

Expertenrat
für Klimafragen

Report on the review of the GHG- Projection-Data 2024 – Summary

Special Report in accordance with Section 12 (4) KSG



Summary

On March 15, 2024, the German Environment Agency published the 2024 projection data. On April 19, 2024, the Federal Government commissioned the Council of Experts on Climate Change with a special report to review the data. The subject of the special report is an assessment of the 2024 projection data's compliance with or failure to meet the targets for the period up to 2030 in accordance with the amended Climate Change Act (KSG)¹ within the meaning of § 12 (1) KSG.

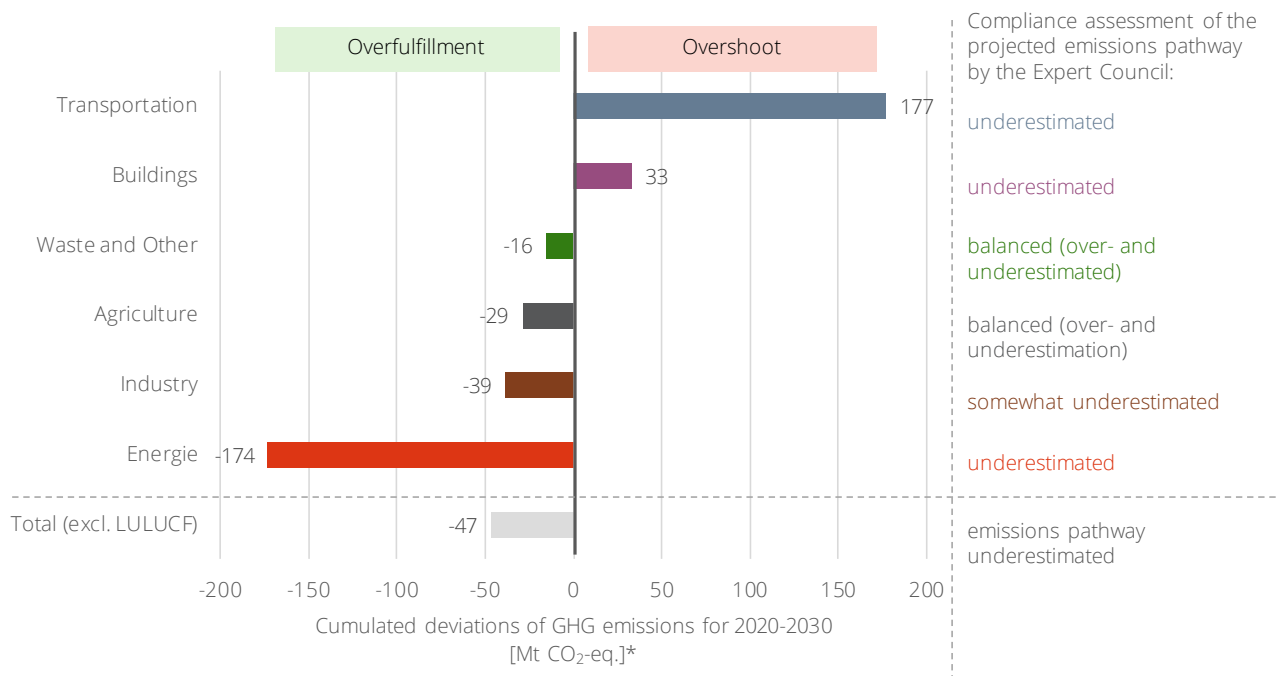
Presentation and characterisation of the 2024 projection data for the period 2021-2030 (excluding LULUCF)

The overarching target of a 65 % reduction in annual greenhouse gas (GHG) emissions in 2030 compared to 1990 (§ 3 (1) sentence 1 KSG), equivalent to 438 Mt CO₂-eq. in 2030, would be narrowly missed at 455 Mt CO₂-eq. according to the 2024 projection data. However, according to the 2024 projection data, the overall budget for GHG emissions specified in § 4 (1) KSG would just be met in the period from 2021-2030 with a buffer of 47 Mt CO₂-eq. (see Figure Z 1). The missed targets in the transport and buildings sectors would be compensated for by overfulfilments in the other sectors, particularly the energy sector and, to a lesser extent, industry. In the agriculture and waste management sectors, methodological changes that have led to an adjustment of emission factors make a significant contribution to target achievement. The LULUCF sector, which is not part of the budget analysis, would fail to meet the target for 2030 set out in the Climate Change Act. Similarly, according to the 2024 projection data, the national obligations under the European Effort Sharing Regulation (ESR), which primarily concern the transport and buildings sectors, would not be met from 2024 onwards.

Sensitivity calculations were conducted for various framework data and parameters as part of the creation of the 2024 projection data. These show that the realisation of lower than assumed CO₂ certificate prices in the European emissions trading system EU ETS would lead to significantly higher GHG emissions in the projection. A possible reduction in GHG emissions, on the other hand, could result from a reduced price difference between gas and coal, higher oil prices and a slower recovery of production volumes in industry. Overall, the sensitivities do not cover the full range of possible development paths, partly due to the limited number of varying influencing factors.

¹ The amendment to the Climate Change Act had not yet been ratified by the Federal President at the time this report went to press (31 May 2024). This report's assessment was written in accordance with the amendment to the Climate Change Act.

Figure Z 1: Deviations of sectoral GHG emissions according to the 2024 projection data from the cumulative permitted annual emission quantities in the period 2021-2030 by sector and in total (excluding LULUCF) and assessment of the 2024 projection data regarding over- and underestimation by the Expert Council



Own illustration. Based on the target values according to the Climate Change Act, on the historical emissions data (UBA 2024a) and the 2024 projection data (UBA 2024e). Negative values describe a cumulative overfulfillment of the permissible emission quantities 2021-2030, positive values an overshoot. *These calculated values deviate slightly from the values of the Federal Environment Agency in UBA (2024e).

Review of the 2021-2030 period in the 2024 projection data for currentness and plausibility

The projection of future emissions inherently carries uncertainties. Based on the objective of the Climate Change Act, the Expert Council concludes that the assessment of an "overfulfillment or overshoot" as required within the meaning of § 12 (1) sentence 2 KSG must be made based on at least an emissions pathway that is *equally as likely to* overfulfil as overshoot (hereinafter referred to as the 50/50 emissions pathway). No information is provided in the 2024 projection data on the probability of the indicated emissions pathway. Based on the results of its review, the Expert Council therefore formulates an assessment of whether the 50/50 emissions pathway it assumes would lie above or below the emissions pathway of the 2024 projection data. Based on the comparison of this 50/50 emission pathway with the emission pathway indicated in the 2024 projection data and the KSG target values, the Expert Council then determines aggregated for all sectors "to what extent the sum of greenhouse gas emissions according to the projection data overshoots or overfulfils the sum of the total annual emission quantities according to Annex 2 in conjunction with § 4 (2) in the years 2021 through 2030" (within the meaning of § 12 (1) sentence 2 KSG).

In this report, the Expert Council applies a multi-part review framework:

- i) Descriptive presentation of the 2024 projection data and comparison with the requirements of the Climate Change Act

- ii) Examination of the methodological approach to determining and justifying the 2024 projection data, including an assessment of the consistency and transparency of the approach
- iii) Assessment, in particular with regard to their probability of occurrence, taking special consideration of the currentness and plausibility of the underlying assumptions

The 2024 projection data were determined in a model group based on separate models for the individual sectors. After review, the Expert Council sees a high level of detail in the modelled measures, activities and GHG emissions. However, the review also identified some methodological problems regarding the consistency and transparency of the procedure.

The development of GHG emissions determined in the 2024 projection data depends heavily on the assumptions made regarding key economic framework data. Since the cut-off date for setting the assumptions at the end of October 2023, new assessments of the framework data have emerged. For example, the current economic prospect is less positive than in mid-2023, and both the expected gas and the CO₂ certificate prices in the EU ETS are at a significantly lower level. Additionally, in terms of the implementation of measures, some of the original assumptions no longer correspond to the current situation. In particular, the cuts in the Climate and Transformation Fund (KTF) were not taken into account when the 2024 projection data were prepared. Against this background, the Expert Council believes that the transformation speed from a fossil to a non-fossil capital stock as depicted in the 2024 projection data and partly based on KTF subsidies, tends to be overestimated.

Assessment of compliance with or failure to meet the targets within the meaning of § 12 (1) sentence 2 KSG

As a result, the Expert Council concludes that the 2024 projection data underestimate GHG emissions in the energy, buildings and transport sectors and - with limitations - in industry compared to an assumed 50/50 emissions pathway (see [Figure Z 2](#)). A 50/50 emissions pathway would also lead to substantial reductions in annual GHG emissions according to the Expert Council's assessment. Nevertheless, such a path would lie above that of the 2024 projection data, and the overshoot would be significant enough that the statutory target for the total annual emissions for the period 2021-2030 would probably not be met overall.

In the view of the Expert Council, this finding is equivalent to determining a failure to meet the target within the meaning of § 8 (1) sentence 1 KSG, as the Expert Council believes that it is not the result of the projection data themselves but its assessment by the Expert Council that will be decisive. Thus, for the year 2024, the Expert Council establishes the first failure to meet the target within the meaning of the provisions of the amended Climate Change Act (§ 12 (1) KSG and § 16 (2) KSG).

Last year, the Expert Council already identified a failure to miss the target when analysing the 2023 projection data (ERK 2023c). Even though, following the amendment to the Climate Change Act, this does not trigger consequences, the Expert Council sees a need for action by the Federal Government and the German Bundestag in light of the results of the analysis of the 2024 projection data considered here - despite the lack of legal consequences in the current year 2024. From the expert council's perspective, the failure to meet the target for total annual emissions in the period 2021-2030 is *more likely* than compliance with the target. Furthermore, the Expert Council notes that, according to the 2024 projection data, the targets set for Germany in the European the European Effort Sharing Regulation will be missed in total for the years 2021 to 2030. Furthermore, a significantly lower sink performance of the LULUCF sector is expected in the target year 2030.

Against this backdrop, the Expert Council recommends not waiting for another failure to meet the target, but instead to start developing further measures immediately. These measures should be suitable for ensuring both the requirement under § 8 (1) sentence 1 KSG, namely compliance with the total annual emissions for

the years 2021 to 2030, and the requirement under the ESR, namely compliance with the European emission ceilings.

Examination of the 2024 projection data for the period 2031-2050 and the LULUCF sector

For the period from 2031 onwards, the 2024 projection data indicate substantial overshoots of the targets set by the Climate Change Act. In the period from 2031 to 2040, the 2024 projection data show a significant projected overshoot of the GHG budget target by 278 Mt CO₂-eq. The target of net greenhouse gas neutrality by 2045 would also be missed by a very wide margin and not achieved by 2050 either (Figure Z 2).

However, according to the Climate Change Act, a mandatory action resulting from this realisation will not arise until 2030 at the earliest. The Expert Council does not understand why the development of a sufficient long-term GHG reduction strategy should be delayed until then.

Furthermore, according to the 2024 projection data, the LULUCF sector would significantly miss the targets set out in the German Climate Change Act. Instead of becoming an increasingly pronounced sink, the sector would at times even be a GHG source. In this regard as well, the expert council recommends promptly initiating counteractive measures.

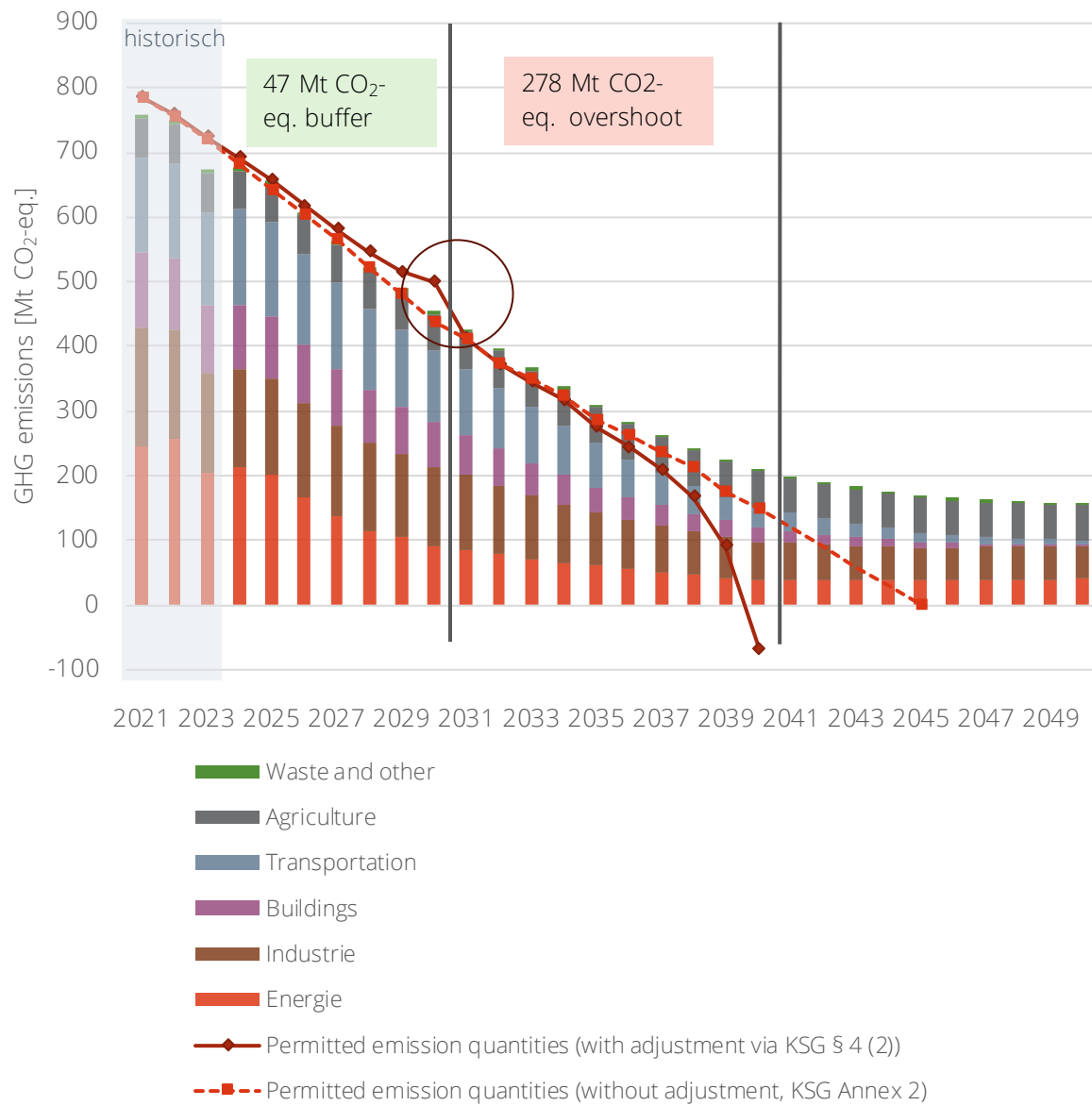
The Climate Change Act does not yet regulate whether and how any buffers or deficits from the period 2021 to 2030 will be taken into account in the targets for the subsequent period 2031 to 2040. The Expert Council recommends clarification on this matter by the Federal Government or the legislature.

Requirements for the process of creating projection data and considerations regarding governance

In line with previous findings, the Expert Council generally welcomes the change made in the amended Climate Change Act to include ex-ante data in the assessment of the necessity to trigger additional climate policy measures. However, the use of projection data raises new challenges regarding appropriate modelling. The Expert Council therefore addresses fundamental requirements for the process of creating projection data in light of the great importance they gain in the context of the amended Climate Change Act. These requirements concern issues relating to the treatment of uncertainties associated with projection calculations, aspects of the data and models used, and the governance of the process for commissioning and creating the projection data. The Expert Council sees potential for improvement in all of these areas, partly arising from the fact that the creation of projection data has so far served exclusively to fulfil reporting obligations. The Expert Council recommends that the Federal Government examine existing design options in line with the suggestions made when implementing the requirements of the new Climate Change Act.

With the amendment to the Climate Change Act, responsibility for action in the event of a failure to meet the target has been transferred to the Federal Government as a whole, without specifically designating who within the Federal Government has the "lead responsibility". The Expert Council recommends that the Federal Government promptly specify the process between determining the necessity of measures and the corresponding decision through regulation.

Figure Z 2: Development of GHG emissions (excluding LULUCF) in comparison to the annually permitted emission quantities



Own illustration. Based on the Climate Change Act, the historical emissions data (UBA 2024a) and the 2024 projection data (UBA 2024e).