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PART 1/2

NGEU Report 2023

COMMISSION STAFF WORKING DOCUMENT

NGEU Report 2023
Green Bonds - Impact and Allocation report

European Commission



#NextGenerationEU
GREEN BONDS
ALLOCATION AND IMPACT REPORT

Budget

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Foreword



It is with great pleasure that I present the 2023 NextGenerationEU (NGEU) Green Bonds Allocation and Impact Report. This report underlines the central role the NGEU Green Bond programme plays for the European Union's commitment to a greener and more sustainable future. It is thus a key component of the NGEU recovery instrument, which turned the Covid pandemic into an opportunity to invest in the future: in a greener and more digital Europe. Consequently, at least 37% of funds disbursed through each national Recovery and Resilience Plans finance sustainable investments in fields such as green infrastructure and renewable energy.

On the funding side the NGEU Green Bond programme matches this ambition – with great success: Since the inaugural NGEU Green Bond issuance two years ago the European Union managed to become a leader in the global green bond market. By the time this report is published, the NGEU Green Bond programme has brought almost EUR 50 billion of highly rated green bonds to market with the potential to grow into the world's largest green bond programme. Thereby, the European Commission also contributes to deepening and consolidating the EU's leadership in sustainable finance.

The bedrock of this programme is the transparency for investors: We offer information on the use of NGEU Green Bond proceeds via our constantly updated on-line dashboard as well as via our tracking and reporting mechanisms described in this report. In addition, this year's report also provides for the very first time, estimates of the tangible climate impact of investments that are expected to be financed by NGEU green bonds. Full implementation of all measurable climate-relevant actions can permanently reduce greenhouse gas emissions by 44 million tonnes per annum, which is equivalent to 1.2% of aggregate EU greenhouse gas emissions in 2022. Let me underline that these are very conservative estimates.

This NGEU Green Bonds Allocation and Impact Report is a testament to the European Union's unwavering commitment to sustainable finance and the transition towards a greener future. We have established ourselves as a leader in the global green bond market, and this success is a result of the trust placed in us by investors, stakeholders, and citizens alike. We remain dedicated to transparency, open communication, and furthering the green transition.

I invite you to delve into the details of this report, to understand the steady progress that we have made in developing the NGEU Green Bond programme, and to share in our enthusiasm for a greener and more sustainable future.

Johannes Hahn

EU Commissioner for
Administration & Budget

Table of contents

1. Introduction 9
2. The pool of NGEU Green Bond eligible expenditure 12
3. Allocation of NGEU Green Bond proceeds 16
4. EU Taxonomy alignment 24
5. Climate Impact of NGEU Green Bond proceeds 29
6. Case studies of investments financed by NGEU Green Bonds 39
7. Limited Assurance Report 44
8. Annexes 48

Abbreviations

CO2e	Carbon dioxide equivalent
DNSH	“Do no significant harm”
ERTMS	European Rail Traffic Management System
GHG	Greenhouse gas
ICMA	International Capital Market Association
NGEU	Next Generation EU
RRF	Recovery and Resiliency Facility
RRP	Recovery and Resilience Plan
SCC	EU Taxonomy Substantial Contribution Criteria
TSC	EU Taxonomy Technical Screening Criteria

Executive summary:

Under the NextGenerationEU (NGEU) instrument at least 37% of spending in Member States' Recovery and Resilience Plans (RRPs) will be used for sustainable investments and reforms in areas such as green infrastructure and renewable energy. Proceeds from NGEU Green Bonds are used to finance these investments.

This report, which builds on the first NGEU Green Bonds Allocation Report, published in December 2022[1], provides investors and stakeholders with updated information on the allocation of proceeds as of the cut-off date of 1 August 2023 and, for the very first time, presents the climate impacts of investments financed by the NGEU Green Bond programme.

As with the first edition, this report has been subject to a limited assurance report by an independent auditor of the information pertaining to allocation of NGEU Green Bond proceeds and realised impact.

The pool of eligible NGEU Green Bond expenditures expands to EUR 190.6 billion:

The report shows that the NGEU Green Bond programme is underpinned by a significant pool of planned eligible expenditure. Based on rigorous screening of Member State expenditure reporting, the volume of national expenditure eligible for financing by NGEU Green Bonds stands at EUR 190.6 billion as of 1 August 2023 (from EUR 184.9 billion as of 19 October 2022).

EUR 4.5 billion of this increase is accounted for by the adoption of new RRPs by Hungary and the Netherlands. The remaining EUR 1.2 billion arises because of the revision of four existing RRPs (Estonia, Finland, France, Slovakia) to include additional measures related to energy security and diversification. Almost 60% of this eligible NGEU Green Bond expenditure relates to 'Clean transport & infrastructure' (EUR 64.7 billion) and 'Energy efficiency' (EUR 49.3 billion). The amount of expenditure eligible for NGEU Green Bond financing may increase further following the ongoing assessment of revisions to other Member State RRPs, to enhance the focus on energy security and diversification under the REPowerEU plan.

NGEU Green Bond issuance and reported expenditures increase steadily:

As of 1 August 2023, the European Commission has issued EUR 44.2 billion of NGEU Green Bonds compared to EUR 28.0 billion as of 19 October 2022 (at the time of the first report) – an increase of almost 58%.

Implementation of planned expenditures that are eligible for NGEU Green Bond financing is now gathering momentum. As of 1 August 2023, 14 Member States (compared to 7 as of 19 October 2022) have reported to the Commission EUR 21 billion worth of expenditure that is eligible for NGEU Green Bond financing. This expenditure is linked to the completion of 153 milestones and targets under the relevant national RRPs. The bulk of the reported expenditures has been allocated to 'Clean transport & infrastructure' and 'Energy efficiency' expenditure categories.

A new wave of payment requests relating to investments and reforms that are eligible for NGEU Green Bond financing is currently being assessed. This is expected to result in a substantial increase

[1] https://commission.europa.eu/system/files/2022-12/SWD_2022_442_F1_STAFF_WORKING_PAPER_EN_V4_P1_2417689.PDF

in reported expenditures that are eligible for NGEU Green Bond financing and which will form part of next year's allocation and impact report.

As of 1 August 2023, unallocated proceeds (i.e. the difference between the amount of NGEU Green Bonds issued and reported expenditures) amounted to EUR 23.2 billion. These unallocated proceeds, which are an expected consequence of investments being implemented only after reforms in projects under NGEU, will diminish steadily in the period 2024-2026 as implementation and reporting of NGEU Green Bond expenditures gathers momentum.

NGEU Green Bond pool remains strongly aligned with EU Taxonomy:

Similar to the 2022 report, 57.5% of the total pool of NGEU Green Bond eligible expenditure is assessed as of 1 August 2023 to be fully or substantially aligned with the substantial contribution criteria and additional 'do no significant harm' criteria of the EU Taxonomy. A further 36.5% is partially aligned while the remaining 6.0% is not covered (e.g. for spending categories such as biodiversity or air pollution prevention where specific EU Taxonomy metrics have not yet been developed).

NGEU Green Bond financing has the potential to reduce emissions by 1.2% per annum:

Full implementation of quantifiable milestones and targets up until the end of 2026 funded by NGEU Green Bonds, corresponding to 57% of the NGEU Green Bond eligible expenditure, can reduce GHG emissions by 44 million tonnes of CO2e per annum– equivalent to 1.2% of aggregate 2022 EU GHG emissions. These represent conservative estimates and are derived solely from 353 milestones and targets which can be confidently translated into quantifiable GHG emission impacts. No such impacts are claimed for targets and milestones where translation cannot be established.

The climate impact of already realised expenditure is calculated at 224,143 tonnes of CO2e/year of emissions avoided – or 0.5% of the total estimated reduction of GHG emissions of full programme implementation. The limited realised climate impact reflects the early stage in the implementation of the projects financed by the NGEU Green Bonds and is expected to increase progressively up to 2026, in line with increases in the fulfilled quantifiable milestones and targets. Implemented avoidance of GHG emissions will be maintained well beyond 2026 for the lifetime of the financed investments.



Introduction

1. Introduction

As of 1 August 2023, the Commission has issued EUR 44.2 billion of NGEU Green Bonds. NGEU Green Bond issuances are guided by the NGEU Green Bond Framework (Box 1), which is aligned with the Green Bond Principles of the International Capital Market Association (ICMA).

This report constitutes the first comprehensive NGEU Green Bond report that also discloses climate impacts since the start of the NGEU Green Bond programme in 2021. Given the considerable ramp-up phase of investments and reforms in the Recovery and Resilience Facility, and in line with commitments made in the NGEU Green Bond Framework, the first impact report lags the allocation report by one year. In future, allocation and impact reports will be published annually.

The report presents:

(i) An update, on the amount and break-down of each Member State Recovery and Resilience Facility (RRF) expenditure that is eligible to receive financing from NGEU Green Bonds based on the approved Recovery and Resilience Plans (RRPs);

(ii) The evolution of NGEU Green Bond issuances and how the net proceeds have been allocated;

(iii) A review of the EU Taxonomy alignment of the pool of green bond eligible measures and of the allocated proceeds; and

(iv) A first set of expected and realised climate impacts for the quantifiable parts of the pool of NGEU Green Bond expenditures and related reported expenditures. The report describes the methodology used to derive the climate impacts (GHG emissions avoided presented in tonnes of CO2e/year of emissions avoided) based on the expected and current implementation of quantifiable milestones and targets for measures eligible for NGEU Green Bond financing.

Sections (i), (ii) and (iii) supplement and update information included in the NGEU Green Bonds Allocation Report published in December 2022[2]. Section (iv) presents the methodology for quantifying the climate impacts of the eligible NGEU Green Bond measures and related results.

The information included in this report is based on a cut-off date of 1 August 2023 (compared to a cut off-date of 19 October for the 2022 Allocation Report). In 2023, Member States have been revising their RRPs to reflect, among others, new priorities and additional funding opportunities under the REPowerEU plan - EU's plan to bolster energy resilience, increase renewable energy generation, and promote sustainable energy sources. As Member States sent requests to amend their RRPs throughout summer 2023[3], the 1 August 2023 cut-off date allows for analysis based on a stable dataset[4]. The changes in the national RRPs after the cut-off date will be reflected in the 2024 NGEU Green Bonds Allocation and Impact Report.

This report is supplemented by an independent auditor's limited assurance report in respect of information relating to allocation of NGEU Green Bond proceeds and realised impact.

[2] SWD_2022_442_F1_STAFF_WORKING_PAPER_EN_V4_P1_2417689.PDF (europa.eu)

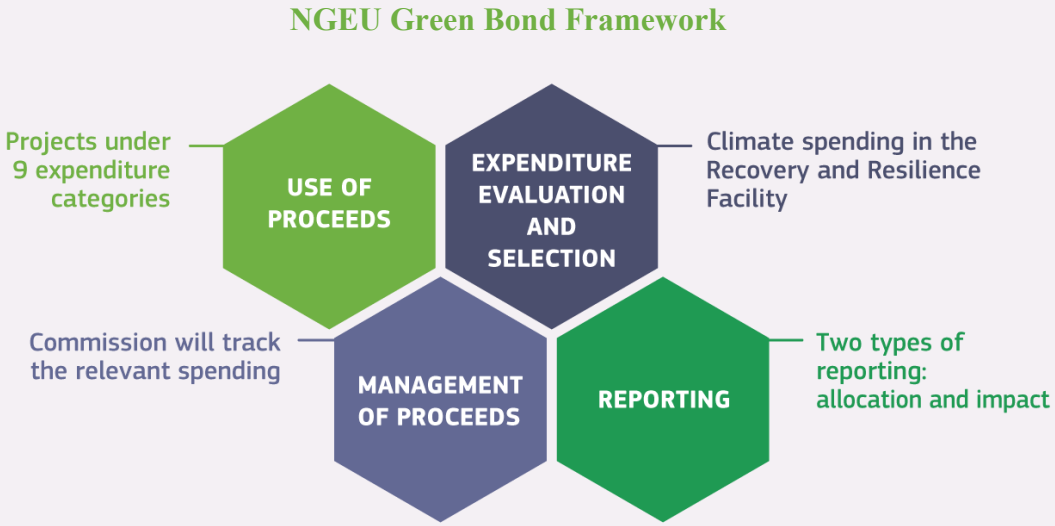
[3] Member State requests can only be considered final after being assessed by the Commission and approved by the Council – expected by the end of 2023.

[4] Despite the earlier cut-off date, revised RRPs from Estonia, Finland, France and Slovakia have been adopted by the Council and have led to a change in the green bond pool. RRP revisions from other Member States received until 1 August 2023 had no impact on the pool.

Box 1: The NGEU Green Bond framework[5] and due diligence procedure

The Commission has put in place a robust multi-level framework of control and assessment procedures to determine whether individual measures will receive financing from the proceeds of NGEU Green Bonds.

NGEU Green Bond issuances are underpinned by the NGEU Green Bond framework. The framework, adopted in September 2021, aligned with the green bond principles of the International Capital Market Association (ICMA) and reviewed by a second party opinion provider, Vigeo Eiris, part of Moody's ESG Solutions, ensures alignment with market standards on the use, management and reporting of proceed through four main pillars[6]:



- **Use of proceeds.** NGEU Green Bond proceeds are to be used for nine predefined broad expenditure categories, including 'energy efficiency', 'clean energy & network' and 'climate change adaptation' as defined in the NGEU Green Bond framework.
- **Process for expenditure evaluation and selection.** The investments are, in a first instance, identified based on the 37% climate expenditure of the RRPs – the spending roadmaps under the RRF at the heart of the NGEU recovery instrument.
- **Management of proceeds.** The Commission is tracking the net proceeds of the NGEU Green Bonds and the related payments, which are based on data submitted by EU Member States.
- **Reporting.** The Commission is committed to providing investors and the wider public with transparent reporting on allocation of proceeds as well as on the impact of the expenditures financed by NGEU Green Bonds. The Commission released the first allocation report at the end of 2022.

[5] https://commission.europa.eu/system/files/2021-09/nextgenerationeu_green_bond_framework.pdf

[6] The NGEU framework is aligned, to the extent feasible, with the European green bond standard, which defines requirements for compliance of green financing with the EU Taxonomy. However, as the NGEU Green Bond Framework had to be established prior to the EU Taxonomy certain differences exist. These differences were extensively presented in 2022 NGEU Green Bonds Allocation Report.



The pool of NGEU Green Bond eligible expenditure

2. The pool of NGEU Green Bond eligible expenditure

In determining the individual measures that are eligible for financing from NGEU Green Bonds, the Commission applies a multi-level framework of control and assessment procedures. This evaluation and selection process starts with a careful screening of the climate relevant expenditures notified by Member States as part of their national RRPs. This screening is reinforced by a second layer of in-house due diligence of measures aimed at ensuring that only measures that can live up to the strict and conservative standards of the NGEU Green Bond framework are included in the pool of green bond eligible measures (see Annex I). Only measures passing this due diligence are considered eligible for financing under the NGEU Green Bonds. In accordance with this control framework, no measures for energy creation from nuclear or from natural gas are included in the NGEU Green Bond eligibility pool.

As of the cut-off date of 1 August 2023, the pool of measures eligible for receiving financing under NGEU Green Bonds consists of EUR 190.6 billion[7] of eligible assets (made up of 875 measures). This is an increase from EUR 184.9 billion as of 19 October 2022 reported in the 2022 NGEU Green Bonds Allocation Report.

This revised pool reflects the current state of play of RRPs adopted with a Council Implementing Decision[8] and the revision of 4 RRPs (Estonia, Finland, France, Slovakia) that were submitted and assessed by the Commission prior to the cut-off date. All new measures introduced in revisions have been through eligibility due diligence process.

Almost 60% of the maximum eligible NGEU Green Bond expenditure pool relates to financing in expenditure categories: 'Clean transport & infrastructure' (EUR 64.7 billion) and 'Energy efficiency' (EUR 49.3 billion). Additionally, 'Clean energy & network' accounts for EUR 31.2 billion, 'Water supply & waste management' for EUR 12.1 billion, 'Climate change adaptation' EUR 11.8 billion, 'Research and innovation activities supporting the green transition' for EUR 11.0 billion, 'Protection, rehabilitation and biodiversity' for EUR 5.9 billion, 'Digital technologies supporting the green transition' for EUR 0.4 billion and 'Other' for EUR 4.3 billion.

[7] For non-Eurozone Member States, an exchange rate is specified in the Council Implementing Decision for the costing of measures in the RRP. When reporting on expenditures, non-Eurozone Member States report to the Commission in their local currency, a weighted exchange rates of all disbursement dates is used to convert the local currency amount to EUR.

[8] RRPs have now been approved for all 27 Member States (relative to 25 at the time of the 2022 NGEU Green Bonds Allocation Report).

Table 1: NGEU Green Bond pool broken down by expenditure category (in EUR).

Row Labels	NGEU Green Bonds Eligible Amount (as of 1 August 2023)	NGEU Green Bonds Eligible Amount (as of 19 October 2022)
Clean energy & network	31,205,299,035	30,607,675,329
Clean transport & infrastructure	64,693,956,318	63,575,659,898
Climate change adaptation	11,760,281,770	11,785,844,698
Digital technologies supporting the green transition	402,970,079	392,642,079
Energy efficiency	49,262,056,890	46,676,940,123
Nature protection, rehabilitation and biodiversity	5,867,904,567	4,774,204,567
Other	4,256,118,393	4,250,338,393
Research and innovation activities supporting the green transition	11,018,668,481	10,971,968,481
Water supply & waste management	12,138,876,319	11,910,513,844
Grand Total	**190,606,131,852**	**184,945,787,413**

Table 2: NGEU Green Bond pool broken down by Member State (in EUR, as of 1 August 2023)

Row Labels	Sum of NGEU Green Bonds Eligible Amount
Austria	2,230,585,000
Belgium	2,952,051,778
Bulgaria	3,497,684,000
Croatia	2,053,820,674
Cyprus	456,504,000
Czechia	2,197,855,805
Denmark	646,870,171
Estonia	546,280,000
Finland	742,800,000
France	15,211,477,614
Germany	8,074,220,165
Greece	11,003,177,155
Hungary	2,050,429,849
Ireland	406,199,000
Italy	70,286,458,550
Latvia	534,004,500
Lithuania	829,236,000
Luxembourg	60,500,000
Malta	163,760,000
Netherlands	2,451,476,000
Poland	13,944,730,000
Portugal	5,753,554,432
Romania	12,391,528,228
Slovakia	2,664,908,977
Slovenia	1,030,980,682
Spain	27,212,642,999
Sweden	1,212,396,274
Grand Total	**190,606,131,852**



Allocation of NGEU Green Bond proceeds

3. Allocation of NGEU Green Bond proceeds

Under the RRF, Member States' national RRPs set out planned reforms and investments structured around broad expenditure categories (e.g. energy efficiency). Investments and reforms themselves consist of groups or portfolios of individual projects (measures and sub-measures) related to the same economic activities (e.g. renovation of public buildings). Each reform and investment is linked to qualitative milestones and quantitative targets that represent steps towards implementing these reforms and investments.

Member States can receive payments, up to twice per year, after the fulfilment of their respective milestones and targets – in line with the performance-based nature of the programme.

Member States are also required to report to the Commission with each payment request the total cumulative expenditures incurred for the implementation of each reform and investment with a positive climate marker[9]. This requirement is set out in the financing and loan agreements between the Commission and Member States and allows the Commission to match proceeds raised through NGEU Green Bonds with the concrete expenditure for climate relevant measures.

The central role that milestones and targets have in the design and implementation of the RRF enable the Commission to determine the actual expenditure incurred for projects financed through NGEU Green Bonds. The pool of eligible NGEU Green Bond expenditures hence represents the maximum amount to which the NGEU Green Bond proceeds can be allocated.

NGEU GREEN BOND ISSUANCES

As of 1 August 2023, the European Commission had issued EUR 44.2 billion of NGEU Green Bonds across four different lines (as of 19 October 2022: EUR 28.0 billion). This represents an increase of EUR 16.2 billion (or 57.9%). All NGEU Green Bond issuances have been met with strong demand in both syndicated transactions and auctions, indicating a continuous strong investor appetite.

[9] The Commission relies on Member States data availability and quality. The Commission, in its institutional capacity, cannot directly assess the progress of the measures in the Member States. This report is constructed based on available and assessed data as they were presented and submitted to the Commission by the Member States.

Table 3: Summary of NGEU Green Bond issuances

Type	Issue format	Transaction date	Maturity	Volume issued (EUR million)	Yield	ISIN
Tap	Auction	17/04/2023	04/02/2033	1,732	3.087%	EU000A3K4DW8
Tap	Syndication	28/03/2023	04/02/2048	6,000	3.348%	EU000A3K4DM9
Tap	Auction	28/11/2022	04/02/2043	1,000	2.845%	EU000A3K4DG1
New Bond	Syndication	15/11/2022	04/02/2033	6,000	2.820%	EU000A3K4DW8
Tap	Auction	24/10/2022	04/02/2037	1,450	3.378%	EU000A3K4C42
New Bond	Syndication	21/06/2022	04/02/2048	5,000	2.713%	EU000A3K4DM9
Tap	Auction	25/04/2022	04/02/2037	2,499	1.626%	EU000A3K4C42
New Bond	Syndication	05/04/2022	04/02/2043	6,000	1.370%	EU000A3K4DG1
Tap	Auction	24/01/2022	04/02/2037	2,499	0.374%	EU000A3K4C42
New Bond	Syndication	12/10/2021	04/02/2037	12,000	0.450%	EU000A3K4C42

Member States have already received EUR 153.4 billion in RRF grant and loan disbursements, of which EUR 56.8 billion[10] is expected to be spent on climate relevant actions – therefore comfortably exceeding the amounts of NGEU Green Bonds issued.

IMPLEMENTATION OF MILESTONES AND TARGETS

Out of the total 6,273 milestones and targets for the whole RRF financing, the Commission has identified 1,729 milestones and targets that can be directly linked to the EUR 190.6 billion worth of measures which are included in the NGEU Green Bond pool. These 1,729 milestones and targets relate to the 875 individual measures or sub-measures that form the NGEU Green Bond eligible pool.

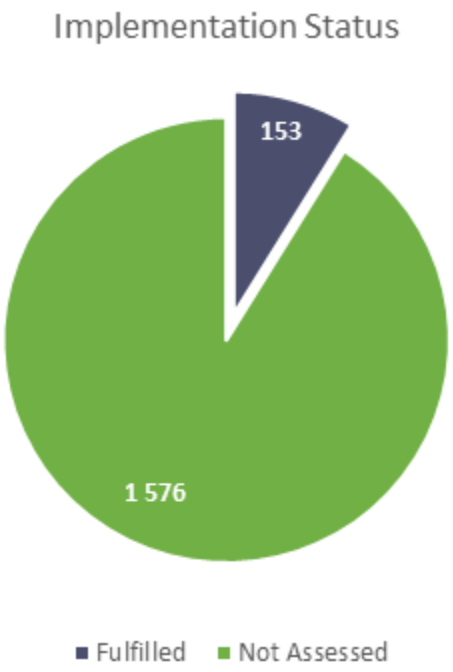
As of the cut-off date of 1 August 2023, out of 1,729 milestones and targets linked to measures in the NGEU Green Bond pool, 153 are considered as 'Fulfilled'. These are associated mostly to measures that are defined by the NGEU Green Bond Framework as contributing towards improved "Energy Efficiency" (e.g. energy Efficient Renovation of private or public buildings) and "Clean transport & infrastructure" (e.g. improved transportation links). A number of these milestones are linked to enabling implementation measures, such as signature of contracts to commence construction.

A further 297 of these milestones and targets have been declared as 'completed' by Member States but are still subject to assessment by the Commission. However, it is noted that the implementation

[10] Based on the payments disbursed to Member States and their respective share of costs eligible for NGEU Green Bond financing in the national RRPs. The financial envelope allocated is based on an ex-ante costing provided by the Member States.

status of milestones and targets is neither directly proportional to the financial envelope of reported expenditure, nor to the outputs implemented by a given Member State[11].

Figure 1: Implementation status of milestones and targets directly linked to the NGEU Green Bond pool (as of 1 August 2023).



Box 2: Milestones and Targets labelling and declaration process[12]:

According to the RRF Regulation, Member States must report twice a year on the progress made in the implementation of their Recovery and Resilience Plan.

The progress status of each milestone and target, can be reported by a Member State, as:

- 'completed' or
- 'not completed'.

Milestones and targets which Member States declare as 'completed' and have already been assessed as satisfactorily fulfilled by the Commission in the context of a payment request, are labelled for the purposes of this report as 'Fulfilled'. Milestones and Targets that are "Not completed" or "Completed but not assessed", are labelled as 'Not Assessed'.

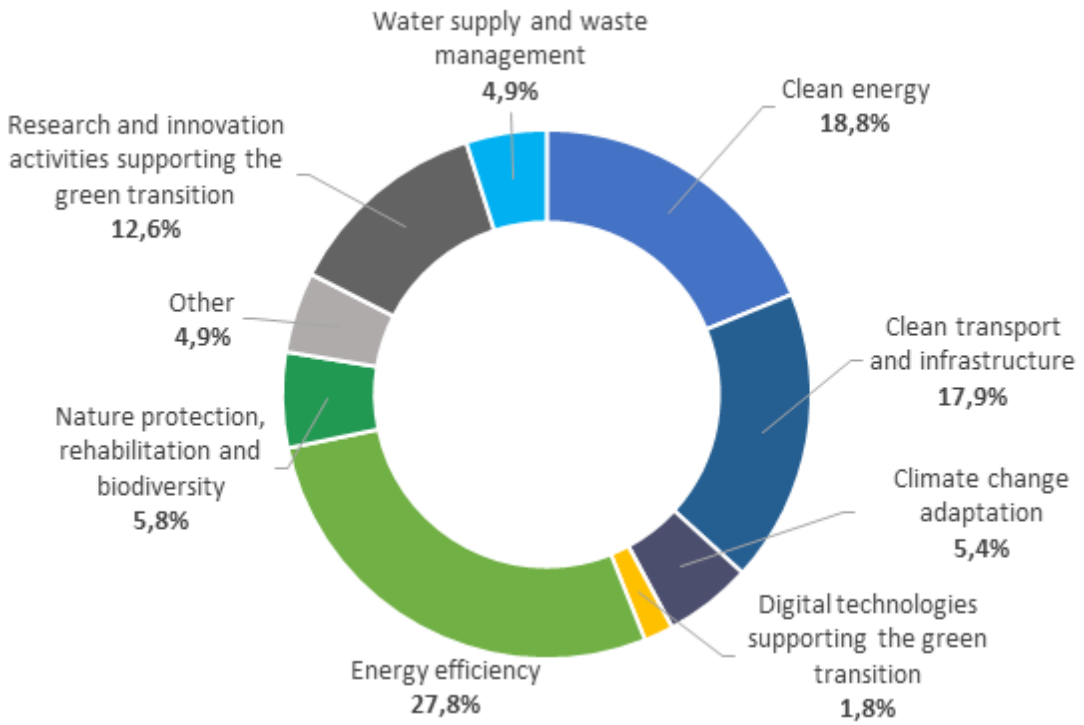
[11] Milestones and targets are reported by Member States within a 12-month window, which is followed by the Commission assessment. In addition, the number of milestones and targets does not necessarily correspond to the financial envelope of related measure (or sub-measure).

[12] Bi-annual Reporting Factsheet – Spring 2023, available at: Microsoft Word - DRAFT spring bi-annual_reporting_factsheet_v2.docx (europa.eu)

Table 4: Fulfilled milestones and targets by Member State

Member State	Number of fulfilled milestones
Austria	11
Bulgaria	1
Croatia	8
Cyprus	3
Czechia	8
Denmark	15
France	10
Greece	16
Italy	34
Lithuania	8
Malta	1
Portugal	15
Romania	10
Slovakia	1
Spain	12
Total	**153**

Figure 2: Fulfilled milestones and targets per expenditure category[13]



[13] Due to structural characteristics of RRF milestones and targets this chart should be interpreted as illustrative only and does not fully align with the numbers in Table 4. In addition, it is noted that the "Other" expenditure category of this graph also includes any milestones and targets which could not be grouped with any specific expenditure category under the Green Bond Framework.

ALLOCATED PROCEEDS

By 1 August 2023, Member States had received EUR 153.4 billion in RRF grant and loan disbursements, of which EUR 56.8 billion is expected to be spent on NGEU Green Bond eligible measures, based on the share of NGEU Green Bond eligible expenditure in the respective RRPs. From the total disbursements, as of 1 August 2023, **14 Member States have reported expenditures** relating to fulfilled milestones and targets eligible for NGEU Green Bond financing for a total amount **of EUR 21.0 billion** (compared to 7 Member States and EUR 13.5 billion as of 19 October 2022).

Most of the reported expenditures are incurred in the expenditure categories 'Energy efficiency' (EUR 9.8 billion), 'Clean transport & infrastructure' (EUR 9.0 billion) and 'Climate change adaptation' (EUR 1.2 billion).

Implementation of the NGEU green funded climate relevant actions and related reporting is expected to gather further pace after the revision of national RRPs, occasioned by the need to integrate a strong energy security focus.

Table 5: Reported expenditure by Member State (in EUR, as of 1 August 2023)

Row Labels	Sum of NGEU Green Bond cumulated expenditure
Austria	206,678,000
Croatia	34,659,272
Cyprus	8,938,000
Czechia	343,767,144
Denmark	35,310,864
France	5,069,652,000
Greece	1,120,888,000
Italy	13,447,364,000
Lithuania	19,000,000
Luxembourg	960,000
Portugal	247,400,000
Slovakia	200,000
Slovenia	89,180,000
Spain	398,176,000
Grand Total	**21,022,173,280**

Table 6: Reported expenditure by expenditure category (in EUR, as of 1 August 2023)

Row Labels	Sum of NGEU Green Bond cumulated expenditure
Clean energy & network	475,185,248
Clean transport & infrastructure	8,986,779,893
Climate change adaptation	1,222,136,053
Digital technologies supporting the green transition	12,000
Energy efficiency	9,797,308,047
Nature protection, rehabilitation and biodiversity	90,729,433
Other	221,461,267
Research and innovation activities supporting the green transition	67,513,689
Water supply & waste management	161,047,650
Grand Total	**21,022,173,280**

Annex III includes granular information on the allocation of proceeds across intervention fields and across Member States.

UNALLOCATED PROCEEDS

Unallocated proceeds is the difference between the funds raised from NGEU Green Bond issuances and Member States' reported eligible green expenditures. As of 1 August 2023, with EUR 44.2 billion of NGEU Green Bonds issued and EUR 21.0 billion of reported expenditure to which proceeds have been allocated, unallocated proceeds, i.e. the remainder, stand at EUR 23.2 billion. These unallocated proceeds are supported by a large pool of NGEU Green Bond eligible measures (of EUR 190.6 billion) which are expected to receive NGEU Green Bonds allocation as implementation of the NGEU programme progresses.

The scale of unallocated proceeds is restricted through robust risk management processes which ensure calibration of NGEU Green Bond issuances to manage the risk of issuing more NGEU Green Bonds than can eventually be allocated to reported green expenditures[14]. Any gap between NGEU Green Bond issuances and reported green expenditure will diminish over time as implementation and reporting of NGEU Green Bond expenditures gathers momentum.

[14] Before being disbursed to Member States or other EU programmes, NGEU Green Bond proceeds, like all NGEU related bond proceeds, are routed through the Commission's cash account at the European Central Bank (ECB). While all green bond proceeds must eventually be allocated to expenditures on green bond eligible measures as reported by Member States, proceeds may also be temporarily used for other EU programmes or by Member States for other measures in their budget. The Commission endeavors to allocate all green bond proceeds within 24 months of issuance and is currently well on track to do so.

Box 3: Refinancing and co-financing

Under the NGEU Green Bond framework, up to 100% of the NGEU Green Bond issuance proceeds can be used to refinance eligible expenditure. In the context of NGEU Green Bonds, a payment from the Commission to Member States is considered to be refinancing when a Member State pays for the measure first and receives the money at a later stage from the Commission. Based on the timing of expenditure reported by Member States, refinancing of reported expenditure amounts to a total of EUR 14.0 billion or 66.7% of reported expenditures.

In addition, under the NGEU Green Bond Framework, it is possible for measures to receive financing from sources other than NGEU Green Bond proceeds. This relates to (i) measures that are tagged with a 40% climate coefficient where the remaining 60% of expenditure is financed from conventional NGEU related bond issuances; and (ii) measures where Member States finance eligible NGEU Green Bond measures partially from their own national budgets. Based on reporting by Member States, the financing from these two additional sources corresponds to EUR 1.2 billion or 5.8%. EUR 0.4 billion of this co-financing is co-financing from Member States with EUR 0.8 billion linked to co-financing by conventional EU Bonds (see Annex IV). The Commission does not receive information from Member States to be able to identify other sources of financing from third parties, such as development banks or agencies.

Further details on the methodology applied for the calculation of refinancing, pre-financing and co-financing can be found in the NGEU Green Bonds Allocation Report published in December 2022.

EU Taxonomy alignment



4. EU Taxonomy alignment

The RRF Regulation, which fixes the parameters for eligible NGEU Green Bond expenditure, predated the delegated acts for the EU Taxonomy. Nevertheless, the draft Taxonomy conditions were reflected in the RRF regulation to the extent feasible. The Commission also committed to reporting on the alignment of the NGEU Green Bond expenditure with the EU Taxonomy. The EU Taxonomy alignment of the pool of NGEU Green Bond eligible measures was originally disclosed in the first NGEU Green Bonds Allocation Report published in December 2022, were the EU Taxonomy alignment of the NGEU Green Bond pool was reported. To further facilitate the investors in their assessment of the EU Taxonomy alignment of their investments, the Commission will initiate reporting on the EU Taxonomy alignment of the allocated proceeds as from this report.

In assessing EU Taxonomy alignment, the Commission relies on information contained in the RRF regulation's annex on climate tracking intervention fields as well as the technical guidance on the application of the DNSH principle in order to compare the alignment of measures supported under the RRF Regulation with the EU Taxonomy Technical Screening Criteria (TSC)[15]. At the time of making the assessment, the Commission could use the Commission regulation covering climate change mitigation, climate change adaptation and the 'do no significant harm' principle[16].

Box 4: Methodology for classification of EU Taxonomy alignment

The EU Taxonomy alignment for the NGEU Green Bonds is based on the assessment at the level of intervention fields[17] of:

1) alignment with the EU Taxonomy's Substantial Contribution Criteria (SCC) to the environmental objectives namely "climate change mitigation and climate change adaptation"; and
2) alignment of the DNSH criteria.

Both SCC and DNSH alignment were assessed independently of one another.

For the SCC, alignment can be classified in one of the following categories: 'Fully aligned'; 'Substantially compliant with the main substantive SCC conditions, but not to the same scale'; 'Partially compliant with only some SCC conditions'; 'Not aligned' and 'Not covered' (see Annex V). In order to be considered 'Fully aligned' or 'Substantially aligned' with the main SCC condition, the inclusion of quantitative criteria must be present in both RRF and the EU Taxonomy, but in case of 'Substantial alignment', the degree of the variable covered by the criteria is not the same.'

[15] The relationship between intervention fields and the EU Taxonomy Technical Screening Criteria (TSC) under the Commission Delegated Regulation (EU) 2021/2139 are set out in the NGEU green bond framework and its annex.

[16] See Commission Delegated Regulation (EU) 2021/2139 of 4 June 2021 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives. Commission has not yet used the Commission Delegated Regulation (EU) 2023/2485 amending Delegated Regulation (EU) 2021/2139, as it was adopted after the cut-off date, on 21.11.2023

[17] The EU Taxonomy alignment assessment at the level of Intervention Fields is driven by the stable nature of these fields (fixed in the RRF regulation), relative to individual measures which are subject to amendments or revisions under Member States RRPs.

To assess consistency with the DNSH requirements, the analysis is based on the standard DNSH criteria stemming from Annexes 1-4 of the Commission guidance notice on DNSH implementation for the RRF[18] along with the additional quantitative conditions present in Annex VI of the RRF Regulation.

The resulting RRF conditions are then compared to the EU Taxonomy DNSH conditions, consisting of both basic standard conditions for all activities and additional quantifiable conditions specific to individual EU Taxonomy activities.

Depending on the evidence, consistency between the conditions is assessed on the following scale: 'Fully aligned', 'Partially aligned' or 'Not covering specific DNSH EU Taxonomy conditions'.

In interpreting this assessment, it is noted that, while both the RRF DNSH criteria and the EU Taxonomy DNSH criteria aim to promote sustainability, they have different scopes, purposes, and areas of focus. The RRF criteria are applied to specific measures and reforms related to economic recovery and resilience, while the EU Taxonomy criteria classify entire economic activities based on their environmental and climate sustainability. These differences do not however retract form the sustainability benefits of the respective measures[19].

In addition, while in many cases, the 1,729 milestones or targets attached to the 875 measures in the NGEU Green Bond pool include conditions to reinforce compliance with DNSH, this could not be considered for the purpose of this analysis, as EU Taxonomy alignment is performed only up to the level on Intervention Fields (not of individual measures). These additional safeguards embedded in the milestones and targets, which are expected to lead to a much closer alignment between the EU Taxonomy Delegated act and the RRF, are hence not reflected in this analysis, rendering the presented estimates on the conservative side.

Based on the methodological considerations set out in Box 4, as of 1 August 2023, **57.5%, of the pool of eligible measures (EUR 190.6 billion) is assessed to be fully or substantially aligned with the EU Taxonomy** of both SCC and additional quantifiable DNSH criteria (compared to 57.9% as of 19 October 2022). **Further 36.5% is partially aligned** and the remaining **6.0% is not covered or aligned** (e.g. spending categories such as "biodiversity" or "air pollution prevention" where specific EU Taxonomy activities were not yet developed at the time of assessment[20]).

[18] Commission Notice C(2021) 1054: Technical guidance on the application of 'do no significant harm' under the Recovery and Resilience Facility Regulation

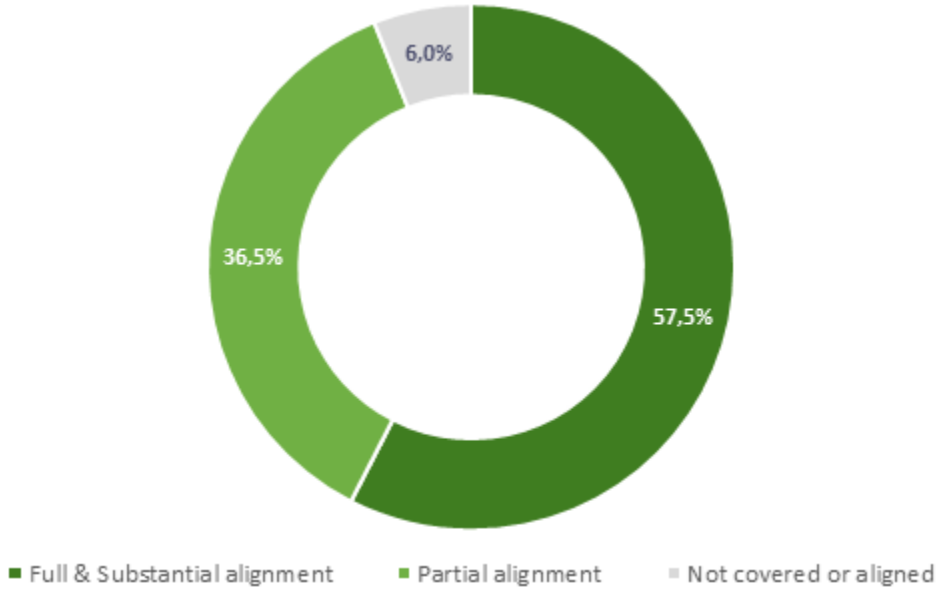
[19] For example, one of the specific considerations of Taxonomy are also Minimum Safeguards of labor and human rights: The Commission does not individually confirm each individual RRF measure to be aligned with Minimum Safeguards, however as all EU financing has to comply with EU labor protection, equality and human rights enshrined in EU fundamental treaties, the Commission operates in confidence that RRF financing, same as all EU financing provides such considerations and protections. In case of violations, EU labor protection agencies, EU and local Ombudsman and national and EU courts intervene. Commission also maintains its right to exclude measures which have unreliable implementation from the NGEU Green bond pool or in case of violations recover funds.

[20] The Commission adopted an Environmental Delegated Act under the Taxonomy Regulation on 27 June 2023 and submitted it to the co-legislators for scrutiny (see the proposal for the Commission Delegated Regulation (EU) 2023/2486supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to the sustainable use and protection of water and marine resources, to the transition to a circular economy, to pollution prevention and control, or to the protection and restoration of biodiversity and ecosystems and for determining whether that economic activity causes no significant harm to any of the other environmental objectives and

This stable EU Taxonomy alignment is reflective of the relative stable scope of interventions[21] and size of the pool, which however may change as the Commission assesses the alignment of measures arising from RePowerEU revisions.

Table 7: EU Taxonomy-alignment of pool of NGEU Green Bond eligible measure (table in EUR million and chart in %)

	DNSH fully aligned	DNSH partially aligned	DNSH not covering specific EU Taxonomy conditions
Full SCC alignment	21 intervention fields 72,097.5	3 intervention fields 19,429.9	4 intervention fields 38,680.8
Substantial SCC alignment	3 intervention fields 14,594.2	1 intervention field 3,557.5	1 intervention field 3,682.1
Partial SCC alignment	5 intervention fields 1,346.6	1 intervention field 1,199.0	10 intervention fields 24,580.2
Not SCC aligned			8 intervention fields **1,018.2**
Not covered			7 intervention fields **10,420.2**



amending Delegated Regulation (EU) 2021/2178 as regards specific public disclosures for those economic activities). The latest Commission Delegated Regulation (EU) 2023/2486 was adopted on 21.11.2023.

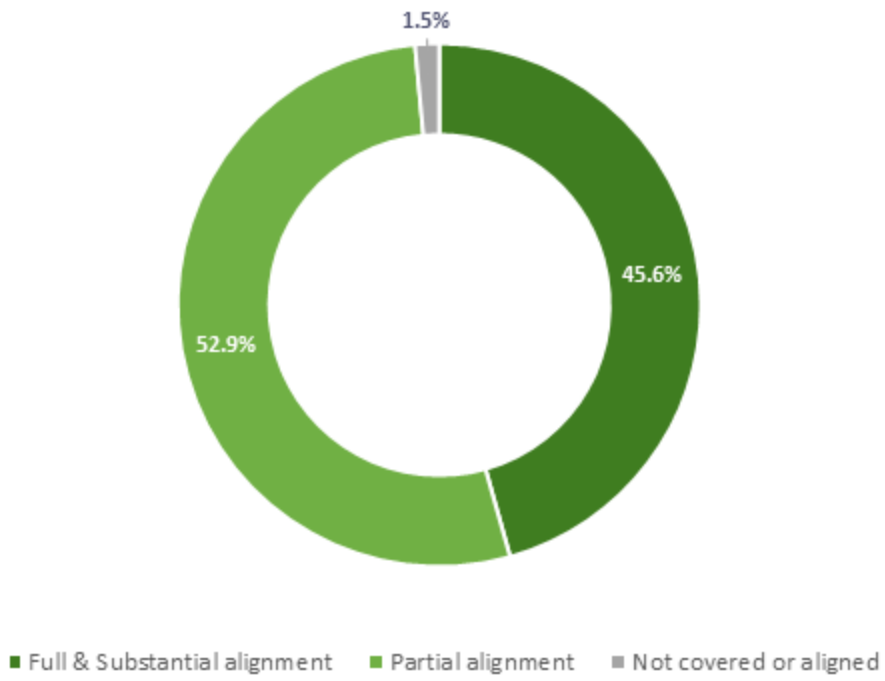
[21] This is notwithstanding the revision of the EU Taxonomy alignment methodology for the 2023 report with respect to five intervention fields (064, 065, 067, 068, and 069bis), all pertaining to the railway and TEN-T railway construction and reconstruction, which were upgraded from "substantially aligned" in 2022 to "fully aligned" with the EU Taxonomy SCC for the 2023 assessment. This upgrade follows additional verifications which led the Commission to conclude that for activity 6.14 - Infrastructure for rail transport compliance with the TEN-T directive (EU 2016/797, Annex II.2) sufficiently justifies full alignment of the intervention fields with the Taxonomy activity 6.14 SCC i) and ii) criteria.

For the EUR 21.0 billion of reported expenditure, the extent of full/substantial alignment is slightly lower at 45.6% while partial alignment is at 52.9% and not covered/aligned with the substantial contribution criteria and DNSH principles of the EU Taxonomy is 1.5%.

The difference between the EU Taxonomy alignment of the total pool relative to that of allocated proceeds is driven by the slower implementation speed of higher EU Taxonomy aligned measures (e.g. new infrastructure).

Table 8: EU Taxonomy-alignment of the allocated proceeds (table in EUR million and chart in %)

	DNSH fully aligned	DNSH partially aligned	DNSH not covering specific EU Taxonomy conditions
Full SCC alignment	21 intervention fields 8,699.2	3 intervention fields 674.9	4 intervention fields 9,285.5
Substantial SCC alignment	3 intervention fields 153.4	1 intervention field 67.9	1 intervention field 0.0
Partial SCC alignment	5 intervention fields 23.9	1 intervention field 0.8	10 intervention fields 1,802.5
Not SCC aligned			8 intervention fields **2.0**
Not covered			7 intervention fields **312.2**



Annex V includes further details on the EU Taxonomy alignment analysis underpinning these results and explaining the differences between different levels of alignment.



Climate Impact of NGEU Green Bond proceeds

5. Climate Impact of NGEU Green Bond proceeds

In the NGEU Green Bond Framework, the Commission has committed to providing investors and the wider public with transparent reporting on allocation of proceeds as well as on the impact of the expenditures financed by NGEU Green Bonds.

This impact report enables for the first time a quantification of these impacts, calculated in million tonnes of CO2e/year of emissions avoided. Given the still early stages of implementation of projects eligible for financing by NGEU Green Bonds, the report serves predominantly as (i) a foundation for future reports, focusing on the impact reporting methodologies; and (ii) as a reference-point for the estimated potential climate impacts that can be achieved through NGEU Green Bond financing, following full implementation of the measures that can currently be quantified.

IMPACT REPORTING METHODOLOGY

In order to approximate the climate impact from investments financed by NGEU Green Bonds, a three-pronged approach has been established building on the milestones and targets included in the national RRPs.

In a first step, all the milestones and targets are analysed in order to find metrics – referred to as output indicators - that can be used in assessing the implementation progress of certain measures. Examples of such output indicators are MWh of solar panel capacity installed, km of railway upgraded or installed, or number of dwellings renovated. While for some measures multiple output indicators could be viable, the final decision on the chosen output indicator is based on its usability in making the translation to climate impact. Milestones and targets and their respective target values are only counted for a single output indicator in order to avoid issues of double counting. Output indicators are assigned to the intervention field for which they apply. Table 9 below provides some examples of output indicators per intervention field.

In a second step, for each output indicator (and corresponding intervention field) a methodology for translating the output indicators into GHG emissions avoided is established[22]. These methodologies have been established with the support of Carbone 4, a specialized consultant in the field, and the establishment of such methodologies rely heavily on available academic literature. Once these two steps are completed, the theoretical basis for translating investments in specific measures to GHG emissions avoided is thus established. A final step, however, is required to calculate actual realised impact based on this approach.

In the final step, the actual completion of milestones and targets is tracked. Milestones and targets are only deemed as fulfilled and therefore taken into account for calculating the realised climate impact after the Commission has confirmed that the target value has indeed been reached. Partially achieved milestones or targets are not used for the purpose of impact calculations. For completed milestones and targets that contain output indicators which are marked as relevant

[22] While the Commission recognises that other impact indicators than GHG emissions avoided are available, this first report focuses only on GHG emissions avoided given its usability for investors in estimating the climate impact of their investments. Other climate impact indicators may be added in future reports.

for impact reporting, as per step one, these output indicators are summed up and subsequently used as input in the developed impact estimation model as per the above step. This concludes the final step in calculating the impact from investments in NGEU Green Bonds.

While certain measures receive funding also from other sources than the RRF, for example national budgets, it is worth noting that the output indicators included in the milestones and targets used as input for calculating climate impact, only relate to funding from the RRF.

All expected impact numbers presented in this report relate to the annual amount of GHG emissions avoided resulting from implementation of investments by fulfilling indicated quantifiable milestones and targets scheduled up until end 2026 only. Nevertheless, emissions that are avoided through NGEU Green Bond proceeds will be maintained for the entire lifetime of the NGEU Green Bond financed investments.

Annex VI provides a more detailed description of the process followed to calculate climate impact per relevant intervention field.

Table 9 – Examples of output indicators and impact indicators

Intervention field	Output indicator	Outcome unit	Impact indicator	Impact unit
025bis - Energy efficiency renovation of existing housing stock, demonstration projects and supporting measures compliant with energy efficiency criteria	Square meter or amount of dwellings renovated	m^2	GHG emissions avoided	XYZ ton of CO2e/year emissions avoided
064 - Newly built or upgraded railways - TEN-T core network	KMs of rail track built or upgraded	km	GHG emissions avoided	XYZ ton of CO2e/year emissions avoided
030bis - Renewable energy: biomass with high GHG savings	Additional operation capacity installed for renewable energy	MW	GHG emissions avoided	XYZ ton of CO2e/year emissions avoided
029 - Renewable energy: solar	Additional operation capacity installed for solar energy	MW	GHG emissions avoided	XYZ ton of CO2e/year emissions avoided
075 - Cycling infrastructure	Amount of cycling infrastructure installed	km	GHG emissions avoided	XYZ ton of CO2e/year emissions avoided

ESTIMATED EXPECTED IMPACT

Out of the 1,729 milestones and targets related to the NGEU Green Bond eligible pool, 353 of these (under 20 intervention fields) contained quantifiable data that could be analysed in calculating climate impacts. The analysis captured around 57% of the total amount of costs eligible for NGEU Green Bond financing, while representing 49% of the NGEU Green Bond eligible measures with quantifiable milestones and targets listed under the 20 intervention fields that were part of the analysis. It is estimated that, **following full implementation of quantifiable milestones and targets up until 2026, NGEU Green Bond eligible projects will result in 44 million tonnes of CO2e/year of emissions avoided. This amount represents approximately 1.2% of the annual GHG emissions of the EU for the year 2022**[23].

The expenditure categories resulting in the largest amount of GHG emissions avoided are "clean energy & network", primarily through the investments in wind and solar power, and "energy efficiency", primarily through investments in energy efficiency renovations and energy efficient construction.

The amounts of expected GHG emissions avoided per expenditure category do not necessarily correspond directly to the amount of costs eligible for NGEU Green Bond financing in the respective category and cannot be used as a basis to assess the effectiveness of spending in this regard. While some expenditure categories may result in higher amounts of emissions avoided per cost, differences are primarily due to the complexity of the investments under individual categories. In order to achieve climate neutrality by 2050, investments under all expenditure categories are necessary however, regardless of their individual ratios of funds spent per ton of emissions avoided.

Table 10: Estimated impact per expenditure category

Expenditure Category	GHG Emissions avoided (in tCO2e/year) - Total expected by 2026
Research and innovation activities supporting the green transition	3,499,281
Energy efficiency	7,407,791
Clean energy & network	18,648,956
Water supply & waste management	992,881
Clean transport & infrastructure	13,656,781
Grand Total	**44,205,690**

[23] Source: EUROSTAT (https://ec.europa.eu/eurostat/databrowser/view/ENV_AC_AIGG_Q__custom_2691128/bookmark/table?lang=en&bookmarkId=4bb9ab20-296b-4119-88e9-580ea7741c0a)
The reference year of 2022 was chosen to represent an amount of GHG emissions that is not artificially lowered by the effects of the COVID-19 pandemic.

REALISED IMPACT

The nature of the RRF means that for measures financed by NGEU Green Bonds the associated milestones and targets can be achieved up until end 2026 by Member States. Hence, unlike other sovereign issuers, NGEU Green Bonds issued by the EU do not refinance spending from previous budget years, but are rather forward looking, financing measures that are being implemented or are planned to be implemented in the upcoming years.

As a result, much of the potential impact is likely to only be realised towards the end of the RRF programme, with the impact at the current initial phase being limited. The expected backloaded nature of impacts under the RRF programme is reflected in the structure of milestones and targets included in the calculations, for which the share of quantitative targets that can be used in the quantification of impacts increases towards the end of the programme in 2026.

This backloaded nature of milestones and targets and the fact that the RRF programme contains numerous investments with long lead times, means that in this early stage of implementation realised impacts are limited.

Considering the implementation of milestones and targets up until the cut-off date of 1 August 2023, the realised impact of the allocated NGEU Green Bond proceeds is calculated to be 224,143 tonnes of CO2e/year of emissions avoided. As of yet, this realised impact has been achieved solely through energy efficiency renovations. This amounts to 0.5% of the total estimated reduction of GHG emissions from the expected climate impact of full implementation of quantifiable milestones and targets up until end 2026. The limited realised climate impact reflects the early stage in the implementation of the investment part of projects financed by the NGEU Green Bonds and is expected to increase progressively leading up to 2026, in line with the increase in the relevant quantifiable milestones and targets.

A detailed list of intervention fields incorporated in the analysis as well as the output indicator and impact indicator results can be found below. Description of methodologies used to calculate the impact indicator results of CO2e/year of emissions avoided for each intervention field and output indicator can be found in the methodological annex (Annex VI).

Table 11: Realised impact per expenditure category

Expenditure Category	GHG Emissions avoided (in tCO2e/year) - realised impact
Research and innovation activities supporting the green transition	-
Energy efficiency	224,143
Clean energy & network	-
Water supply & waste management	-
Clean transport & infrastructure	-
Grand Total	**224,143**

Table 12: Climate impact per Intervention Field (expected and realised)

INTERVENTION FIELD	OUTPUT				IMPACT GHG Emissions avoided (in tCO2e/year)	
	Indicator	Current result	Total 2026	Unit	Current result	Total 2026
022 - Research and innovation processes, technology transfer and cooperation between enterprises focusing on the low carbon economy, resilience and adaptation to climate change	Electrolyser capacity - Hydrogen production	0	1,810	MW	0	3,397,629
	Number of zero emission vehicles	0	100,000	Number	0	101,653
025bis - Energy efficiency renovation of existing housing stock, demonstration projects and supporting measures compliant with energy efficiency criteria	Square Meters renovated (residential and non-residential)	39,360,880	581,085,576	m2	224,143	5,938,669
025ter - Construction of new energy efficient buildings	Square Meters renovated (residential and non-residential)	0	2,921,881	m2	0	39,690
	Square Meters constructed (residential and non-residential)	0	11,652,034	m2	0	39,284
026 - Energy efficiency renovation or energy efficiency measures regarding public infrastructure, demonstration projects and supporting measures	Square Meters renovated (residential and non-residential)	0	2,048,150	m2	0	21,606
	Square Meters constructed (residential and non-residential)	0	890,143	m2	0	4,472
026bis - Energy efficiency renovation or energy efficiency measures regarding public infrastructure, demonstration projects and supporting measures compliant with energy efficiency criteria	Square Meters renovated (residential and non-residential)	0	23,194,378	m2	0	442,964
	Square Meters constructed (residential and non-residential)	0	30,060,218	m2	0	157,670
	Additional MWh saved per year	0	319,841	MWh	0	124,924
028 - Renewable energy: wind	Installed Capacity of Wind Farms	0	3,451	MW	0	3,452,050

INTERVENTION FIELD	OUTPUT				IMPACT GHG Emissions avoided (in tCO2e/year)	
	Indicator	Current result	Total 2026	Unit	Current result	Total 2026
	Installed Capacity of Offshore Wind Farms	0	8,000	MW	0	4,267,844
	Installed Capacity of Wave Energy	0	200	MW	0	214,332
029 - Renewable energy: solar	Installed Capacity of Solar Panels	0	9,923	MW	0	4,233,265
030bis - Renewable energy: biomass with high GHG savings	Production of bioethanol equivalent	0	3,068,636	tons	0	2,043,390
	Production of hydrogen	0	560,000	m3	0	476,596
	Additional CO2e/year	-	-		0	15,000
031 - Renewable energy: marine	Installed Capacity of Offshore Wind Farms	0	1,500	MW	0	3,946,479
033 - Smart Energy Systems (including smart grids and ICT systems) and related storage.	Number of smart electricity meters	0	730,680	Number	0	60,088
	Electrolyser capacity - Hydrogen production	0	150	MW	0	187,714
	Installed Capacity of Solar Panels	0	1,500	MW	0	390,711
042 - Household waste management: prevention, minimisation, sorting, reuse, recycling measures	Number of sorting facilities - Plastic waste	0	3	Number	0	992,881
	Number of sorting facilities - Municipal waste	0	38	Number		
064 - Newly built or upgraded railways - TEN-T core network	Length of railway	0	5,981	km	0	280,937
065 - Newly built or upgraded railways - TEN-T comprehensive network	Length of railway	0	4,175	km	0	230,757

INTERVENTION FIELD	OUTPUT				IMPACT GHG Emissions avoided (in tCO2e/year)	
	Indicator	Current result	Total 2026	Unit	Current result	Total 2026
068 - Reconstructed or modernised railways - TEN-T comprehensive network	Length of railway	0	5,048	km	0	922,132
072bis - Mobile zero emission/electric powered rail assets	Number of trains/locomotives	0	701	Number	0	1,449
073 - Clean urban transport infrastructure	Length of constructed tram or metroway	0	642	km	0	1,550,857
	Charging points constructed	0	6,602	Number	0	7,450
074 - Clean urban transport rolling stock	Zero-emission buses	0	37,344	Number	0	2,038,359
	Charging points constructed	0	13,200	Number	0	17,658
075 - Cycling infrastructure	Cycle path constructed	0	7,845	km	0	477,460
	Bicycle parking spaces constructed	0	10,000	Number		
077 - Alternative fuels infrastructure	Zero-emission car charging points (public and private)	0	557,102	Number	0	6,988,904
	Zero-emission bus charging points	0	417	Number	0	3,642
	Electric vehicles	0	3,525	Number	0	4,424
	Biogas refuelling stations (compressed)	0	59	Number	0	323,674
	Biogas refuelling stations (liquefied)	0	14	Number	0	28,211
ADHOC - Ad hoc intervention field	Zero-emission vehicles	0	585,952	Number	0	780,867
TOTAL						**44,205,690**

METHODOLOGICAL CONSTRAINTS

While the Commission strives to provide a large overview of NGEU Green Bond's achievements in terms of climate impact, the analysis presented in this report is subject to a number of methodological constraints.

To start, the impact reporting methodology is based on establishing reasonable output indicators per intervention field as the first step and assessing the climate impact of the respective intervention field as the next step. For the current report, this climate impact is defined primarily in terms of climate change mitigation through the use of the impact indicator of GHG emissions avoided. While all measures financed by NGEU Green Bonds contribute to furthering the EU's climate ambitions, only these measures where the translation into the desired impact indicator (GHG emissions avoided) was possible have been included in the impact reporting. Primarily, this concerns measures where an effect of GHG emissions avoided could reasonably be expected (such as clean energy or renovation actions). Intervention fields where such a specific impact metric was less readily evident tended to not be included in this year's analysis of impact (e.g., Adaptation to climate change measures and prevention and management of climate related risks or Water management and water resource conservation), though their contribution to the green transition remains undisputed.

In addition, this type of analysis necessitates translation of measures' quantitative targets into output indicators. By nature, only such targets that actually provided reasonable quantitative information can be taken into account. As not all measures have quantifiable milestones or targets that can be incorporated in the calculation of the output indicators, not all measures can be factored into the calculation of the output metrics per intervention field. Where only qualitative information was available, the available data was not suitable for aggregation or there was no methodology available to translate the output indicator into an impact indicator, milestones or targets were not taken into account. For example, while most measures under intervention field *"Energy efficiency renovation of existing housing stock, demonstration projects and supporting measures compliant with energy efficiency criteria* dealing with renovations" will have provided targets indicating the square meters or number of dwellings/buildings to be renovated, some measures only provided the number of actions. Since this did not allow for a reasonable conversion towards m2 or number of dwellings, these measures could not be included in the analysis.

It should be noted that most measures contain more qualitative milestones than quantitative targets, as milestones often refer to the necessary prerequisites to start implementation. For example, while milestones may refer to necessary legislation being passed, the quantitative target may then refer to the actual implementation at a later stage.

Furthermore, while the Commission has sought to cover as much eligible expenditure and allocated proceeds as possible in the first impact reporting cycle, methodological constraints meant that the analysis is based on the largest intervention fields in terms of their importance to the NGEU Green Bond pool and for which calculations of outputs and impacts were deemed feasible.

Due to the above mentioned limitations, while the NGEU Green Bond pool comprises 1,729 milestones and targets, only 353 of these provide quantitative data that could be incorporated in the analysis of outputs and impacts presented in this report. Despite this limited absolute number, these quantifiable milestones and targets represent around 57% of the total NGEU Green Bond eligible expenditures. The remaining measures, while relevant in terms of climate impact, could not be quantified at the time of this report.

The Commission will continue to provide updates of the realised climate impacts from projects financed by NGEU Green Bonds until full allocation of NGEU Green Bond proceeds has been completed.



Case studies of investments financed by NGEU Green Bonds

6. Case studies of investments financed by NGEU Green Bonds

Case studies help exemplify the transformative power of investments financed by NGEU Green Bonds. The case studies presented below showcase how funds raised through NGEU Green Bond are contributing to a greener and more resilient Europe across different sectors and Member States, from innovative green infrastructure projects to advancements in energy efficiency.

Further examples of concrete reforms and investments financed by the RRF including in the area of green transition can be found in the annexes of the Commission report on the implementation of the RRF[24].

AUSTRIA

Measure Title: Exchange of oil and gas heating systems

Measure/Project Description:

The project aims to increase the share of renewable energy-based heating systems in residential buildings, reducing energy consumption, GHG emissions and air pollution. It provides financial support to households replacing fossil-fuelled heating systems with renewable heating technologies, such as biomass-based heaters, heat pumps or connectors to district heating.

The Ministry of Climate Action and Energy is responsible for the implementation of the investment. The only beneficiaries are private individuals.

It sets the objective of replacing at least 31,800 heating systems.



Photo: @Reflexpixel, Adobe Stock, 2023

[24] COM (2023) 545 final: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52023DC0545

Measure achievements

The replacement of 6,360 heating systems was positively assessed in the context of the first payment request. According to Austrian Authorities, the final target of 31,800 heating systems has been already fulfilled. This will be assessed in the context of the second payment request.

By replacing fossil-fueled heating systems with new systems relying on renewable energy, the project has been contributing to reduce heating-related energy consumption, GHG emissions and air pollution.

BULGARIA

Measure Title: Sofia metro line 3 – new section

Measure/Project Description

Bulgaria's RRP introduced investments to support green and efficient public transport services. The RRF provides EUR 110.5 million for the construction of the Hadzhi Dimitar – Levski section on line 3 of the Sofia metro, which will provide a clean, rapid and efficient public transport service to passengers with intermodal connections. EUR 95 million of this is eligible for financing from NGEU Green Bonds. The total length of the section is 3 km and covers three stations. Works are expected to be completed by 31 December 2025. The project is implemented by Metropoliten EAD, a company owned by the Sofia Municipality which operates the metro lines in Sofia.

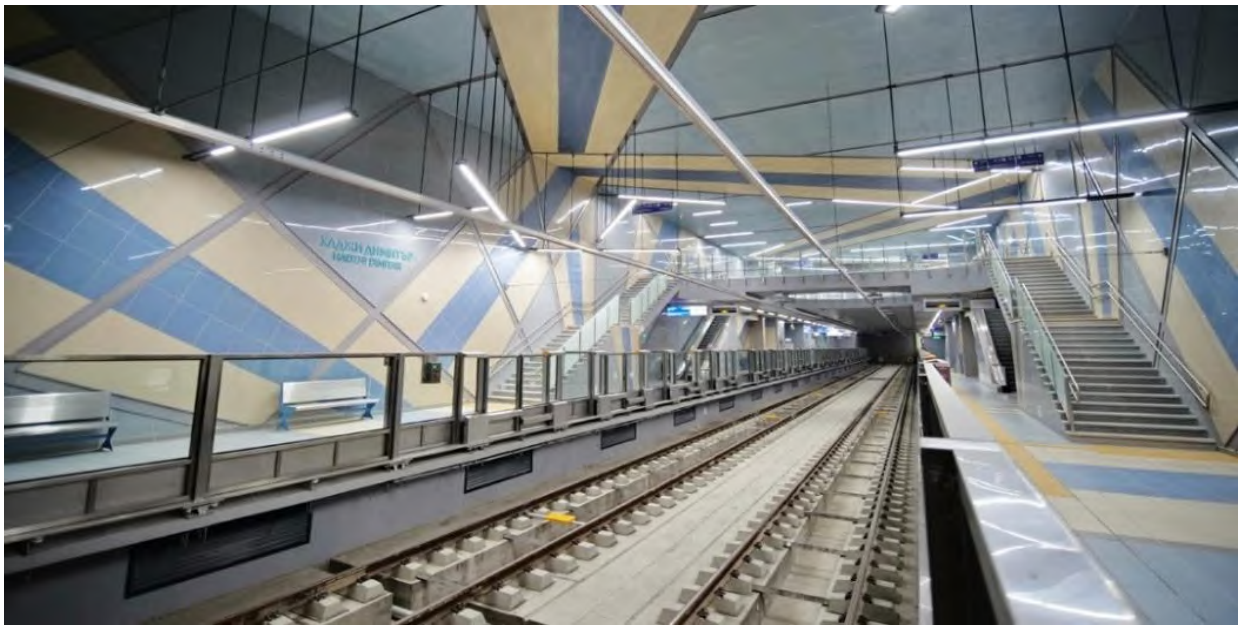


Photo: courtesy of Metropolitan, Sofia Municipality website

Measure achievements:

The contracts for the construction works have been signed and the implementation is ongoing. The investment is expected to allow the transport of 7.6 million passengers per year on average as of 2026 and to lead to a reduction in GHG and air pollution, as well as in the number of cars in circulation in the city.

DENMARK

Measure Title: Subsidies to replace oil burners and gas furnaces with green heating solutions

Measure Description:

The measure aims at phasing oil and natural gas out of the national heating system by supporting the replacement of oil burners and gas furnaces with electric heat pumps and district heating from renewable sources. The measure consists in the provision of subsidies to the amount of EUR 65 million to reduce the cost borne by consumers for the conversion to green heating solutions. The support scheme financed under the national RRP is articulated in three sub-schemes: (1) Sub-scheme for district heating ("*Fjernvarmepuljen*") providing a subsidy to expand district heating grids into new areas; (2) Sub-scheme for decoupling ("A*fkoblingsordningen*") exempting households from the payment of the decoupling fee charged by the Danish state-owned gas distribution company; and (3) Sub-scheme for scrapping ("*Skrotningsordningen*") providing a subsidy for companies that offer heat pumps on subscription for private year-round housing. This subsidy is particularly relevant for citizens who wish to convert to a heat pump but have limited financing opportunities.

The three subsidy schemes (*Fjernvarmepuljen, Afkoblingsordningen and Skrotningsordningen*) are all under the responsibility of the Danish Energy Agency. The Danish Energy Agency is a part of the Ministry of Climate, Energy and Utilities. The measure will result in at least 10,100 oil burners and gas furnaces being replaced with electric heat pumps and district heating from renewable sources by 31 August 2026.



Photo: Installation of a heat pump, ©European Union, 2023

Measure achievements:

The selection phase of applications received under the schemes will be completed by 31 March 2025. The final output target of 10,100 oil burners and gas furnaces being replaced with electric heat pumps and district heating from renewable sources will be reached at the latest by 31 August 2026.

LITHUANIA

Measure title: Support to increase local production of RES fuels

Measure description:

The aim of the sub-measure is to create a supply of renewable fuels and to promote their use in the transport sector. The first part of the investment covers the roll out of an IT system to support the production and consumption of biofuels and biogas in the transport sector in order to replace fossil fuels. The system will record the quantities of biomethane gas and other renewable fuels supplied to the transport sector as well as of the certificates given to producers to fulfil their RES fuels supply obligations, therefore ensuring the increase in consumption of biomethane and other alternative fuels produced over time. The System will also provide functionalities for data cross checking with the databases of Lithuania's State Tax Inspectorate. Investments on biomethane, second generation biofuels and green hydrogen production will follow up. Total cost of the measure is EUR 50,9 million.



Photo: @Fokussiert, Adobe Stock, 2023

Measure achievements

The IT System together with the registration module was launched in December 2021. With the entry into operation of the IT system, producers of alternative fuels have now a tool to assess the demand for alternative fuels, which will allow them to increase their level of production. Investments related to the production of alternative fuels will be implemented gradually with the objective that by the end of the RRF timeframe the share of fossil fuels in the transport sector in Lithuania will have significantly be reduced.



Limited Assurance Report

7. Limited Assurance Report



Independent Auditor's Assurance Report on selected information of the European Union (EU)

To the Directorate General for Budget of the European Commission (DG Budget)

In accordance with our agreed terms of engagement dated 25 July 2022 and 27 July 2023, we have completed our limited assurance engagement to report on the preparation of the selected information for the NextGenerationEU (NGEU) green bonds (ISIN: EU000A3K4C42, EU000A3K4DG1, EU000A3K4DM9 and EU000A3K4DW8) of the EU prepared by the DG Budget (Selected Information) and contained in Annex III: "Allocation of NGEU Green Bond proceeds by Member State, category and intervention field" and Table 11: "Realised impact per expenditure category" under section 5 "Climate Impact of NGEU Green Bond proceeds" in the EU's NGEU Green Bonds Allocation and Impact Report. The applicable criteria on the basis of which the DG Budget has prepared the Selected Information are described in the Annex I: "Evaluation and selection of eligible NGEU Green Bond measures" and Annex VI: "Impact methodologies per Intervention Fields" in the NGEU Green Bonds Allocation and Impact Report (Basis of Preparation).

Responsibility of the DG Budget for the Selected Information

The DG Budget is responsible for the preparation of the Selected Information on the basis of the applicable criteria described in the Basis of Preparation.

Our independence and quality management

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants (IESBA) and as adopted for Luxembourg by the *Commission de Surveillance du Secteur Financier* (CSSF), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

Our firm applies International Standard on Quality Management 1, as adopted for Luxembourg by the CSSF, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Inherent limitations

The absence of a significant body of established practice on which to draw to evaluate and measure non-financial information allows for different, but acceptable, measures and measurement techniques and can affect comparability between entities.

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R.C.S. Luxembourg B 65 477 - TVA LU25482518

Responsibilities of the Réviseur d'entreprises agréé

Our responsibility is to express a limited assurance conclusion on the Selected Information based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with International Standard on Assurance Engagements 3000 (Revised) 'Assurance Engagements other than Audits or Reviews of Historical Financial Information', as issued by the International Auditing and Assurance Standards Board (IAASB) and as adopted for Luxembourg by the *Institut des Réviseurs d'Entreprises* (IRE) and in accordance with the Luxembourg legislation and with the professional standards issued by the IRE.

This standard requires that we plan to perform our work to obtain limited assurance as to whether the Selected Information were prepared by the DG Budget, in all material respects, in accordance with the Basis of Preparation.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

The selection of such procedures depends on our professional judgment, including the assessment of the risks of management's assertion being materially misstated. The scope of our work comprised, among others, of the following procedures:

- assessing and testing the design and functioning of the systems and processes used for data-gathering, collection, consolidation and validation, including the methods used for calculating and estimating the information and data presented in the Selected Information;

- conducting interviews with responsible officers; and

- inspecting internal and external documentation.

We have evaluated the Selected Information against the Basis of Preparation. The accuracy and completeness of the Selected Information are subject to limitations given their nature and the methods for determining, calculating, or estimating such information.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Limited assurance conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Selected Information has not been prepared, in all material respects, in accordance with the Basis of Preparation.

Restriction of use and distribution of the report

This report, including the opinion, has been prepared for and only for the DG Budget in accordance with the terms of our engagement letters and is not suitable for any other purpose. We do not accept any responsibility to any other party to whom it may be distributed.

PricewaterhouseCoopers, Société coopérative — Luxembourg, 28 November 2023

Represented by

Electronically signed by
Malik Lekehal

Malik Lekehal