

Avosetta Meeting

May 29th/30th 2026 – Copenhagen

“Instruments of Climate Mitigation and Energy Transition”

Questionnaire (Germany – Bernhard Wegener)

1

1. Political Situation

Is EU climate (and energy transition) policy generally supported or viewed critically in the respective national political context? How has national climate (and energy transition) policy developed in recent years? What are the prospects for future political developments? What are the key climate (and energy transition) policy controversies in the national political debate? What has been the role of the Courts in your national context?

1.1 EU Climate Policy: Supported or Viewed Critically?

Germany has historically been one of the EU's strongest proponents of ambitious climate policy, and broad mainstream political support for EU-level climate frameworks remains largely intact. The 2025 CDU/CSU–SPD coalition agreement supports the introduction of ETS II, backs a European energy union with an efficient internal energy market, and endorses the European Commission's omnibus package of legislative reforms.

However, the domestic mood has grown more complicated. As energy prices have risen in recent years and more so in recent month, the argument that energy transitions undermine affordability and competitiveness has gained traction in the German public debate. The far-right Alternative for Germany (AfD), which secured its strongest-ever federal result with 21% of the vote in February 2025, sits entirely outside this consensus: the AfD manifesto repeatedly questions the "supposed scientific consensus" on human-caused climate change and rejects every policy and tax related to what it calls "alleged climate protection."

There is also growing business-oriented pushback. The coalition agreement signals support for ensuring competitiveness of export-oriented sectors through free allowances in the ETS should carbon leakage protection through CBAM fail to deliver. In short: the EU climate framework is broadly supported by the mainstream parties, but economic and competitiveness pressures — and the rise of the AfD — have introduced significant friction.

1.2. National Climate & Energy Policy: Recent Development

Germany's domestic climate trajectory has been shaped by several landmark moments since 2019: Between 1990 and 2024, Germany halved its greenhouse gas emissions — a reduction of 48% — mainly driven by the transformation of the energy sector. Renewables accounted for almost 60% of electricity production in 2024, doubling their share in a short period. The Decarbonisation was nevertheless hindered by the phasing-out of nuclear power in Germany. In April 2023, Germany disconnected its last nuclear power plant from the grid.

The 2019 Climate Protection Act and its amendment: Germany adopted its first legally binding *Klimaschutzgesetz* (Climate Change Act) in 2019, setting sectoral emissions targets. Following the landmark 2021 constitutional court ruling (see below), Germany amended the Climate Change Act to aim for climate neutrality by 2045 and negative emissions after 2050, with intermediate targets of 65% reduction from 1990 levels by 2030 and 88% by 2040.

The 2024 weakening of the Climate Change Act: The previous government weakened the Climate Change Act in May 2024, by replacing the compliance mechanism for binding sectoral emissions reductions targets with the ability for sectors to compensate for each other as long as the overall target is met — concealing the fact that the transport and buildings sectors will exceed their 2030 targets.

The 2025 CDU/CSU–SPD coalition: After the "traffic light" coalition collapsed in late 2024, snap elections in February 2025 brought a “new” CDU/CSU-SPD coalition to power. Despite changes in leadership, Germany's climate goals remain mainly unchanged: Chancellor Merz explicitly reaffirmed commitment to the Paris Agreement and climate neutrality by 2045 in his first address to the Bundestag.

1.3. Prospects for Future Political Developments

The short-to-medium-term outlook is one of continued commitment to (more and more illusionary looking) high-level targets combined with weaker implementation ambition:

- The new government intends to construct up to 20 GW (after a critical EU-Commission intervention 12 GW) of new gas-fired power capacity by 2030 to ensure grid stability during the coal phase-out, a significant scale-up from previous plans.
- The CDU/CSU–SPD coalition aims to reduce household electricity prices by at least 5 cents per kWh through reducing the electricity tax to the EU minimum, capping grid fees, and introducing a new industrial electricity price for energy-intensive sectors.
- The Climate Action Tracker continues to rate Germany's climate action as "Insufficient," noting that Germany's 2030 emissions projections are now higher than in previous assessments.
- The AfD's surge means that climate scepticism is now firmly embedded in the Bundestag, though the mainstream "firewall" against coalition with the AfD remains intact for now.

1.4. Key Climate Policy Controversies

The "Heizungsgesetz" (Building Energy Act / Heating Law): This has been the single most explosive climate controversy in recent years. Media described the controversies within the coalition government and society about how to achieve climate-friendly heating as "one of the greatest political dramas in recent German history." A massive campaign against the original proposal was launched by Germany's leading tabloid *Bild*, and the bill was criticised not only by opposition parties but also increasingly by the FDP within the coalition, leading to numerous provisions being watered down. The new CDU/CSU–SPD government has watered down the law even further.

The debt brake (*Schuldenbremse*): The Federal Constitutional Court's ruling that the government could not redirect COVID-era credit to the Climate and Transformation Fund created a 60-billion-euro hole in planned climate spending, forcing the former government to cut support for electric vehicles, energy efficiency, and green heating infrastructure.

Carbon Capture and Storage (CCS): The new coalition plans to broaden CCS use beyond industry to include gas-fired power plants — a significant departure from the previous government's more restrictive approach — and has made ratification of amendments to the London Protocol to allow CO₂ export for storage offshore a highest priority.

Transport sector laggard: Germany's transport sector is a clear sectoral laggard from an emissions reduction perspective, with the strong dominance of oil needing to be drastically reduced to meet climate targets. Disputes over the EU combustion engine ban (2035), EV subsidies and the never ending debate about a speed-limit on German Autobahns have been particularly contentious.

1.5. The Role of the Courts

Germany's judiciary — particularly the Federal Constitutional Court (*Bundesverfassungsgericht*, BVerfG) — has played some role in shaping climate policy.

The *Neubauer v. Germany* decision (2021): This is the defining case. On 29 April 2021, the Federal Constitutional Court struck down parts of Germany's 2019 Climate Protection Act as incompatible with fundamental rights, finding that the Act failed to set sufficient provisions for emission cuts beyond 2030 and effectively offloaded drastic reduction burdens onto future generations. The Court held that the government had a duty to speed up its climate protection measures as part of its constitutional duty to protect the rights to life and the environment under Articles 2 and 20a of the *Grundgesetz* (GG).

The Court's reasoning was conceptually innovative. It found that "one generation must not be allowed to consume large portions of the CO₂ budget while bearing a relatively minor share of the reduction effort, if this would involve leaving subsequent generations with a drastic reduction burden and expose their lives to serious losses of freedom." It further rejected the argument that Germany's limited global share of emissions absolved it of responsibility: the Court held that it is precisely because states depend on international cooperation to tackle climate change that each must avoid creating incentives for others to undermine that cooperation.

The legislative response was rapid: parliament amended the Climate Change Act to target climate neutrality by 2045 with more stringent interim targets.

The 2022 follow-up decision on state-level obligations: In February 2022, the BVerfG refused to hear constitutional complaints targeting climate legislation at the state (*Länder*) level, clarifying that only the Federal Republic — not individual states — is competent for regulating the consumption of emissions budgets. This concentrated climate accountability at the federal level.

The debt brake ruling (2023): While not a climate case *per se*, the Federal Constitutional Court's ruling that the government's plan to redirect unused COVID credit authorisations to the Climate and Transformation Fund was unconstitutional had a devastating impact on climate financing, removing 60 billion euros from planned green investment. It demonstrated how constitutional fiscal constraints can directly undermine climate ambition. The GREENS used their constitutional powers to oblige the new government to provide for more climate-transition funding (new Art. 143h GG).

Unsuccessful civil litigation: Separately, Germanwatch has supported a civil case brought by a Peruvian farmer against energy company RWE — Europe's largest CO2 emitter — over climate-change-driven glacial lake flooding threatening his home and city of Huaraz, arguing RWE should bear roughly 0.5% of the costs of necessary protective measures. This case, lingered for years but was finally rejected on rather technical grounds. Other litigation — directed mainly against German car manufacturers — was unsuccessful as well. The Courts refused to judicate on matters falling in the responsibility of the legislator.

2. Overall Climate Policy Targets

Are the EU's overall climate targets (2035/2040/2050) considered adequate / too ambitious / insufficient in national politics? Has the Member State set more ambitious national climate targets ("gold plating")? If so, what additional national targets are being pursued?

Germany officially pursues the goal of climate neutrality for the year 2045. There is however already some debate to "fall back in line" with the EU-timeframe 2050.

3. Emission Trading System I (Industry)

Is ETS I considered appropriate? If not, what reforms are viewed as priorities from the national perspective?

Germany's Position on EU ETS 1: Broadly Supportive, but with Key Reform Demands

General Assessment

Germany broadly considers the EU Emissions Trading System (ETS 1) a legitimate and effective climate instrument. The ETS 1 succeeded in reducing greenhouse gas emissions of covered sectors by half in 2024 compared with 2005, and it is considered the cornerstone of EU climate policy. Germany's official position, as of April 2026, endorses maintaining its core function: "ETS1 will continue to function as an anchor in light of current economic and international challenges if we focus on its core function: achieving climate targets, and providing stability, reliability, and long-term planning certainty," with Germany emphasising that "strengthening its reliability must be central."

However, Germany does not consider the current design fully adequate for the challenges ahead and has articulated several reform priorities — particularly in the context of the EU Commission's upcoming July 2026 legislative proposal to revise ETS 1.

Key Reform Priorities from Germany's National Perspective

3.1. Protecting Industrial Competitiveness — Benchmark Revision and Free Allocation

This is Germany's most prominent concern. Berlin wants targeted amendments to the cap-and-trade carbon programme to strengthen the bloc's competitiveness and safeguard its industrial base. This includes a revision of benchmarks — which determine how many free allowances

each industry receives — a slower pace of emissions cuts to prevent price spikes in the 2030s, and a prolonged phaseout of free allowances for certain sectors.

Germany's Environment Minister has been explicit on the transition to CBAM: the minister argued that until the EU's carbon border adjustment mechanism (CBAM) is "functioning smoothly," export-oriented industry should continue to receive free allocations in the ETS. This reflects a concern that the planned phase-out of free allowances from 2026 to 2034 may leave export-exposed industries vulnerable before CBAM fully compensates for the loss of protection.

3.2. Avoiding Misuse of ETS 1 as a Short-Term Energy Price Tool

Germany has been explicit that reform must not weaken the carbon price signal. Germany argues the EU must avoid policies that "misinterpret" the ETS 1 market as a short-term way to lower power prices, endangering its core task of stimulating investment in clean energy. This was notably relevant after Chancellor Merz made comments in February 2026 suggesting the EU should be open to revising or postponing the ETS — causing carbon prices to fall — before he subsequently walked back those remarks.

3.3. CBAM Completeness and Carbon Leakage Concerns

Germany recognises that considerable uncertainty remains over whether CBAM will ensure a level playing field, as it does not address competitiveness in export markets and therefore leaves some carbon leakage risks unresolved. Germany's Federal Environment Agency (Umweltbundesamt) has published work specifically on aligning ETS 1 with the new EU 2030 climate target and reforming the Market Stability Reserve. The DEHSt (Germany's emissions trading authority) is actively monitoring the transition of carbon leakage protection from free allocation to CBAM.

3.4. Market Stability Reserve (MSR) Reform

Germany supports a robust MSR to prevent price volatility. The introduction of the MSR in conjunction with the gradual lowering of the cap has helped reduce the surplus on the carbon market and restore confidence in the steering function of the EU ETS 1. At the EU level, on 1 April 2026, the Commission tabled a legislative proposal to revise the MSR — the mechanism that adjusts the supply of allowances in the EU ETS to stabilise the carbon market by removing or releasing permits depending on market conditions. The proposed amendment would stop the invalidation mechanism, allowing allowances above 400 million in the reserve to be kept as a buffer to support market stability in the future. Germany supports this direction.

3.5. Scope Expansion — Carbon Removals and Additional Sectors

The upcoming 2026 assessment will address several issues, notably the role of carbon dioxide removals, the expansion of the current scope to additional sectors and GHGs not yet covered by the ETS, new rules on how to account for non-permanent carbon capture and utilisation, and the risk of carbon leakage in sectors not covered by CBAM. Germany's UBA has advocated for a more ambitious 2040 EU climate target (95% GHG reduction vs. 1990, compared to the Commission's proposed 90%), indicating national support for maintaining ETS 1's long-term ambition trajectory.

4. Emission Trading System II (Buildings and Road Transport)

What share of national total energy consumption is attributable to buildings and road transport? Is the postponement of ETS II to 2028 viewed positively? Are buildings and road transport already part of a national regulatory regime that anticipates elements of ETS II? How are the prospects for decarbonizing the national building and transport sectors assessed?

4.1. Share of Buildings and Road Transport in German Energy Consumption

Buildings and road transport together constitute the dominant share of Germany's final energy use. According to the German Environment Agency (UBA), in 2024, building-related heat consumption (space heating and hot water) was responsible for 32.5% of total final energy consumption, and the transport sector for around 30.6%. Together, these two sectors thus account for roughly **63%** of Germany's final energy consumption.

Within transport, final energy consumption is dominated by cars, which covered 66% of the transport sector's total consumption in 2023. On the renewables side, the gap is still wide: the heating sector (with a renewables share of 17.1%) and the transport sector (11.9%) experienced only very moderate growth.

4.2. Reaction to the ETS 2 Postponement to 2028

The reaction to the postponement was politically mixed and notably *unwelcome* from the German perspective, given that Germany has already had its own national carbon pricing system in place since 2021.

German business associations criticised the decision by EU member states to postpone the full introduction of ETS 2 by one year to 2028. As Germany already has a national carbon price for fuels used in these sectors, the delay means an extra year of disadvantages for smaller industrial companies in the country, said industry association BDI, whose deputy head called on the federal government to urgently mitigate this gap in European competition.

Energy industry association BDEW was similarly critical: it argued that this market-based instrument "would have sent important price signals across Europe for the heat transition and the ramp-up of electromobility, and is a key measure for achieving the climate target that has just been adopted."

The SPD's climate expert reflected the government's resigned acceptance: Germany would have preferred an EU-wide solution already in 2027 but accepted the compromise found with other EU states. CDU MP Andreas Jung emphasised the positive framing — that freezing the national price in 2027 would give consumers "planning security and reliability" ahead of the EU-wide shift. But CDU energy policy expert Andreas Lenz was blunter, telling Handelsblatt that the postponement of ETS 2 would mean "a massive disadvantage in competition" for German companies whose investment calculations were no longer valid.

There is also some discussion about the legality of the ETS 2 postponement (<https://www.cep.eu/de/eu-themen/details/rechtsprobleme-der-ets-2-verschiebung.html>).

4.3. Germany's National Regulatory Framework Anticipating ETS 2

Germany's national ETS (nEHS) has been functioning as a direct precursor to ETS 2 since 2021.

Germany launched its national ETS (nEHS) for heating and transport fuels in 2021, covering all fuel emissions not covered by the EU ETS 1. It operates upstream — i.e., on fuel distributors, not end consumers — and has been phased in gradually, with an increasing fixed price per tonne of CO₂ from 2021 to 2025. The nETS covers all main fuel types: gasoline, diesel, heating oil, natural and liquid gases from the outset, with solid fuels (coal) added in 2023 and waste incineration in 2024.

Germany plans to use existing nEHS infrastructure for EU ETS 2 submissions, reducing duplication and enabling efficient multi-jurisdictional compliance. In 2026, the system transitions to auction-based pricing within the nEHS, directly familiarising German fuel distributors with market-based certificate trading before the EU-wide start. During the extended reporting phase (2024–2027), reporting and surrender obligations within the nEHS will continue in parallel with the EU ETS 2 reporting obligations.

4.4. Prospects for Decarbonising Buildings and Transport: A Difficult Outlook

These two sectors are widely regarded as Germany's most serious structural decarbonisation challenges — and the assessment is increasingly bleak.

Buildings: The building sector has achieved a 50.8% reduction in emissions since 1990 and accounted for 15.9% of total emissions in 2025. However, building emissions have largely stagnated since 2011, and Germany is a long way from reaching its target of a "nearly" climate-neutral building stock by mid-century. The 2025 data was particularly bad: emissions from buildings increased compared to 2024, clearly exceeding the annual levels stipulated in the Climate Action Law, partly driven by colder winter temperatures and continued reliance on fossil gas and heating oil for space heating.

Transport: Transport was responsible for 22.5% of total emissions in 2025, and reductions have been extremely difficult — emissions remained largely unchanged from 1990 until the COVID-19 pandemic in 2020, with a cumulative reduction of only 10.4% by 2025. Despite vehicles being less emission-intensive today, there has been an increase in road traffic with ever larger and heavier vehicles. The IEA has explicitly identified Germany's transport sector as a clear sectoral laggard from an emissions reduction perspective.

On the overall trajectory: emissions projections from early 2025 showed that Germany would reduce greenhouse gas emissions by 63% by 2030 — failing the 65% target by about 25 million tonnes — if current policies are fully implemented. The latest projections from March 2026 show an even bigger target miss for both 2030 and 2040, with transport and buildings lagging most severely.

Germany's own climate advisory council and the UBA have repeatedly singled out these two sectors: the focus for additional measures should be on transport and buildings, as these are projected to exceed their targets the most and are especially relevant for Germany's European effort-sharing obligations.

In summary, while Germany has a relatively sophisticated national regulatory infrastructure that anticipates ETS 2 — the nEHS has been running for five years — the substantive decarbonisation of its building stock and transport network remains far off track, and the current government's policy rollbacks are, by most expert assessments, moving in the wrong direction.

5. Double regulation?

Is there a discussion about the topic of 'double' regulation: e.g. energy efficiency in ETS installations / build environment, National taxes on/pricing of CO2 emissions, Emission Limit Values in environmental permits?

The "Double Regulation" Debate in EU/German Carbon and Environmental Policy

The question of whether multiple overlapping regulatory instruments lead to inefficiency, undue compliance burden, or policy contradiction runs through several distinct but related debates. The term "double regulation" itself is actively used — particularly by industry — as a framing device to resist additional regulatory layers on top of the ETS.

8

5.1. ETS 1 and the Industrial Emissions Directive (IED): The Core Tension

The central question is whether installations covered by ETS 1 can *also* be subject to binding GHG emission limit values (ELVs) in their environmental permits issued under the IED.

The current legal answer is: no, they cannot. Article 9 of IED 2.0 states that for EU ETS installations, permits shall not include an emission limit value for GHG emissions covered under the ETS. Industrial decarbonisation efforts must be fully aligned with the existing EU framework — the ETS.

Industry has been emphatic on this point. In a 2024 joint statement, the IE Alliance — representing cement, steel, refining and other energy-intensive sectors — invoked the explicit "double regulation" term: it is essential that no "double regulation" is imposed on European producers when implementing IED 2.0, noting that the European Council Conclusions from April 2024 explicitly called for a significant reduction of administrative and compliance burden and the prevention of over-regulation. The BAT conclusions should not create obligations that overlap with ETS requirements.

Environmental NGOs take the opposite view. Carbon Market Watch has argued forcefully that the IED prohibition is counterproductive: the prohibition in Article 9(1) of the IED on including GHG limits in operating permits is unhelpful and unnecessarily restricts member states' options to promote emissions reductions. Including GHG emissions within the IED's scope does not entail duplication vis-à-vis the ETS, because both frameworks are complementary and follow different approaches — the IED uses performance-based BAT standards while the ETS sets a price level — so BREF documents would be reinforcing, not overlapping regulation.

The NGO argument rests on a critical empirical observation: with more than 90% of industrial GHG emissions historically covered by free ETS allowances, the ETS Directive has initially provided virtually no incentive to energy-intensive industries to decarbonise, a situation that has changed only slowly and to a certain extent.

The IED 2.0 revision of 2024 did not resolve this tension; it deferred it. The revised IED delays alignment with ETS objectives until the next IED revision in 2028, by which point a Commission report assessing IED-ETS synergies will have been submitted.

On energy efficiency specifically, the current IED Article 9(2) leaves it *optional* for permit authorities to impose energy efficiency requirements on ETS installations — and in practice this option is rarely used.

5.2. ETS 2 and Complementary Efficiency Policies in Buildings: The "Waterbed" Problem

In the buildings and road transport context — the domain of ETS 2 — a parallel structural tension arises: if national or EU energy efficiency measures reduce demand for fossil fuels, do they simply allow ETS 2 allowances to be used elsewhere, neutralising the environmental gain?

This is the classic "waterbed effect" — well-documented in ETS 1 theory — now applying to ETS 2. Energy performance standards for buildings, which decrease energy demand for heating and cooling, would reduce the demand for EU ETS 2 allowances and consequently decrease EU ETS 2 prices, all else being equal. The consequence is that within a fixed cap, efficiency measures in one sub-sector can enable more emissions in another.

The EEA explicitly acknowledges this layered policy architecture in the buildings sector: the revised Energy Performance of Buildings Directive (EPBD) and Energy Efficiency Directive (EED) define clear frameworks to achieve decarbonisation ambition in buildings, including national building renovation plans and mandatory efficiency improvements for public buildings. Persistent barriers continue to slow the transition, including high upfront costs, limited installation capacity, affordability constraints, contradicting signals, long payback periods and split incentives.

The academic literature confirms that the policy interaction is fundamental to ETS 2 price formation: complementary energy efficiency and renewable energy policies play a crucial role in determining prices in the new EU ETS 2, and more up-to-date modelling incorporating the final adopted revisions of RED, EED, ESR and EPBD would tend to show lower ETS 2 prices than earlier projections.

The EU has consciously designed these instruments to coexist, but the Commission's position is that they are *complementary*, not duplicative: ETS 2 will complement other policies of the European Green Deal in the covered sectors, helping member states achieve their emission reduction targets under the Effort Sharing Regulation.

5.3. National Carbon Pricing (Germany's nEHS/BEHG) Running Alongside ETS 1 and ETS 2

A third dimension of the debate concerns whether it is legally permissible — and practically coherent — for Germany to run its own carbon pricing system in sectors already covered (or about to be covered) by EU-level carbon pricing.

For ETS 1 sectors, Germany's national BEHG explicitly exempts installations already covered, to avoid genuine double counting. Provisions have been put in place to avoid double compliance burdens for installations covered by EU ETS 1. Emissions that arise from a fuel delivered to and used in an EU ETS installation may be deducted from the reported emissions of the fuel distributor under the German ETS, provided evidence is given that the emissions have been reported by the receiving EU ETS installation.

For ETS 2 sectors, a 2024 legal analysis in *npj Climate Action* examined whether national carbon instruments can legally coexist with ETS 2, and concluded: from a legal perspective, the coexistence of national carbon pricing instruments and the EU ETS 2 is not prohibited. The analysis noted, however, the economic tension: a nationally-maintained higher carbon price — as Germany has — creates a competitive disadvantage relative to other member states during

the period before ETS 2 is fully operational, since German fuel distributors face costs their EU competitors do not.

This is precisely what German industry criticised after the ETS 2 postponement to 2028: the delay means an extra year of disadvantages for smaller industrial companies in Germany, since the country already has a national carbon price for fuels used in these sectors. BDI called on the federal government to urgently mitigate this gap in European competition.

During the current transitional phase, the reporting burden is explicitly layered: during the transition phase from 2025 to 2026, many companies are subject to dual reporting obligations under both the nEHS and EU ETS 2.

10

5.4. Double-counting of “Climate” considerations in the permit-procedure

Under the EU-EIA-directive member state authorities must take into consideration the “climate”-effects of any project. In the jurisprudence of the German Bundesverwaltungsgericht and in the literature one can observe an ongoing discussion about the extend of this requirement. The Bundesverwaltungsgericht tries to limit its implications referring to the potential “double-counting” of climate-implications in different legal regimes. Parts of the literature nevertheless argue for a more detailed examination of all possible green-house-gas emissions of EIA-relevant projects (sceptical: *Wegener*: Everything Everywhere All at Once? Der Klimaschutz in der Vorhabenzulassung, ZUR 2024, 577 f.).

6. Effort Sharing

Is the Member State “on track” to meet its national reduction targets under the Effort Sharing Regulation 2018/842? Is failure / compliance / over-achievement of the EU requirements expected? What are the main challenges or success factors influencing compliance or non-compliance with the EU requirements? Does the state intend to sell its own emission credits or to purchase such credits from other Member States?

6.1. Germany's target and current trajectory

Under the amended ESR (Regulation (EU) 2018/842 as revised by Regulation (EU) 2023/857), Germany must reduce overall emissions in the effort sharing sectors — domestic transport, buildings, agriculture, small industry and waste — by 50 percent by 2030 compared to 2005 levels. This is one of the more ambitious targets in the EU, alongside Denmark (-50%) and the Netherlands (-48%), reflecting Germany's higher GDP per capita.

Germany is **not** on track to meet this obligation. Failure is expected, although the precise size of the gap has worsened with each successive projection round:

- The **Projektionsbericht 2024** estimated a cumulative ESR shortfall of about **126 Mt CO₂eq** for 2021–2030.
- The **Projektionsbericht 2025** (March 2025) revised this upward. It confirmed and exacerbated the fact that Germany is at risk of falling well short of its targets under the EU Effort Sharing Regulation (ESR) between 2021 and 2030, while domestic KSG targets were cumulatively over-achieved (by roughly 81 Mt CO₂eq, mainly thanks to over-performance in the power sector).

- The **Projektionsbericht 2026** (published 14 March 2026) shows a further deterioration. The cumulative gap between 2021 and 2030 grew by 29 million tonnes to now 255 million tonnes of CO₂ equivalents. This means: Germany must either massively course-correct — or buy certificates from other EU member states. For the period from 2021 to 2030, the cross-sectoral annual emissions budgets under the KSG are met, in purely arithmetic terms, with a margin of just under 3.8 million tonnes of CO₂ equivalents. Compared with the 2025 projection data, cross-sectoral overachievement has declined significantly and the previous buffer of around 81 million tonnes of CO₂ equivalents has been almost used up.

The Climate Action Tracker similarly finds that without further action, Germany will exceed its 2030 [ESR] target by at least 224 MtCO₂e cumulative between 2021 and 2030, up from 126 MtCO₂e estimated only a year ago. This overshoot will be expensive; for example, if certificates are each priced at EUR 100, this gap in emission reductions would cost German taxpayers EUR 22bn.

So: **failure of the ESR obligation is the consensus expectation** of UBA, the Expert Council on Climate Issues (Expertenrat für Klimafragen), Öko-Institut, the Climate Action Tracker, and the European Environment Agency. Over-achievement is essentially ruled out; even compliance through purely domestic measures is no longer considered realistic.

6.2. Main challenges and success factors

The decisive challenge is the structural imbalance between sectors. Germany's overall climate trajectory looks acceptable only because the power sector is over-performing strongly while transport and buildings are under-performing severely — but the ESR specifically *excludes* the power sector.

Policy weakening compounds this. The 2024 reform of the Klimaschutzgesetz removed binding sectoral budgets, making domestic accountability looser exactly where the ESR is most demanding. Germany's new government took power in May 2025 under a coalition contract that undermines existing climate policies and actions. The policies described in the contract are not sufficient to meet the national climate targets as enshrined in law under the country's Climate Change Act.

6.3. Selling or buying credits?

Germany will be a **buyer**, not a seller.

This is now openly assumed in the federal budget. It is a memo in the federal government's draft budget submitted to the Bundestag that draws attention: It shows that the purchase of so-called emission allocations under the EU Climate Protection Regulation, also known as the European Effort Sharing Regulation (ESR), is to be funded from the Climate and Transformation Fund (KTF) starting in 2026. The line item is currently entered at zero euros for 2026, because final settlement only occurs after the two compliance checks (2027 for the 2021–2025 period; 2032 for 2026–2030), but the budgetary architecture for purchases has been put in place.

The cost is highly uncertain because there is no central market — transactions are bilateral. Historical precedent is misleadingly cheap: For the period until 2020, Germany, for instance, bought more than 11 million allocations from Hungary, Bulgaria and the Czech Republic for

one euro each. Prices for 2021–2030 are expected to be far higher because by the end of the 2020s, emissions across the EU are projected to be higher than available allocations – meaning there simply will not be enough overperforming countries to supply the laggards. Likely sellers include Denmark, Sweden, and a handful of other Nordic and Baltic states. Estimates of the total bill for Germany range from roughly €4 billion (at very low AEA prices) to the €22 billion figure cited by the Climate Action Tracker and Brigitte Knopf (deputy chair of the Expertenrat für Klimafragen) at an assumed €100/tonne.

Domestic political controversy now centres less on whether Germany will buy than on how the purchase will be financed. Knopf and Green-party MPs have criticised the plan to fund certificate purchases out of the Climate and Transformation Fund (KTF) — the very vehicle meant to finance domestic decarbonisation — as a self-defeating loop.

7. Renewable Energy

What progress has been made in the transition towards a national energy supply based on renewable energy? What is the current energy mix, and what are the projections up to 2050? What differences exist in the transformation of the electricity market versus the broader energy market (including non electric heating, transport and other energy use)? What are the major national regulatory instruments to support the transition to renewables? What major obstacles hinder a faster transition to renewable energy at the national level? Are adjustments to the EU's regulatory framework considered necessary? If so, which ones?

7.1. Progress and current energy mix (2025 data)

Germany's "Energiewende" has advanced furthest in the **electricity sector**, where renewables now provide roughly the same volume of power as all fossil sources combined:

- In 2025 renewable energy sources provided 290 billion kilowatt-hours of electricity and accounted for 55.1 percent of German electricity demand. With wind power being by far the most important energy source in the German electricity mix, followed by photovoltaics, which increased its production by 21 percent in 2025 and overtook lignite for the first time.

By contrast, the renewable share in **gross final energy consumption** — which captures heating, transport and industrial energy as well as power — is much lower: **The renewable energies share in gross final energy consumption reached 23.8 percent in 2025** (calculated in accordance with EU directive RED). Because of the fading out of nuclear power in Germany, the net-decarbonization effect of the rise of the renewables has been very limited.

Within the non-electric sectors:

- **Heating/cooling:** Renewables' share for heating and cooling purposes has risen from 4.4 percent in 2000 to 19.0 percent in 2025... biomass (solid, liquid and gaseous), still providing about 77 percent of all renewable heat in 2025. Since the early 2000s, heat generated by solar thermal plants and heat pumps has been growing with increasing speed, now providing about 16 percent of renewable heat.
- **Transport:** The transport sector holds the lowest share of renewable energy sources. In 2000 less than one percent of final energy consumption for transport purposes was

derived from renewable energy sources. This share grew to 8.0 percent in 2025. Main renewable sources being biodiesel, bioethanol and a growing share of renewable electricity.

The 2030 target for the renewable share in gross final energy consumption is **41%** under Germany's NECP — meaning the share would need to rise by roughly 1.7 percentage points per year for the next five years, more than double the 0.8-pp/year pace observed since 2005.

7.2. Projections to 2050

Germany's binding statutory framework targets **climate neutrality by 2045** under the Klimaschutzgesetz, with interim cuts of -65% by 2030 and -88% by 2040 (versus 1990). Post-2050 the country aims for net-negative emissions.

13

The major techno-economic scenarios all agree on a few core features by 2045:

- **Total electricity demand roughly doubles** versus today, driven by the electrification of heat (heat pumps), transport (EVs) and industrial process heat. Agora/Prognos's "Climate-Neutral Germany 2045" scenario projects that electricity consumption would increase by almost 60 percent between 2030 and 2045.
- **Installed renewable capacity must reach 400–650 GW by 2045** (roughly 270–350 GW already by 2030) according to McKinsey's Net-Zero Germany analysis, with corresponding offshore-wind targets stepping up from 9.2 GW in 2025 to reach a minimum of 30 GW by 2030, 40 GW by 2035 and 70 GW by 2045. The country wants to achieve a total solar PV capacity of 215 GW by 2030 and 400 GW by 2040.
- **Hydrogen** (mostly imported) becomes the second pillar alongside electricity. McKinsey estimates 10–15 Mt/yr of green hydrogen demand at climate neutrality, the bulk imported through repurposed gas pipelines and via shipping.
- **Substantial battery and grid flexibility** is required: Fraunhofer ISE's models show a battery storage requirement of 100 to 170 GWh by 2030, against ~25 GWh installed today.

The latest UBA projections (Projektionsbericht 2026) show only a -62.6% reduction by 2030 with current measures — short of the -65% target — and a -80% reduction by 2040 versus the -88% target. Climate neutrality by 2045 is therefore not on track under current policy and would require recovery of the policy momentum lost in 2024–2025.

7.3. Electricity vs. broader energy market — a tale of two transitions

The contrast between the electricity transition and the rest of the energy system is the single most important structural feature of the Energiewende right now.

Power has transformed. Renewables are now the largest source of generation; the last nuclear reactors closed in April 2023; Germany... shut down a total of 16 coal-fired power plants by June 2025... set to phase out coal entirely by 2038 at the latest. If the EU ETS prices continue to increase, they will likely drive coal out of the market in Germany by 2030 due to its unprofitability. Wholesale prices regularly turn negative when wind and sun coincide with low demand.

Heating and transport have lagged. Buildings emissions have plateaued since 2011, transport emissions barely moved before COVID-19, and both sectors went *up* again in 2025 versus 2024,

breaching their KSG annual targets and driving the projected ESR shortfall above 250 Mt CO₂eq for 2021–2030. The structural reasons:

1. **Capital stock turnover is slow.** Heating systems run for 20+ years, buildings for many decades, vehicles for 15+ years. A regulatory push reaches the emissions inventory only with a long lag.
2. **Regulation is fragmented and politically contested.** The 2024 Gebäudeenergiegesetz (the "Heizungsgesetz") was so politically toxic that the new CDU/SPD government has committed to repealing and replacing it. The coalition factions agreed on key points for a Building Modernisation Act on 24 February 2026. The new law is intended to be more technology-open, flexible, practical and simpler... When replacing heating systems, modern gas and oil boilers will once again be permitted in the future. From 2029, however, oil and gas will be required to contain a binding bio-component. The 65%-renewables rule for new boilers will be dropped in favour of CO₂ pricing as the steering instrument.
3. **EV uptake has been volatile.** After the abrupt end of purchase subsidies in late 2023, EV sales collapsed; they recovered strongly in 2025 (Almost every fifth newly registered car was a pure battery-electric vehicle – 45 percent more than 2024), but the new government has yet to introduce replacement incentives.
4. **Heat pumps are accelerating but from a low base.** In 2025 heat pumps overtook gas boilers for the first time, with 299,000 units sold (+55% YoY) — encouraging, but only a fraction of the ~5–6 million annual replacements needed across the building stock by 2045.

Crucially, the electricity sector's over-performance under the **Climate Action Law** can offset weaknesses in transport and buildings domestically, but **not** under the EU Effort Sharing Regulation, which excludes power. This is why Germany's domestic and EU compliance pictures diverge so strongly.

7.4. Major national regulatory instruments

The German Energiewende is anchored in a layered set of statutes:

1. **Erneuerbare-Energien-Gesetz (EEG)** — the renewable energy act first introduced in 2000, last amended substantially in 2023. It governs feed-in remuneration, market premiums, and competitive auctions for wind, solar, biomass and hydropower; it sets the **80% renewable electricity by 2030** target and the path to 100% by 2035 (the 2035 target was slightly softened by the new government).
2. **Wind-an-Land-Gesetz (WindBG, 2022)** — requires the federal states to designate at least 2% of land area for onshore wind by 2032, with intermediate 1.4% target by 2026.
3. **Wind-See-Gesetz (WindSeeG)** — the offshore wind act, targeting **30 GW by 2030, 40–50 GW by 2035, 70 GW by 2045**.
4. **Bundes-Klimaschutzgesetz (KSG)** — the federal climate-protection act (2019, amended 2021 and 2024). Since the 2024 reform, sectoral budgets are no longer binding individually; only the overall pathway is.
5. **Gebäudeenergiegesetz (GEG / "Heizungsgesetz")** — currently still in force with the 65%-renewables rule for new boilers, tied to communal heat planning deadlines (mid-2026 for cities >100,000 inhabitants, mid-2028 elsewhere). Slated for replacement by a more technology-neutral *Gebäudemodernisierungsgesetz* by 1 July 2026.
6. **Brennstoffemissionshandelsgesetz (BEHG)** — the national fuel-emissions trading scheme covering transport and heating fuels since 2021. From 2026, the certificate price

will essentially be set by the market, although a price corridor of 55 to 65 euros per emission certificate is provided for in 2026. From 2028, this is folded into EU ETS 2.

7. **Klima- und Transformationsfonds (KTF)** — the central climate financing vehicle. After the November 2023 Constitutional Court ruling invalidated €60 billion of pandemic-era credit transfers, In March 2025, the legislator decided to create a new fund of 500 billion EUR designated for additional investments (over 12 years) into infrastructure projects but also to achieve climate neutrality by 2045. 100 billion EUR of this new fund are allocated to the KTF.
8. **Solarpaket I and the Solarspitzenengesetz (2025)** — addressing PV permitting, balcony solar and increasingly negative wholesale prices during midday solar peaks.
9. **Wärmeplanungsgesetz** — mandates municipal heat plans by 2026/2028.
10. **Bundesnetzausbaubeschleunigungsgesetz (NABEG)** — accelerates transmission grid expansion.

7.5. Major obstacles to faster transition

Six obstacles dominate the current German debate:

1. Grid bottlenecks. Renewables are increasingly outpacing the grid that has to deliver them. This mismatch has led to rising costs. Rising redispatch costs, north-south transmission constraints, and slow distribution-grid digitalisation are now binding constraints on adding more wind and solar capacity productively.

2. Onshore-wind expansion is lagging targets. With 2.5 GW added in 2024, net expansion remained modest due to the decommissioning of old turbines. The country's roughly 63 GW capacity installed in 2024 falls short of the 69 GW intermediary target set by the EEG for that year. Although permits and auction volumes have surged in 2024–2025, actual installations still trail policy targets — driven historically by lengthy permit processes (According to a 2023 analysis by industry lobby group BWE, the average duration from planning to licensing of a wind farm was four to five years), restrictive minimum-distance rules in some Länder, and lingering local opposition.

3. Offshore wind has stalled. Two unsuccessful auctions in 2025 and grid-connection delays (e.g. Borkum Riffgrund 3 cannot feed in until 2026) signal a deeper financing problem. Offshore wind developed weakly, with hardly any expansion progress and two unsuccessful bidding rounds signalling an urgent need for reform. Industry is calling for two-sided contracts for difference (CfDs) to replace negative-bid auctions.

4. Policy uncertainty under the new government. The May 2025 Merz coalition's monitoring report and the parallel rewriting of the Heizungsgesetz, EEG amendment and 2030 ambition have created a stop-go climate.

5. Skilled labour and supply chains. Heat-pump installers, construction-workers, electricians, grid engineers and PV/wind technicians are in chronic shortage; offshore-wind supply chains (vessels, foundations, cables) are also constrained.

6. Market-design gaps for flexibility and dispatchable backup. Negative wholesale prices already occurred in 345 hours of Q2 2025 alone. The country needs storage, demand-side flexibility, and dispatchable backup. The government plans roughly 12 GW of hydrogen-ready gas plants and a capacity mechanism by 2028.

7. Heating-sector transformation is politically toxic. Public backlash against the GEG/"Heizungshammer" depressed heat-pump sales for over a year. The new government's pivot to "technology openness" risks sliding back: Investors and homeowners have repeatedly delayed decisions in response to shifting signals.

7.6. Adjustments to the EU regulatory framework

There is broad agreement among German policymakers, industry and researchers that several EU-level adjustments are needed:

1. Faster transposition and full use of RED III's "acceleration areas". Member States will design renewables acceleration areas where renewable energy projects will undergo simplified and faster permit-granting processes. Renewable energy deployment will also be presumed to be of "overriding public interest," to limit the grounds of legal objections to new installations. Germany has begun designating these areas but the legal uncertainty around environmental-protection law (especially species protection) needs further EU-level clarification to prevent litigation.

2. EU electricity market design — Germany welcomes but wants to go further than Directive (EU) 2024/1711. Two-way contracts for difference (CfDs) for offshore wind and large RE installations are on the agenda. The German government has actively used the new framework but needs Commission state-aid approval for its post-2026 successor to the EEG support scheme, since the current system is authorised under European law only until the end of 2026.

3. EU Grids Package and cross-border planning. The energy transition requires coordinated investment across borders – renewable deployment, grid reinforcement, hydrogen infrastructure, and demand management cannot be optimally pursued by 27 countries in isolation. The recently proposed EU Grids Package attempts to institutionalise this through mandatory cross-border network planning, but so far faced opposition from several Member States. Germany supports stronger ENTSO-E coordination given that its north-south imbalance can only be cost-effectively solved with Nordic, Dutch and Polish interconnectors.

4. Hydrogen regulation. Germany is pushing for clearer rules on the definition of "renewable hydrogen" (the Delegated Acts under RED III), faster permitting for electrolyzers and hydrogen pipelines, and EU funding for the European Hydrogen Backbone. The current Delegated Act on RFNBOs (additionality, temporal/geographic correlation) is widely viewed as too restrictive for industrial-scale ramp-up.

5. ETS 2 design and the "soft price cap" debate. ETS 2 (operational from 2028 for transport and buildings fuels) raises political-economy concerns about social acceptance. Germany supports the Climate Social Fund but is also part of the discussion that a "soft price cap" for the EU's emissions trading system (ETS) could come before a general ETS review is presented in July. There are tensions between Germany's preference for stable price signals and other Member States' fears of social backlash.

6. State-aid framework for industrial decarbonisation. Germany is actively using the CBAM, the Net-Zero Industry Act and the Clean Industrial Deal but wants more flexible Important Projects of Common European Interest (IPCEI) procedures and clearer rules for Carbon Contracts for Difference (CCfDs).

7. Effort Sharing Regulation post-2030. With Germany already projecting a major ESR shortfall (see prior question), there is interest in re-thinking the post-2030 architecture: either folding most non-ETS sectors fully into ETS 2, or substantially rebalancing the burden-sharing methodology.

8. Land Use

How exactly are emissions from the land-use sector recorded nationally? What trends can be derived from this data? What strategies are being pursued at the national level to strengthen the land-use sector's contribution to emission reductions and to comply with the LULUCF-Regulation 2018/841?

17

8.1. How LULUCF emissions are recorded

Germany's land-use, land-use change and forestry (LULUCF) sector is reported under the same UNFCCC inventory architecture used for all other sectors, but it is methodologically distinctive because it covers both **emissions and removals** of CO₂, CH₄ and N₂O from biological pools (vegetation, soils, dead wood, harvested wood products) rather than from technical processes.

Institutional setup. The German GHG inventory is managed centrally by the **Umweltbundesamt (UBA)** through its Central System on Emissions (CSE) database. Within that system, responsibility for LULUCF and agriculture is delegated to the **Johann Heinrich von Thünen-Institut (TI)**, the federal research institute under the Ministry for Food, Agriculture and Home Affairs.

Reporting categories. Following the IPCC 2006 Guidelines (with the 2013 KP Supplement and 2019 Refinement), the inventory distinguishes the six standard land-use categories — **Forest Land, Cropland, Grassland, Wetlands, Settlements and Other Land** — each split into "land remaining" and "land converted to" sub-categories so that land-use change effects can be tracked. GHG emissions are reported for the main land use categories of forest, cropland, grassland, wetlands, settlements and other land, as well as various sub-categories, and for the pools of above-ground and below-ground biomass, mineral and organic soils, dead wood and litter, anthropogenically influenced standing and flowing [waters]. Harvested Wood Products (HWP) and off-site emissions from peat extraction are reported separately at the federal level.

Activity data. Spatial activity data come from a range of sources: the **federal forest inventory** ("Bundeswaldinventur" — most recently BWI 4, 2022), the **carbon inventory** for forests (Kohlenstoffinventur, last 2017), the **Agricultural Soil Inventory (Bodenzustandserhebung Landwirtschaft)** for cropland and grassland, ATKIS topographic data for land-use change, and high-resolution maps of soil type, drainage status and water tables for organic soils. Spatial activity data comprise high resolution maps of land-use, type of organic soil and mean annual water table (WT).

Methodological tier. Methodological changes can be substantial: in the 2024 inventory submission, results from BWI 4 and the first-time inclusion of mineral-soil emissions on cropland/grassland produced a sharp upward revision of historic emissions.

8.2. Trends derived from the data

Three major trends stand out:

1. The sector has flipped from sink to source. In 2023, Germany's LULUCF sector was a significant source of greenhouse gases (GHG), with net emissions of 68.7 Mt CO₂ equivalents. The main sources are currently organic soils, followed by forest biomass, the former main sink. The dramatic increase in net emissions since the drought year 2018 is mainly due to forest damage caused by the drought and the associated calamities. The Thünen Institute's most recent press release (March 2026) confirms the broader picture: Since 2000, Germany's LULUCF sector has been predominantly a net source of greenhouse gases to a greater or lesser extent. This source effect was particularly pronounced during the drought year of 2003 and again during the dry years since 2018. In the reporting year 2024, all land use categories released greenhouse gases. Net emissions in 2025 fell back to **26.9 Mt CO₂eq** — a dramatic improvement of more than 30 Mt against 2024 — but the sector remains far from delivering the required net sink.

2. Forests went from net sink to net source after 2018, with a partial recovery now visible. Severe drought, bark-beetle calamities and storm damage between 2018 and 2022 destroyed large areas of spruce monocultures, particularly in central and eastern Germany, dramatically reducing biomass carbon stocks. Overall, the carbon stock stored in the forest has therefore decreased since 2018; the forest has gone from being a sink to a source of CO₂ emissions. It can therefore no longer even partially compensate for other sources of greenhouse gases in the LULUCF and other sectors. The Thünen Institute now reports a tentative recovery: Following the disastrous years for the forests since 2018, researchers are observing a slight recovery from 2023 onwards. The felling of damaged timber, particularly dead and damaged spruce trees, has now largely been completed. However, growth rates in timber stock remain lower than before 2018. In 2025, 19 million tonnes more carbon dioxide were sequestered in the forest than were released. However, the levels seen in the years prior to 2018 have not been reached.

3. Drained organic soils (peatlands) are the dominant and most persistent emission source. Although they cover only about 7% of Germany's land area (roughly 1.8 million hectares), drained peatlands emit on the order of 40–50 Mt CO₂eq per year — making them the largest single LULUCF emission source by far. This source is "structural": as long as the water table is held below natural levels for agricultural use, oxidation of peat releases CO₂ continuously.

4. Mineral agricultural soils have emerged as a previously underestimated source. Contrary to previous assumptions, mineral soils used for agriculture also emit CO₂. Modelling by the Thünen Institute shows that Germany's arable land loses around 0.14 tonnes of carbon per hectare per year. That sums up to about seven million tonnes of CO₂ equivalent per year. The first-time inclusion of these emissions in the 2024 submission accounted for much of the upward revision in cropland (+39%) and grassland (+14%) emissions.

5. Settlements and Cropland (excluding the soil component) are smaller but persistent net emitters, while Wetlands swing between source and sink depending on management.

The Thünen Institute's 2026 projection report puts these trends in a sobering perspective: The Climate Protection Act stipulated that, on average between 2027 and 2030, at least 25 million tonnes of CO₂ equivalents per year should be permanently sequestered in forests and soils. Current calculations by the Thünen Institute now show that this amount will instead be released.

8.3. Germany's LULUCF target and compliance gap

Under **Regulation (EU) 2018/841** as amended by **Regulation (EU) 2023/839** (Fit-for-55 LULUCF revision):

- For the **2021–2025** period, the "no-debit" rule applies: accounted emissions must not exceed accounted removals.
- For the **2026–2030** period, the EU as a whole must deliver an **additional 42 Mt CO₂eq net removals**, leading to an EU-wide net sink of **-310 Mt CO₂eq by 2030**. For the period 2026-2030, the additional target of -42 Mt CO₂-eq covers all LULUCF reporting categories and is distributed among the Member States via individual targets on the basis of their share of total managed area.
- **Germany's binding 2030 target is -30.84 Mt CO₂eq net removals** (specified in Annex IIa of the regulation). The German Klimaschutzgesetz sets a slightly less ambitious national figure of **-25 Mt CO₂eq** by 2030, with -35 Mt by 2040 and -40 Mt by 2045.

19

There is a **massive projected gap**. With current measures, the German LULUCF sector is projected to be a *source* of around +20 to +25 Mt CO₂eq in 2030 rather than a sink. In practical terms, Germany is heading for a 50+ Mt cumulative gap in 2030 alone — and this is one reason a successful court case by Deutsche Umwelthilfe forced the federal government to take corrective action under the Federal Climate Protection Act.

8.4. Strategies pursued at national level

Germany's response has crystallised around six tracks:

1. The Aktionsprogramm Natürlicher Klimaschutz (ANK) — Natural Climate Action Programme

This is the central federal strategy for strengthening the natural carbon sink. Adopted in 2023 with an initial budget of around €4 billion (2022–2026, financed largely via the Klima- und Transformationsfonds), it bundles measures across ten action fields including peatlands, forests, soils, water bodies, urban green infrastructure and protected areas. The ANK feeds into the broader **Klimaschutzprogramm 2025**, which was developed in parallel through 2025: By 25 September 2025, all ministries were required to submit their proposals for the new climate protection programme. This measure became necessary because it is foreseeable that the existing requirements of the Climate Protection Act will not be met. Particular pressure for action exists in the area of land use, land-use change and forestry (LULUCF), as a legally binding ruling won by the DUH obliges the federal government to take corrective action.

2. Peatland rewetting (the "Moorschutz" strategy)

Because drained peatlands dominate emissions, rewetting is the single highest-leverage measure available. The federal government and the Länder concluded the **Bund-Länder-Zielvereinbarung Moorbodenschutz** in 2021, committing to reducing peatland emissions by ~5 Mt CO₂eq/year by 2030. Implementation involves voluntary rewetting agreements with farmers, paludiculture pilots (cattail, sphagnum, reeds) and CAP-funded extensification, but progress has been slow because rewetting requires landowner cooperation, hydrological infrastructure changes, and conversion of livelihoods. Realistic 2030 emission savings are now estimated below the original target.

3. Forest restoration and adaptation

The federal **Waldstrategie 2050** and the funding programme "**Klimaangepasstes Waldmanagement**" (€900 million for 2022–2026) pay forest owners for ecosystem services and species-mix transformation. The objective is to convert vulnerable spruce monocultures into climate-resilient mixed forests and to maintain growing stock so that the forest sink can be partially restored. EU instruments — the Nature Restoration Law and the new EU Forest Strategy — provide additional impetus. The picture is, however, complicated by the trade-off between leaving carbon in the forest (sink benefit) and harvesting timber as a substitute for fossil materials and energy (substitution benefit, accounted in other sectors). The Wissenschaftlicher Beirat warned that the -25 Mt target "could theoretically only be achieved through a sharp restriction of timber extractions while growth remains stable", with risks of leakage to imported timber and reduced substitution.

4. Agricultural soil carbon and farm-level mitigation

Measures include cover cropping, reduced/zero tillage, agroforestry, organic farming, optimisation of crop rotations, and prevention of grassland conversion to cropland. These are supported through the **CAP eco-schemes**, the German GAP-Strategieplan 2023–2027, and the Federal Programme for Sustainable Agriculture. As noted, the 2026 projection for the agricultural sector is more positive. According to the projection, greenhouse gas emissions are set to fall to 58.2 million tonnes of CO₂ equivalents by 2030, to 55.6 million tonnes by 2040, and to 54.4 million tonnes by 2050. Overall, the sector is therefore expected to exceed the reduction targets set out in the Climate Action Act for the period 2021 to 2030 by 14.5 million tonnes of CO₂ equivalents. Note that this is the *agriculture* sector inventory (mainly enteric methane and N₂O from soil management), which is reported separately from LULUCF.

5. Methodology, monitoring and certification

Germany is investing in better measurement: completing the Agricultural Soil Inventory, building a national peatland monitoring centre (Kompetenzzentrum Moorbodenschutz, KoMo), implementing satellite-based monitoring (Thünen Earth Observation), and preparing for the **EU Carbon Removal Certification Framework (CRCF)** so that voluntary carbon-farming projects can be certified and incentivised.

6. Use of flexibilities under the LULUCF Regulation

The amended regulation maintains options that Germany may need: The amended Regulation keeps the possibility to trade removals between member states and use surplus annual emission allocations under the Effort Sharing Regulation to reach LULUCF targets. There is also a mechanism to account for natural disturbances affecting a member states' ability to deliver on the national target (e.g., wildfires or pests), provided that the EU as a whole is on track. Germany is also entitled to use the "managed forest land flexibility" if natural disturbances trigger it. However, given that ESR allowances are themselves scarce (Germany expects to be a *buyer* there, not a seller), and given that LULUCF removal markets between Member States are thin, these flexibilities offer limited relief.

9. Special National Strategies, Programmes, and Ideas

What special strategies, regulatory programmes, and ideas—beyond those already mentioned—are being pursued nationally for climate mitigation? How do these national concepts and legal instruments relate to EU climate policy? Does a programme for carbon capture and storage exist?

9.1. Further German climate-mitigation strategies, EU integration, and CCS

The Energiewende, ESR/LULUCF compliance and the renewable-energy framework already covered are only part of Germany's climate-policy architecture. A second layer of strategies addresses the harder remaining problems: industry decarbonisation, hydrogen, transport beyond electrification, the circular economy, financing, and — newly — carbon management. Each of these is closely linked to specific EU instruments, and Germany has only just (in November 2025) reversed its long-standing prohibition on commercial-scale carbon capture and storage.

1. Industrial decarbonisation: Klimaschutzverträge (Carbon Contracts for Difference)

The flagship instrument for the industrial sector is the **Klimaschutzvertrag** programme (Carbon Contracts for Difference, CCfD). Carbon Contracts for Difference (CCfD) are intended to initiate climate-friendly production processes in energy-intensive industries, for example in the steel, cement, paper or glass industries. To this end, CCfD compensate for the additional costs compared to conventional processes, where climate-friendly production processes cannot yet be operated competitively. Carbon Contracts for Difference are modelled on private-sector hedging contracts, i.e. risk hedging instruments. As soon as transformative production can be carried out more cheaply than conventional production, the payment relationship established by the CCfD is reversed: Additional revenues of the subsidized companies then flow back to the state.

How it works: companies bid in a reverse auction the price (€/tonne CO₂ avoided) they need to make a low-carbon production process competitive. The state pays the difference to the prevailing fossil/ETS reference price for 15 years; if carbon prices rise above the contract price, the company pays back. The reference systems are explicitly tied to EU ETS product benchmarks, so the instrument dovetails with EU carbon pricing.

The first auction round (2024) targeted industries emitting at least 10,000 t CO₂/yr in steel, cement, chemicals, paper, glass and ceramics, with €4 billion for the first tranche. The first contracts were awarded in autumn 2024.

The Merz government has now expanded the scope substantially. Germany has unveiled an EUR 6 billion funding initiative that expands climate protection contracts to include carbon capture and storage (CCS), adjusts renewable energy deployment, and introduces regulatory relief for energy-heavy industries, including in the fields of chemicals, pulp and paper, steel, cement and lime, as well as ceramics, glass, and gypsum. Starting in 2026, CCS and carbon capture and utilization (CCU) projects will be eligible for state-backed 15-year climate contracts under a reverse-auction model. The preparatory phase for the 2026 bidding process launched on October 6, 2025, with participation required by December 1, 2025, to qualify for the auction, expected in mid-2026.

Germany pioneered CCfDs in Europe (only the Netherlands had a comparable scheme), and the EU has subsequently endorsed the instrument: the 2024 EU electricity-market reform (Directive 2024/1711) actively promotes CfDs and PPAs, and the Net-Zero Industry Act (NZIA, Regulation 2024/1735) and Clean Industrial Deal explicitly support such mechanisms. EU state-aid clearance under the revised CEEAG (Climate, Environmental Protection and Energy Aid Guidelines) is required for each tender round.

2. National Hydrogen Strategy and the Hydrogen Core Network

The **Nationale Wasserstoffstrategie**, originally adopted in 2020 and substantially updated in July 2023, is Germany's framework for the green-hydrogen ramp-up. The strategy update assumes total hydrogen demand in 2030 will be 95-130 terawatt hours (TWh), including derivatives like ammonia, methanol or synthetic fuels. Today's demand is around 55 TWh, supplied using fossil gas. The country will have to import 50-70 percent of this by 2030, later an even higher share.

22

Key pillars:

1. **Domestic electrolyser capacity of 10 GW by 2030** (doubled from 5 GW in the original strategy).
2. **A "hydrogen core network" (Wasserstoffkernnetz)** of about 9,000 km of new and repurposed pipelines, prioritised through 1,800 km of "start-up grid" by 2027/2028. The Bundesnetzagentur approved the core network in October 2024; financing is via a regulated charge with state backstop. To support these developments, investment of around EUR 20 billion is expected in transport infrastructure by 2030. This will involve repurposing existing natural gas pipelines and constructing new hydrogen pipelines.
3. **Import diversification** through the Wasserstoff-Importstrategie (2024), with bilateral partnerships (Norway, Denmark, the Netherlands, Australia, Namibia, Morocco, UAE, Canada) and the **H2Global** double-auction platform that procures hydrogen abroad and resells it in Germany.
4. **Prioritised hydrogen use** in hard-to-abate sectors: industry (steel, chemicals, refineries), heavy-duty road transport, aviation (e-SAF), shipping (ammonia/methanol) and dispatchable backup power (hydrogen-ready gas plants).
5. **EU integration via IPCEIs** (Important Projects of Common European Interest) on hydrogen technologies and infrastructure, the European Hydrogen Backbone, and RFNBO rules under RED III.

3. Carbon Management Strategy and the new CO₂ Storage and Transport Act

The most striking change in recent German climate policy is the formal acceptance of carbon capture, utilisation and storage as a legitimate mitigation pillar — after a decade of de-facto prohibition.

Background. The 2012 Carbon Dioxide Storage Act (Kohlendioxid-Speicherungsgesetz, KSpG) had transposed the EU CCS Directive (2009/31/EC) but in a deliberately restrictive form. For over a decade, Germany's legal framework for CCS has been governed by the Carbon Dioxide Storage Act (Kohlendioxid-Speicherungsgesetz – KSpG), enacted in 2012. While the law was intended to enable research, testing and demonstration of CCS technologies, it effectively imposed a de facto ban on commercial-scale deployment. Applications for storage projects had to be submitted by the end of 2016 and were subject to strict volume limits. In

addition, federal states were granted the right to opt out of hosting CCS sites within their territories. As a result, no commercial storage facility was ever permitted.

Carbon Management Strategy (CMS, 2024). The Habeck-led BMWK published a CMS Eckpunktepapier in February 2024 and the full strategy in May 2024, establishing CCS/CCU as a necessary instrument for emissions that are technically unavoidable — primarily process emissions from cement, lime, glass, certain chemicals, and waste incineration. The strategy distinguishes three categories: emissions that should be avoided (no public CCS support), emissions that are difficult to avoid (subsidised CCS allowed), and unavoidable process emissions (CCS strongly supported). It also flags a parallel **Long-term Strategy for Negative Emissions (LNe)** to govern CDR (Carbon Dioxide Removal) — covering BECCS, DACCS, biochar, enhanced rock weathering, and ocean-based methods.

23

The new KSpTG (Kohlendioxid-Speicherungs- und Transportgesetz, in force since 28. November 2025) is the legal cornerstone. Key provisions:

- For the first time, carbon capture, utilisation, and storage (CCS/CCU) will be permitted on a commercial scale.
- The focus is on offshore CO₂ storage in the German continental shelf and the Exclusive Economic Zone. The objective is to ensure that permanent storage is conducted offshore, i. e. outside sensitive land areas. Storage within the 12-nautical-mile zone remains prohibited. Storage on the mainland remains prohibited in principle, with the exception of research projects. While the previous legislation allowed the federal states the option of prohibiting storage through an "Opt-Out," the KSpTG reverses this approach: Now, the federal states can actively determine through an "Opt-In" that permanent storage of carbon dioxide is permitted on their territory or in certain regions.
- The London Protocol amendment was ratified in January 2026, allowing **cross-border CO₂ export** to e.g. Norway (Northern Lights) and Denmark.
- The act explicitly implements key provisions of Regulation (EU) 2024/1735 – the so-called Net Zero Industry Act (NZIA). Under the NZIA, member states are required to accelerate the expansion of key climate-relevant technologies and ensure a minimum annual CO₂ storage capacity of at least 50 million tons within the EU by 2030.

Funding. A €6 billion funding envelope for industrial decarbonisation in 2026 (announced by Economy Minister Reiche in October 2025) for the first time includes CCS/CCU projects under the Klimaschutzvertrag scheme. The 2026 federal budget also earmarks €111 million for carbon dioxide removal (CDR), including €98 million in project funding and €11.5 million for public procurement of CO₂ removals—plus €320 million in multi-year commitments through 2033.

Caveats. The framework is new and the political-economy challenges are real. So far, no federal state has announced that it will make use of the opt-in clause. Some even expressly reject CO₂ storage on their territory. The EEZ is already largely over planned due to shipping, wind energy, pipelines and marine protected areas. Identifying suitable and legally feasible offshore storage sites is therefore extremely challenging. As long as CCS is not integrated into maritime spatial and technical planning, the primary use case for CCS in Germany in the short to medium term is likely to be CO₂ export – particularly to Norway and Denmark. There is neither a robust carbon management strategy (CMS) nor a long-term strategy for negative emissions or a finalised power plant strategy. Thus, the legislative act precedes the political strategy. Without such a decision on the direction to take, the necessary orientation for investment decisions is lacking. In addition, the gap between the estimated costs of CCS projects (approx. 130–300 EUR/t CO₂) and the current price of emission allowances (approx.

90 EUR) is still too large. Environmental NGOs have warned against using CCS for "technically avoidable" emissions, fearing lock-in of fossil infrastructure.

4. Transport and mobility strategies

Beyond the EU's CO₂ standards for vehicles (which Germany helped renegotiate in late 2025 to soften the strict 2035 ICE ban), the federal government runs:

- **EV purchase incentives** (currently being redesigned after the 2023 budget shock; the new government has introduced replacement subsidies).
- **Charging infrastructure roll-out** under the Masterplan Ladeinfrastruktur II (target: 1 million public charging points by 2030; currently around 180,000 as of end 2025).
- **Heavy-duty truck strategy** combining the EU CO₂-standards for trucks (Regulation 2019/1242 as amended), the **Lkw-Maut** with CO₂ surcharge introduced 1 December 2023, and funding for charging/H₂-refuelling along TEN-T corridors.
- **Deutschlandticket** (€63/month) for public transport — a flagship demand-side mobility instrument with potential climate-effectiveness.
- **Sustainable Aviation Fuel (SAF) quotas** (transposed from RED III and ReFuelEU Aviation, including a binding 2% RFNBO quota by 2030).
- **FuelEU Maritime** transposition for shipping decarbonisation.

5. Circular Economy and Resource Strategy

The **Nationale Kreislaufwirtschaftsstrategie (NKWS, 2024)** translates EU circular-economy policy (Circular Economy Action Plan, Ecodesign for Sustainable Products Regulation 2024/1781, packaging, batteries, end-of-life vehicles) into a national framework aiming to halve primary raw-material consumption by 2045. Climate co-benefits are substantial — recycled steel, aluminium, plastics and concrete embed far less CO₂ — though circular policy is only loosely integrated with the KSG accounting.

6. Climate-policy architecture and relationship to EU policy

The relationship between national and EU instruments is structured along three axes:

1. Direct transposition. Several major German acts implement EU directives:

- The KSpTG implements Directive 2009/31/EC (CCS Directive) and elements of NZIA.
- The Gebäudeenergiegesetz / future Gebäudemodernisierungsgesetz transposes the EU Energy Performance of Buildings Directive (EPBD recast 2024) and Energy Efficiency Directive (EED).
- The new RED III implementing legislation (cabinet-approved late 2025) sets the GHG intensity reduction obligation for transport fuels with the RFNBO quotas.
- The Wärmeplanungsgesetz reflects EED Article 25 obligations on local heating planning.

2. National operationalisation of EU framework regulations. ESR (2018/842), LULUCF (2018/841), EU Climate Law (2021/1119) and Governance Regulation (2018/1999) establish binding outcomes and reporting obligations; Germany meets these through its Klimaschutzgesetz (KSG), the **Nationaler Energie- und Klimaplan (NECP)** updated and submitted to the Commission on 29 August 2024, the annual Klimaschutzprogramm, and the climate inventory submissions managed by UBA. The KSG sets the -65% by 2030, -88% by

2040 and net-zero by 2045 targets — which, under EU Climate Law, can only be tightened, not relaxed.

3. Co-financing and state aid. Most of the major German support programmes (CCfD, hydrogen IPCEIs, decarbonisation funding, building-renovation subsidies) require Commission approval under EU state-aid rules (CEEAG, GBER, IPCEI framework). Germany also draws on EU funds: the **Modernisation Fund and Innovation Fund** of the EU ETS, the **Recovery and Resilience Facility** (the German Aufbau- und Resilienzplan ran out in August 2026 with €28 billion deployed), the **Just Transition Fund** for the lignite regions (Lausitz, Rhineland, Central Germany), and **CEF Energy** for cross-border infrastructure.

4. Influence on EU policy. Germany — as the largest emitter in the EU — actively shapes EU policy. Recent examples include the late-2025 weakening of the 2035 ICE ban (the EU Commission proposed allowing combustion vehicles meeting a 90% CO₂ reduction rather than a full ban after 2035, partly in response to German auto-industry pressure), Germany's strong support for the **2040 EU climate target of -90%** (provisionally agreed by Council and Parliament in December 2025), its co-leadership of the **Clean Industrial Deal** debate, and its active role in shaping the EU's Industrial Carbon Management Strategy.

25

Other notable national instruments

Several smaller but important instruments fill out the picture:

- **Klimaanpassungsgesetz (Climate Adaptation Act, 2024)** — (see below question 11).
- **Bundesförderung für effiziente Gebäude (BEG)** — the unified federal funding instrument for building energy efficiency and renewable heating, providing up to 70% subsidies for heat-pump installations.
- **Bundesförderung für effiziente Wärmenetze (BEW)** — district-heating decarbonisation programme.
- **Dekarbonisierung der Industrie** — the legacy programme alongside CCfD for SMEs and industries not eligible for CCfD.
- **Aufbau- und Resilienzplan (DARP)** — Germany's national plan under the EU Recovery and Resilience Facility, with significant climate components (charging infrastructure, hydrogen, building renovation).
- **The Power Plant Strategy (Kraftwerksstrategie)** — currently being finalised, intended to procure ~12 GW of hydrogen-ready gas-fired backup capacity through tenders, designed to be compatible with EU state-aid rules and the EU electricity-market reform's capacity-mechanism rules.
- **Sondervermögen Infrastruktur (€500 billion, 2025)** — the new infrastructure special fund created in March 2025 has €100 billion earmarked for the KTF and additional billions for grid expansion, rail, and climate-relevant infrastructure investments. In March 2025, the legislator decided to create a new fund of 500 billion EUR designated for additional investments (over 12 years) into infrastructure projects but also to achieve climate neutrality by 2045. 100 billion EUR of this new fund are allocated to the KTF.
- **Sustainable Finance Strategy** — German implementation of the EU Sustainable Finance Disclosure Regulation, EU Taxonomy, CSRD/CS3D and Green Bond Standard.

10. Social and Regional Compensation Mechanisms

Are there national mechanisms to provide social or regional compensation for the burdens arising from climate protection measures? Is any form of “climate dividend” or “climate payment” being issued?

Compensation mechanisms for climate-protection burdens in Germany

The short answer: Germany has **regional and sectoral** compensation mechanisms in place, but **no per-capita “climate dividend”** has been implemented, despite years of political promises. As of 2026, the planned *Klimageld* exists only as a concept.

26

The “Klimageld” — promised but not implemented

The *Klimageld* (also called *Klimaprämie* or *Klimadividende*) is the German version of the carbon-fee-and-dividend idea: revenues from CO₂ pricing on heating fuels and transport fuels would flow into a fund and be paid back equally per capita to all residents. Those who behave in a climate-friendly way would benefit financially, while higher emitters would pay more — and because higher emissions tend to correlate with higher incomes, the mechanism would tend to favor lower-income households.

Status of the policy:

- The 2021 coalition government of SPD, Greens and FDP announced a *Klimageld* in their coalition agreement, intending to channel revenues from the CO₂ tax back to citizens in full or in part.
- The previous government never actually implemented it. In a written response to a CDU/CSU parliamentary question (Drucksache 20/13865, 19 November 2024), the federal government stated that the precise design of a *Klimageld* should be deliberated in the next legislative period.
- The CDU/CSU–SPD coalition agreement that followed the February 2025 federal election does not include a *Klimageld*; instead it states that revenues from CO₂ pricing will be returned to consumers and businesses through noticeable relief on electricity prices and through investment subsidies for climate neutrality.
- On 20 March 2026, the Bundestag rejected a motion by Die Linke titled “Klimageld – Sofort und sozial gerecht” (21/789), with CDU/CSU, AfD and SPD voting against and the Greens and Die Linke voting in favor.

What exists instead as social/price relief in 2026:

- The gas-storage levy (Gasspeicherumlage) was abolished in 2026, saving a four-person household between €30 and €60 per year depending on consumption. Federal funds are being used to lower electricity grid fees, which can mean about €100 in relief at an annual consumption of 3,500 kWh. The electricity tax cut, however, applies only to companies — households do not benefit directly.
- The commuter allowance (Entfernungspauschale) was set to 38 cents per kilometer from 1 January 2026, applying from the very first kilometer rather than only from the 21st kilometer as before. For low-income earners who do not benefit from the tax-based allowance, the Mobilitätsprämie remains in place and has been made permanent.

- The Klimasozialfonds (EU Social Climate Fund) will channel money to Germany once ETS 2 — the European emissions trading system covering road transport and heating fuels — starts in 2028.

The administrative groundwork has been partially built: it has already been determined that any future Klimageld payment would be made through a new state direct-payment mechanism (Direktauszahlung), for which citizens would need to provide their bank account details to the Federal Central Tax Office (Bundeszentralamt für Steuern).

Regional compensation: the coal-phase-out package

Where Germany *has* built a substantial compensation system is at the regional level, for areas affected by the coal phase-out.

The legal framework is the **Strukturstärkungsgesetz Kohleregionen** (Structural Development Act for Coal Regions) of 2020, which accompanies the Kohleausstiegsgesetz (Coal Phase-Out Act). The federal government supports structural change in coal-mining areas with up to €40 billion through 2038, aiming to open new opportunities for sustainable economic activity with high-quality jobs as Germany phases out coal.

The package has two pillars:

- Under the Investitionsgesetz Kohleregionen, the lignite regions receive financial assistance of up to €14 billion through 2038 for particularly significant investments by the federal states and municipalities (the "first pillar"). In addition, the federal government supports the regions through measures within its own competence with up to €26 billion through 2038, including expansion of research and funding programs, transport infrastructure projects, and the relocation of federal agencies (the "second pillar").
- Beyond that, the remaining hard-coal power plant locations receive €1.09 billion, and the former lignite areas in the districts of Helmstedt and Altenburger Land each receive up to €90 million. Eligible structurally weak hard-coal locations include Wilhelmshaven, Unna, Hamm, Herne, Duisburg, Gelsenkirchen, Rostock, Saarlouis and Saarbrücken.

There are also worker-specific protections: workers aged 58 and over who lose their jobs in a power station or open-cast mine as a result of the phase-out can receive transitional payments (Anpassungsgeld) for up to five years until they reach pensionable age.

The EU contributes through the **Just Transition Fund**: the German lignite regions, the northern Ruhr area, Chemnitz and the Uckermark together have access to €2.477 billion in JTF funds, although at least 85% of this is offset against the funding from the Strukturstärkungsgesetz.

Separately, the operators of coal power plants themselves received compensation for early closures — for hard coal through declining-cap auctions, and for lignite through negotiated contracts with RWE and LEAG. This is compensation to companies, not to citizens or regions in the social sense.

11. Adaptation

Are there national programmes for climate adaptation? How can these be briefly described? Should the EU, from a national perspective, develop climate adaptation programmes, or should this remain the responsibility of the Member States?

11.1. Germany's national adaptation framework

Germany has built up a coherent, legally binding adaptation framework over the past two decades, which now rests on three pillars:

28

1. The Federal Climate Adaptation Act (Klimaanpassungsgesetz, KAnG)

The Act entered into force in July 2024 and requires the federal government, the federal states (Länder) and municipalities to draw up strategies and plans to adapt to global heating, based on risk analyses and underpinned by specific programmes of measures. The Act also mandates a regular Climate Risk Analysis at least every eight years as the scientific basis for adaptation planning.

2. The German Climate Adaptation Strategy 2024 (Deutsche Anpassungsstrategie, DAS 2024)

Adopted by the Federal Cabinet on 11 December 2024, it is the first strategy of its kind in Germany to establish measurable targets for climate adaptation. It contains 33 targets and 45 sub-targets, most to be met by 2030 and some by 2050. Target-specific indicators will be used to measure progress. The Plan promises no additional bureaucracy or reporting requirements for private individuals or companies.

The targets are organised in seven clusters covering the full range of adaptation and precautionary measures — broadly: human health and care, water, infrastructure, land and land use, economy, urban development, and cross-cutting issues such as research and spatial planning. Examples of concrete goals include strengthening the public's ability to adapt to heat and ultraviolet rays by 2030, optimising transport and logistics conditions on federal waterways by 2030–2040 to keep rivers navigable at low water levels, reducing weather-related disruptions to road and rail transport by 2050, and adapting buildings and properties to make existing buildings more resilient by 2030–2050 through precautionary structural measures. The strategy is operationalised through the **Adaptation Action Plan IV (APA IV)**, which lists the concrete federal measures.

3. Funding instruments and support structures

The Federal Environment Ministry has launched two support programmes to aid federal states and municipalities in their adaptation efforts: one funding climate adaptation managers (DAS) and the other promoting adaptation in social institutions (AnPaSo). The Zentrum KlimaAnpassung serves as the first point of contact for municipalities and social institutions, providing tailored advice, training and networking.

The system is multi-level by design: climate adaptation is not only an undertaking for the entire German government, but also for the federal states, municipalities and companies — the federal

government is setting a framework to advance adaptation in all areas of life. All 16 Länder have their own adaptation strategies, and many cities (Hamburg, Berlin, Munich, Bremen, etc.) have additional municipal heat-action plans, stormwater concepts, and green-infrastructure programmes. Federal financing increasingly flows through the Climate and Transformation Fund (KTF) and the recently established €100-billion Sondervermögen for infrastructure.

11.2. Should adaptation be an EU task or a Member-State task?

Before discussing what *should* be the case, the legal starting point matters. According to articles 11 and 191–193 TFEU, the EU is competent to act in all areas of environmental policy, including climate change, and its scope for action is limited by the principle of subsidiarity. Fighting climate change is a shared competence: both the EU and its Member States may adopt legally binding acts, but the Member States can do so only where the EU has not exercised its competence or has explicitly ceased to do so. So the question is not "EU *or* Member States" but how the shared competence should be calibrated.

The EU has already exercised this competence: on 24 February 2021, the European Commission adopted "Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change", which outlines a long-term vision for the EU to become a climate-resilient society fully adapted to the unavoidable impacts of climate change by 2050. The European Climate Law recognises adaptation as a key component of the long-term global response and requires Member States and the Union to enhance their adaptive capacity, strengthen resilience and reduce vulnerability — and it introduces a requirement for the implementation of national strategies.

Climate adaptation instruments in the EU Nature Restoration Regulation

Climate adaptation is built into the Nature Restoration Regulation (Regulation (EU) 2024/1991, "NRR" or "Nature Restoration Law") at three levels: as one of the explicit purposes of the law, as a planning requirement that Member States must address in their National Restoration Plans, and as a set of concrete habitat-related obligations that function as nature-based adaptation measures.

Adaptation is not an incidental side effect but a stated aim. The regulation aims to restore ecosystems in order to ensure biodiversity, resilience, and contribute to climate change mitigation and adaptation. Key objectives include restoring degraded ecosystems, supporting climate change mitigation, adaptation and land neutrality goals, enhancing food security, and meeting international commitments (Article 2).

Most of the substantive obligations function simultaneously as nature-based adaptation measures. The most important:

Peatland rewetting (Article 11) — perhaps the strongest combined mitigation/adaptation provision. Member States are required to restore and partially rewet drained agricultural peatlands: 30% by 2030 (of which at least a quarter rewetted), 40% by 2040 (a third rewetted) and 50% by 2050 (a third rewetted), with potential exemptions under certain circumstances such as infrastructure, buildings, climate adaptation or other public interests. Member States are encouraged to provide incentives to make rewetting an attractive option for farmers and landowners. Rewetted peatlands store carbon, retain water in landscapes during droughts, buffer floods, and cool local microclimates.

River connectivity and floodplain restoration (Article 9) — the most direct flood-adaptation tool in the regulation. Member States are required to restore the natural connectivity of rivers and the natural functions of related floodplains, contributing to the objective of restoring at least 25,000 km of rivers into free-flowing rivers by 2030. Reconnected floodplains absorb peak flows, reducing downstream flood damage — a function that proved decisive during the 2021 Ahr Valley and 2024 Central European floods.

Urban ecosystems (Article 8) — the principal heat-adaptation tool. Member States must halt the loss of urban green and increase urban green space and urban tree canopy cover. "Urban Green Space" is defined as the total area of trees, bushes, shrubs, permanent herbaceous vegetation, lichens and mosses, ponds and watercourses found within cities or towns and suburbs, while "Urban Tree Canopy Cover" is the total area of tree cover within cities and towns and suburbs. This addresses urban heat islands, stormwater retention and air quality at once.

Forest ecosystems (Article 12) — climate-resilient forests. The regulation requires an increasing trend in indicators including standing and lying deadwood, share of forests with uneven-aged structure, forest connectivity, organic carbon stock, share of forests dominated by native species, and tree species diversity — each of which contributes to resilience against drought, storms, fires and pests.

Agricultural ecosystems (Article 11) — soil and landscape resilience. The law mandates increasing populations of grassland butterflies, enhancing organic carbon stocks in cropland soils, and expanding high-diversity landscapes in agricultural regions. Higher soil organic carbon improves water retention and drought tolerance; landscape features (hedges, ponds, buffer strips) reduce erosion and runoff.

Marine and coastal ecosystems (Articles 5 and 6) — coastal protection. Restoration of seagrass meadows, oyster reefs and coastal wetlands provides natural shoreline buffering against storm surges and sea-level rise.

Arguments for keeping the main responsibility with Member States (and within Germany, with the Länder and municipalities):

- Adaptation needs are highly *place-specific*. Heat in Cologne, low water on the Rhine, coastal flooding on Sylt, and pine-forest die-off in Brandenburg call for very different responses. A Berlin-based ministry can already struggle to do justice to these differences; Brussels would struggle more.
- German federal structure allocates many of the relevant competences (spatial planning, building law, water management, civil protection, public health, education) to the Länder and municipalities. EU programmes that bypass this allocation create constitutional friction and risk weakening locally embedded knowledge.
- Adapting to climate change is mostly a matter of regional and local action. The decisions that actually reduce risk — where to plant trees, how to manage a forest, where to dig retention basins, how to renovate a hospital — are inherently sub-national.
- A subsidiarity-based reading of TFEU Article 5 favors EU action only where Member States cannot achieve objectives sufficiently on their own.

Arguments for a stronger EU role:

- Climate impacts cross borders. River basins (Rhine, Danube, Oder), coastlines, ecosystems, migratory species, and supply chains do not respect national boundaries.

Climate impacts have significant cross-border effects and threaten to deepen existing divisions; cooperation on adaptation may be useful even though it is mostly seen as requiring local or regional efforts.

- Solidarity and financing: poorer or more exposed regions cannot finance adaptation on the scale needed. EU instruments — Cohesion Funds, the LIFE programme, the Just Transition Fund, the Solidarity Fund — pool risk and capacity.

12. New liability/compensation regime in the Air Quality Directive (2024/2881) and the amended IE Directive (2024/1784)

31

The new Air Quality Directive 2024/2881, art. 28. and the amended IE Directive (2024/1785) requires Member States to establish a liability/compensation regime regarding persons suffering damage to human health caused by violation of the EU-obligations under the two directives. The new EU-obligation should be seen in light of the CJEU-ruling in C-61/21 in which the CJEU rejected Member State liability for human health damage based on the (old) Air Quality Directive. The new obligations place Member States as the one who should pay compensation for the damage, but the legal implications of the new regimes are not entirely clear. How is the new obligation on liability/compensation in the new Air Quality Directive and the amended IE Directive intended to be implemented in your Member State?

Implementation of Article 28 AAQD 2024/2881 and the parallel IED compensation regime in Germany

1. The new EU obligation in context

The starting point is that Article 28 of Directive (EU) 2024/2881 (recast Air Quality Directive, AAQD) and the parallel provision inserted into the amended IED (Directive (EU) 2024/1785) impose on Member States a duty to provide a *Schadensersatzanspruch* — a compensation claim — for natural persons whose health has been damaged by an intentional or negligent breach by competent authorities of certain core obligations. As Article 28(1) AAQD puts it: Member States shall ensure that natural persons who suffer damage to human health caused by a violation of the national rules transposing Article 19(1) to (5) and Article 20(1) and (2) of this Directive that has been committed intentionally or negligently by the competent authorities have the right to claim and obtain compensation for that damage. Article 28(2) and (3) add that procedural rules must not make the claim impossible or excessively difficult, and that Member States may set limitation periods that begin only once the violation has ceased and the damage is reasonably knowable.

This is the EU legislator's response to the Court's ruling in **Case C-61/21 (JP v Ministre de la Transition écologique, 22 December 2022)**; see B. W. Wegener / M. Wilkens, No Francovich in environmental law: The ECJ's decision in J.P. v. Ministre de la Transition Écologique, CMLRev. 60 (2023) 1773-1786), where the CJEU held that the old Air Quality Directive 2008/50/EC and its predecessor 96/62/EC do not confer rights on individuals capable of grounding *Francovich* state liability for health damage from breaches of the limit-value/air-quality-plan obligations. The new directives take that conclusion away: the right to compensation is now expressly written into the secondary law itself, so the "intended-to-confer-rights" leg of *Francovich* (and of national state-liability law that mirrors it) is satisfied by legislative fiat.

The IED amendment follows the same logic. National provisions should not impede the effective operation of the compensation mechanisms under Directive 2010/75/EU. Directive 2004/35/EC does not give private parties a right to compensation as a result of environmental damage or an imminent threat of such damage. The new compensation regimes are thus deliberately positioned as a *separate* private-law/quasi-public-law remedy alongside, but distinct from, the Environmental Liability Directive (ELD) (which addresses environmental, not personal, damage) and the Aarhus access-to-justice mechanism.

2. The German legal starting point: existing state-liability law

Before transposition, Germany already has a general state-liability (*Amtshaftung*) regime that the new EU obligation will largely be channelled through:

- **§ 839 BGB in conjunction with Art. 34 GG** — the central German basis for state liability. Whenever a public official breaches an *Amtspflicht* (official duty) owed to a third party (*drittgerichtete Amtspflicht*), the state steps in for the personal liability of the official. Fault (intent or negligence) is required.
- **The unionsrechtlicher Staatshaftungsanspruch** — Germany also recognises the *Francovich*/EU-law liability claim as a separate basis when EU-law rights are breached by the state, applied in parallel with § 839 BGB.

The crucial feature is that German *Amtshaftung* under § 839 BGB requires the breached duty to be specifically directed at protecting the claimant (*Drittbezogenheit*). Until *C-61/21* was decided in late 2022, it was actively contested in German doctrine and case-law whether the limit-value and air-quality-plan duties under the AAQD/BImSchG were *drittbezogen* in respect of individual health. The CJEU's negative answer in *C-61/21* effectively closed that route under the *old* directive. Article 28 of the new AAQD reopens it — but, importantly, it requires Member States to *establish* the regime, leaving its design to national law within the limits of effectiveness and equivalence.

3. How Germany plans to transpose: current state (as of mid-2026)

The transposition is occurring through two parallel legislative tracks, both anchored in the **Bundes-Immissionsschutzgesetz (BImSchG)** and its subordinate ordinances (especially the **39. BImSchV**, which already transposes the existing limit-value system).

IED 2.0 (Directive 2024/1785) — further along

This is the more advanced track because the IED transposition deadline is **1 July 2026**. On 21 January 2026 the Federal Cabinet adopted a draft act ("Artikelgesetz") to transpose the new IED, with the package also being used to lay the groundwork for a modernisation of German emissions-control law. The Federal Government adopted the draft omnibus act and accompanying omnibus ordinance to transpose Directive (EU) 2024/1785 on 21 January 2026.

AAQD 2024/2881 — under preparation

The deadline here is **11 December 2026**. By 11 December 2026 at the latest, Germany must have transposed the new EU Air Quality Directive. The directive will be transposed domestically in the BImSchG and the 39. BImSchV.

4. How the compensation/liability obligation specifically will be implemented

Several points characterise the likely German approach:

(a) Channelling through § 839 BGB / Art. 34 GG rather than creating a wholly new private-law claim. The German legislator's strong preference is to integrate new EU-mandated state-liability obligations into the existing *Amtshaftung* architecture. Article 28 fits that template very well: it requires fault (intent or negligence), it targets *competent authorities*, and the damage is health-related — all features that map onto § 839 BGB. The likely design is a clarifying provision in the BImSchG (probably accompanying §§ 47, 47a BImSchG, which contain the air-quality-plan obligations). The planned new § 65 BImSchG will read as follows (my own translation):

Section 65 of the Federal Immission Control Act (BImSchG): Damages

(1) If the operator of an installation under the Industrial Emissions Directive infringes Section 5 paragraph 1 numbers 1 and 2, or paragraphs 3 to 5, and the health of another person is thereby harmed, the operator shall be obliged to compensate the injured party for the damage arising therefrom.

(2) If, in the exercise of a public office, a person intentionally or negligently infringes a requirement of Section 47 or a provision concerning air quality plans, air quality roadmaps, or short-term action plans contained in a statutory ordinance issued pursuant to Section 48a, and the health of another person is thereby harmed, the public authority in whose service the office holder stands shall be obliged to compensate the injured party for the damage arising therefrom.

(3) Claims for damages under paragraphs 1 and 2 shall be subject to a limitation period of three years. The limitation period shall begin at the end of the year in which:

1. the claim arose,
2. the infringement giving rise to the claim has ended, and
3. the claimant has obtained knowledge, or could reasonably be expected to know, that damage has been caused by the infringement.

(b) Procedural-effectiveness requirements (Art. 28(2)) — adjustments to evidence and causation rules. Article 28(2) requires that national rules not render the claim "impossible or excessively difficult". This is the trickier part for German law: the burden of proving (i) breach by the competent authority, (ii) fault, (iii) concrete health damage, and (iv) causation between the breach and the individual damage is normally on the claimant under § 286 ZPO. For air-pollution-induced health damage that causal proof is notoriously difficult (background exposure, multifactorial diseases). Two implementation options are being discussed:

- A *causation presumption* (similar to those used in product-liability contexts), e.g. that exceedance of a limit value at the claimant's place of residence/work over a relevant period is presumed to have causally contributed to a documented health condition typical for that pollutant unless the authority proves otherwise.
- *Burden-of-proof reversal* on fault (negligence), once an objective breach (exceedance and absence of an adequate plan) is shown — modeled on existing patterns in German environmental and product law.

The *Referentenentwurf* text published so far do not yet finalise the design, but the academic and ministry commentary points toward the lighter touch (declaration of *Drittbezogenheit* plus a

rebuttable causation presumption tied to limit-value exceedances) rather than a full new strict-liability statute.

(c) The defendant: which "competent authority"? A complication peculiar to German federalism is that the obligations flowing from Articles 19 and 20 AAQD are split: the *Länder* are responsible for adopting and enforcing the air-quality plans (*Luftreinhaltepläne*) under § 47 BImSchG, while the federal level is responsible for setting the framework (39. BImSchV, BImSchG). Article 34 GG channels liability to the public-law entity in whose service the official acts — i.e., as a rule, the relevant *Land*, sometimes the municipality. Litigation will therefore typically be in the ordinary courts (LG/OLG/BGH) against the relevant *Land*, not against the Federation. The transposition will need to clarify the addressee, particularly for *Überschreitungsgebiete* (exceedance zones) crossing administrative boundaries.

34

(d) Limitation periods. For the compensation claim, Member States may set a limitation period. Germany will almost certainly use the standard three-year limitation under § 195 BGB, but with the directive-required modifications (start of the period only after the violation has ceased and the claimant knows or ought to know of damage and violation — broadly compatible with § 199 BGB's *Kenntnis* trigger, but the "violation must have ceased" element will need an explicit textual hook because German law normally lets the period run from knowledge alone).

(e) Access to justice and NGO standing. The directive also strengthens NGO representation. The revision imposes sanctions on Member States in the event of non-compliance and guarantees the right to receive compensation and to be represented by non-governmental organisations to persons whose health has been affected by pollution, in the event of violation of European standards (Article 28). Germany already has the **Umweltrechtsbehelfsgesetz (UmwRG)** for environmental NGO standing in administrative-court actions; an extension to support individual compensation claims (e.g., representative or assistance role in the civil courts) is being examined as part of the *UmwRG* amendment that the Federal Cabinet pushed forward in parallel on 22 January 2026.

(f) Relationship to existing remedies. The new private-law compensation claim sits alongside, and does not replace:

- the *Klagerechte* of NGOs and individuals against deficient air-quality plans developed by the Bundesverwaltungsgericht in the *Diesel-Urteil* of 27 February 2018, where the Federal Administrative Court held that a traffic ban for diesel vehicles below Euro 6 and petrol vehicles below Euro 3 within a low-emission zone, where this proves to be the only suitable measure for the fastest possible compliance with NO₂ limit values, must be adopted under Article 23(1) subparagraph 2 of the Air Quality Directive;
- the Environmental Liability Directive transposition (Umweltschadensgesetz, USchadG), which addresses *environmental*, not personal, damage;
- the general tort claims under §§ 823 ff. BGB against polluting operators (private-law liability, distinct from state liability).

5. Open issues and likely litigation flashpoints

Several questions remain genuinely unresolved and will be tested in the courts after 12 December 2026:

- **The threshold for "negligent breach by competent authorities."** Is it negligent to adopt a plan that the agency genuinely believed sufficient at the time, but which proved inadequate? German doctrine on fault under § 839 BGB is relatively forgiving (*haftungsprivilegierte Beurteilungsspielräume*); the directive's effectiveness requirement may push toward a stricter standard.
- **Causation in epidemiologically diffuse settings.** How concrete must the link between exceedance and individual disease (asthma, cardiovascular event) be? German courts will need to import elements of probabilistic causation that the *Bundesgerichtshof* has so far been cautious about.
- **Quantification of damage.** The directive does not specify damage heads. German law will apply §§ 249 ff. BGB (Naturalrestitution, monetary damages for pain and suffering, loss of earnings).
- **Interplay with the IED compensation regime.** Where harm comes from an IED installation, claimants may have parallel claims against the operator (under § 906 BGB and the *Umwelthaftungsgesetz*) and against the authority (under the new IED-based regime) — the apportionment rules will need clarification.
- **Federalism:** which *Land* answers for transboundary plumes; how the *Bund* and *Länder* allocate ultimate fiscal responsibility (the *Konnexitätsprinzip* of Art. 104a GG).