken the counter-productive 'zero-sum' (or 'juste retour') notion which fuels the mistaken public perception of the EU budget.

64 See Krenek and Schratzenstaller (2019)

Selected options of new own resources to fund Green Deal Implementation Fund → Table 1

| New own resource | Short description | Potential design | EU-revenue potential |
|---|---|---|---|
| **Green NORs** | | | |
| E-waste charge | Charge on Member States based on harmonised statistical indicator of e-waste | Call rate of between EUR 1 and EUR 2 per kilogram of non-recycled e-waste | EUR 4–8 bn per year |
| Food waste charge | Charge on Member States based on harmonised statistical indicator of some food waste | Call rate of between EUR 0.05 and EUR 0.20 per kilogram of food waste | EUR 3–12 bn per year |
| Methane Fee | Fee on excessive methane emissions in the oil and gas sectors (mid- and downstream) | Import levy coupled with domestic methane pricing system. A charge is levied on emissions that exceed certain intensity benchmarks. Same price trajectory as in the Inflation Reduction Act. | At least EUR 26–43 bn over seven years |
| ETS revenues | An increased share of revenues would accrue to the EU budget | Either transfer a share of revenues from national auctions or allocate more ETS allowances to EU-level | EUR 7 bn per year on average |
| **Other NORs** | | | |
| Digital services tax | Charge on certain gross revenues generated by online advertising, digital intermediary activities and the sale of users' data | Revival of 2018 European Commission Proposal | At least EUR 5 bn per year |
| Financial transaction tax | Taxation of transactions of equities, debt (bonds), and derivatives | Call rate of 0.1 percent for debt & equity and 0.01 percent for deriviatives transactions | Starting at EUR 25 bn per year at least |

**Increased contribution to EU policy goals:** Apart from the revenue aspect, NORs (in contrast to existing own resources) make a significant contribution to the European Union's overarching policy objectives thanks to their steering potential. They can, by design, provide financial incentives to induce certain behavioural shifts in consumption or production patterns in line with Green Deal objectives.

Not every NOR is equally feasible and significant[65]. As presented in Section 5, we have chosen several NORs for our financing proposal for the GDIF (see Table 2). We selected them on the basis of the following three assessment criteria:

**Revenue Stability:** Revenue stability, as we define it, consists of four dimensions. Firstly, the revenue should not be too volatile in the short term, yet predictable enough to ensure budgetary planning. Secondly, the revenue outlook should also be stable over the long term. This is based on expectations that the tax base or relevant elasticities will remain largely constant over time. Thirdly, a NOR should generate substantive enough amounts of revenue to justify the relatively large amount of political capital needed for its adoption. Lastly, revenue stability is characterised by a large underlying tax base. The larger the tax base, the lower the level at which the call rate needs to be set in order to generate sufficient revenue.

**Practicability:** An NOR should be practical so that it can be swiftly adopted and implemented. Firstly, the maturity of the proposal matters. How many open questions still need to be addressed? And linked to this, are there any technical preconditions that must be met for the tax to be fully implemented? Examples include whether targeted tax bases, taxes or statistical indicators still need to be established or fully harmonised. It is also relevant whether the NOR needs to be tied to other legislation still being negotiated. Secondly, a practical NOR design is characterised by simplicity, thus keeping the administrative burden and collection costs low. It should also be legally feasible and not require any treaty changes. Thirdly, political feasibility determines practicability. While not straightforward to judge, factors such as the expected distribution of the tax burden across or within Member States should be considered.

**EU rationale:** This category may comprise all the aspects that feed into a rationale justifying the introduction of a proposed fiscal measure at EU level. They reflect the two points made above and entail political judgments. Firstly, is an EU-level NOR more efficient and effective in raising revenue due to cross-border issues? Secondly, does the proposed NOR induce steering effects that contribute to overarching EU political objectives such as the Green Deal or energy security targets? The rationale is correspondingly strengthened if the proposed NOR is tied to prominent EU legislation. Moreover, this category may comprise any other potential (political) case to be made to justify EU-wide adoption, such as equity, a just transition solidarity or similar considerations.

In the following, we elaborate on our selection of NORs. They should be adopted partly to cover a portion of the financing need for the GDIF. We distinguish between two sets of NORs that we label 'green NORs' and 'other NORs'.

## Green NORs

### Statistical-based own resources: e-waste and food waste

Statistical-based NORs constitute a charge levied on Member States on the basis of a harmonised statistical indicator. We select two such NORs that are based on statistics relating to the amount of **e-waste** and **food waste** generated, as discussed by the Commission[66]. In contrast to criticisms raised, statistical own resources are not just another type of national contributions like the GNI-based own contribution. This is because Member States are in a position to influence the size of the charge by reducing their food waste and e-waste. While financially

65 See also Schratzenstaller et al. (2022)

66 European Commission (2023a)

incentivised to do so, they retain full control over their choice of fiscal measures or policies to achieve this (and/or recoup the charge). With the adoption of the plastic-based own resource, there is already one precedent for such a green statistical-based NOR.

In terms of revenue stability, the two NORs are expected to have a medium-sized impact. Call rates of between one and two euros per kilogram of non-recycled e-waste and of 0.05 to 0.20 euros per kilogram of food waste are estimated to generate **4–8 billion and 3–12 billion euros per year** respectively[67]. In the short term, revenue streams can be expected to show little volatility and high predictability. However, the underlying sustainability notion presupposes a downward long-term trend of revenues. While well-suited to providing some easily generated upfront revenues, these NORs should therefore be complemented with other NORs in the long term. The two NORs rank high in terms of practicability with implementation expected to be swift and simple. There is no need for harmonisation or coordination across Member States except with respect to the underlying statistical bases, which are already well developed. The EU rationale is strong. Both NORs would create financial incentives that advance the EU's sustainability and energy security objectives, such as creating a circular economy, securing the supply of critical raw materials and reducing the climate and environmental footprint of food production and consumption.

### Methane Fee

There is a strong case for an NOR based on a fee for methane emissions in the energy sector, as has been adopted in the US and Norway. Identified design options comprise a methane border adjustment mechanism (MBAM), an excise duty levied at the consumption level or an import levy coupled with a domestic methane pricing system[68]. We view the latter to be the most viable option. Our chosen design targets upstream methane emissions in the oil and gas sector for both importers and domestic producers, implemented in two phases.

This methane charge scores medium well on revenue stability. In the short to medium term, it is expected to generate medium-sized revenues. Using the methodologies and price trajectories of the US methane charge, data from the IEA Global Methane Tracker and abatement scenarios and demand elasticities from studies[69], we conservatively estimate that annual revenues could start at 4.2–5.8 billion euros and generate between 26 and 43 billion euros over the span of seven years. Evidently, the financial incentive to abate will result in a long-term downward trend of revenues. The methane charge scores well on practicability, as underscored by its implementation in other jurisdictions such as the United States. Opting for a two-phase solution would allow open issues to be addressed. This is because most of the issues regarding oversight, data quality and the Monitoring, Reporting and Verification (MRV) framework will be tackled during implementation of the EU's Methane Regulation via delegated acts. The EU rationale is strong. A methane charge would reinforce the implementation of the EU's Methane Regulation and Methane Strategy and contribute to fulfilling the EU's commitment under the Global Methane Pledge. Cutting emissions in the oil and gas sector represents a low-hanging fruit given the considerable potential impact of implementing simple zero- to low-cost technical solutions[70]. Creating financial incentives for producers to abate by pricing methane emissions is deemed an effective and efficient measure[71]. This requires effective implementation and also needs to cover imports, which is feasible only if undertaken as a concerted effort at EU level. In addition, energy security goals are unlikely to be jeopardised in the light of growing expectations that the fossil fuel sector will move fully towards a buyers' market[72].

67 European Commission (2023a)
68 see Schrems et al. (2021); Clausing et al. (2023).
69 CE Delft (2022), Enervis (2021), Forum Ökologisch-Soziale Marktwirtschaft (2021), International Energy Agency (2022)
70 International Energy Agency (2023a)
71 Parry et al. (2022).
72 International Energy Agency (2023b)

### ETS revenues

The EU can use ETS revenues in different ways. One option is to introduce a new own resource, as proposed by the European Commission[73] as part of the package to cover the legacy debt from NextGenerationEU. This new own resource would transfer to the EU budget a share of the revenues that Member States generate by auctioning off allowances. The other option is being used to finance the Innovation, Modernisation and Social Climate Funds and does not constitute a new own resource. In this case, the EU claims a share of ETS allowances and conducts its own auctions to generate revenues. Our financing proposal in Section 5 is based on the latter option.

### Other options

A multitude of other options for green NORs should be further explored. The idea of a consumption-based charge on materials is worthy of note. Such a contribution could take the form of an excise charge or increase in existing EU taxes on the sale of products with large amounts of energy-intensive and/or critical raw materials in their composition.

Concretely, it could apply to final products such as new buildings and infrastructure, new vehicles, shipbuilding, machinery and equipment, household chemical products and plastic-intensive products. The materials could include all energy-intensive materials, such as iron and steel, aluminium, plastics, cement and concrete, glass, non-metallic mineral products and some basic chemical polymers such as olefins and aromatics and their main derivatives. It could also include all critical materials listed in the Critical Raw Materials Act and related products, such as electronic devices and components and so on.

A differentiated (lower) charge could be applied to products with a higher share of recycled materials. This approach would have the advantage of effectively discouraging the inefficient use of these materials, while at the same time raising very significant sums. Estimates based on a similar but much narrower version of this idea (focusing on just five basic material products sold in the EU), suggested in 2016 that around 17 billion euros per year could be raised (at 2017 prices)[74].

The charge could be set at a level sufficient to ensure that it did not exceed one percent of the final product price, so as not to disadvantage final consumers. It could apply to both domestic and imported consumption goods once released for consumption in the internal market. If the contribution were applied to consumption goods, it would not violate WTO rules and would apply equally to imports and exports. The charge could potentially also be modulated to exempt extremely low-carbon innovation technologies to make them more competitive than conventional high-carbon production sources.

Other options to consider include revamping a temporary levy on excess profits, for instance to endow the Renewable Energy Financing Mechanism with fresh funds[75]. Finally, the further expansion of the scope of the ETS and/or the launch of an ETS III must be examined to cover areas not yet addressed, such as international aviation or parts of the LULUCF sectors[76].

## Other NORs

### Digital services tax

An NOR should be introduced on the basis of harmonised **taxation of the digital economy.** The European Commission has put its plans on hold during the ongoing multilateral negotiations on digital taxation with respect Pillar I of the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting agreement. While an agreement would entail a major reallocation of digital taxation rights to EU

73 European Commission (2023d)

74 See Stede et al. (2021)
75 Agora Energiewende (2024b)
76 See for example European Commission (2023b)

jurisdictions, it is already behind schedule and experts deem the chances of success to be very slim. The European Council has mandated the Commission (in the Pillar Two Directive) to submit an alternative EU-level proposal for this eventuality. One of the many viable options is to revive the Commission's 2018 proposal for a **digital services tax.** It imposes a charge on certain gross revenues created from online advertising, digital intermediary activities and the sale of users' data, which could then be transferred to the EU budget as an NOR.

A DST would score high on revenue stability due to the long-term growth prospects, predictability and robustness of the underlying tax base. Estimates of annual revenue at EU level start at **five billion euros at 2018 prices**[77]. While the pre-existing proposals on digital taxation facilitate practicability, there are also some challenges to be overcome. A greater effort to harmonise tax regulations across Member States will be required than previously envisioned, as several Member States have recently adopted unilateral DSTs. This is why a proposal should be put forward as soon as possible to realise implementation in 2027. The measure would then remain in place until further notice, leaving the door open to a Pillar I agreement. In terms of EU rationale, there is a strong case for harmonising existing DSTs to preserve the EU digital single market.

### Financial transaction tax

Since the Global Financial Crisis, several initiatives for a harmonised financial transaction tax (FTT) have been launched but no agreement has yet been reached. However, an NOR on a broad-based harmonised FTT, with the scope of 2011 or 2013 Commission proposals, has great potential to sustain EU climate finance as well as other spending priorities in the long term.

A broad-based FTT NOR scores very highly on revenue stability with substantial amounts and positive long-term prospects. Drawing on previous estimates, we conservatively predict an inflation-adjusted revenue potential of at least **25 billion euros per year** at current prices[78]. While financial transactions are prone to some short-term volatility, revenues tend to average out over the medium term. In principle, a FTT is characterised by medium practicability. The design and implementation could be feasible and simple, as the collection of revenues by financial intermediaries could take advantage of existing infrastructure. Certain challenges will need to be overcome, however, and a greater harmonisation effort will be required given that several unilateral national FTTs have been adopted in the meantime. An FTT scores very highly on the EU-rationale dimension. Firstly, it would contribute to the European public good of financial stability by pricing in potential negative externalities of highly speculative transactions. Secondly, the cross-border nature of financial activities and the involvement of non-resident actors requires EU-wide coordination and harmonisation to minimise tax evasion and competition. This is underlined by evidence of the limited effectiveness of existing national FTTs[79]. Thirdly, the rationale has the potential to strengthen the public's sense of distributive justice by taxing a sector that is widely perceived to be under-taxed, as illustrated by the VAT exemption for the financial sector.

77 European Commission (2018)

78 See European Commission (2011); Solilová et al. (2017); Climate Action Network (2023)

79 Schäfer (2015); Solilová et al. (2017)

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Agora Energiewende develops scientifically sound, politically feasible ways to ensure the success of the energy transition – in Germany, Europe and the rest of the world. The organisation works independently of economic and partisan interests. Its only commitment is to climate action.

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