Sectoral Carbon Budgets and the NECP

The national climate policy under the spotlight

Summary

Carbon budgets constitute a key climate policy tool and are defined as the maximum quantities of greenhouse gas emissions that are allowed to be emitted over a definite period of time.

According to the provisions of the national Climate Law, by the end of 2024, Greece must prepare carbon budgets for the following seven sectors of the economy: electricity & heat production; transport; industry; buildings; agriculture & livestock; waste; and land use, land use change & forestry (LULUCF). In order to contribute to the public debate foreseen by the national Climate Law, this analysis uses the projections of the latest publicly available version of the NECP, which was submitted for public consultation in August 2024, to calculate the seven sectoral carbon budgets for the period 2026-2030; based on the latter, conclusions are drawn regarding Greece's climate trajectory.

The main findings of the analysis are summarized as follows:

- Cumulatively, over the five-year period 2026-2030, Greece will emit 257 million tons CO_{2eq}; this figure represents a 145 million tons reduction (-36%) compared to the 2018-2022 period, which is the last five-year period for which official data are available.
- 83% of this reduction will come from electricity & heat production (-90 Mt CO_{2eq}) and industry (-31 Mt CO_{2eq}), the two most polluting sectors during the 2018-2022 period.
- The buildings sector will contribute at a lesser degree to this reduction with -11.7 Mt CO_{2eq}. Even smaller contributions will be made by the agriculture-livestock sector (-7.5 Mt CO_{2eq}) and LULUCF (-6.3 Mt CO_{2eq}), while the progress in the waste management sector will be negligible (-1.1 Mt CO_{2eq}).
- In contrast, emissions from the transport sector are expected to increase (+3.1 Mt CO_{2eq}) to 105 Mt CO_{2eq} over the five-year period 2026-2030; accounting for nearly 41% of the country's total carbon budget for 2026-2030, transport will, thus, become Greece's most polluting sector.

Based on the results of the analysis, the following are recommended:

- Review NECP measures and policies regarding the transport sector based on measures foreseen by other Member States that are moving in far more ambitious directions.
- Review the national waste management plan to align it with the relevant European policies, and eliminate the incineration option.
- Develop a national plan to reduce methane emissions, particularly from the livestock sector, in cooperation with all stakeholders.
- At the institutional level, amend Article 7 of Greece's Climate Law to denote that each sector's emissions in both the starting and ending year of each five-year period match those projected by the latest available NECP.

Introduction

Carbon budgets constitute a key tool for climate policy-making at local, national, European and global level, as well as at the level of entire economic sectors. They are defined as the maximum quantities of greenhouse gas (GHG) emissions that are allowed to be emitted over a definite period of time.

This tool differs from specific climate targets to reduce emissions *in a given year compared to a baseline year* (e.g. reducing emissions in 2030 by 55% compared to 1990), as it involves limiting *the total quantities* of greenhouse gases emitted *over an entire period of time*. Carbon budgets, thus, complement specific climate targets, contributing to transparency and accountability and serving as a roadmap for governments to stay committed to the path towards climate neutrality.

For this reason, in 2021, the EU introduced the obligation of establishing a carbon budget for the period 2030-2050 in the European Climate Law[1]. In this context, the European Scientific Advisory Board on Climate Change proposed limiting cumulative GHG emissions over this period to 11-14 billion tons of CO_2 equivalent (Gt CO_{2eq})[2], in line with the EU's long-term climate target of achieving climate neutrality by 2050.

The obligation to prepare carbon budgets has also been incorporated into the Climate Laws of several European countries (Germany, France, the Netherlands, the United Kingdom, Denmark, Spain, Finland, Ireland), thus becoming legally binding. Greece is included among these countries as of 2022, following the adoption of the first national Climate Law[3]. In fact, along with other EU Member States (Germany, France, Ireland), Greece is drawing up separate carbon budgets for individual sectors of the economy - in addition to the overall national carbon budget. Specifically, according to Article 7 of the Climate Law, Greece is obliged to prepare seven (7) five-year sectoral carbon budgets for the following sectors: (a) electricity & heat production; (b) transport; (c) industry; (d) buildings; (e) agriculture & livestock; (f) waste; and (g) land use, land-use change & forestry (LULUCF). The sum of the sectoral carbon budgets shall amount to the country's total carbon budget for the respective five-year period.

Greece's first sectoral carbon budgets will address the 2026-2030 five-year period and, according to Article 7 (paragraph 3) of the Climate Law, shall be set by the end of 2024. Their preparation has been designed to be inclusive, with broad participation. In particular, the Law foresees a public consultation in the form of a climate debate forum on the website of the Natural Environment & Climate Change Agency; this consultation shall last at least one month, bringing together representatives of municipalities, regions, universities, environmental non-governmental organizations, companies, professional organizations, and trade unions (Article 26). Its results shall be integrated by the Scientific Committee on

[1]Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021, https://shorturl.at/Xep5l.

[2] European Scientific Advisory Board on Climate Change, 15.06.2023. "Scientific advice for the determination of an EU-wide 2040 climate target and a greenhouse gas budget for 2030-2050", https://bit.ly/3OlKux2.

[3] National Climate Law, 4936/2022, GG A 105/2022.

Climate Change in its opinion to the Governmental Committee on Climate Neutrality, namely, the entity finalizing the seven sectoral carbon budgets (Article 29).

In addition to historical data on emissions, the preparation of these first budgets will employ projections of future emissions in different sectors of the economy. The most detailed projections available have been derived from the detailed mathematical models used to draft the National Energy and Climate Plan (NECP).

In order to contribute to the public debate foreseen by the national Climate Law, this report uses the latest publicly available version of the NECP[4] to calculate the seven sectoral carbon budgets for the period 2026-2030; subsequently, based on the latter, conclusions are drawn regarding Greece's future climate course.

First, this report defines the seven sectoral budgets in relation to the internationally recognized emission categories included in the reports submitted annually by all countries -worldwide- to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). The NECP data used to prepare the sectoral budgets are presented next, followed by the results of our analysis; finally, we put forth our conclusions and recommendations. As the NECP provides no formal methodology for determining sectoral carbon budgets, an annex presents the methodology and assumptions made herein to carry out the mapping between the NECP projections and the UNFCCC emission categories.

Definitions of Sectoral Budgets

The categorization included in the annual greenhouse gas inventory reports[5] was used to define the seven sectoral carbon budgets. These reports are prepared in accordance with the latest United Nations Intergovernmental Panel on Climate Change (IPCC) guidelines and submitted by Greece to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). More specifically, in this analysis, the seven sectoral budgets are defined as follows:

Electricity & Heat Production: Includes emissions resulting from the combustion of fossil fuels for electricity and heat production (1.A.1.a), as well as fugitive emissions, most of which are methane emissions from lignite mines (1.B).

Transport: Includes emissions from road and rail transport; domestic shipping; and aviation within the European Economic Area (EEA) (1A.3); emissions from military aviation (1.A.5); and emissions from international aviation (1.D.1.a)[6].

Industry: Includes emissions from processes in refineries such as the production of heat, steam and/or electricity in furnaces, gas turbines and internal combustion engines within

[4] Ministry of Environment and Energy, August 2024, NECP-Revised Version as submitted to public consultation, https://bit.ly/3ZfbODl.

[5] Ministry of Environment and Energy/Climate Change/Reports and current status, https://bit.ly/3APG6TM. Emissions are also available in the European Environment Agency database.

[6] Airlines based in Greece are not exclusively accountable for international air transport emissions; thus, the latter sub-sector could theoretically be omitted. Nonetheless, international aviation emissions are taken into account in the overall European climate target for 2030 (namely, to reduce net greenhouse gas emissions by at least 55% compared to 1990), which coincides with the national target reflected in Greece's Climate Law; therefore, on the grounds of consistency, these emissions were included in the sectoral budget of transport.

refineries; emissions from thermal cracking of heavy hydrocarbons (1.A.1.b); emissions from the combustion of gas during petroleum and gas extraction in the Prinos oil field (1.A.1.c); emissions from the use of various fuels for the production of steam and heat used in all categories of industrial processes (1A.2); and, finally, all emissions not related to energy production but resulting from chemical, physical or biological reactions during industrial processes, as well as from the use of industrial products (2)[7].

Buildings: Includes emissions resulting from the use of various fuels for space and water heating in the residential (1.A.4.b) and tertiary sectors (1.A.4.a)[8].

Agriculture & Livestock: Includes emissions from agricultural and livestock activities such as rice cultivation, fertilization and nitrogen removal from agricultural land, crop residue burning, enteric fermentation and animal manure management (3), as well as emissions from combustion processes to meet heating needs (for instance in greenhouses) or to operate agricultural machinery (1.A.4.c).

Waste: Includes emissions from the landfilling of solid domestic and industrial waste, as well as solid waste excavation, construction and demolition; clinical waste incineration; domestic and industrial wastewater treatment; and biological waste treatment (5).

Land use, land use change and forestry (LULUCF) activities: Includes emissions and removals from forests, crops, grasslands and other lands, wetlands and settlements (4).

The mapping between the above sectors and the categories of the annual GHG emission inventory reports submitted to the UNFCCC is displayed in Table 1.

Table 1: Sector definition based on GHG inventory report categories

Sector	Inventory Report Categories (UNFCCC)
Electricity & Heat Production	1.A.1.a - Public Electricity & Heat Production 1.B - Fugitive Emissions from Fuels
Transport	1.A.3 – Transport 1.D.1.a - International Aviation 1.A.5 – Other Other Sectors
Industry	1.A.1.b - Petroleum Refining 1.A.1.c - Manufacture of Solid Fuels & Other Energy Industries 1.A.2 - Manufacturing Industries & Construction 2 - Industrial Processes and Product Use (IPPU)
Buildings	1.A.4.b – Residential 1.A.4.a - Commercial/Institutional
Agriculture & Livestock	1.A.4.c - Agriculture/Forestry/Fishing 3 – Agriculture
Waste	5 - Waste Management
LULUCF	4 - Land Use, Land-Use Change and Forestry

[7] This category (Industrial Processes and Product Use) includes the use of fluorinated gases (F-gases) in sectors other than industry, and in particular in buildings, transport and electricity transmission. For the purpose of methodological simplicity, emissions from the use of F-gases in other sectors were not calculated separately. Specifically, the NECP does not provide distinct information on fluorinated gases that would allow the 2025 and 2030 projections to be allocated to different sectors without a multitude of assumptions.

[8] It should be noted that a large part of the electricity produced is consumed in buildings. However, the corresponding emissions were not included in this sector for reasons similar to those that prompted the non-distinction of fluorinated gas emissions by end-use sector.

Methodological Approach

Beyond the Climate Law's provisions, no specific methodology has been established for calculating sectoral carbon budgets. According to Article 7, "*the starting point for the calculation of the quantity of emissions for each five-year period is the average of the sectoral emissions of the last three (3) years preceding the year of preparation of said budget*"; moreover, "*the quantity of emissions of the last year of each five-year period is calculated based on the climate targets for the years 2030, 2040 and 2050*".

Several methodological issues are identified in these provisions. First, data on individual sectors for the year preceding the year of budget preparation are not available[9]. Second, using median emissions to estimate the starting point of calculations (2024 here) is of questionable accuracy[10]. Third, the climate target for 2030 specified in the Climate Law (reduction of net anthropogenic GHG emissions by at least 55%) concerns total emissions rather than individual sectors.

In contrast, the NECP does include detailed projections -based on detailed mathematical models- regarding the evolution of emissions from all sectors of the economy. Moreover, according to the Regulation on the Governance of the Energy Union[11], Member States are obliged to revise their NECPs in 2029. Thus, the time cycle for NECP revision is in line with that of both the first (2026-2030) and subsequent (2031-2035) five-year carbon budgets.

Therefore, in the present analysis, we opted to use the projections of the latest publicly available version of the NECP[4] to calculate the first carbon budgets (2026-2030). In fact, at an institutional level, we recommend that Article 7 of the Climate Law be amended to denote that each sector's emissions in both the starting and ending year of each five-year period match those projected by the latest available NECP.

NECP Data

In order to calculate the seven sectoral carbon budgets for the period 2026-2030 corresponding to the latest publicly available version of the NECP[4], we employed all relevant projections for the years 2025 and 2030. In particular, the NECP presents:

I. The evolution of -exclusively- carbon dioxide (CO_2) emissions from different sectors of the economy (electricity production; industry; residential, tertiary and agricultural sectors; transport, including all domestic transport as well as international aviation; and LULUCF); moreover, total emissions of all GHGs except CO_2; finally, emissions avoided via the implementation of carbon capture and storage

[9] The calculation of the first budgets (2026-2030 period) has to be carried out in 2024; however, the official 2023 data which are required for the application of the law's provision (Article 7) will be available in April 2025 (deadline for the annual inventory report).

[10] In the case of the electricity production sector, applying this rule leads to emission projections for 2024 that largely exceed this (full) year's estimated emissions.

[11] Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, https://shorturl.at/CvKkB.

(CCS) and carbon capture and utilization (CCU) technologies in industry (Table 30, p. 436).

II. The evolution of all GHG emissions from the agricultural sector (Table 11, p. 209).

III. The evolution of all GHG emissions from the waste management sector (Table 15, p. 228).

To ensure clarity, the data from Tables 30, 11 and 15 of the NECP, which were used in the analysis to calculate the seven sectoral carbon budgets for the period 2026-2030, are also reproduced below (Table 2).

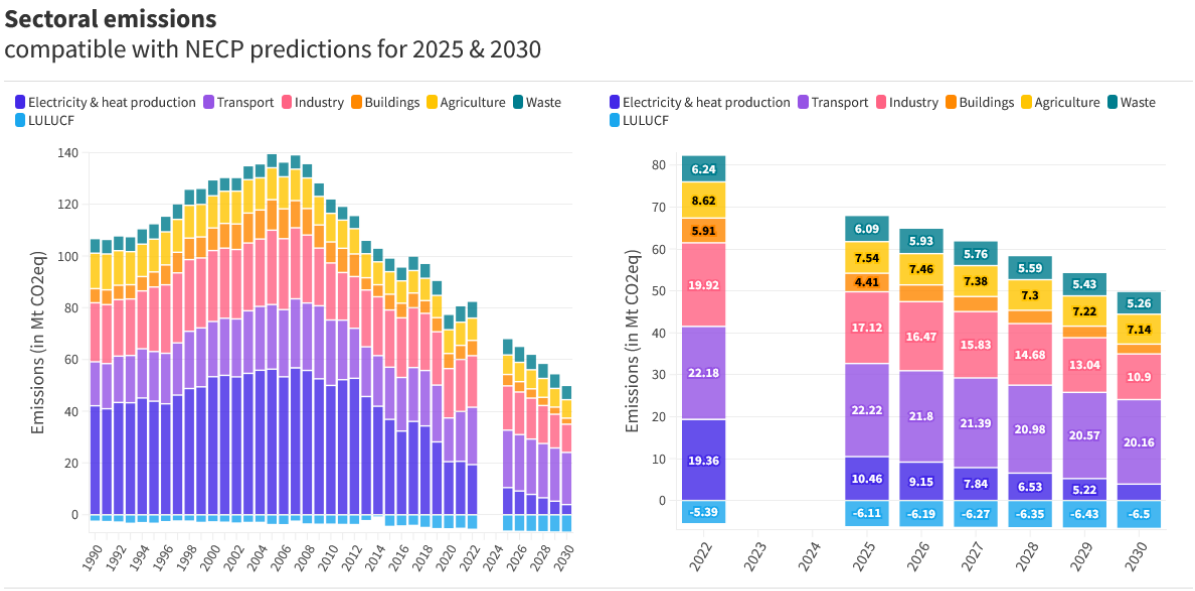
Table 2: NECP data used in this analysis

Sector	Emissions (Mt CO_{2eq})		
	2022	2025	2030
NECP, Table 30, p. 436			
Electricity production	18.8	10.2	3.9
Industry	15.1	13.9	11.3
Residential	5.0	3.8	2.1
Tertiary	0.9	0.7	0.4
Agriculture	0.6	0.2	0.2
Transport (Domestic transport & international aviation)	21.6	21.6	19.6
Non-CO_2 GHG emissions	20.3	17.6	15.4
Emissions and carbon sequestration in land use, land use change and forestry (LULUCF)	-5.5	-6.2	-6.6
Carbon capture in Industry			3.2
CO_2 Use			0.2
CO_2 Storage			3.0
NECP, Table 11, p. 209			
Total GHG emission from agriculture	7.980	7.544	7.139
NECP, Table 15, p. 228			
Total GHG emission from waste management	6.240	6.091	5.262

Evidently, the available NECP projections (Table 2) do not correspond one-to-one to the emission categories of the annual inventories that define the seven sectoral carbon budgets, as presented in the corresponding section (Table 1). The mapping of the emission categories in Table 1 to the available NECP projections in Table 2 for the period 2025-2030 was based on the methodology and assumptions presented in the Annex. Applying the mapping in Table 1 for the seven sectors and using official data from the annual inventories also allowed for the calculation of each sector's trajectory from 1990 to 2022, namely the last year for which official data are available.

Results

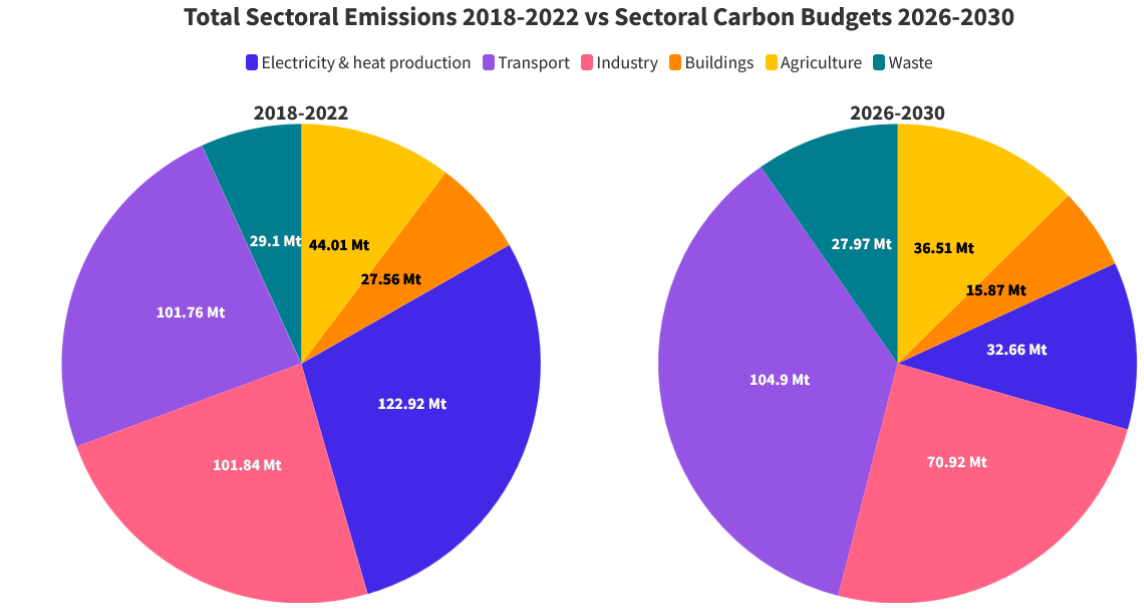
The evolution of the seven sectors' actual emissions from 1990 to 2022, as well as the projections for the period 2025-2030 (consistent with the NECP) are presented in Figure 1.



Sources: UNFCCC annual reports, NECP, own calculations • Industrial CCS is included

***Figure 1**: Evolution of GHG emissions for the seven sectors as defined in Table 1, consistent with the NECP's projections for 2025 and 2030. Left: 1990-2030; Right: 2022-2030.*

The sum of each sector's emissions for all years within the period 2026-2030 provides the corresponding sectoral carbon budget. All seven budgets are presented in Figure 2, along with -for comparison purposes- each sector's cumulative emissions for the past five years (2018-2022), based on annual inventories' official data.



Sources: UNFCCC annual reports, NECP, own calculations • Industrial CCS is included

***Figure 2**: Left: Total sectoral emissions for the five-year period 2018-2022; Right: Sectoral carbon budgets for the five-year period 2026-2030, consistent with NECP projections.*

Based on the results of the calculations, the following are observed:

1. Emissions from the electricity and heat production sector nearly sub-quadruple, from approximately 123 million tons CO_{2eq} in the five-year period 2018-2022 to less than 33 million tons CO_{2eq} in the five-year period 2026-2030. This impressive progress is largely due to the phase-out of lignite, which, according to the NECP, will be completed by 2028. In addition, the NECP foresees a drastic reduction of petroleum use in the islands, as their interconnection with the mainland grid is planned to be completed by 2029. Furthermore, the NECP foresees a significant reduction in the use of fossil gas in electricity production, along with an increase in the penetration of Renewable Energy Sources (RES).
2. The reduction of emissions in the industrial sector is of particular importance. Over the 2018-2022 five-year period, this sector constituted Greece's second largest polluter, emitting nearly 102 million tons CO_{2eq}. Furthermore, according to the latest official European Emissions Trading System (ETS) data, between 2013 (start of the 3rd phase of the ETS) and 2023, the carbon footprint of Greek industry merely dropped by 9%, while, over the same period, the electricity & heat production sector's emissions were reduced by nearly 2/3 (-65.8%)[12]. Nevertheless, as a result of both the commitments made by the country's major industries and several projects which are underway[13,14,15,16] (also reflected in the NECP), emissions from this sector in the five-year period 2026-2030 are projected to decrease by more than 30%; consequently, the corresponding sectoral budget will not exceed 71 million tons CO_{2eq}. These commitments mark the end of a long period of stagnation in emissions from the Greek industry.
3. The buildings sector shows the third highest emission reduction behind the electricity production and industry sectors and the second highest percentage reduction behind the electricity production sector. The corresponding sectoral budget for 2026-2030 (15.9 Mt CO_{2eq}) shows a 42% decrease compared to the cumulative emissions recorded in the five-year period 2018-2022 (27.6 Mt CO_{2eq}). This improvement can be attributed to two reasons. Firstly, the annual rate of building renovation has increased, and, according to the NECP, is expected to reach an average of 70,000 residences over the period 2025-2030. Secondly, the use of petroleum for building heating has been significantly reduced (-78% in 2030 compared to 2022 regarding the residential sector) and largely substituted (by nearly 50%) by heating electrification, mainly through heat pumps.
4. In stark contrast to the electricity production, industry and buildings sectors, the emissions from the transport sector follow an upward trend; this sector's cumulative emissions are expected to increase from 102 million tons CO_{2eq} in 2018-2022 to nearly 105 million tons CO_{2eq} in 2026-2030. Thus, the transport sector will become the most polluting sector in Greece -by a wide margin from the second highest polluter, namely, industry- and account for nearly 41% of the country's total carbon budget during 2026-2030. This negative outcome can be attributed to the inadequacy of the relevant measures foreseen

[12]The Green Tank, 2024. "Trends in the Emissions Trading System in the EU and in Greece 2005-2023", https://shorturl.at/vGZp1.

[13] European Commission, Innovation Fund, IFESTOS Program, https://bit.ly/4b2ick4.

[14] Holcim Climate Report 2023, https://bit.ly/4eD84QE.

[15] European Commission, Innovation Fund, IRIS Program, https://bit.ly/45wfPok.

[16] European Commission, Prinos Project of Common Interest (PCI), https://bit.ly/4eKPlmd.

in the NECP. More specifically, land transport emissions are expected to decrease by 10% in 2030 compared to 2022; nonetheless, this reduction does not sufficiently compensate for the additional emissions from maritime and aviation transport due to increased activity in these sub-sectors. As a result, the overall carbon footprint of the sector will increase.

5. Emissions from the waste sector are stagnant, decreasing by just 1.1 Mt CO_{2eq} in the period 2026-2030 compared to the five-year period 2018-2022. Therefore, the respective sectoral carbon budget for 2026-2030 will remain at 28 Mt CO_{2eq}.
6. The agriculture-livestock sector shows relatively little progress, with emissions decreasing by 17% (from 44 Mt CO_{2eq} in 2018-2022 to 36.5 Mt CO_{2eq} in 2026-2030). This is likely due to the vagueness of the carbon footprint reduction measures reflected in the NECP, particularly regarding the livestock sector; specifically, the NECP highlights the uniqueness of the aforementioned sector, citing that "*further analysis of the policy measures and technologies needed to reduce emissions*" is required.
7. The LULUCF sector will contribute to the country's climate targets by absorbing a total of 31.7 Mt CO_{2eq} over the 2026-2030 period, an increase of 11% compared to the 2018-2022 period (25.4 Mt CO_{2eq}).

In summary, it is estimated that Greece will cumulatively emit 257 million tons CO_{2eq} (including net LULUCF removals) over the five-year period 2026-2030; this represents a reduction of 145 million tons (or -36%) compared to the 2018-2022 period, namely, the last five-year period for which official data are available.

The vast majority (83%) of this reduction will be effected by the sectors of electricity & heat production (-90 Mt CO_{2eq}) and industry (-31 Mt CO_{2eq}).

The buildings sector is projected to contribute at a lower rate to this reduction with -11.7 Mt CO_{2eq}. Even smaller contributions will be made by the agriculture-livestock sector (-7.5 Mt CO_{2eq}) and LULUCF (-6.3 Mt CO_{2eq}), while the decline in emissions from the waste management sector are considered negligible (-1.1 Mt CO_{2eq}).

In contrast, pollution coming from the transport sector is expected to increase (+3.1 Mt CO_{2eq}); with emissions amounting to 105 Mt CO_{2eq} over the five-year period 2026-2030, this sector will be -by far- Greece's highest polluter and account for nearly 41% of the country's total carbon budget.

Conclusions – Recommendations

The calculation of sectoral carbon budgets carried out in this analysis highlights the significant climate progress the country is projected to make in the near future, according to the latest publicly available version of its NECP4. The electricity production sector will predominantly drive this progress, with lignite being completely phased out in the coming years. Equally noteworthy is the reduction of the industrial sector's carbon footprint by 30%. The sustainability commitments of the country's largest industries -translated into projects to be completed by 2030- indicate that Greek industry has acknowledged that 'greening' industrial processes best guarantees its future competitiveness.

The improvement of the country's overall carbon footprint would be much greater had the NECP provided adequate measures to reduce emissions in the transport sector. Apart from this sector's negative climate performance over the 2026-2030 period, the projected stagnation of its carbon footprint will also have an equally negative socio-economic impact. In particular, with a new and distinct Emissions Trading Scheme (ETS-2) expected to be launched in 2027, the cost of fossil fuel use in the buildings and road transport sectors will rise. Therefore, and depending on the evolution of the carbon price in ETS-2, if the use of fossil fuels in road transport is not reduced more drastically in the coming years, the consequences for citizens -and more broadly for the national economy- could be greatly damaging. Thus, it is recommended that measures and policies for the transport sector be reviewed on the basis of measures to be implemented by Member States that have set the climate ambition bar considerably higher. For instance, Spain plans to reduce its transport emissions from 73.9 Mt CO_{2eq} in 2020 to 59.6 Mt CO_{2eq} in 2030 (-19.3%)[17], in stark contrast to Greece, which is projected to increase its emissions by 21.7% in 2030 compared to 2020 (from 16.1 Mt CO_{2eq} in 2020 to 19.6 Mt CO_{2eq} in 2030). Similarly, Portugal aims to reduce emissions from transport by 40% in 2030 compared to 2005[18], while the corresponding Greek target is 19%.

With regards to the waste sector, we recommend that the polluting option of incineration for waste management be eradicated. Incineration is an expensive option, accompanied by emissions of greenhouse and other gases; the latter, if not systematically monitored and limited by the use of appropriate anti-pollution technologies, can be deeply harmful to human health. Indeed, the European Commission's Guidelines for NECPs[19] regarding waste management do not include incineration among the recommended measures and policies to reduce methane emissions. Instead, guidelines emphasize source separation and anaerobic digestion with biogas recovery.

Furthermore, a national plan for the reduction of methane emissions from the livestock sector should be prepared in cooperation with all stakeholders. The implementation of these recommendations is important for the country to, inter alia, meet its commitments under the Global Methane Pledge[20]; the latter has set a target of reducing global methane emissions by 30% in 2030 compared to 2020 levels.

Finally, at an institutional level, it is recommended that Article 7 of Greece's Climate Law be amended to denote that each sector's emissions in both the starting and ending year of each five-year period match those projected by the latest available NECP.

[17] Spain's NECP, 2024, https://bit.ly/3ATdNDZ.

[18] Portugal's NECP (draft) 2023, https://bit.ly/3Ogva4S.

[19] European Commission, 2022. "Commission notice on the guidance to Member States for the update of the 2021-2030 national energy and climate plans", https://shorturl.at/cpIMA.

[20] https://www.globalmethanepledge.org/.

Annex: Methodology - Assumptions

In order to estimate the emissions of each UNFCCC-based emission category (Table 1, right column), which are then used to calculate the sectoral carbon budgets based on NECP projections for 2025 and 2030 (Table 2), the following methodology was applied:

I. The share of non-CO_2 emissions in all sectors included in the sectoral budget calculations for 2025 and 2030 is assumed to be the same as in 2022. This assumption is used for the estimation of:

   A. total (CO_2 & non-CO_2) emissions of each sector from the corresponding CO_2 emissions of the same sectors as reflected in the NECP.

   B. non-CO_2 emissions of industry (mainly fluorinated gases). First, the non-CO_2 emission estimates from all Table 2 sectors are summed, with the exception of industry. This sum is then subtracted from the total non-CO_2 emissions listed in the NECP for 2025 and 2030, giving an estimate of non-CO_2 emissions from industry that is consistent with NECP projections.

II. Fugitive emissions from lignite mining, which are required for the calculation of the carbon budget of the electricity and heat production sector, are assumed to be half those of 2022 (-50%) in 2025. This assumption is based on the lignite use reduction recorded from 2022 to 2024. The official data by the Independent Power Transmission Operator (IPTO) reveal a 48.8% decrease between the first 10 months of 2024 and the respective period of 2022. Moreover, given that in 2030 the lignite phase-out will be completed, that year's fugitive emissions are assumed to be null.

III. Following the one-to-one mapping between all emission categories presented in Table 1 and NECP projections (Table 2) for the years 2025 and 2030, each sector's emissions are estimated for each intermediate year, assuming that the change in emissions between 2025 and 2030 follows a linear course. Sectoral budgets are then calculated by summing up the annual emission projections.

IV. By combining the schedules for the construction of CCUS infrastructure -included in the NECP and co-financed by the Innovation Fund of the European Emission Trading Scheme (ETS)- with the respective schedules of the industries involved, 0.5 Mt, 1.5 Mt and 3.0 Mt CO_{2eq} (for 2028, 2029 and 2030, respectively) are subtracted from the carbon budget of the industry sector.

V. The 0.2 Mt emissions coming from synthetic fuel production (CCU) in 2030, as projected in the NECP, are excluded from the calculations; it is assumed that these emissions are either already incorporated in the transport sector projections or that synthetic fuels produced via CCU are not used.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