



Towards EU climate neutrality

Progress, policy gaps and opportunities

Chapter 2: Methodology

Assessment Report 2024

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2 Methodology

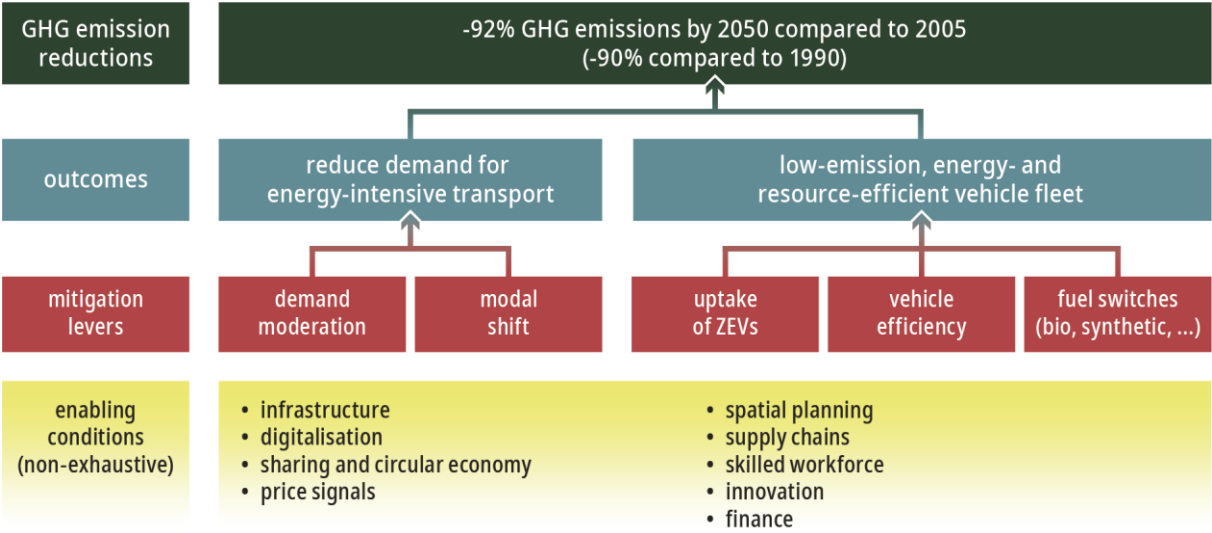
2.1 Assessment framework

Achieving deep GHG emission reductions across all sectors of the economy will require a combination of different solutions – both demand- and supply-focused – that are often interlinked, as well as a broad supporting framework to facilitate those solutions. To structure the progress and policy consistency assessment, the Advisory Board has developed a framework that structures these different elements into:

- **GHG emission reductions**, which represent the GHG emission reductions (or, in the LULUCF sector, net emission removals) that would need to be achieved in each sector by 2050 as a contribution to the economy-wide climate neutrality objective;
- **outcomes**, the main results that need to be obtained both on the demand side and on the supply side, to drive GHG emission reductions in line with the required GHG emission reductions;
- **mitigation levers**, which are physical changes that, all other things being equal, are certain to contribute to the achievement of the outcomes;
- **enabling conditions**, either physical or non-physical changes that do not directly contribute to the achievement of the outcomes but can facilitate (and are in some cases crucial for) the activation of one or more mitigation levers.

This approach – which was inspired by the UK Climate Change Committee’s monitoring framework (UK CCC, 2022) – is illustrated in Figure 5 (based on the assessment framework for the transport sector).

Figure 5 Illustration of the assessment framework based on its application to the transport sector



Source: Advisory Board (2024).

The GHG emission reductions required by 2050 for each sector are primarily based on the European Commission’s scenarios that underpin the EU’s 2030 and 2050 climate objectives, or – where available – on specific sectoral targets in official EU documents. For example, – 90 % by 2050 compared with 1990 for the transport sector is based on the European Green Deal communication (EC, 2019c).

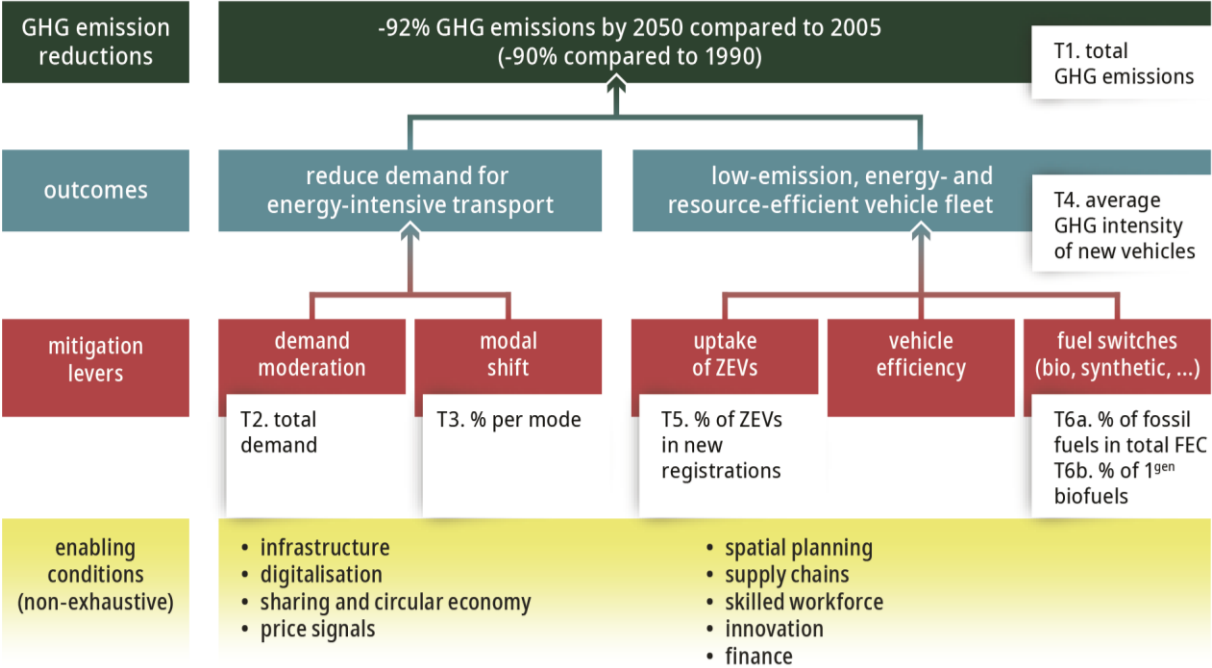
The outcomes, mitigation levers and enabling conditions draw on the mitigation pathways presented in the Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report (AR6) (IPCC, 2022d), complemented by insights from similar assessment frameworks developed by national advisory bodies in Europe.

2.2 Methodology for the progress assessment

Progress tracking based on indicators

To assess whether the EU is on track towards its climate objectives, the Advisory Board used an indicator-based approach which was inspired by similar existing assessments (Boehm et al., 2023, ECNO, 2023, Velten et al., 2021). Several indicators were selected to track progress on overall GHG emission reductions, outcomes, mitigation levers and some (but not all) of the enabling conditions (shown in Figure 6). This selection was made taking into account (i) the need for completeness (covering the required GHG emission reductions, outcomes and most of the mitigation levers), (ii) representativeness (indicators that representatively reflect progress on the related contribution, outcome, mitigation lever or enabling condition) and (iii) data availability. The relationship between the assessment framework described above and the indicators to track progress is illustrated in Figure 6, based on the assessment framework for the transport sector. Indicators are labelled based on the title of their respective chapters (e.g. O1 to O3 for indicators discussed under Chapter 3 ‘Overall progress’, T1 to T6 for indicators discussed under Chapter 6 ‘Transport’, etc.).

Figure 6 Illustration of indicators (white boxes) for tracking progress based on their application to the transport sector



Source: Advisory Board (2024).

Comparing historical progress with linear trajectories towards 2030 and 2050 benchmarks

For each of the selected indicators, it was assessed whether historical developments are progressing at a sufficient pace to meet specific benchmarks for 2030 and 2050. More specifically, their average annual rate of change in the past (e.g. the average annual GHG emission reductions in megatonnes of CO_{2e}), or the average annual increase in solar PV capacities in gigawatts (GW) was compared with the required average annual rate of change to meet benchmarks set for 2030 and 2050 (which implies linear progress towards those benchmarks).

Historical progress was measured based on data from 2005 onwards, or – where 2005 data was not available – from the most recent year for which data was available. Tracking progress on GHG emission reductions is based on the average annual reduction between 2005 and 2022. For other indicators, recent historical progress was calculated as the average annual rate of change for the last 5-year period for which data is available. In some cases, an earlier 5-year period was taken, to exclude years with outlier values. This is particularly the case for indicators in the transport sector, which showed non-representative values in 2020 and 2021 due to the COVID-19 pandemic. Historical data is primarily based on official databases, including Eurostat, the EU GHG inventories and data from the EEA. In some cases, this was complemented with data from sectoral federations.

The 2030 and 2050 benchmarks for each indicator were based on a cascading set of possible sources (in descending order of priority):

1. legally binding objectives, which are embedded in EU legislation,
2. political objectives, which are objectives not embedded in EU legislation but politically endorsed by EU institutions such as the European Council, the Council of the European Union or the European Parliament,
3. proposed objectives, which are objectives put forward by the European Commission (either in legislative proposals or in strategic documents) but are not (yet) endorsed or approved by the other EU institutions,
4. outputs of the European Commission's scenarios that underpin the EU climate objectives, notably the scenarios underpinning the Fit for 55 package (EC, 2021v), the scenarios underpinning the 2020 Climate Target Plan (EC, 2020s) ⁽¹⁾, and the scenarios from the in-depth assessment accompanying the 2018 LTS 'A Clean Planet for all' (EC, 2018e) ⁽²⁾; here, priority was given to the most recent scenarios.

Five categories of progress

The final step in the progress assessment methodology is to compare the ratio of the required rates of change (based on linear trajectories towards each chosen benchmark) to the recent historical rate of change ⁽³⁾. This ratio is referred to as the '**required change**'. Depending on this required change, each indicator is assigned to one of five categories of progress, as shown in Table 1.

⁽¹⁾ For the Fit for 55 and Climate Target Plan scenarios, the MIX scenario was used as a source for the benchmarks. For most indicators, the difference in the outputs for 2030 across the different policy scenarios is very limited.

⁽²⁾ The 2018 in-depth analysis is based on the EU-28. Where necessary, values were recalibrated for the EU-27 based on the EU-27/EU-28 ratio in 2015.

⁽³⁾ For indicators that are heading in the wrong direction, the final ratio was inverted (recent historical rate of change / required rate of change) to better represent the magnitude of the divergence between the historical and required future rates of change. The ratio was also inverted for some indicators that put an upward pressure on GHG emissions, but whose benchmarks still allowed for a positive rate of change in the future, to better reflect progress. For example, under the European Commission's scenarios, transport demand is projected to increase further in the future, but at a much slower rate

Table 1 Categories of progress

On track	The required change is ≤ 1 .
Almost on track	The required change is between 1 and 1.5.
Somewhat off track	The required change is between 1.5 and 2.
Considerably off track	The required change is ≥ 2 .
Wrong Direction	The required change is < 0 .

Note: The required change is calculated as the ratio of the required rates of change (based on linear trajectories towards each chosen benchmark) to the recent historical rate of change. For indicators that are heading in the wrong direction or that put upward pressure on GHG emissions on GHG emissions but whose benchmarks still allow a positive rate of change in the future, the ratio was inverted to calculate the rate of change (see footnote (5) for more details).

Source: Advisory Board (2024).

This assessment is based on both the required change until 2030 and the required change between 2031 and 2050. The progress category for 2031–2050 is by default limited to the category assigned to the period up to 2030. If, for example, progress is considerably off track towards the 2030 benchmark, but adequate to be consistent with the trajectory between 2031 and 2050 (because the benchmarks expect most progress up to 2030, and a slowdown after that), the indicator will be considered considerably off track for 2031–2050 too.

An overview of progress in the six different sectors covered by this report, including the categorisation of progress for each of the selected indicators, is included in a summary table at the end of each chapter. A full overview of the sources and assumptions underlying the progress assessment is included in Annex I.

Limitations of the progress assessment methodology

In practice, no legal, political or proposed objectives are in place for most indicators, and the benchmarks are therefore based on the outputs of the European Commission’s scenarios that underpin the EU’s overall climate objectives. The Advisory Board acknowledges that the detailed outputs of these scenarios are not intended as specific objectives that need to be achieved, and that there are several possible pathways towards achieving the climate objectives for 2030 and 2050. However, it is nevertheless useful to compare progress with these scenario outputs because the non-attainment of the benchmark for one indicator would require outperformance in other indicators to attain the overall objective. If most indicators within a sector are off track compared with these scenarios, it could be a strong indication that the sector in general is not progressing in line with the EU’s overall climate objectives.

It is also important to note that the overall methodology to track progress is based on benchmarks that are set by EU institutions and the European Commission in particular, without questioning the validity or adequacy of those benchmarks.

than the observed rate of change in 2015–2019. Under the standard methodology, the required change would be ≤ 1 and therefore the indicator would be categorised as ‘on track’. To prevent this unrepresentative outcome, for these types of indicators the ratio to determine the required rate of change was inverted.

Finally, the progress assessment is based on linear trajectories towards the benchmarks up to 2030, and between the benchmarks for 2030 and 2050. Using such linear trajectories is a simplification which does not consider the following.

- The uptake of new technologies is non-linear. It is usually characterised by an S-shaped curve, when uptake is slow at the beginning and then accelerates strongly, to slow down again as the market saturates.
- A non-linear GHG reduction trajectory would need to be followed between 2030 and 2050, to be consistent with the 90–95 % reduction objective for 2040 as recommended by the Advisory Board (ESABCC, 2023b). To reflect this, the progress assessment for some indicators ⁽⁴⁾ will also refer to the progress required to be consistent with the scenarios that underpin the recommended 90–95 % reduction objective for 2040. When this is the case, it will be explicitly specified throughout the report.

2.3 Methodology for the policy consistency assessments

Focus on internal and horizontal policy consistency

Policy consistency is a broad concept that can be interpreted in different ways, at different levels and across different dimensions. At a minimal level, it implies that there are no contradictions or counteractive signals in the policy framework, implying a neutral coexistence between different policies and policy objectives. At a more comprehensive level, it could also refer to the presence of policies that are mutually reinforcing, therefore resulting in synergies, which is also often referred to as policy coherence (Evans et al., 2023; Lenschow et al., 2018; Rogge and Reichardt, 2016). Furthermore, policy consistency can be assessed internally within a specific policy domain (e.g. whether EU climate policies are consistent with its climate objectives), horizontally across different policy domains (e.g. whether EU transport policies are consistent with the EU climate objectives) and vertically across different governance levels (e.g. whether national policies are consistent with the EU climate objectives) (Evans et al., 2023).

The scope of the policy consistency assessment for this report is summarised in Table 2. This assessment is focused on identifying potentially counterproductive EU policies, which hinder progress towards its climate objectives, and on assessing the suitability of EU policies to achieve those objectives, but does not go as far as assessing synergies between different policies (for lack of available evidence in existing literature). Furthermore, it focuses on consistency across the internal and horizontal dimensions, and therefore includes an assessment of EU policies in other policy areas (e.g. agriculture, transport, energy) that can have a substantial impact on GHG emissions. The consistency of specific national policies ('vertical consistency') with the EU climate objectives is beyond the scope of this report.

⁽⁴⁾ Depending on availability and comparability of data.

Table 2 Scope of the policy consistency assessment

	Internal	Horizontal	Vertical
<i>Lack of conflicts</i>	EU climate policies do not conflict with the EU climate objectives	EU non-climate policies do not conflict with the EU climate objectives	(Sub-)national policies do not conflict with EU climate objectives
<i>Adequacy of policies</i>	EU climate policies are adequate to deliver on the EU climate objectives	EU non-climate policies are adequate to deliver on the EU climate objectives	(Sub-)national policies are adequate to deliver on the EU climate objectives
<i>Synergies between policies</i>	EU climate policies are mutually reinforcing	EU climate and non-climate policies are mutually reinforcing	EU and (sub-)national policies are mutually reinforcing

Notes: The scope of this report is included in the green box. The grey text illustrates aspects of policy consistency that are not included in the scope of this report.

Source: Advisory Board (2024), adapted from Evans et al. (2023).

Consistency assessment based on the overall assessment framework

The methodology to assess policy consistency is based on the overall assessment framework described in Section 2.1. In short, the Advisory Board has assessed to what extent EU policies are (or can be expected to be) sufficiently driving the various mitigation levers and enabling conditions to achieve the outcomes and eventually the required GHG emission reductions. The aim of this assessment is to identify:

- **policy gaps**, when there are no EU policies in place to drive the required change in the specific mitigation lever or enabling conditions;
- **policy inconsistencies**, understood as cases where EU policies are providing incentives that counteract the required change in the relevant mitigation levers or enabling conditions;
- **ambition gaps**, which means there are EU policies in place to target the relevant mitigation lever or enabling condition, but their overall ambition level – in terms of either their objectives or their delivery mechanisms – is considered to be insufficient to achieve the outcomes;
- **implementation gaps**, which means there are ambitious EU policies in place, but implementation at the EU, national or subnational level has been ineffective so far.

Focus on existing and new key EU policies

The consistency assessment was carried out both for existing EU policies that have already been in force for several years (and therefore can be assessed *ex post* to some extent) and for new EU policies that have been recently adopted or are still under development (and of which therefore only an *ex ante* assessment is possible). The latter category includes the various new policies and revisions of existing legislation under the Fit for 55 package (EC, 2021m), other relevant strategies under the European Green Deal (e.g. the Farm to Fork Strategy (EC, 2020f), the Sustainable and Smart Mobility Strategy (EC, 2020k), the CEAP 2 (EC, 2020g)), REPowerEU (EC, 2022p) and the Green Deal Industrial Plan (EC, 2023u). As many of these policies are very recent (or even not yet fully adopted), the assessment of their consistency is preliminary.

Given the wide scope of this report, the assessment focuses on the key EU policies that the Advisory Board considers to be most relevant to the EU climate objectives. Going back to our building block

framework in Figure 5, it also focuses on key mitigation levers and some but not all enabling conditions. Whereas this does not constitute an exhaustive, comprehensive analysis of all EU policies that might affect the climate transition, the approach should provide a reasonably broad and robust overview of policy consistency at the EU level.

Assessment based on existing literature and independent assessment reports

The Advisory Board has based its assessment primarily on existing studies and reports that assess the consistency of EU policies with its 2030 and 2050 climate objectives. A wide variety of literature was consulted to this end, based on the following hierarchy:

1. scientific, peer-reviewed literature, with an effort to include evidence from recent publications (2019 or after),
2. reports and assessments by independent official institutions and organisations, including European organisations such as the ECA, the EEA, Science Advice for Policy by European Academies (SAPEA), the European Academies Science Advisory Council (EASAC), and international organisations including the IEA and the Organisation for Economic Co-operation and Development (OECD),
3. the European Commission's own data and impact assessments, including reports and studies by the JRC and the European University Institute/Florence School of Regulation,
4. reports and studies written or commissioned by other, independent research institutes and think tanks.

Although a wide range of literature was consulted to underpin the consistency assessment, it does not constitute a full review of all relevant available literature on the wide range of topics covered in this report. The Advisory Board has striven to give its assessment a broad scientific foundation by prioritising sources that are also synthesis assessments based on extensive literature reviews, including IPCC AR6, and by combining the joint expertise of its 15 members.



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