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COMMISSION STAFF WORKING DOCUMENT

Environmental Implementation Review 2022
Country Report - GERMANY

Accompanying the document

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions

Environmental Implementation Review 2022: *Turning the tide through environmental compliance*

{COM(2022) 438 final} - {SWD(2022) 252 final} - {SWD(2022) 253 final} - {SWD(2022) 254 final} - {SWD(2022) 255 final} - {SWD(2022) 256 final} - {SWD(2022) 257 final} - {SWD(2022) 258 final} - {SWD(2022) 259 final} - {SWD(2022) 260 final} - {SWD(2022) 261 final} - {SWD(2022) 262 final} - {SWD(2022) 263 final} - {SWD(2022) 264 final} - {SWD(2022) 266 final} - {SWD(2022) 267 final} - {SWD(2022) 268 final} - {SWD(2022) 269 final} - {SWD(2022) 270 final} - {SWD(2022) 271 final} - {SWD(2022) 272 final} - {SWD(2022) 273 final} - {SWD(2022) 274 final} - {SWD(2022) 275 final} - {SWD(2022) 276 final} - {SWD(2022) 277 final} - {SWD(2022) 278 final}

This report has been written by the staff of the Directorate-General for Environment, European Commission.

Comments are welcome, please send them to: ENV-EIR@ec.europa.eu

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Executive summary

In previous Environmental Implementation Reviews (EIRs), the main challenges identified for Germany for the implementation of EU environmental policy and law were:

- reducing pressures on nature and water, in particular ground water from intensive agriculture, including the use nutrients;
- improving air quality, especially in densely populated areas.

On **nature,** the picture is mixed: while the share of habitats and species in good condition has slightly improved, the share of species in bad status has also grown, and the situation of hay meadows is of serious concern, and needs improvement. Germany's Natura 2000 network is now nearly complete, but in the Commission's view the quality of the set objectives and measures is insufficient for all Special Areas of Conservation (SACs). The situation for forested areas protected under the Nature Directives remains worrying as 31 % have a bad conservation status, and most peatland habitats have a bad or inadequate status. Restoring these ecosystems, which will also boost natural carbon sinks, needs to be accelerated. There has been further progress on ecosystem assessment and accounting.

According to the latest report on the implementation of the **Nitrates Directive**, groundwater quality has not improved, and water pollution caused by nitrates remains a serious concern. There are continuing acute problems with excess plant and algae growth due to high concentrations of nutrients (euthrophication) in the Baltic and North Seas. Germany still has to fully implement the ruling of the EU Court of Justice over the Nitrates Directive. In Germany only 8.1 % of all surface water bodies reach good ecological status. For many water bodies the environmental objectives will not be met by 2021 and may not even be met by 2027.

On **air quality** there has been some progress since the 2019 EIR, with new measures to bring air quality zones into compliance. While there were no exceedances for PM_{10}, five air quality zones still reported exceedances for NO_2 under the Ambiant Air Quality Directive in 2020. Additional measures are therefore needed to bring all zones into compliance with the Directive. The current submission of air pollutant emission projections under the National Emissions Ceiling Directive do not demonstrate reaching the emission reduction commitments for ammonia for 2020-2029 and from 2030 onwards and for $PM_{2.5}$ from 2030 onwards. According to the latest inventory data submitted by Germany, which are still to be reviewed by the Commission, Germany is in compliance with the emission reduction commitments for all pollutants in 2020.

On **waste management,** Germany remains at the top of the recycling league, and its circular material use rate is around EU average, but lags behind EU leaders. However, it is at the lower end of the table on municipal waste generation, with 632 kg of waste per person in 2020. Packaging waste in particular has increased. In view of the post-2020 recycling targets, efforts need to be pursued to strengthen waste prevention, reuse and remanufacturing. Making better use of the potential of circularity in industry will help reduce resource dependency, in particular fossil fuel-based raw materials.

Germany's recovery and resiliaece plan contains no measures having biodiversity as

their objective, but green infrastructure and the circular economy are priorities in cohesion funding for the new programming period. Given the overall small allocation of EU funds compared to GDP, the main source of funds to deal with investment needs must come from national and private sources.

Germany's overall **environmental financing** for investments came to 0.63 % of GDP in 2014-2020, relying heavily on national financing sources. The overall environmental investment needs in 2021-2027 are estimated to be at least 0.82 % of Germany's GDP per year, suggesting a potential environmental financing gap of 0.19 % of GDP, which needs to be addressed for environmental implementation.

Part I: Thematic areas

1. Circular economy and waste management

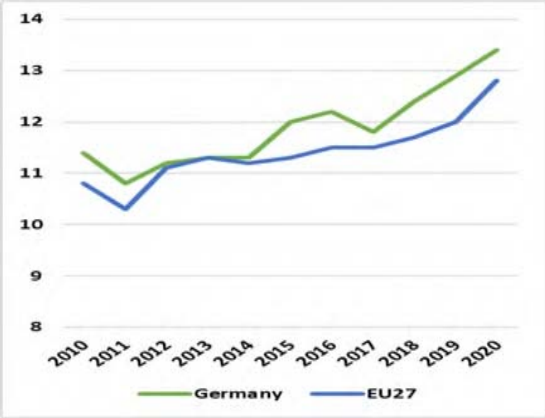
Measures towards a circular economy

The new circular economy action plan adopted in March 2020 is one of the main building blocks of the European Green Deal. The EU's transition to a circular economy will reduce pressure on natural resources and will create sustainable growth and jobs. It is also a prerequisite to achieve the EU's 2050 climate neutrality target and to halt biodiversity loss. The action plan announces initiatives along the entire life cycle of products, aiming to reduce the EU's consumption footprint and to double the EU's circular material use rate by 2030. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented and the resources used are kept in the EU economy for as long as possible.

The circular material use rate is a good indicator of an economy's circularity, as it includes all the materials that are fed back into our economy. Large differences in the circularity rate exist between countries. To help achieve the EU circular economy action plan's goal of doubling the EU's circular material use rate by 2030, ambitious measures targeting the whole product life cycle are needed at Member State level. Such measures range from sustainable product design that make it possible to able to increase the durability, reparability, upgradability and recyclability of products, to other measures like : (i) 'remanufacturing'; (ii) increasing circularity in production processes; (iii) recycling; (iv) boosting eco-innovation; (v) and increasing the uptake of green public procurement.remanufacturing, increasing the circularity in production processes, recycling, as well as boosting eco-innovation and increasing the uptake of green public procurement.

Germany's circular (secondary) use of materials rose from 11.4 % in 2017 to 13.4 % in 2020, compared to the EU average of 12.8 %. This shows a steady increase in recent years. But Germany has quite a way to go to chatch up with EU leaders - Netherlands (30.9 %), Belgium (23 %), and France 22.2 %).

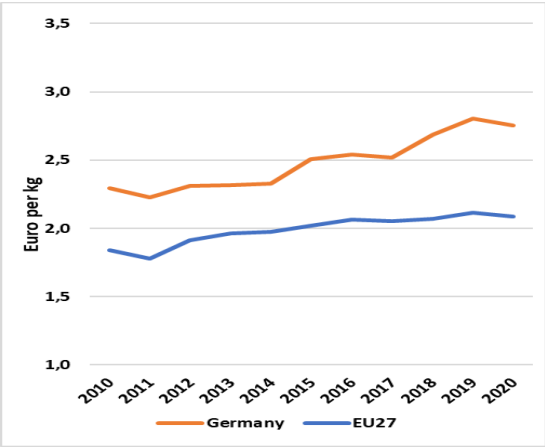
Figure 1: Circular material use rate (%) 2010-2020[1]



Resource productivity expresses how efficiently the economy uses material resources to produce wealth. Improving resource productivity can help to minimise negative impacts on the environment and reduce dependency on volatile raw material markets.

As shown in Figure 2, with EUR 2.76 generated per kg of material consumed in 2020, resource productivity in Germany is well above the EU average of EUR 2.09 per kg. This positive performance is further supported by a continuous increase in Germany's resource productivity over the last decade.

Figure 2: Resource productivity, 2010-2020[2]



[1] Eurostat, Circular Economy Monitoring Framework.
[2] Eurostat, Resource productivity.

Circular economy strategies

The Commission encourages Member States to adopt and implement national/regional circular economy strategies covering the whole life cycle of products, as they are one of the most effective ways to progress towards a more circular economy. Since the launch of the online European Circular Economy Stakeholder Platform in 2017[3], national, regional or local authorities have used the platform to share their strategies and roadmaps.

Germany currently does not have an overall circular economy strategy. The new government programme mentions that a comprehensive national circular economy strategy will be drawn up. So far several strategies and initiatives address many aspects of the circular economy. The resource efficiency programme PROGRESS, the waste prevention programme, the German hightech-strategy, the digtial policy agenda for the environment and the national programme on sustainable consumption all deal with different circularity aspects.

PROGRESS, the resource efficiency programmewas updated for the third time in June 2020 and now incorporates decarbonisation and digitalisation. These new elements stress the importance of resource efficiency for achieving Germany's climate targets, and address the potential and risks of digital transformation in the field of resource efficiency, as well as mobility in terms of resource efficiency.

Germany has a sectorial strategy for plastics. In 2018 it launched a five-point plan to lower the amount of plastic waste.The aim is to eliminate the use of unnecessary packaging, replace existing packaging with environmentally friendly alternatives, increase the recycling rate, encourage better separation of plastics from organic waste, and contribute to international efforts to reduce the amount of plastic waste in marine waters.

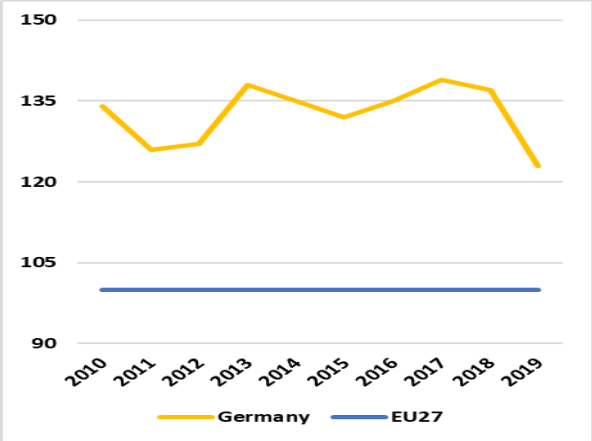
Eco-innovation

A successful transition to a circular economy requires social and technological innovation. this is because the full potential of the circular economy can only be reached when it is implemented across all value chains. Eco-Innovation is an important enabling factor for the circular economy. New appraoches to product design and new business models can help to produce systemic circularity innovations, creating new business opportunities.

[3] European Commission, Circular Economy Stakeholder Platform

Germany is an eco-innovation leader ranking sixth in the 2021 Eco-Innovation Scoreboard . In two out of five components, Germany performs above the EU average, namely the eco-innovation inputs and outputs., and below average on eco-innovation activities, socio-economic outcomes and resource efficiency outcomes.

Figure 3: Eco-innovation performance, 2010-2019[4]



Green public procurement (GPP)

Public procurement accounts for a large proportion of European consumption, with public authorities' purchasing power representing 14 % of EU GDP. Public procurement can help drive the demand for sustainable products that meet repairability and recyclability standards. To date reporting to monitor the uptake of green public procurement is voluntary.

Given that the federal authorities aim to be climate neutral by 2030, a stricter and more comprehensive regulation of green public procurement called AVV Klima entered into force on 1 January 2022. The new elements include life cycle costing, a list banning certain single-use plastics, encouraging alternatives to buying (benefit rather than ownership), and giving priority to recycled products. The German government used the occasion of transposing the 2018 waste package into national waste law to make the green public procurement of recycled products mandatory.

[4] European Commission - Directorate-General for Environment (DG ENV), Eco-innovation Observatory, Eco-innovation index.

EU Ecolabel and the eco management and audit scheme (EMAS)

The number of EU Ecolabel products and EMAS-licensed[5] organisations in a given country provides some indication of the extent to which the private sector and national stakeholders are actively engaged in the transition to a circular economy. It also shows how committed public authorities are to supporting instruments designed to promote the circular economy.

As of September 2021, Germany had 7 780 products out of 83 590 and 358 licenses out of 2 057 registered in the EU ecolabel scheme. Germany ranks first on registered licences and fourth on products in Europe[6]. Moreover, 1 115 organisations from Germany are currently registered in EMAS, 122 fewer than in 2019[7]. There have been 3 339 registrations for an EU Ecolabel and 37 new licence registrations since 2019.

Germany received a priority action in 2019 to strengthen its policy framework in order to to speed up the transition towards the circular economy by all economic sectors. As a circular economy strategy has been announced in the new government programme, but as work has not started yet, the priority action is repeated.

2022 priority action

- Strengthen the policy framework to speed up the transition towards the circular economy by all economic sectors, including priority sectors like plastics, textiles and construction.

Waste management

Turning waste into a resource is supported by:
(i) fully implementing EU waste legislation, which includes the waste hierarchy, the need to ensure separate collection of waste, the landfill diversion targets, etc.;
(ii) reducing waste generation and waste generation per capita in absolute terms;
(iii) limiting energy recovery to non-recyclable materials and phasing out landfilling of recyclable or recoverable waste.

This section focuses on the management of municipal waste[8] for which EU law sets mandatory recycling targets.

Preventing products and materials from becoming waste for as long as possible is the most efficient way to improve resource efficiency and to reduce the environmental impact of waste. In 2020 – as the first EU Member State – Germany introduced a new general "duty of care" in its *Kreislaufwirtschaftsgesetz* (Circular Economy Act), obliging producers and distributors to prevent goods from becoming waste by introducing certain measures, for example selling goods at a reduced rate or donating goods.[9]

Waste prevention and re-use are the most preferred options and top the waste hierarchy. The amount of municipal waste generated is a good indicator of the effectiveness of waste prevention measures.

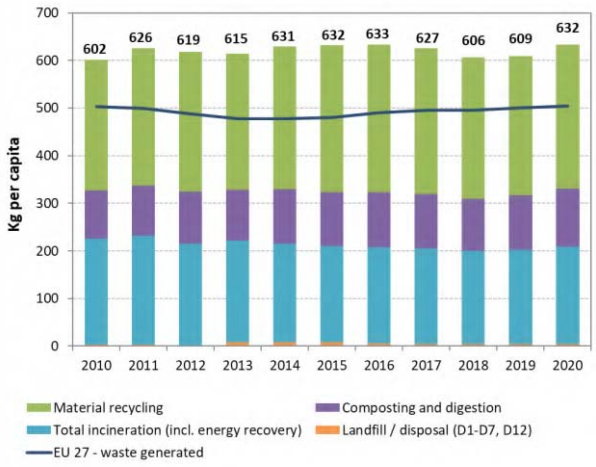
As Figure 4 shows, German municipal waste generation per capita has seen a slight decrease since 2016, but in 2020 the amount jumped back to 632 kg, which to a certain extent may be COVID-related. Germany has the fourth highest per capita rate, well above the EU average of 505 kg.

Total waste generation has remained steady overall since 2014, although there was an increase for some waste fractions such as packaging. Given that GDP continued to grow, the trend indicates that Germany seems to be on track to relatively decouple its waste generation from its economic growth[10]. Gven the overall high level of municipal waste, waste prevention measures taken so far have not been impactful enough, or not shown their impact yet.

[5] EMAS is the European Commission's Eco-Management and Audit Scheme, a programme to encourage organisations to behave in a more environmentally sustainable way.
[6] European Commission, Ecolabel Facts and Figures
[7] European Commission, Eco-Management and Audit Scheme

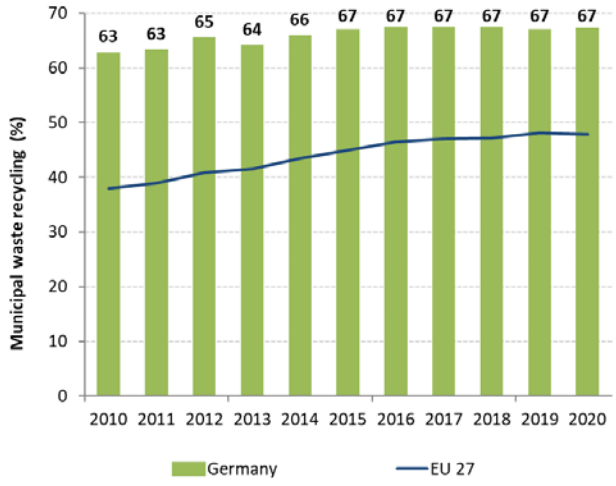
[8] Municipal waste consists of (a) mixed waste and separately collected waste from households, including paper and cardboard, glass, metals, plastics, bio-waste, wood, textiles, packaging, waste electrical and electronic equipment, waste batteries and accumulators, and bulky waste, including mattresses and furniture; (b) mixed waste and separately collected waste from other sources, where such waste is similar in nature and composition to waste from households. (Directive 2008/98/EC, Article. 3 2b).
[9] Even though this obligation is not yet concrete in what exactly producers or distrubuters have to do, it already has a 'radiation' effect.
[10] European Environment Agency, Overview of National Waste Prevention Programmes, Germany Country profile.

Figure 4: Municipal waste by treatment in Germany, 2010-2020[11]



Germany is one of the best performing countries in the EU in terms of waste treatment. It has the highest recycling rate across the EU. In 2019, Germany recycled 66.7 % of its municipal waste (see Figure 5) which is well above the EU 2020 recycling target of 50 % of municipal waste. Post-2020 recycling targets are ambitious particularly in terms of incineration, which has remained at the same rate since 2015.

Figure 5: Recycling rate of municipal waste, 2010-2020[12]



The Commission's 2018 early warning report'[12] did not list Germany as one of the countries at risk of missing the EU 2020 target of recycling 50 % of municipal waste. The Commission is finalising its analysis of the progress made on the recommendations set out in the 2018 early warning reports and an analysis of progress towards achieving the 2025 waste recycling targets. This report will be presented at the end of 2022 and will make recommendations as appropriate.

Implementation of the 2018 waste legislative package

Germany notified the transposition of the 2018 waste package[13] to the Commission. A conformity assessment is now ongoing.

Waste management plans and waste prevention programmes are instrumental for a sound implementation of the EU waste legislation. They set out key provisions and investments to ensure compliance with existing and new legal requirements (e.g. waste prevention, separate collection for a number of specific waste streams, recycling and landfill targets). Directive (EU) 2018/851 makes substantial amendments to the provisions of Directive 2008/98/EC which specified the content of waste management plans and waste prevention programmes. Adjustments to these plans and programmes are therefore necessary to bring them into line with Directive (EU) 2018/851. Revised plans and programmes were due on 5 July 2020.

Germany has notified an updated Waste Prevention Programme, however the notification of the large majority of revised waste management plans is still pending. In Germany waste management plans are under the responsibility of the Länder (federal states), no national plan exists. .

Germany has introduced a number of new measures to improve waste prevention, and reuse.efforts need to be continued to shift recyclable and reuseable waste away from incineration. A priority action for waste management plans is added.

2022 priority actions

- Shift reuseable and recyclable waste away from incineration.
- Ensure that regional waste management plans in line with the revised Waste Framework Directive are in place.

[11] Eurostat, Municipal waste by waste operation, April 2022.

[12] Eurostat, Recycling rate of municipal rate, April 2022.

[13] Directive (EU) 2018/851, Directive (EU) 2018/852, Directive (EU) 2018/850 and Directive (EU) 2018/849 amend the previous waste legislation and set more ambitious recycling targets for the period up to 2035.

2. Biodiversity and natural capital

The 2030 EU biodiversity strategy adopted in May 2020 aims to put the EU's biodiversity on a path to recovery and sets out new targets and governance mechanisms to achieve healthy and resilient ecosystems.
In particular, the strategy sets out ambitious targets to:
(i) protect a minimum of 30 % of the EU's land area and 30 % of its sea area and integrate ecological corridors, as part of a true trans-European nature network;
(ii) strictly protect at least a third of the EU's protected areas, including all remaining EU primary and old-growth forests;
(iii) effectively manage all protected areas, defining clear conservation objectives and measures, and monitoring them appropriately.
The strategy also sets out an EU nature restoration plan – a series of concrete commitments and actions to restore degraded ecosystems across the EU by 2030, and manage them sustainably, addressing the key drivers of biodiversity loss.

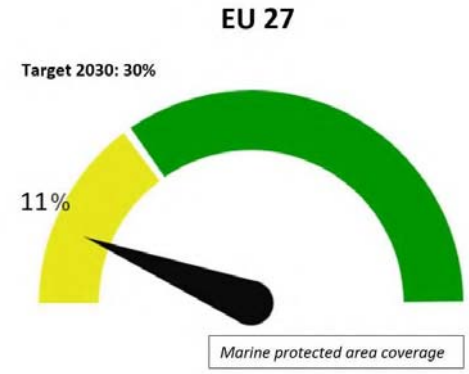
In 2015, the 2020 nature conservation action programme was adopted to give fresh impetus to implementation of the 2007 national strategy on biological diversity [14] and address the persistent negative trend in biodiversity due to failure to implement key policy changes. A new biodiversity strategy is being prepared to take into account the EU 2030 biodiversity atrategy and to implement the results of the Convention on Biological Diversity[15].

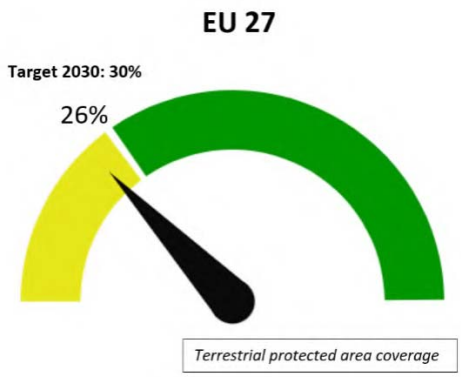
Nature protection and restoration

The EU's Habitats and Birds Directives are key legislative tools to deliver on the targets in the EU's biodiversity strategy for 2030, and are the cornerstone of European legislation aimed at conserving the EU's wildlife[16].

Natura 2000[17], the largest co-ordinated network of protected areas in the world, is the key instrument to achieve the objectives in the Birds and Habitats Directives' . These objectives are (i) to ensure the long-term protection, conservation and survival of Europe's most valuable and threatened species and habitats; and (ii) to maintain or restore the favourable conservation status of these species and habitats. Key milestones towards meeting the objectives of the Birds and Habitats Directives are: (i) the setting up of a coherent Natura 2000 network; (ii) the designation of sites of Community importance (SCIs) as SACs[18]; and (iii) the setting of conservation objectives and measures for the Natura 2000 sites.

Figure 6: Marine & terrestrial protected area coverage, 2021[19]





[14] Germany, 2020 nature conservation action programme
[15] Bundesamt für Naturschutz
[16] These should be strengthened by the Nature Restoration Law, according to the new EU biodiversity strategy.
[17] Natura 2000 comprises Sites of Community Importance (SCIs) designated pursuant to the Habitats Directive as well as Special Protection Areas (SPAs) classified pursuant to the Birds Directive. coverage figures do not add up due to the fact that some SCIs and SPAs overlap. Special Areas of Conservation (SACs) are SCIs designated by Member States.
[18] SCIs are designated under the Habitats Directive whereas SPAs are designated under the Birds Directive; figures of coverage do not add up since some SCIs and SPAs overlap. SACs are SCIs designated by the Member States.
[19] EU Biodiversity Strategy Dashboard, indicators A1.1.1 and A1.2.1, February 2022.

Setting up a coherent network of Natura 2000 sites

Germany hosts 93 habitat types[20] and 195 species[21] covered by the Habitats Directive. The country also hosts populations of nearly 120 bird taxa listed in Annex I to the Birds Directive[22].

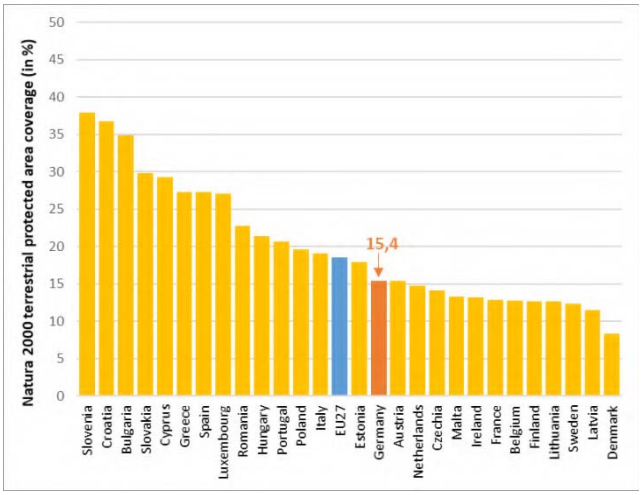
Nature protection in Germany falls within the competence of the 16 Länder and the federal authorities are responsible for the exclusive economic zone.

By 2021, 15.5 % of the national land territory of Germany was covered by Natura 2000 (EU coverage 18.5 %), with special protection areas (SPAs) classified under the Birds Directive covering 11.3 % (EU coverage 12.8 %) and sites of community importance (SCIs) under the Habitats Directive covering 9.4 % (EU coverage 14.2 %) of Germany's territory[23].

The latest assessment of the SCI part of the Natura 2000 network shows that there is only one insufficiency in designation for the species *Lycaena helle* in the Alpine biogeographical region (Bavaria). Germany is expected to complete its Natura 2000 network by the end of 2022.

Considering both Natura 2000 and other nationally designated protected areas, Germany legally protects 37.2 % of its terrestrial areas (EU 27 coverage 26.4 %) and 45.9 % of its marine areas (EU 27 coverage 10.7 %)[24]. Germany strictly protects 7.2 % of the EU's protected areas (SCI and SPA).

Figure 7: Natura 2000 terrestrial protected area coverage, 2021[25]



Designating SACs and setting conservation objectives and measures

The Commission considers that the quality of the set objectives and measures is insufficient for all 4 544 SACs in Germany. The main legal dispute with Germany is about how specific and detailed conservation objectives have to be set for each site designated under the Habitats Directive. In the Commission's view, conservation objectives specify which conditions species and habitat types shall achieve in a site so that the site can contribute to the overall goal of favourable conservation status of these species and habitat types. They are the basis for the conservation measures to be established and the benchmark for the appropriate assessments in the context of project approvals in Natura 2000 sites. The Commission believes that these conservation objectives have to be specified also in quantitative terms for each relevant protected feature in the sites. The case is currently before the EU Court of Justice; in February 2022 the Commission lodged the Court application.

In addition 33 (SPA under the Birds Directive are still not legally protected under national law (from which 32 are located in Lower Saxony) and 283 SPAs do not have conservation measures (state of play August 2021).

[20] EEA, Article 17 dashboard, Annex I total, 2019.

[21] EEA, Article 17 dashboard, Annex II + Annex IV excluding those in Annex II + Annex V excluding those in Annex II, 2019. This counting only takes into account species and habitats for which assessment of conservation status was requested.

[22] EEA, Article 12 dashboard, Annex I, 2020. This counting only takes into account birds taxa for which information was requested.

[23] Bundesamt für Naturschutz – Natura-2000-Gebiete

[24] EEA, Protected Areas, terrestrial protected area percentage (2021) and marine protected area percentage (2019), March 2022. https://dopa.jrc.ec.europa.eu/kcbd/dashboard/#COHERENT%20NETWORK%20OF%20PROTECTED%20AREAS

[25] European Environment Agency, Natura 2000 Barometer, February 2022.

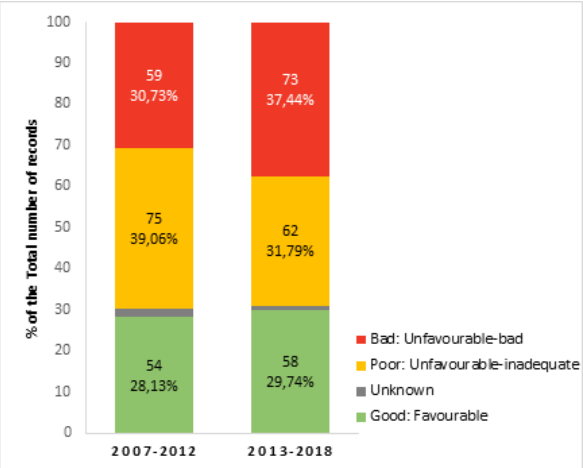
Progress in maintaining or restoring favourable conservation status of species and habitats

To measure the performance of Member States, Article 17 of the Habitats Directive and Article 12 of the Birds Directive require reporting on the progress made towards maintaining or restoring the favourable conservation status of species and habitats.

According to the report submitted by Member States on the conservation status of habitats and species required under Article 17 of the Habitats Directive for 2013-2018, 29.7 % of habitats were assessed as being in good conservation status in 2019 compared to 28.1 % in the previous reporting period (2007-2012). As forprotected species, 25.6 % were assessed as being in good conservation status in 2018 compared to 24.6 % reported under the previous reporting period (2007-2012). However, less than 10 % of German protected grassland habitat types show a favourable conservation status[26]. Regarding birds 61 % of the breeding species showed short-term increasing or stable population trends

At the same time, the share of habitats in unfavourable conservation status decreased slightly from 69.8 % to 69.2 % while the share of assessments for species in unfavourable conservation status grew from 60.4 % to 63.3 %. The main pressures are agriculture and changes in land use (both, intensification and abandonment) together with nitrogen deposition from agriculture and traffic sources.

Figure 8: Assessments on conservation status for habitats for 2007-2012 and 2013-2018 reporting periods[27]

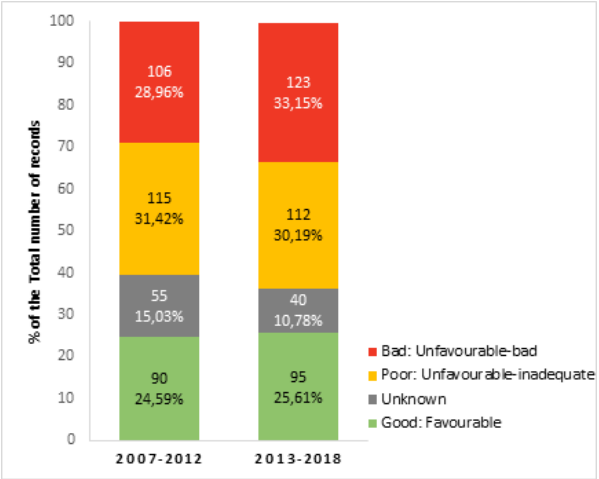


[26] European Envrionment Agenccy, State of Nature in the EU, 2020

[27] European Environment Agency, Conservation status and trends of habitats and species, December 2021. Please note when comparing the figures shown for 2007-2012 and 2013-2018 that these may also be affected by changes of methods or better data availability.

On 2 December 2021 the Commission decided to refer Germany to the EU Court of Justice for failing to comply with its obligation to prevent the deterioration of two habitat types: low hay meadows and mountain hay meadows. In the Commission's view this is due to largely unsustainable agricultural practices. These habitat types have significantly diminished in size or disappeared completely at various sites in recent years. The two habitat types play a vital role for pollinating insects, bees and butterflies, and are protected as part of the Natura 2000 network.

Figure 9: Assessments on conservation status for species for 2007-2012 and 2013-2018 reporting periods[28]



Germany has one of the highest shares of red-listed species and habitat types for several classes. these still show a negative tendency.

Germany is among the countries with a high percentage of peatlands. However, only 5 % of near-natural peatlands remain in Germany. The conservation status of habitats in the Continental and Atlantic zones is reported to be either unfavourable or bad. Peatlands contribute to 6.7 % of Germany's greenhouse gas emissions overall, but a much higher share in the northern Länder, where peatlands are concentrated[29]. The new government has announced a new action programme on natural climate protection. It aims to create synergies between nature and climate protection by restoring peatlands, forests, floodplains, grassland

[28] idem.

[29] Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Nationale Moorschutzstrategie

and marine and coastal ecosystems. Additional financing from the Energy and Climate Fund will be made available.

In 2019, Germany received three priority actions. As the Natura 2000 network designation is nearly complete this part is dropped, as is the priority action on development and promotion of guidance; the remainder of the priority actions is retained.

2022 priority actions

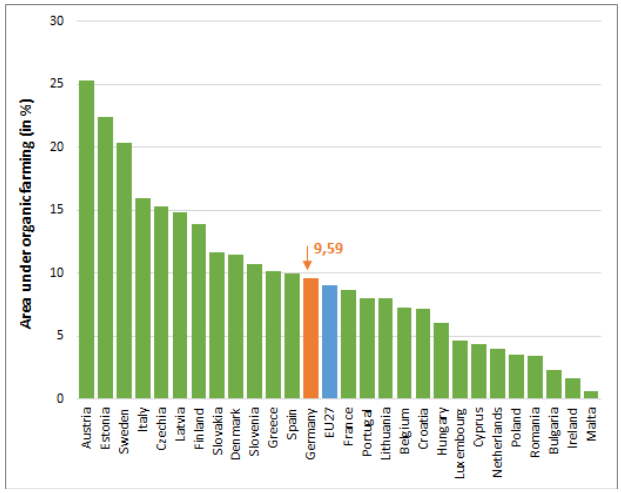
- Put in place clearly defined conservation objectives and the necessary conservation measures for the sites, and provide adequate resources for their implementation in order to maintain/restore species and habitats of Community interest to a favourable conservation status across their natural range.
- Ensure that pressures from agriculture are adequately addressed and that the sector complies fully with nature protection.

Bringing nature back to agricultural land and restoring soil ecosystems

Agricultural land

The biodiversity strategy works alongside the new farm to fork strategy and the new common agricultural policy (CAP) to support and achieve the transition to fully sustainable agriculture.
The biodiversity and farm to fork strategies have set four important targets for 2030:
- a 50% reduction in the overall use of – and risk from – chemical pesticides;
- a 50 % reduction in the use of more hazardous pesticides;
- a 50 % reduction in losses of nutrients from fertilisers while ensuring there is no deterioration of soil fertility (which will result in a 20 % reduction in the use of fertilisers);
- bring back at least 10 % of agricultural area under high-diversity landscape features and increase areas under organic farming to at least 25 %Germany, with an estimated 9.59 % of its area under organic farming, is marginally above the EU average of 9.07 %. (2020 data, Eurostat)., The increase in organic farming has been moderate over the last decade and will need to be accelerated in view of the new government's more ambitious objective of 30 % organic farming by 2030.

Figure 10: Share of total utilised agricultural area occupied by organic farming per Member State, 2020[30]



On environmental performance, the situation of Germany's agricultural sector varies depending on the part of the country. Some Länder, especially in the north-west and south-east, have high livestock density and land use intensification, which significantly affect ecosystems. Diffuse agriculture pollution is the most significant pressure on both surface and groundwater bodies with nitrate being the worst pollutant, causing failure to achieve good chemical status in groundwater. Germany has failed to reverse or halt the decline in protected habitats and species associated with agricultural land. In 2020, 14 % of agricultural land in Germany was under contract to contribute to biodiversity and landscapes[31].

Soil ecosystems

Soil is a finite and extremely fragile resource. It is increasingly degrading in the EU.
The new EU soil strategy, adopted on 17 November 2021, stresses the importance of soil protection, of sustainable soil management and of restoring degraded soils to achieve the Green Deal objectives as well as land degradation neutrality by 2030.
This entails:
(i) preventing further soil degradation;
(ii) making sustainable soil management the new normal;
(iii) taking action for ecosystem restoration.

[30] https://ec.europa.eu/eurostat/databrowser/view/sdg_02_40/default/table?lang=en (Eurostat, Area under organic farming, February 2022

[31] SWD(2020) 373

The new government programme states that Germany will update its national soil protection law by strengthening the precautionary aspect and the contribution of soils for climate change adaption and climate protection as well as for preservation of soil biodiversity.

One factor in the degradation of soil ecosystems is the area of soil that is sealed or artificialised[32]. The net land taken (land 'taken' means land that is sealed or artificialised) per year in 2012-2018 can be seen as a measure of one significant pressure on nature and biodiversity – land use change. At the same time, land use change constitutes an environmental pressure on people living in urbanised areas.

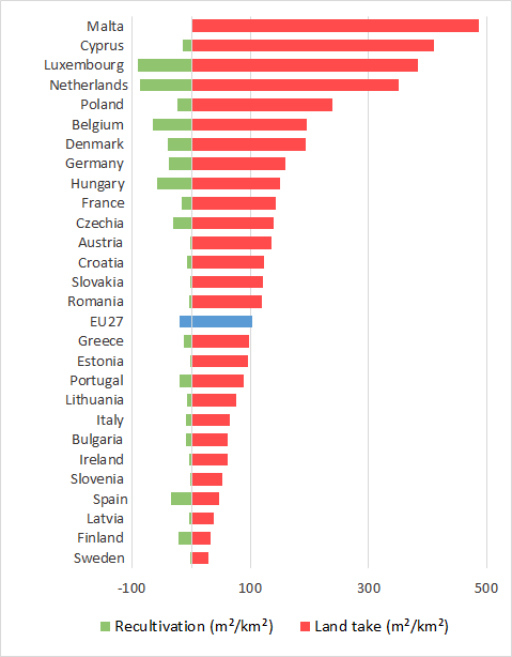
Despite a reduction in the last decade (land take was over 1 000 km²/year in the EU-28 between 2000 and 2006), land take in the EU-28 still amounted to 539km²/year in 2012-2018[33]. The concept of 'net land take' combines land take with the return of land to non-artificial land categories (recultivation). While some land was recultivated in the EU-28 in 2000-2018, 11 times more land was taken than returned.

Germany ranks above the EU average with a net land take of 119.9 m²/km² (EU-27 average: 83.8 m²/km²)[34].

In its national sustainability strategy, (*Deutsche Nachhaltigkeitsstrategie)* Germany set itself the target of restricting daily landtake to under 30 ha by 2030. Daily land take for the period 2017-2020 was 54 ha.

In 2018, Germany updated its reporting on land degradation according to the Performance Review and Implementation System (PRAIS3) reporting platform[35], with actions intended to remedy the degradation identified.

Figure 11: Land take and re-cultivation in EU27 (m²/km²), 2012-2018[36]



However, Germany has not yet committed to set targets for land degradation neutrality under the United Nations Convention to Combat Desertification[37].

Forests and timber

The EU forest strategy for 2030, adopted in July 2021, is part of the 'Fit for 55' package. The strategy promotes the many services that forests provide. Its key objective is to ensure healthy, diverse and resilient EU forests that contribute significantly to the strengthened biodiversity and climate ambitions.
Forests are important carbon sinks and conserving them is vital if the EU is to achieve climate neutrality by 2050

27 % of EU forest area protected under the Habitats Directive, less than 15 % of assessments show a favourable conservation status[38]. Bad conservation status increased from 27 % to 31 % in the EU compared to 2015.

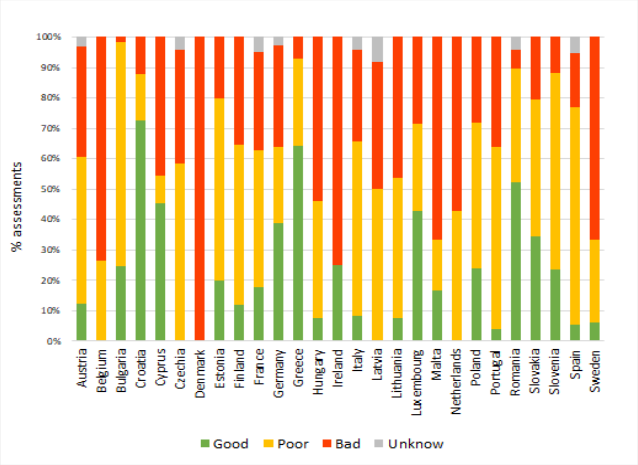
Forests cover 30.97 % of Germany[39] but less than 40 % of assessments of EU-protected forest habitats show a

[32] Artificial land cover is defined as the total of: roofed built-up areas (including buildings and greenhouses), artificial non-built-up areas (including sealed area features, such as yards, farmyards, cemeteries, car parking areas etc. and linear features, such as streets, roads, railways, runways, bridges) and other artificial areas (including bridges and viaducts, mobile homes, solar panels, power plants, electrical substations, pipelines, water sewage plants, and open dump sites).
[33] Land take in Europe — European Environment Agency, Figure 6.
[34] European Environment Agency - Land take in Europe
[35] UNCCD, PRAIS3.

[36] European Environment Agency, Land take in Europe, December 2021.
[37] UNCCD, LDN Target Setting Programme.
[38] European Environment Agency, State of Nature in the EU
[39] European Enviornment Agency, Forest information system for Europe

good conservation status[40]. German forests are affected by a combination of factors: exceptional heatwaves, droughts, bark beetle outbreaks and forest fires. Climate change and unsustainable forest management practices (monocultures) have led to high economic losses for foresters due to emergency wood-cutting.

Figure 12: Conservation status of forests protected under the Habitats Directive in EU Member States, 2013-2018 (% assessments)[41]



The European Union Timber Regulation (EUTR) [42] prohibits the placing on the EU market of illegally harvested timber. In accordance with the EUTR, EU Member States' competent authorities must conduct regular checks on operators and traders, and apply penalties in case of non-compliance. With the amendment of Article 20 of the EUTR, reporting every 2 years has been changed to annual reporting, and covers the calendar year as of 2019.

Between March 2017 and February 2019, Germany carried out 786 checks on domestic timber operators. It also carried out 500 checks on operators importing timber. It is estimated that Germany had 2 000 000 operators placing domestic and 27 000 operators placing imported timber types onto the internal market over the reporting period[43].

The new Deforestation Regulation[44] will repeal and replace EUTR, as it will essentially integrate and improve the existing system to control timber legality.

[40] SWD(2021) 652

[41] European Environment Agency, Conservation status and trend in conservation status by habitat group - forests, January 2022.

[42] Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010.

[43] COM(2020) 629.

[44] COM(2021) 706.

Invasive alien species (IAS)

IAS are a key cause of biodiversity loss in the EU (alongside changes in land and sea use, overexploitation, climate change and pollution).
Besides inflicting major damage on nature and the economy, many IAS also facilitate the outbreak and spread of infectious diseases, posing a threat to humans and wildlife.
The implementation of the EU Invasive Alien Species Regulation and other relevant legislation must be stepped up.
The biodiversity strategy for 2030 aims to manage recognised invasive alien species and decrease the number of 'red list' species they threaten by 50 %.

The core of Regulation (EU) 1143/2014 IAS[45] (the IAS Regulation) is the list of IAS of Union concern.

The total number of IAS of Union concern is currently 66, of which: 30 are animal species; 36 are plant species; 41 are primarily terrestrial species; 23 are primarily freshwater species; 1 is a brackish-water species; and 1 is a marine species

According to a 2021 report[46] on the review of the application of the IAS Regulation, progress was being made towards certain objectives, such as creating a coherent framework for addressing IAS at EU level and increasing awareness of the problem of IAS. The report also identified some challenges and areas for improvement. However, given that implementation deadlines for the IAS Regulation were staggered from July 2016 to July 2019, it is still too early to draw conclusions on several aspects of implementation.

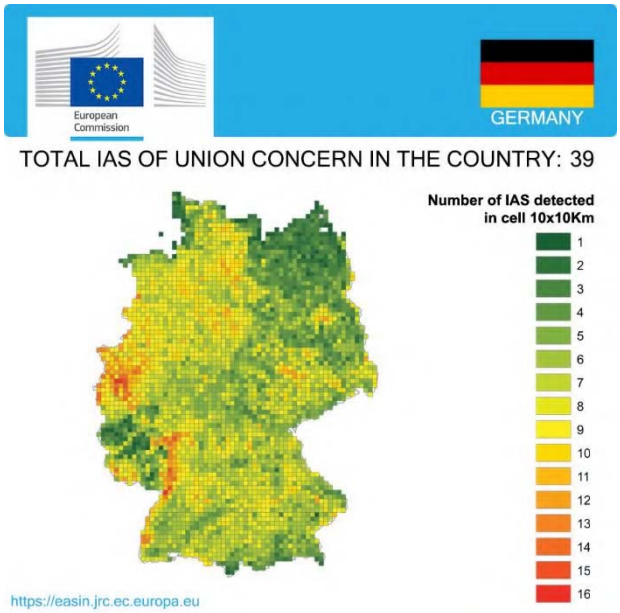
A 2021 report[47] on the baseline distribution shows that of the 66 species on the Union list, 39 have been observed in the environment in Germany. The spread can be checked in Figure 13.

[45] Regulation (EU) No 1143/2014

[46] Report from the Commission to the European Parliament and the Council on the review of the application of Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species, COM(2021) 628 final, 13.10.2021.

[47] Cardoso A.C., Tsiamis K., Deriu I., D' Amico F., Gervasini E., EU Regulation 1143/2014: assessment of invasive alien species of Union concern distribution, Member States reports vs JRC baselines, EUR 30689 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-37420-6, doi:10.2760/11150, JRC123170.

Figure 13: Number of invasive alien species of EU concern, based on available georeferenced information for Germany, 2021



2022 priority actions

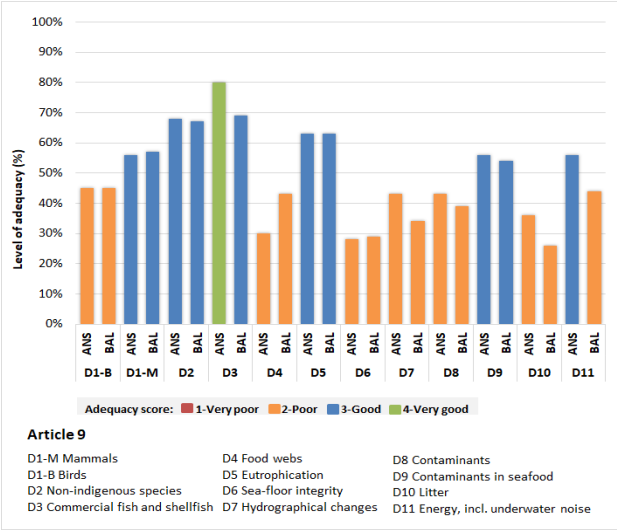
- Put in place clearly defined conservation objectives and the necessary conservation measures for the sites, and provide adequate resources for their implementation in order to maintain/restore species and habitats of Community interest to a favourable conservation status across their natural range.
- Ensure that pressures from agriculture are adequately addressed and that the sector complies fully with nature protection.

Marine ecosystems

The EU's biodiversity strategy for 2030 aims to: (i) substantially reduce the negative impacts on sensitive species and habitats in marine ecosystems; (ii) achieve good environmental status; and (iii) eliminate or reduce the by-catch of species to a level that allows species recovery and conservation[48].

The Marine Strategy Framework Directive (MSFD)[49] requires Member States to achieve good environmental status (GES) for their marine waters. To that end, Member States must draw up marine strategies for their marine waters, and cooperate with Member States sharing the same marine region or subregion. These marine strategies comprise different steps to be developed and implemented over six-year cycles.The MSFD also requires Member States by 15 October 2018 to draw up a set of GES characteristics for each descriptor (Article 9), and to provide an initial assessment of their marine waters (Article 8). The Commission then assesses whether this constitutes an appropriate framework to meet the requirements of the Directive.The Commission assessed Germany's 2018 determinations of GES for each of the MSFD's 11 descriptors[50] and determined their level of adequacy in relation to the Commission's Decision[51]. A good or very good score indicates that the national determinations of GES are well aligned with requirements of the Commission GES Decision, providing qualitative and quantitative national environmental objectives to be achieved for their marine waters.

Figure 14: Level of adequacy of GES determination by Germany (ANS and BAL regions) with criteria set under the Commission GES Decision – Article 9 (2018 reporting exercise)[52]



[48] The EU Common Fisheries Policy (CFP) aims to contribute to the achievement of the objectives of the environmental legislation for marine ecosystems.

[49] Marine Strategy Framework Directive 2008/56/EC.

[50] Annex I of Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ L 164, 25.6.2008, pp. 19 – 40.

[51] This assessment was made in relation to the Commission GES Decision, Commission Decision No 2017/848, pp. 43-74.

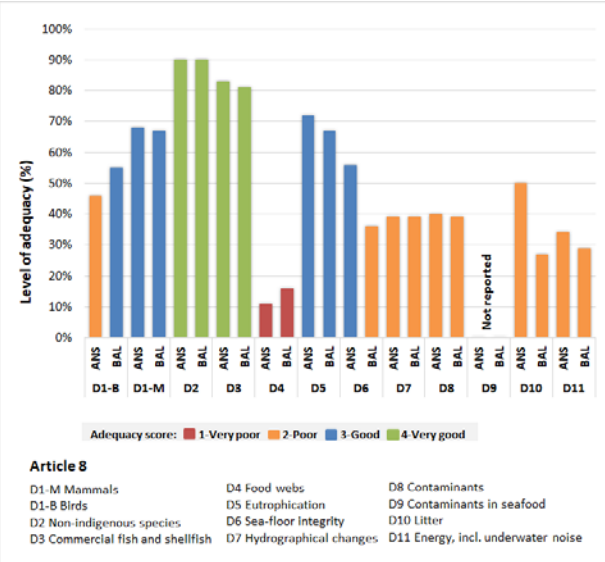
[52] Assessment carried out by the European Commission of the data reported by the Member States, January 2022. Please note that only two sub-sections of descriptor D1 are displayed (D1-M Mammals and D1-B Birds). For the analysis, these two sub-sections were considered as a whole after averaging them.

Germany has two marine sub-regions:

- ANS-NE Atlantic: Greater North Sea. In this marine sub-region, 6 out of 11 determinations of GES were assessed as good or very good. The national determination of GES by Germany is coherent for 6 of the 11 descriptors.
- BAL-Baltic Sea. In this marine subregion, 5 out of 11 determinations of GES were assessed as good or very good. The national determination of GES by Germany is coherent for 5 of the 11 descriptors.

The MSFD also requires that Member States make an assessment of the current environmental status of their marine waters in relation to the determination of GES. A good or very good score indicates Member States has good capabilities to assess their marine environment in accordance with the requirements set out in the Commission GES Decision.

Figure 15: Level of adequacy of national assessment of Germany's marine environment (ANS and BAL regions) with criteria set under the Commission GES Decision – Article 8 (2018 reporting exercise)[53]



- In the marine sub-region ANS-NE Atlantic: Greater North Sea, 5 descriptors out of 11 were scored as good or very good. Germany's assessment of its marine environment is coherent with requirements set under the Commission GES Decision for 5 of the 11 descriptors.
- In the marine subregion BAL-Baltic Sea, 4 descriptors out of 11 were scored as good or very good. Germany's assessment of its marine environment is coherent with requirements set under the Commission GES Decision for 4 of the 11 descriptors.

Germany is missing data for one descriptor, D9 Contaminants in seafood.

As highlighted in the Commission's report on the implementation of the MSFD [54], while regional cooperation has improved since the adoption of the MSFD, more cooperation is needed to attain full regional coherence of the marine strategies, as required by the Directive.

Furthermore, in March 2022, the Commission published a Communication with recommendations for Member States. According to the Commission's assessment Member States need to step up their efforts to determine the good environmental status and the use of the criteria and methodological standards according to the Commission GES Decision. The above considerations form the basis for the 2022 priority actions.

2022 priority actions

- Ensure regional cooperation with Member States sharing the same marine (sub)region to address predominant pressures.
- Implement the recommendations made by the Commission in the staff working document[55] accompanying the Communication [56] on recommendations for each Member State and region on the 2018 updated reports for Articles 8, 9 and 10 of the MSFD.

Ecosystem assessment and accounting

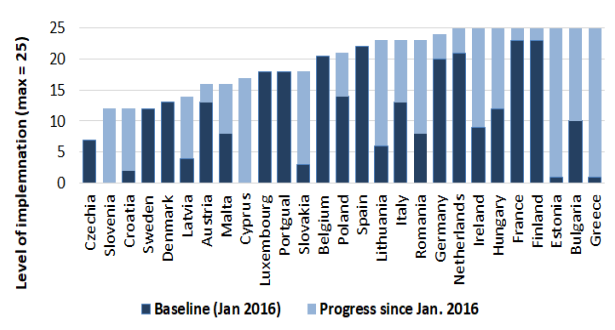
The EU biodiversity strategy for 2030 calls on Member States to better integrate biodiversity considerations into public and business decision making at all levels and to develop natural capital accounting. The EU needs a better performing biodiversity-observation network and more consistent reporting on the condition of ecosystems.

[53] Assessment carried out by the European Commission of the data reported by the Member States, January 2022. Please note that only two sub-sections of descriptor D1 are displayed (D1-M Mammals and D1-B Birds). For the analysis, these two sub-sections were considered as a whole after averaging them.

[54] COM2020) 259
[55] SWD(2022) 1392.
[56] COM(2022) 550.

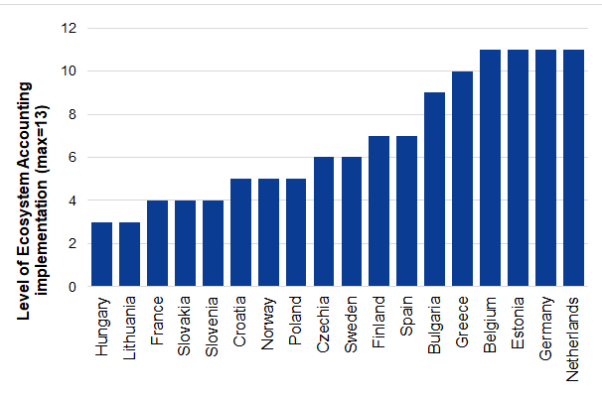
There has been further progress in implementing the mapping and assessment of ecosystems and their services initiative (MAES) in Germany with a good level of implementation (see Figure 16). This assessment is based on 27 implementation questions and is updated every 6 months.

Figure 16: ESMERALDA MAES Barometer, January 2016 - March 2021[57]



Progress on ecosystem accounting implementation is assessed at national scale based on 13 questions (see Figure 17).

Figure 17: Ecosystem accounting Barometer, September 2021[58]



Some ecosystem accounts are already incorporated into the statistical system related to the National Sustainable Development Strategy of Germany. Now, the priorities for Germany are to take the first steps in implementing the accounting framework, focussing on biodiversity conservation targets in urban and rural areas. Following this, the knowledge gathered in the process will feed into a reporting system to inform policy on the full range of ecological and economic effects of policy decisions.

The ecosystem extent account for Germany is available on a regional and national scale. Ecosystem services accounts in biophysical and economic terms have been developed for the following: natural soil fertility of cropland and grassland, amenity value of public urban green spaces, appreciation of species and habitats services, timber and carbon sequestration of woodlands. Biophysical ecosystem services accounts are done for soil erosion mitigation, pollination service potential and recreation services. Accounts of climate gas mitigation and economic accounts of recreation services are on-going.

2022 priority action

- Further capacity building for the National Statistical Agency would be beneficial. The time is right to inform policy makers, the public, business and the finance sector of the potential and advantages of natural capital accounting. Sufficient funding needs to be ensured and co-operation, both national and international and better knowledge sharing is encouraged.

[57] European Commission, Joint Research Centre, Publication Office, EU Ecosystem assessment: summary for policymakers, page 80, May 2021.

[58] MAIA Portal, Mapping and assessment for Integrated Ecosystem Accounting (EU Horizon 2020 project), 2022. MAIA uses the System of Environmental Economic Accounting – Experimental Ecosystem Accounting (SEEA-EEA) as the methodological basis for the ecosystem accounting. The SEEA EA is an integrated an comprehensive statistical framework that is based on five core accounts: ecosystem extent, condition, services and monetary ecosystem asset.

3. Zero pollution

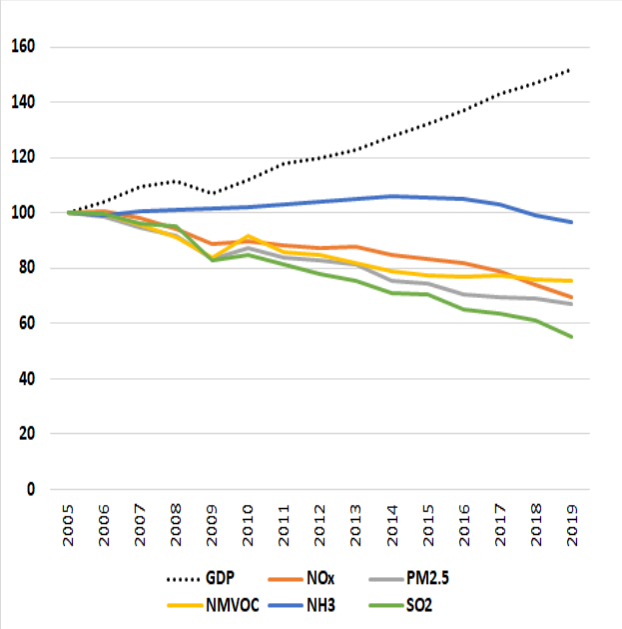
Clean air

EU clean-air policies and legislation need to significantly improve air quality in the EU, moving the EU closer to the quality recommended by the WHO and curbing emissions of key air pollutants.
Air pollution and its impacts on ecosystems and biodiversity should be further reduced with the long-term aim of not exceeding critical loads and levels. This requires strengthening efforts to reach full compliance with EU clean air legislation and defining strategic targets and actions for 2030 and beyond.
The 2030 zero pollution action plan targets are to reduce the health impacts of air pollution by 55 % and to reduce the EU ecosystems threatened by air pollution by 25 %.

The EU has developed a comprehensive suite of air quality legislation, which sets health-based air quality standard[59] and emission reduction commitments[60] by Member State for a number of air pollutants.

Air quality in Germany continues to give cause for serious concern. The latest available annual estimates (for 2019) by the European Environment Agency[61] point to about 53 800 premature deaths (or 560 800 years of life lost (YLL)) attributable to fine particulate matter concentrations[62], 3 350 (36 200 YLL) to ozone concentrations[63] and 6 000 (62 500 YLL) to nitrogen dioxide concentrations[64] [65].

Figure 18: Emission trends of main pollutants / GDP in Germany, 2005-2019[66]



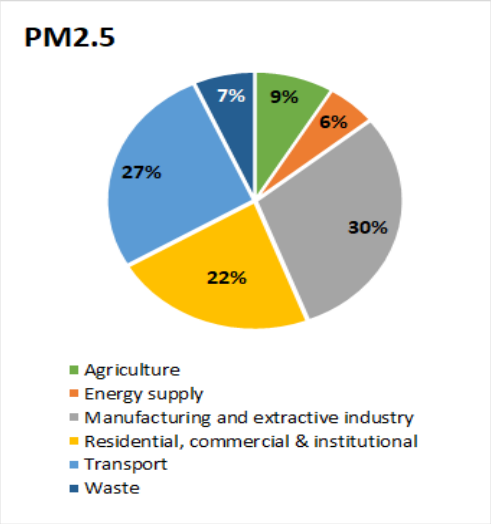
The emissions of key air pollutants have decreased significantly in Germany over the last years, while GDP growth continued (see graph). According to the latest projections required under Article 10(2) of the National Emission Reduction Commitments Directive [67], Germany projects to reach emission reduction commitments for most air pollutants covered by the Directive for 2020-2029 except NH_3. The current submission of air pollutant emission projections does not demonstrate reaching the emission reduction commitments for 2020-2029 and for 2030 onwards for NO_X and the emission reduction commitment for $PM_{2.5}$ from 2030 onwards. According to the latest inventory data submitted by Germany, which is still to be reviewed by the Commission, , Germany is in compliance with the emission reduction commitments for all pollutants in 2020.

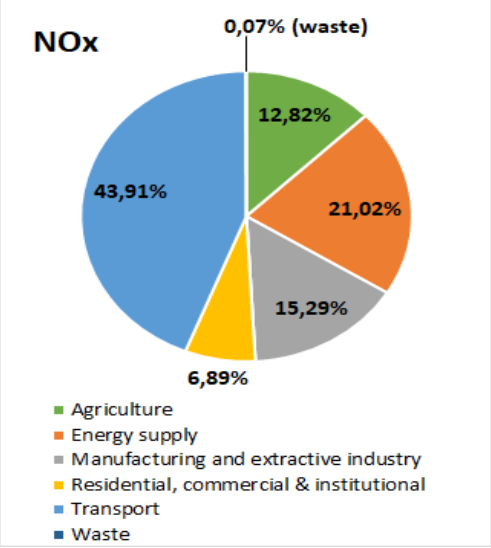
Germany submitted its national air pollution control programme (NAPCP) on 22 May 2019.

[59] European Commission, 2016. Air quality standards
[60] European Commission, Reduction of national emissions
[61] European Environmentn Agency, Air quality in Europe –2021 report for details on the underpinning methodology, (p.106).
[62] Particulate matter (PM) is a mixture of aerosol particles (solid and liquid) covering a wide range of sizes and chemical compositions. PM_{10} ($PM_{2.5}$) refers to particles with a diameter of 10 (2.5) micrometres or less. PM is emitted from many human sources, including combustion.
[63] Low-level ozone is produced by photochemical action on pollution.
[64] NOx is emitted during fuel combustion e.g. from industrial facilities and the road transport sector. NOx is a group of gases comprising nitrogen monoxide (NO) and nitrogen dioxide (NO_2).
[65] Note: these figures refer to the impacts of individual pollutants, and to avoid double-counting cannot be added up to derive a sum.

[66] European Environment Agency
[67] Directive 2016/2284/EU.

Figure 19: $PM_{2.5}$ and NO_x emissions by sector in Germany, 2019[68]





For the year 2020, exceedances above the limit values established by the Ambient Air Quality Directive were registered for nitrogen dioxide (NO_2) in five air quality zones[69]. Furthermore, for several air quality zones the target values on ozone concentration have not been met[70].

Persistent breaches of air quality requirements, which have severe negative effects on health and environment, are being followed up by the Commission through infringement procedures (mainly over PM_{10} and NO_2 exceedances) covering all Member States concerned, including Germany for exceedances of PM_{10} and NO_2 limit values in several air quality zones. The EU Court of Justice has delivered a judgment on exceedances of NO_2 limit values (C-635/18; COM vs Germany) confirming non-compliance with Directive 2008/50/EC. The aim is that appropriate measures are put in place to bring all air quality zones into compliance.

In the 2019 EIR, Germany received five priority actions; related to taking specific actions under the NAPCP and the National Emissions Ceiling Directive. As the current submission of air pollutant emission projections does not demonstrate reaching the emission reduction commitments for all pollutants, the priority action with on the NAPCP is retained. The other priority actions addressed reductions in nitrogen oxides and particulate matter, where Germany has made further progress. No exceedances for PM_{10} were reported in 2020.There were still exceedances for NO_2 in five air quality zones in 2020.

2022 priority actions

- As part of the NAPCP, take action towards reducing emissions from the main sources mentioned above.
- Ensure full compliance with EU air quality standards and maintain downward emissions trends for air pollutants to reduce adverse air pollution impacts on health and the economy with a view to reaching WHO guideline values in the future.

Industrial emissions

The main objectives of EU policy on industrial emissions are to:
(i) protect air, water and soil;
(ii) prevent and manage waste;
(iii) improve energy and resource efficiency;
(iv) clean up contaminated sites.
To achieve this, the EU takes an integrated approach to the prevention and control of routine and accidental industrial emissions. The cornerstone of the policy is the Industrial Emissions Directive (IED)[71]. As announced in the European Green Deal, the Commission carried out an impact assessment for the revision of the IED in 2021

[68] European Environment Agency
[69] According to the latest national data exceedances above the limit values established by the Ambient Air Quality Directive*)* were registered for nitrogen dioxide (NO_2) in three air quality zones. At the timing of writing this report these figures had not been reported to the Commission.
[70] European Environment Agency, Eionet Central Data Repository
[71] Directive 2010/75/EU covers industrial activities carried out above certain thresholds. It covers energy industry, metal production, mineral and chemical industry and waste management, as well as a wide range of industrial and agricultural sectors (e.g. intensive rearing of pig and poultry, pulp and paper production, painting and cleaning).

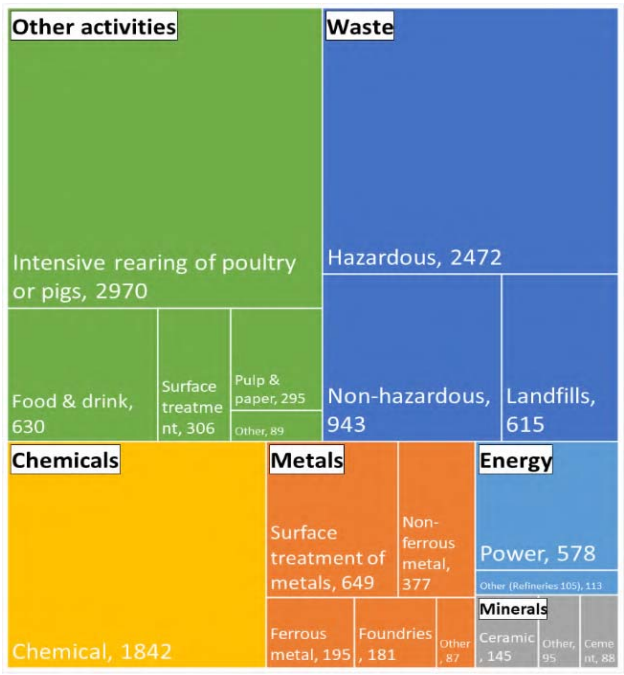
with a view to tabling a proposal in early 2022[72]. The revision seeks to enhance the Directive's contribution to the zero pollution objective, as well as its consistency with climate, energy and circular economy policies.

The overview of industrial activities regulated by the IED set out below is based on data reported to the EU Registry (2018)[73].

In Germany, around 12 670 industrial installations are required to have a permit based on the IED. This represents an increase of almost 3 000 installations since 2015, largely due to an increase in the number of installations in the waste management sector but also in the rearing of poultry or pigs. The distribution of installations is shown in Figure 20 below.

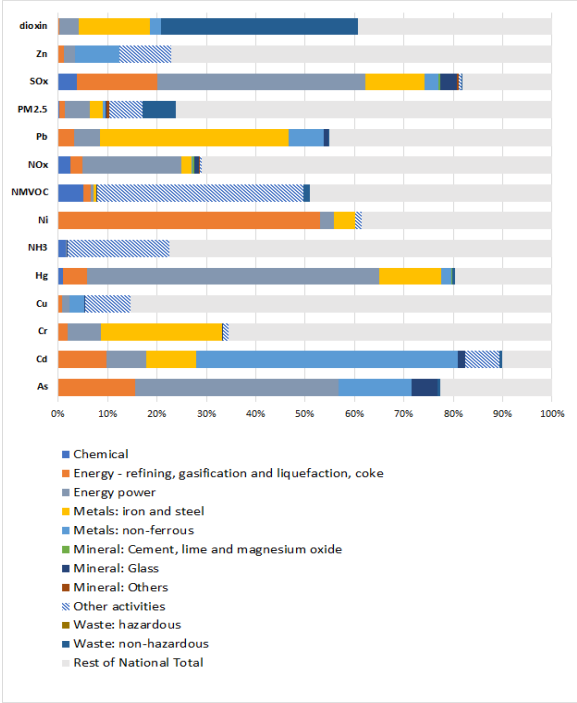
The industrial sectors in Germany with most IED installations in 2018 were the waste management sector (32 %), intensive rearing of poultry and pigs (23 %), the production of chemicals (15 %), followed by power production (5 %), surface treatment of metals (5 %) and food and drink production (5 %).

Figure 20: Number of IED industrial installations per sector in Germany, 2018[74]



The industrial sectors identified as contributing the largest burden to the environment for emissions to air were the use of solvents e.g. for surface treatment for non-methane volatile organic compounds (NMVOCs), intensive rearing of poultry or pigs for ammonia (NH_3); the power sector for mercury (Hg), sulfur oxides (SO_x), arsenic (As) and nitrogen oxides (NO_x); the energy sector (such as refining) for nickel (Ni), As, SO_x, Cd and Hg; the production of metals for Cd, As, chromium (Cr), Pb, dioxins, Hg and Zn; the production of chemicals for NMVOCs, SO_x, NO_x and NH_3; the waste management sector for dioxins and $PM_{2.5}$. The breakdown is shown in the following graph.

Figure 21: Emissions to air from IED sectors and rest of national total air emissions in Germany, 2018[75]



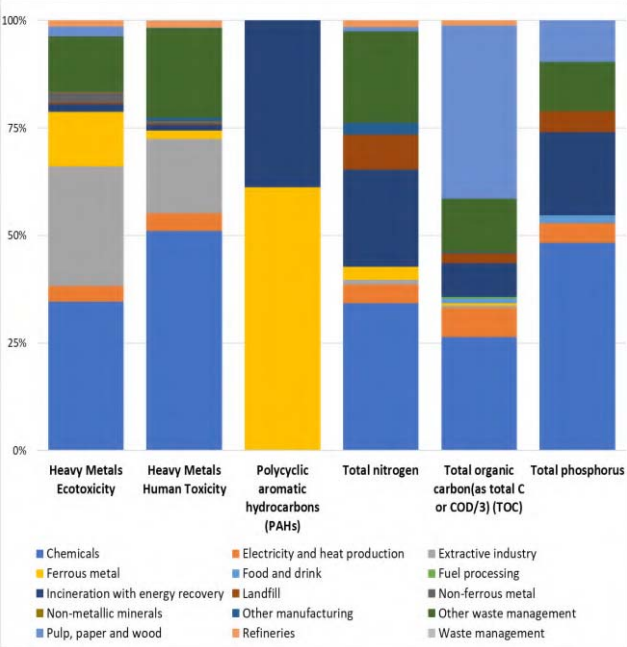
In 2017, 9 IED installations of Germany were among the top 30 European pollutant release and transfer register (E-PRTR) facilities with the highest absolute damage costs from emissions, including 7 power stations – all burning lignite, one producing iron and steel and one producing chemicals[76]. This should be improved by implementing the emission levels associated with best available

[72] The revision of the IED is carried out in parallel with the revision of Regulation (EC) No 166/2006 on the European Pollutant Release and Transfer Register (E-PRTR).
[73] European Environment Agency, European Industrial Emissions Portal.
[74] European Environment Agency, EU Registry, European Industrial Emissions Portal (data retrieved on 3 November 2021).
[75] European Environment Agency, LRTAP, Air pollutant emissions data viewer (Gothenburg Protocol, LRTAP Convention) 1990-2019 (data retrieved on 3 November 2021).
[76] EEA (2021). Costs of air pollution from European industrial facilities 2008–2017. Eionet Report – ETC/ATNI 2020/4. The ranking is based on the approach accounting for the value of a life year (VOLY), table 41, p.125 & table 44, p.141.

techniques (BAT) for large combustion plants[77]. This will – on average and depending on the situation of individual plants – reduce sulfur dioxide emissions by 25 % to 81 %, nitrogen oxide by 8 % to 56 %, dust by 31 % to 78 % and mercury by 19 % to 71 % at EU level.

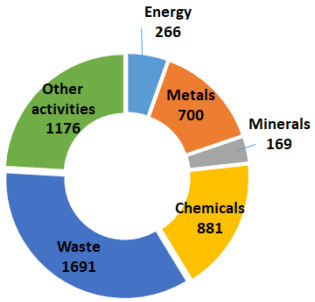
The environmental burdens for industrial emissions to water mainly result from the production of chemicals, production of pulp and paper and the waste management sector for nitrogen, phosphorous and total organic carbon, as well as from the production of ferrous metals and waste incineration for polycyclic aromatic hydrocarbons and from production of chemicals, waste management sector and extractive industry in case of heavy metals. The breakdown, based on E-PRTR data, is presented in the Figure 22 below.

Figure 22: Relative releases to water from industry in Germany, 2018[78]



The EU approach to enforcement under the IED creates strong rights for the public to have access to relevant information and to participate in the permitting process for potentially polluting installations. This empowers the public and NGOs to ensure that permits are appropriately granted and that the conditions of these permits are complied with. As part of environmental inspection, competent authorities undertake site visits at IED installations to take samples and to gather necessary information. According to Article 23(4) of the IED, site visits must be carried out between once a year and once every 3 years, depending on the environmental risks posed by the installations.In 2018 Germany carried out 4 883 site visits, mostly to waste sector installations (32 %), the production of chemicals (18 %), followed by the intensive rearing of poultry or pigs (13 %) and the surface treatment of metals (6 %).

Figure 23: Number of inspections in IED installations in Germany in 2018[79]



The development of BAT reference documents (BREFs) and BAT conclusions ensures good collaboration with stakeholders and enables better implementation of the IED[80]. Since the last EIR report, BAT Conclusions have been adopted for (i) waste incineration; (ii) the food, drink and milk industries; and (iii) surface treatment using organic solvents including preservation of wood and wood products with chemicals.

The Commission relies on the efforts of national competent authorities to implement the legally binding BAT conclusions and associated BAT emission levels in environmental permits, resulting in considerable and continuous reduction of pollution.

In 2019, Germany received priority actions to review permits to comply with newly adopted BAT conclusions and to strengthen control and enforcement to ensure compliance with BAT conclusions. These actions have been followed up by the Commission through the reporting by Germany to the EU Registry. It is currently verifying the reported data about permits granted for

[77] Commission Implementing Decision (EU) 2017/1442 of 31 July 2017 establishing BAT conclusions for large combustion plants, OJ L 212, 17.8.2017.

[78] European Environment Agency, E-PRTR, European Industrial Emissions Portal. The heavy metals are presented both as a weighted sum of eco toxicity and human toxicity factors to illustrate both the ecological and human impact (based on USEtox) (data retrieved on 3 November 2021).

[79] European Environment Agency, EU Registry, European Industrial Emissions Portal (data retrieved on 3 November 2021).

[80] European Commission BAT reference documents

each installation falling under the IED with Germany. Germany also received a priority action to address water and air pollution from intensive rearing of poultry or pigs. The Commission follows up the latter aspect via the implementation of the BAT conclusions for intensive rearing of poultry or pigs, which were to be reflected in permits by February 2021. As mentioned above, emissions from the energy sector need to be addressed by implementing the BAT conclusions on large combustion plants by August 2021.

In 2022, Germany's reporting to the E-PRTR still shows delays and should be improved.

Germany is subject to an infringement. The Commission considers that certain provisions of the IED have not been transposed correctly. Among those, public participation is limited in certain ways, and provisions to enable competent authorities to set in specific cases less stringent emission limit values have not been transposed correctly.

2022 priority actions

- Continue addressing the pollution from large combustion plants, in particular lignite-firing plants.
- Improve the reporting to the E-PRTR.

Major industrial accidents prevention - SEVESO

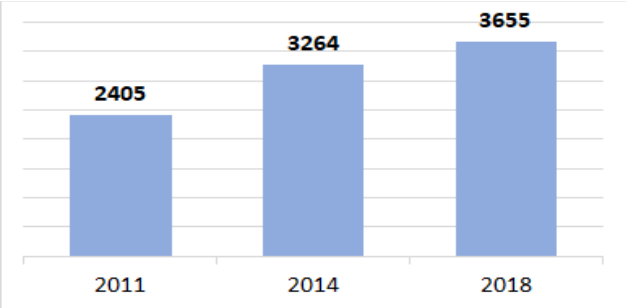
The main objectives of EU policy on the prevention of major industrial accidents are to:
(i) control major accident hazards involving dangerous substances, especially chemicals;
(ii) limit the consequences of such accidents for human health and the environment;
(iii) continuously improve prevention, preparedness and response to major accidents.

The cornerstone of the policy is the Directive 2012/18/EU (the Seveso-III Directive)[81].

The below overview of industrial plants regulated by Seveso-III Directive, ('Seveso establishments'), is based on data reported to the eSPIRS database (2018)[82] and the Germany report on the implementation of the Seveso-III Directive for 2015-2018[83].

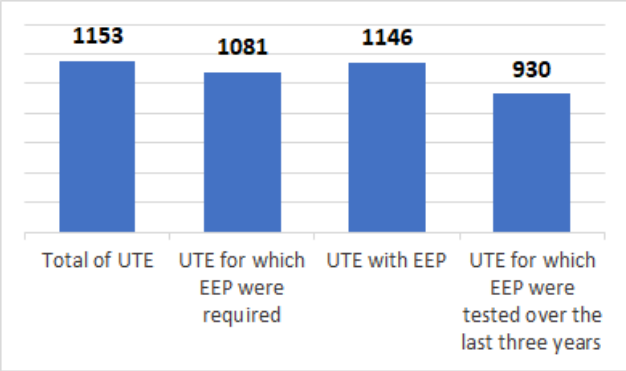
In Germany, among the 3 655 Seveso establishments, 2 502 are categorised as lower-tier establishments (LTEs) and 1 153 as upper-tier establishments (UTEs) – based on the quantity of hazardous substances likely to be present. The upper-tier establishements are subject to more stringent requirements. Figure 24 shows the trend in the number of Seveso establishments.

Figure 24: Number of Seveso establishments in Germany, 2011, 2014 and 2018[84]



According to Germany, an external emergency plan (EEP) is required for 1 081 upper-tier establishements. In 2018, 1 146 such establishements had an EEP, 930 of which had been tested over the last 3 years. The summary is shown in Figure 25. Drawing up and testing EEPs is essential to enable the proper preparation and effective implementation of actions to protect the environment and the population in the event of a major industrial accident.

Figure 25: Situation as regards EEP in Germany, 2018[85]



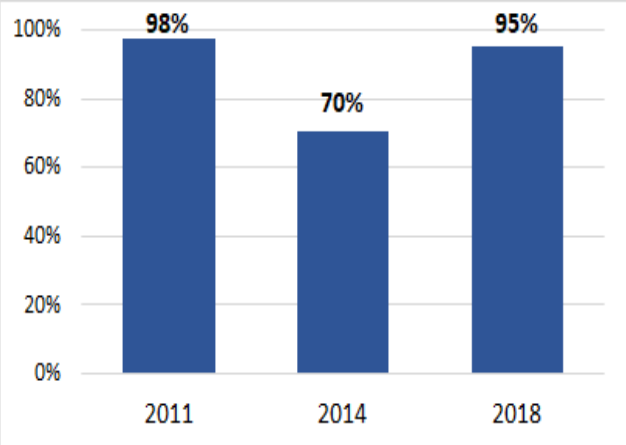
[81] Directive 2012/18/EU (Seveso-III Directive) on the control of major accident hazards involving dangerous substances
[82] European Commission, Seveso Plants Information Retrieval System
[83] As provided for by Article 21(2) of the Seveso-III Directive
[84] European Commission, Assessment and summary of Member States' implementation reports for Implementing Decision 2014/896/EU (implementing Directive 2012/18/EU on the control of major accident hazards involving dangerous substances), 2022.
[85] idem.

Information to the public referred to in Annex V of the Seveso-III Directive – especially about how the public concerned will be warned in case of a major accident; the appropriate behaviour in the event of a major accident; and the date of the last site visit – are permanently available for 77 % of the Seveso establishments in Germany.

Figure 26 presents the share of upper-tier establishments for which information on safety measures and requisite behaviours were actively made available to the public in recent years. This is an important provision of the Seveso-III Directive as the public's knowledge of this information may reduce the consequences of a major industrial accident.

Germany is subject to an infringement procedure related to the transposition of the Seveso-III Directive. Germany has not correctly transposed the Directive in relation to notification requirements, major accident prevention policy, information to the public, public consultation,s participation rights in decision-making and time limits regarding safety reports and emergency plans.

Figure 26: Share of UTE for which information on safety measures and requisite behaviours were actively made available to the public in Germany, 2011, 2014 and 2018[86]



2022 priority action

- Strengthen control and enforcement to ensure compliance with Seveso-III Directive provisions, especially on information to the public and EEPs.

[86] idem.

Noise

The Environmental Noise Directive 87 provides for a common approach to avoid, prevent and reduce the harmful effects of exposure to environmental noise although it does not set noise limits as such. The main instruments it uses in this respect are strategic noise mapping and planning. A relevant 2030 zero pollution action plan target is a reduction by 30% of the share of people chronically disturbed by transport noise compared to 2017.

Excessive noise from aircraft, railways and roads is one of the main causes of environmental health-related issues in the EU. It can cause ischeemic heart disease, stroke, interrupted sleep, cognitive impairment and stress[88].

In Germany, based on a limited set of data, [89] environmental noise is estimated to cause at least around 1600 premature deaths and 5100 cases of ischaemic heart disease every year[90]. Moreover, some 840 000 people suffer from disturbed sleep. In Germany, overall noise exposure decreased by 8 % between 2012 and 2017, based on reported data.

On the basis of the latest full set of information that has been analysed (noise maps and action plans for Germany, June 2021), Germany still lacks action plans for a number of urban areas, and inn particular major roads. These shortcomings are subject of an infringement proceeding.

In the 2019 EIR, Germany received a priority action to complete noise action plans, but there has been only limited progress since then.

2022 priority action

- Complete action plans on noise management.

[87] Directive 2002/49/EC

[88] WHO 2018, Environmental Noise Guidelines for the European Region

[89] European Environment Agency, Noise Fact Sheets 2021.

[90] These figures are an estimation by the European Environmental Agency based on : (i) the data reported by Member States on noise exposure covered by Directive 2002/49/EC; (ii) ETC/ATNI, 2021, Noise indicators under the Environmental Noise Directive 2021: Methodology for estimating missing data, ETC/ATNI Report No 2021/06, European Topic Centre on Air Pollution, Transport, Noise and Industrial Pollution; (iii) the methodology for health impact calculations, ETC/ACM, 2018, Implications of environmental noise on health and wellbeing in Europe, Eionet Report ETC/ACM No 2018/10, European Topic Centre on Air Pollution and Climate Change Mitigation.

Water quality and management

EU legislation and policy requires that the impact of pressures on transitional, coastal and fresh waters (including surface and ground waters) be significantly reduced. Achieving, maintaining or enhancing a good status of water bodies as defined by the Water Framework Directive will ensure that EU citizens benefit from good quality and safe drinking and bathing water. It will further ensure that the nutrient cycle (nitrogen and phosphorus) is managed in a more sustainable and resource-efficient way.

Water Framework Directive

The Water Framework Directive (WFD) [91] is the cornerstone of EU water policy in the 21st century[92]. The WFD and other water-related legislation [93] set the framework for sustainable and integrated water management, which aims at a high level of protection of water resources, prevention of further deterioration and restoration to good status.

By March 2022, Member States had to report the third set of river basin management plans (RBMPs) under the WFD. Germany recently reported its third RBMPs. The Commission will assess the reported status and progress, checking what measures have been taken in reponse to findings identified when the second RBMPs [94] were assessed.

In December 2021, the Commission published the 6th Implementation Report, which assesses implementation of the WFD and the Floods Directive [95]. This report includes an interim assessment of progress on: (i) implementation of the programmes of measures; and (ii) the new priority substances. It follows from the assessment report for Germany[96] that the environmental objectives for many water bodies will not be met by 2021 and may not even be met by 2027. A larger part of the measures was scheduled for the second half of the 2015-2021 planning cycle.

The second set of RBMP reports and data reveal that in Germany only 8.1 % of all surface water bodies had good ecological status (with 2.8 % unknown), and all surface water bodies (100 %) failed to achieve good chemical status. For groundwaters, 36 % failed to achieve good chemical status but only 4.3 % are in poor quantitative status.

Figure 27 illustrates the proportion of surface water bodies in Germany and other European countries that failed to achieve good ecological status.

Figure 27: Proportion of surface water bodies (rivers, lakes, transitional and coastal waters) in less than good ecological status per River Basin District[97]

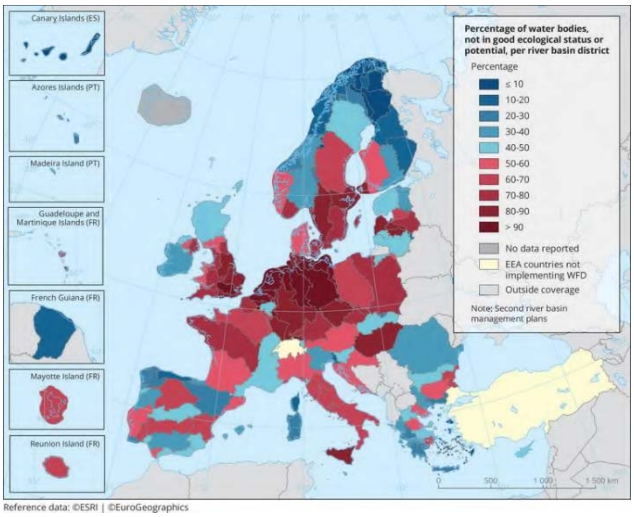
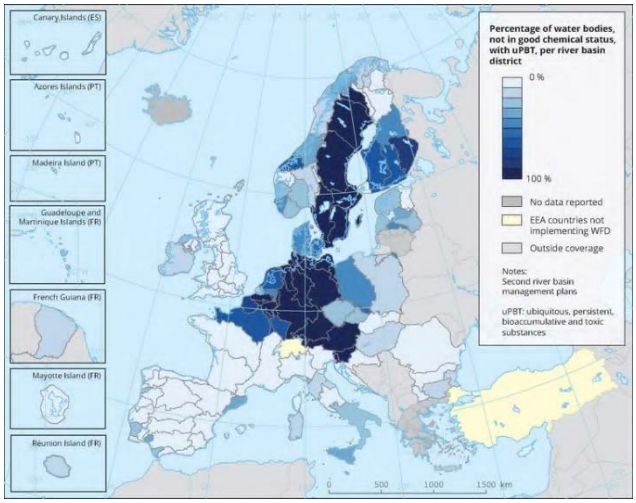


Figure 28 shows the proportion of surfacewater bodies in Germany and other European countries failing to achieve good chemical status. For Germany this is 100 %, if one includes water bodies failing due to substances behaving as ubiquitous PBTs (persistent, bio-accumulative, toxic chemicals). Without uPBTs, 9 % of surface water bodies fail to achieve good chemical status.

[91] The Water Framework Directive (2000/60/EC).
[92] The EU Water Policy.
[93] This includes the Groundwater Directive (2006/118/EC), the Environmental Quality Standards Directive (2008/105/EC), the Floods Directive (2007/60/EC), the Bathing Water Directive (2006/7/EC), the Urban Waste Water Treatment Directive (91/271/EEC), the new Drinking Water Directive (2020/2184/EC), the Nitrates Directive (91/676/EEC), the Marine Strategy Framework Directive (2008/56/EC), the Industrial Emissions Directive (2010/75/EU) and the new Regulation on minimum requirements for water reuse (2020/741).
[94] Detailed information can be found in the 5th Report from the Commission on the implementation of the Water Framework Directive and the Floods Directive, as well as in the 2019 EIR.
[95] See the 6th Implementation Report of the Water Framework Directive and Floods Directive.
[96] European Commission, Directorate-General for Environment, Assessment of Member States' progress in programmes of measures during the second planning cycle of the Water Framework Directive. Member State: Germany, 2022.
[97] European Environment Agency, 2021.

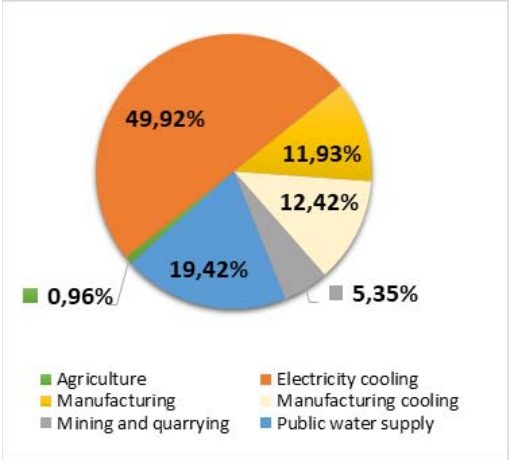
Figure 28: Proportion of surface water bodies not achieving good chemical status[98]



Under the IED framework Germany showed a significant decrease over the last decade (26.6 %) in industrial releases of heavy metals like Cd, Hg, Ni, Pb and in total organic carbon(19.1 %) to water[99].

The total amount of water abstracted every year (corresponding to the 2019 baseline) in Germany from surface and groundwater sources is 27 075.75 hm^3 (EEA, 2022). The percentage for water abstraction per sector is 0.96 % for agriculture, 19.42 % for public water supply, 49.92 % for electricity cooling, 11.93 % for manufacturing, 12.42 % for manufacturing cooling and 5,35 % for mining and quarrying, as illustrated in the following figure. Germany uses water registers to control water abstractions, as well as a permitting system, with permits regularly reviewed. Small abstractions are exempted according to German law, but not all are registered. So, there is no record of the extent of exemptions in practice since they are established by law. Only a few Länder require notification of the uses that are exempt from the obligation to have a permit. Overall, the potential for abstraction is established and quantities of water resources are known.

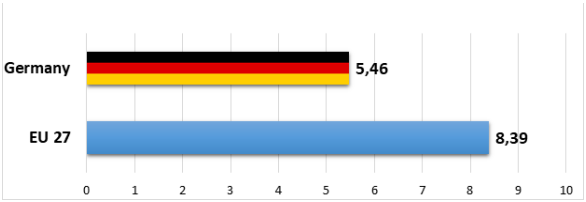
Figure 29: Water abstraction per sector in Germany[100]



In Germany, the water exploitation index plus (WEI+)[101] is 5.46 %, which is far below the 20 % generally considered to be an indication of water scarcity[102].

The bar below presents the WEI+ index in Germany and other EU countries. Germany is ranked 11th (from high to low score) in the EU.

Figure 30: Water exploitation index plus (WEI+) inEU, 2017[103]



Floods Directive

As mentioned above, the Commission published the 6th Implementation Report on the Directive in December 2021. It includes a review and update of the preliminary flood risk assessments during the second cycle (2016-2021).

The assessment report[104] showed that Germany should develop a methodology for defining potential adverse

[98] European Environment Agency, December 2019.
[99] European Environment Agency, June 2021.

[100] European Environment Agency, Water abstraction by source and economic sector in Europe, 2022.
[101] This index is a measure of total fresh water use as a percentage of the renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned after use to the environment.
[102] By May 2022, the EEA will develop seasonal WEI+ at river basin and NUTS2 level, which provide a more complete picture of water stress and water scarcity for each Member State.
[103] EEA, Water exploitation Index Plus, 2022.

consequences of future floods. However, it is worth mentioning as good practice that plausibility checks on the results of the risk assessment on future floods were carried out by specialists and local staff of the water management authorities, with the involvement of local authorities and, if necessary, other relevant local experts.

Another good practice is the LAWA joint assessment tool, which aims to reduce flood risk by evaluating the objectives and catalogues of measures from the 1st cycle plan. The tool is used to evaluate the achievement of objectives and measures adopted under the 1st cycle plan. It enables authorities to collect and report the status of flood measures for all Länder[105].

Germany recently adopted the second generation of flood risk management plans under the Floods Directive. The Commission will assess progress and publish a new report, as it did in 2019.

Drinking Water Directive

On the Drinking Water Directive[106] no new assessment of the quality of drinking water is available since the 2019 EIR. The quality of drinking water in Germany has not been indicated as an area of concern.

The recast Directive[107] entered into force on 12 January 2021, and Member States have until 12 January 2023 to transpose it into their national legal system. Germany will have to comply with these reviewed quality standards.

Bathing Water Directive

On the Bathing Water Directive, Figure 31 shows that in 2020, out of the 2 304 reported bathing waters from Germany, 89.9 % were of excellent quality and 4.9 % of good quality[108]. Detailed information on Germann bathing waters is available from a national portal [109] and via an interactive map viewer from the European Environment Agency[110].

Figure 31: Bathing water quality in Europe in the 2020 season [111]

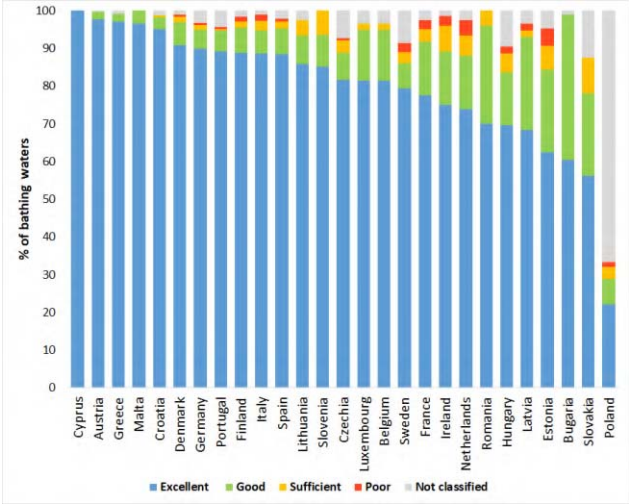
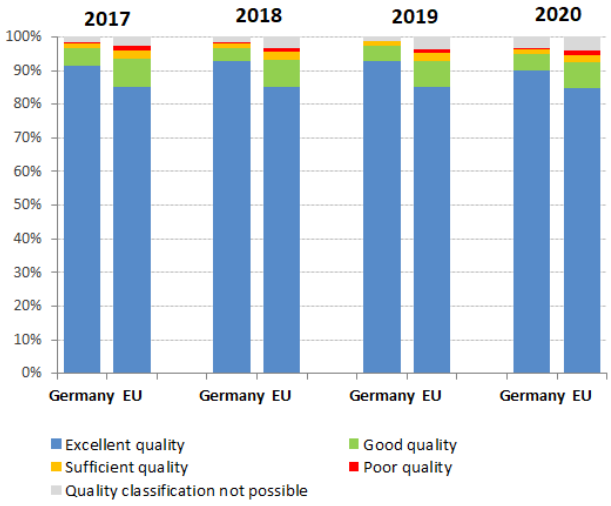


Figure 32: Germany, Bathing water quality 2017-2020[112]



For 2017, 2018 and 2019, data about the UK bathing waters are included under the EU average.

Nitrates Directive

According to the last report on the implementation of the Nitrates Directive, referring to the period 2015-2018[113], groundwater quality has not improved, and water pollution by nitrates remains a serious concern. There are continuing acute problems with groundwater and eutrophication in the Baltic and North Seas. 27 % of monitoring stations exceeded the level of 50 mg nitrate

[104] European Commission, Directorate-General for Environment, Assessment of Second Cycle Preliminary Flood Risk Assessments and Identification of Areas of Potential Significant Flood Risk under the Floods Directive : Member State : Germany, 2022.
[105] European Commission, 2021, Current Practice in Flood Risk Management in the European Union.
[106] OJ L 330, 5.12.1998, pp. 32–54.
[107] OJ L 435, 23.12.2020, pp. 1–62.
[108] European Environment Agency, 2021. State of bathing waters, p. 17.
[109] *Umweltbundesamt*, Badegewässerqualität
[110] European Environment Agency, State of bathing waters in 2020.
[111] European Environment Agency, Bathing Water Quality in 2020, 2022.
[112] European Environment Agency, European Bathing Water Quality in 2017, 2018, 2019, 2020
[113] European Commission, COM(2021) 1000; SWD(2021) 1001

per litre and a large number of stations show a strong increase. A very high number (54 %) of the surface waters are found to be eutrophic.

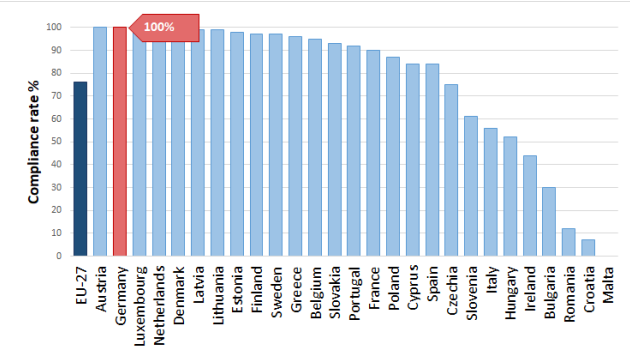
Of the Member States, Germany has the second-highest number of monitoring stations with average nitrate levels exceeding 50 mg/l. One source of pressure is its livestock density, which remained more or less stable compared to 2012-2015. There is a strong correlation between regional animal density and hot spots where water pollution has been identified.

Germany was referred to the EU Court of Justice for failing to take tougher measures to combat water pollution caused by nitrates. In June 2018, the Court confirmed that the measures in the action programmes in force at the time of the referral were insufficient to meet the aims of the Directive. It held that Germany had failed to fulfil its obligations (insufficient rules to limit the application of fertilisers, additional measures for contaminated areas (red zones), closure periods, and fertilisation on steeply sloping ground. Giventhe insufficient implementation of the Court ruling, the Commission sent a Letter of Formal Notice under Article 260 of the Treaty on the Functioning of the European Union in July 2019 urging Germany to fully comply with the judgment[114]. The last update of national fertiliser legislation dates from 1 May 2020. Germany needs to correctly identify the polluted areas where reinforced measures to reduce nutrient pollution should apply.

Urban Waste Water Treatment

Germany fully complies with the Directive on Urban Waste Water Treatment (UWWTD).

Figure 33: Proportion of urban waste water that meets all requirements of the UWWTD (collection, biological treatment, biological treatment with nitrogen and/or phosphorus removal) in compliant urban areas of the UWWTD ('compliance rate'), 2018[115]



In 2019 Germany received a priority action on the Nitrates Directive which is retained, as no progress has been made. With regard to the Water Framework Directive and Floods Directive, part of the priority actions are considered fulfilled, based on the findings of the 6th Implementation Report.

2022 priority actions

- Take steps to improve time and frequency of monitoring.
- Continue efforts to counteract nutrient pollution from agriculture.
- Ensure rapid compliance with the Nitrates Directive by revising the rules on the identification of polluted areas and by taking appropriate measures to address serious groundwater pollution, especially in intensive farming areas.

Chemicals

The EU seeks to ensure that chemicals are produced and used in a way that minimises any significant adverse effects on human health and the environment. In October 2020, the Commission published its chemicals strategy for sustainability - "Towards a Toxic-Free Environment[116] which lead to some systemic changes in EU chemicals legislation. The strategy is part of the EU's zero-pollution-ambition – a key commitment of the European Green Deal.

The EU chemical legislation [117] provides baseline protection for human health and the environment. It also ensures stability and predictability for businesses operating within the single market.

Since 2007, the Commission has gathered information on the enforcement of the Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals ('the REACH Regulation') and the Regulation on Classification, Labelling and Packaging ('CLP Regulation'). In December 2020, the Commission assessed the Member States' reports on the implementation and enforcement of these Regulations[118], in line with Article 117(1) of the REACH Regulation and Article 46(2) of the CLP Regulation. According to the latest available data,

[114] Judgment of the EU Court of Justice of 21 June 2018 in Case C-543/16, Commission v Germany.
[115] European Commission, WISE Freshwater, 2021.
[116] COM(2020) 667 final
[117] REACH: OJ L 396, 30.12.2006, p.1. - CLP: OJ L 252, 31.12.2006, p.1
[118] European Commission, Final report REACH-CLP MS reporting, 2020

national enforcement structures have not changed much in recent years. However, it is apparent from this report that there are still many disparities in the implementation of the REACH and CLP Regulations, and notably in the area of law enforcement. Recorded compliance levels in Member States seem to be quite stable over time, but with a slight worsening trend, which is likely due to: (i) enforcement authorities being more effective in detecting non-compliant products/companies; and (ii) more non-compliant products being put on the EU market.According to the latest available data, national enforcement structures have not changed much. However, it is apparent from this report that there are still many disparities in the REACH-CLP implementation and notably in the area of the law enforcement among the Member States. The recorded compliance levels seem to be quite stable over time, but with a slight worsening trend likely due to enforcement authorities being more effective in detecting noncompliant products/companies and more non-compliant products being put on the EU market.

In August 2021, the Commission published an assessment of the enforcement[119] of the two main EU Regulations on chemicals using a set of indicators on different aspects of enforcement.

Responsibility for checking compliance with both REACH and CLP Regulations in Germany lies with the Länder authorities [120] : Each of the 16 Länder has its own hierarchy of authorities and the respective responsibilities vary between the federal states.

Germany has drawn up and fully implemented enforcement strategies for both REACH and CLP[121]. Their content consists of:

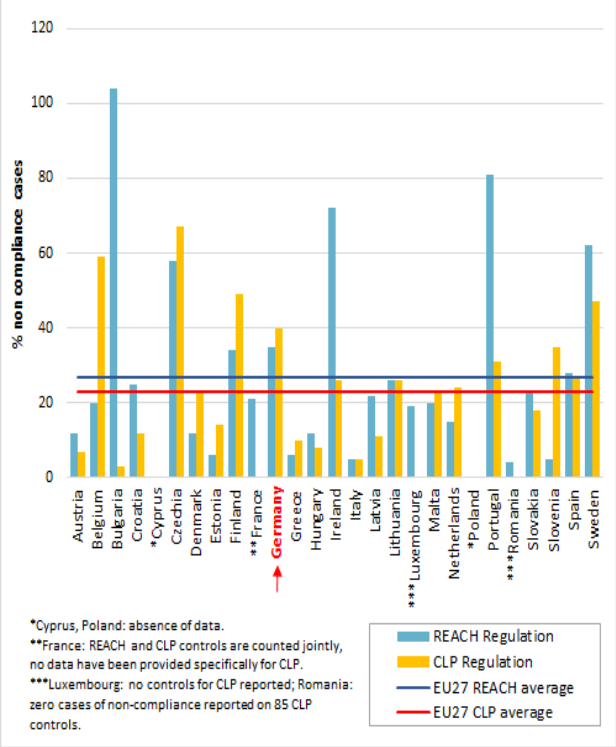
- Enforcement strategy at federal state level with own enforcement priorities and projects
- Risk-based approach to enforcement and reactive enforcement
- Joint strategy across Länder for market surveillance

Projects are usually evaluated after completion. Experience gained from this is shared with other federal states. In some federal states where the enforcement focus is on imports, close cooperation with the customs authorities takes place.

As a rule, all infringements of REACH are classed as 'serious' or 'very serious' environmental administrative offences. If the infringement is sufficiently serious, the competent authority may decide to impose further penalties in addition to a fine. That authority may also, where necessary, order the provisional seizure of assets and documents.

In Germany, resources are considered proportionate to REACH and CLP enforcement[122]. There were 8 195 REACH controls carried out in the reporting period (2019) and 24 961 CLP controls. The number of non-compliant cases for both REACH and CLP controls is above the average[123].

Figure 34: Percentage of non-compliance cases out of the total number of REACH and CLP controls during 2019 per Member State and compared to the EU average[124]



2022 priority actions

- Upgrade the administrative capacities on implementation and enforcement towards zero tolerance of non-compliances.

[119] European Commission, REACH and CLP enforcement: EU level enforcement indicators
[120] European Commission, Final report_REACH-CLP MS_reporting , p. 68
[121] idem, p. 76
[122] idem, p. 74
[123] idem, pp. 87-88.
[124] European Commission, Final Report, on the operation of REACH and CLP, pp.87-88, 2022.

4. Climate action

In line with the Paris Agreement and as part of the European Green Deal, the European Climate Law sets the EU target of reaching climate neutrality by 2050 and reducing greenhouse gas (GHG) emissions by 55% by 2030 compared to 1990. The law also limits the contribution that carbon removals can make towards emission reductions in 2030 to ensure a sufficient mitigation effort.
The EU and its Member States submitted updated Nationally Determined Contribution (NDC) to the UNFCCC in December 2020.
The EU is working across all sectors and policies to cut GHG emissions and make the transition to a climate-neutral and sustainable economy, as well as addressing the unavoidable consequences of climate change.
EU climate legislation incentivises emissions reductions from power generation, industry, transport, the maritime sector and fluorinated gases (F-gases) used in products.
For road transport, EU legislation requires the GHG intensity of vehicle fuels to be cut by 6% by 2020 compared to 2010[125] and sets binding GHG emission standards for different vehicle categories[126].
Under the F-gas Regulation, the EU's F-gas emissions will be cut by two thirds by 2030 compared with 2014 levels.
From 2021, emissions and removals of GHGs from LULUCF have been included in the EU emission-reduction efforts.
The EU adaptation policy is an integral part of the European Green Deal. From 2021, Member States are required to report on their national adaptation policies[127], as the EU Climate Law recognises adaptation as a key component of the long-term global response to climate change. Member States will be required to adopt national strategies, and the EU will regularly assess progress as part of its overall governance on climate action. The updated EU adaptation strategy, published in February 2021, sets out how the EU can adapt to the unavoidable impacts of climate change and become climate resilient by 2050.

Key national climate policies and strategies

Germany submitted its integrated national energy and climate plan (NECP) for 2021-2030. The work builds on long-term energy and climate plans, including the *long-term strategy to reduce greenhouse gas emissions* (2019). Achieving Germany's domestic and European climate ambitions will require sustained efforts. In July 2021, Germany amended its climate law, thereby committing to climate neutrality by 2045 and to greenhouse gas emission reductions by 2030 of -65 % compared to 1990 levels.

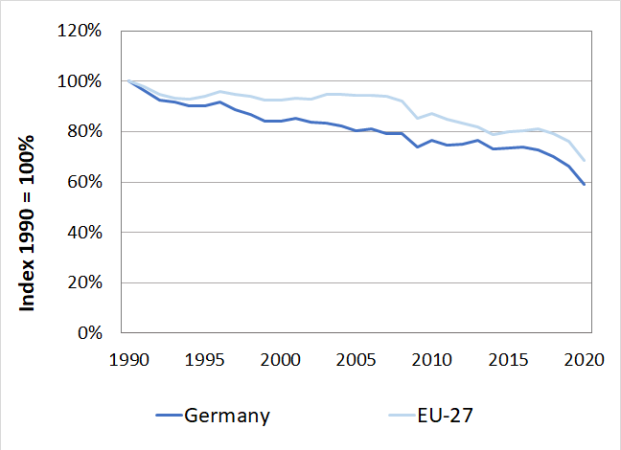
Germany is strongly stepping up public investment, to which its RRP also contributes. The latest policies and measures set out in Germany's 2030 climate action programme and climate law help close the gap to its new binding 2030 target. In its RRP, Germany allocates 42 % of the plan to climate objectives and outlines crucial reforms and investments to further the transition to a more sustainable, climate-neutral and climate-resilient economy. The reforms are expected to support Germany's decarbonisation and energy objectives and are a step towards achieving climate neutrality. However the RRP's size of €25.6 billion makes up for 0.74% of Germany's GDP and will therefore have a rather supporting function in Germany's ambitious climate policy. Measures in the area of climate action and the energy transition include significant efforts for the development of a well-functioning hydrogen economy, measures to promote climate-friendly mobility, and sizeable investment in energy-efficient building renovation (see Chapter 5).

The climate adaptation measures of the federal government are guided by the *German adaptation strategy (DAS)*. It serves as the federal government's strategic framework to guide its adaptation-related policies and activities. The aim is to decrease the vulnerability of German society, economy and environment and to strengthen adaptive capacities. The strategy provides a policy framework and facilitates a cross-sectoral approach. In Germany, climate change adaptation is an ongoing long-term task and is addressed within an institutional and methodological framework agreed at political level. Scientific research and financial support programmes, advisory services and processes for participation and consultation have been set up, along with a continuous reporting system.

The country's emissions have decreased sharply since 1990. Between 1990 and 2020 its greenhouse gas emissions decreased by 41 %. Although its economy has a similar emission intensity to the EU, emissions per capita are above the EU average.

[125] The Fuel Quality Directive (Directive 98/70/EC) sets strict quality requirements for fuels used in road transport in the EU to protect human health and the environment, and to make road travel across the EU safer.
[126] Directive 98/70/EC.
[127] Article 29 of Regulation (EU) 2018/1999.

Figure 35: Total greenhouse gas emissions (incl. international aviation) in Germany, 1990-2020



Effort sharing target

For emissions not covered by the EU's emmissions trading scheme (ETS), Member States have binding national targets under the Effort Sharing legislation[128]. Under EU legislation, Germany's target is to reduce greenhouse gas emissions in the non-ETS sectors (buildings, road and domestic maritime transport, agriculture, waste and small industries) by 14 % by 2020 and reduce emissions by 38 % by 2030 compared to 2005 levels. The country's Effort Sharing emissions in 2019 were above its 2020 target. In its National Energy and Climate Plan, Germany intends to achieve reductions close to its current Effort Sharing target for 2030 of -38 %.

Figure 36: Emissions and targets under the Effort Sharing Decision/ Effort Sharing Regulation in Germany, 2020 and 2030 as percentage change from 2005

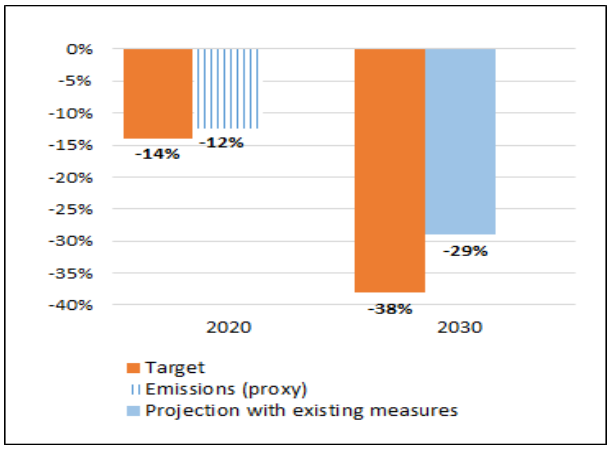
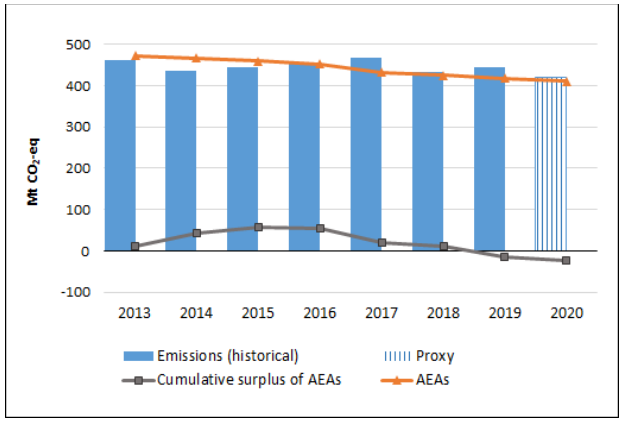


Figure 37: Emissions, annual emission allocations (AEAs) and accumulated surplus/ deficit of AEAs under the Effort Sharing Decision in Germany, 2013-2020



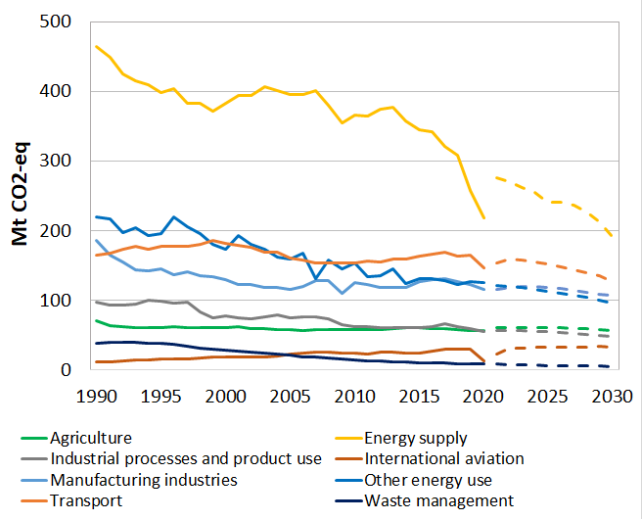
Key sectoral developments

In road transport, the GHG intensity of vehicle fuels in Germany decreased by 3.7 % between 2010 and 2019. The country needs to act swiftly to meet the current EU-wide reduction target of 6 % by 2020. There are several types of action that Member States can take in this regard, for example: (i) further expanding the use of electricity in road transport; (ii) supporting the use of biofuels, and advanced biofuels in particular; (iii) incentivising the development and deployment of renewable fuels of non-biological origin; and (iv) reducing upstream emissions before refining processes.

In 2019, road transport in Germany accounted for 19 % of total GHG emissions. Emissions have increased by 3 % compared to 2005. Energy intensity of passenger transport has improved, but remains above the EU average. Against this background, the NECP makes reference to the promotion of innovative mobility technologies (including batteries, hydrogen/fuel cell or gas powered vehicles, plug-in hybrids, and advanced biofuels).

[128] Regulation (EU) 2018/842

Figure 38: Greenhouse gas emissions by sector in Germany[129] –historical emissions 1990-2020, projections 2021-2030[130]

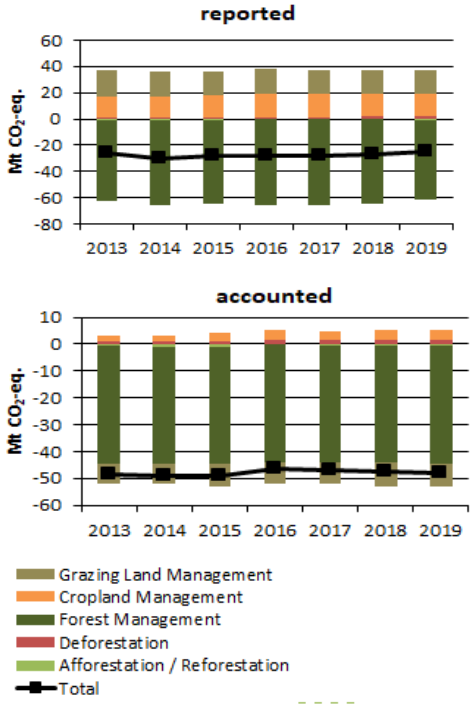


On buildings, Germany submitted its long-term renovation strategy in July 2020. While these policies and measures are important, they are expected to reduce primary energy consumption by only 25 % until 2030. Germany also developed an ambitious 'Renovate' component in its RRP, which can help accelerate building renovation. It also includes a measure on climate-friendly wooden construction.

Emissions from agriculture have remained fairly stable since 2005.

In the land use, land use change and forestry (LULUCF) sector, Germany projects a dramatic decrease of net removals, resulting in significant net emissions by 2030. Reported quantities under the Kyoto Protocol for the LULUCF sector in Germany show net removals of, on average, -27.3 Mt CO_2-eq for 2013-2019. In this regard, Germany contributes 7.9 % to the EU-27's annual average sink of -344.9 Mt CO_2-eq. Accounting for the same period reveals net credits of, on average, -47.9 Mt CO_2-eq, which represents 41.7 % of the EU-27 accounted sink of -115.0 Mt CO_2-eq. Reported net removals and accounted net credits show no trends and little variation.

Figure 39: Reported and accounted emissions and removals from LULUCF in Germany[131]



Use of revenues from the auctioning of EU ETS allowances

Total revenues from the auctioning of emission allowances under the EU ETS between 2012 and 2021 were over EUR 18.5 billion. In Germany, 100 % of revenues are spent on energy and climate projects. All revenues go to a fund for climate and energy projects, which is additionally co-funded from the national budget.

2022 priority actions

- Deploy faster grid expansion swifter planning and approval procedures for onshore wind energy, and addressing investment bottlenecks related to offshore wind to substantially increase electricity consumption from renewable energy sources.
- Continue to use energy R&D to support the energy transition. This includes allocating adequate funding to key priority areas and to monitoring the effectiveness of its RD&D policy.
- Higher and faster investments in sustainable transport infrastructure to make progress on

[129] The sectors in the figure correspond to the following Intergovernmental Panel on Climate Change (IPCC) sectors: Energy supply: 1A1, 1B and 1C. Energy use in manufacturing industries: 1A2. Industrial processes and product use: 2. Transport: 1A3. Other energy use: 1A4, 1A5 and 6. Agriculture: 3. Waste: 5. International aviation: 1.D.1.a.

[130] European Environment Agency, Total GHG trends and projections.

[131] The differences between reported and accounted emissions from LULUCF under the Kyoto Protocol are described in the '*explanatory note on LULUCF – accounted and reported quantities under the Kyoto Protocol*'.

emission reductions. Incentivise investments in climate-friendly production processes throughout the industry sector.

Part II: Enabling Framework: Implementation Tools

5. Financing

Environmental investment needs in the European Union

Financing environmental measures is essential for their success. Although most financing comes from national sources, various EU funds contribute significantly, helping to close the financing gaps between countries.

Post-2020, environmental measures will also be supported by the EU's COVID-19 Recovery Fund (via the Recovery and Resilience Facility) and the 'do no significant harm' principle, which runs across the EU budget.
The renewed commitments made at COP26 (Glasgow, October-November 2021) and the Biodiversity Convention(April-May 2022)[132] will also be reflected in the EU budget.

Overall environmental investment gaps (EU27)

The EU green transition investment needs cover a range of interlinked areas. The additional investment needs over baselines (i.e. the gap between what is needed and what is forecast to be invested if no additional action is taken) for climate, energy and transport were estimated at EUR 390 billion per annum (EU-27)[133], with a further EUR 130 billion to deliver the EU's core environmental objectives[134]. Climate adaptation costs can also be significant, reaching a total of EUR 35-62 billion (narrower scope) or EUR 158-518 billion (wider scope) per year[135]. Those investment needs do reflect the implementation objectives to 2020 and to 2030 (except for climate adaptation which costs are expected to stay for a longer time horizon).

A preliminary update of the EU's core environmental investment gap is provided in Table 1.[136]. Almost 40 % of the environmental investment gap relate to dealing with pollution, accounting for nearly two-thirds of the total if combined with water management. The investment gap in circular economy and waste is estimated to be between EUR 13-28 billion a year, depending on levels of circularity implemented. The annual biodiversity financing gap is estimated at around EUR 20 billion.

Table 1: Estimated breakdown of the EU27's environmental investment gaps, by environmental objective, 2021-2030 (per annum)[137]

Environmental objective	Estimated investment gap (EU-27, p.a.)	
	EUR billion	%
Pollution prevention & control	42.8	39
Water management & industries	26.6	24 %
Circular economy & waste	13.0	12 %
Biodiversity & ecosystems[138]	21.5	20 %
R & D & I and other	6.2	6 %
Total	**110.1**	**100 %**

Environmental investment needs in Germany

There is a perceptible shift of investment priorities in Germany towards the support to climate, energy and transport policies as it can be appreciated in the recovery and resilience plan (RRP) where 42 % of the Recovery and Resilience Fund will be spent on investments in a wide set of economic sectors such as energy renovation of housing, e-mobility, hydrogen and decarbonisation of industry. In the new coalition agreement and recent budget proposals, financing objectives for climate adaptation and nature protection have been significantly strengthened and increased.

[132] The Convention on Biological Diversity; Post-2020 Global Biodiversity Framework | IUCN.
[133] SWD(2021) 621, accompanying proposal COM(2021) 557 to amend the REDII Directive 2018/2001/EU
[134] SWD(2020) 98 final/2
[135] SWD(2018) 292
[136] With decreases due to Brexit and some reconciliation among the objectives. Source: DG ENV "Study supporting EU green investment needs analysis" (ongoing, 2021-2023) and DG ENV internal analysis "Environmental investment needs and financing in the EU's green transition" July 2020.
[137] European Commission, DG Environment, "Study supporting EU green investment needs analysis" (ongoing, 2021-2023) and DG Environment internal analysis "Environmental Investment needs and financing in the EU's green transition", July 2020.
[138] To meet the needs of the 2030 Biodiversity Strategy (Natura 2000, green infrastructure), at least EUR 20 billion a year should be unlocked for nature (COM/2020/380 final) while to fully cover the strategy (including restoration) EUR 30-35 billion may be needed, indicating a gap of EUR 10-20 billion a year compared to current baseline expenditure.

The following environmental investment needs have been identified by sector.

Pollution prevention & control

The EU's first clean air outlook[139] under the clean air programme estimated that the total air pollution control costs for Germany to reach the NECD emission reduction requirements (ERRs)[140] by 2030 amount to EUR 12 646 million per year, including EUR 8 227 million for capital investment (assuming the achievement the 2030 climate and energy targets).

The second EU's clean air outlook[141] suggests that, if all relevant legislation adopted up to 2018 (including all air pollution and the 2030 climate and energy targets set in 2018) delivered its full benefits and if Member States also implemented the measures announced in their NAPCPs, the EU would largely achieve the reductions of air pollutant emissions that correspond to the obligations under the NEC Directive for 2030, except for 15 Member States for ammonia (NH_3). Germany is one of the Member States at risk of non-compliance with the ammonia emission reduction commitment.

Water management

Significant investment needs exist to ensure compliance with the Water Framework Directive given that less than 10 % of surface waters have good ecological status. As regards the Floods Directive, regular river flooding results in significant direct damage costs. Climate change is expected to increase storm-related protection needs on the Baltic and North Sea shores. Germany has good compliance with the Urban Wastewater Treatment Directive and high performance of networks.[142] An OECD study estimates additional cumulative investment needs over baselines of EUR 255 billion to 2030 to ensure continued compliance with the Drinking Water Directive and the Urban Waste Water Treatment Directive in the EU27, of which a cumulative EUR 40 billion relates to Germany (with EUR 22.7 billion on capital costs) – which indicates around EUR 4 billion relevant expenditure per annum (including EUR 2.3 billion on capital) on average, 95 % of that relating to wastewater[143]. Moreover, the recent 6th Water Framework Directive and Floods Directive Implementation Report[144] and the financial - economic study[145] accompanying it, are also a relevant source of information in this domain.

Waste & circular economy

According to a Commission study the capital investments additionally over the baselines required to reach EU recycling targets for EU27 as a whole amount to EUR 15.8 billion for 2021-27. For Germany, those additional needs are estimated at EUR 1.68 billion (EUR 239 million per year on average).[146].

This concerns municipal and packaging waste in the areas of collection, biowaste treatment, recycling reprocessors, waste sorting facilities and waste registry digitalisation, while does not include investment necessary for other key waste streams (plastics, textiles, furniture) or to unlock a higher uptake of circularity and waste prevention across the economy.

Biodiversity & ecosystems

The recently submitted priority action framework (PAF) for Germany shows that nature protection costs (including Natura 2000) in 2021-27 are EUR 1.5 bilion per annum, including EUR 377 million on one-off costs[147]. This excludes additional costs to implement the Biodiversity Strategy to 2030, including on increased protection and restoration.

EU environmental funding 2014-2020

The multiannual financial framework (MFF) for the years 2014-2020 allocated almost EUR 960 billion (in commitments, 2011 prices) [148] for the EU. The commitment to green transition included a 20 % climate spending target and funding opportunities for the environment, in particular, under the European

[139] International Institute for Applied Systems Analysis (IIASA), Progress towards the achievement of the EU's air quality and emissions objectives, 2018

[140] Covering the reductions of and the emission ceilings for 5 atmospheric pollutants, SOx, NOx, PM2.5, NH3 and VOC by 2030, compared to 2005. Source: Progress towards the achievement of the EU's air quality and emissions objectives, IIASA 2018. (page 29). Requirements are based on Directive (EU) 2016/2284.

[141] COM(2021) 3 final. International Institute for Applied Systems Analysis (IIASA), Support to the development of the Second Clean Air Outlook, 2020 and Annex

[142] OECD, *Financing a Water Secure Future*, 2022. Country Fact Sheet France, Country Fact Sheet Germany, Page 4

[143] OECD, *Country fact sheet- Financing Water Supply, Sanitation and Flood Protection.*

[144] WFD and FD Implementation Reports – DG Environment – European Commission.

[145] European Commission, Directorate-General for Environment, Economic data related to the implementation of the WFD and the FD and the financing of measures, Final report. Publications Office, 2021.

[146] European Commision, *Study on investment needs in the waste sector and on the financing of municipal waste management in Member States,* 2019

[147] The N2K Group, *Strengthening investments in Natura 2000 and improving synergies with EU funding instruments report to the European Commission*, 2021

[148] Regulation (EU) No 1311/2013

Structural and Investment (ESI) Funds[149]. The 2014-2020 budget was subsequently topped up with over EUR 50 billion (current prices) from REACT-EU for cohesion policy action against coronavirus (COVID-19)[150].

Germany received EUR 33.5 billion from the ESI Funds over 2014-2020 to invest in job creation and a sustainable and healthy European economy and environment. The planned direct environmental investment amounted to EUR 1.9 billion with further EUR 990.9 million identified as indirect environmental investment value, totalling EUR 2.9 billion. The figure below shows an overview of (planned) individual ESI Funds earmarked for Germany (EU amounts, without national amounts).

Figure 40: ESI Funds allocated to Germany, including environmental investments 2014-2020[151]

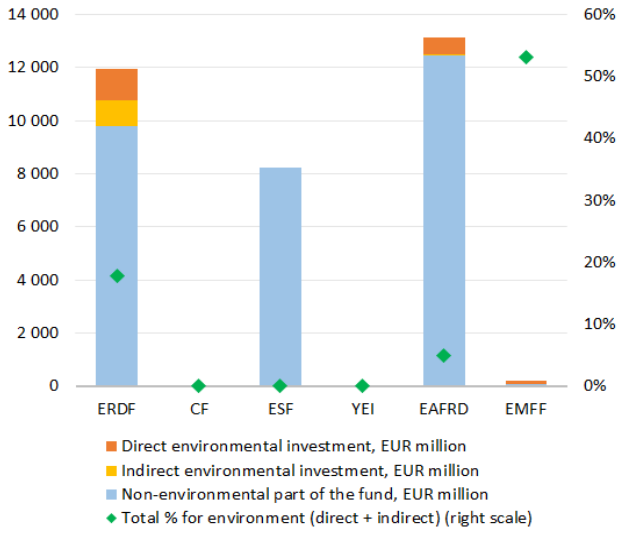


Table 2: Direct and indirect Environmental investments under the ESI Funds in Germany, 2014-2020[152]

Instrument	Allocations for the environment (EUR million)
Under Cohesion policy (ERDF)	**2 137.0**
Direct environmental investments	1 179.0
air quality	34.2
biodiversity and nature	212.1
land rehabilitation	202.0
climate and risk management	730.7
Indirect environmental investments	958.0
renewable energy	35.9
energy efficiency	444.3
other energy[153]	43.5
sustainable transport	272.6
sustainable tourism	47.5
business development, R&I	114.3
Under EAFRD/rural development	**649.4**
Direct environmental investments	617.1
climate and risk management	617.1
Indirect environmental investments	32.4
renewable energy	4.9
energy efficiency	27.5
Under EMFF	**116.5**
Direct environmental investments	115.9
environmental protection & resource efficiency	115.9
Indirect environmental investments	0.6
business development, R&I	0.6
Under ESI Funds total	**2 903.0**
Direct environmental investments	1 912.0
Indirect environmental investments	990.9

Funding for the environment from the ESI Funds has been also supplemented by other EU funding programmes available to all Member States, such as, the LIFE programme or the Horizon 2020 and relevant EIB loans, that add up to an estimated total of EUR 5.4 billion of EU environmental financing for Germany in 2014-2020.

[149] The European Structural and Investment (ESI) Funds include the European Regional Development Fund (ERDF), the Cohesion Fund (CF), the European Social Fund (ESF) with the Youth Employment Initiative (YEI), the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF).

[150] Regulation (EU) 2020/2221

[151] European Commission, DG Environment - Data analysis, DG Environment analysis based on ESI Funds Open Data Portal (cohesiondata.ec.europa.eu), Integration of environmental concerns in Cohesion Policy Funds (COWI, 2017), Regulation (EU) No 1303/2013, Regulation (EU) 2021/1060 and Implementing Regulation (EU) No 215/2014. Cut-off date for data: December 2021. Environmental investments here are captured via the combined use of intervention fields and coefficients under the Regulation (EU) No 1303/2013 and Regulation (EU) 2021/1060 allowing for a more precise identification and valuation of relevant environmental investments. N.B. Indirect environmental investments are valued using the Annex I environmental coefficients of the Regulation (EU) 2021/1060 (as opposed to full value).

[152] European Commission, DG Environment - Data analysis. The values of environmental investments identified here in the specific environmental areas may differ from the tracking values at cohesiondata.ec.europa.eu, e.g. for clean air or biodiversity due to two factors: the set of environmental coefficients used and the range of funds assessed. DG Environment's analysis here covered the full range of ESI Funds. See also the footnote for the figure "ESI Funds allocated to Germany, including environmental investments 2014-2020".

[153] Intelligent energy distribution systems (smart grids) and high efficiency co-generation and district heating, based on intervention field 53 and 54 respectively (with 40% environmental coefficients) of Regulation (EU) No 2021/1060, Annex I.

The LIFE programme [154] is entirely dedicated to environmental and climate objectives. It finances demonstration and best practice actions for green solutions to be deployed. In the 2014-2020 period, Germany has received EU support for 37 LIFE projects (for nature and environment) with EUR 124.3 million from the LIFE programme (out of 1 028 EU27 LIFE projects with the total EU contribution of EUR 1.74 billion)[155].

In 2014-2020, Horizon 2020 allocated about EUR 271.6 million for Germany for the environment, in particular, for circular economy, climate action and natural resources and ecosystems), accounting for 2.7 % of Germany's total allocation[156]. From the European Fund for Strategic Investments (EFSI), Germany received EUR 60.0 million for direct environmental investments out of its total allocation (EUR 5.4 billion) [157]. Germany received EUR 2.1 billion for direct environmental investments (specifically, for water and sewerage) out of the total EIB loans for Germany (EUR 44.7 billion)[158]. The country ranks number 4 in size in total EIB lending.

In 2020, the EIB provided EUR 24.2 billion to fight climate change, 37 % of its total financing and EUR 1.8 billion (3 % of its financing) for the environment[159] [160].

EU environmental funding 2021-2027

The 2020 European Green Deal investment plan calls for EUR 1 trillion in green investments (public and private) to be made across the EU by 2030. The 2021-2027 MFF and the NextGenerationEU spending programme will mobilise EUR 2.018 trillion (in current prices) to support the recovery from COVID-19 and the EU's long-term priorities, including environmental protection [161]. Following the EU Green Deal's[162] pledge to 'do-no-harm' and the Interinstitutional Agreement on the 2021-2027 MFF[163], 30 % of the EU budget will support climate efforts and 7.5 % (as of 2024) and 10 % (as of 2026) biodiversity that requires increased programming of financial resources for biodiversity, specifically under the 2021-2027 Cohesion policy and the 2023-2027 CAP to reach those targets.

Sustainable finance significantly increases transparency on environmental sustainability (a goal promoted by the EU taxonomy)[164], strengthens non-financial reporting requirements, facilitates green bond issuance (by the EU green bond standard[165]). Reinforced by the renewed sustainable finance strategy (2020)[166] it will increase investment flows to climate and environment. In support of financing climate adaptation, the new strategy on adaptation to climate change[167] can facilitate to close the insurance protection gap from non-insured climate-related events[168]. The EIB will align 50 % of its lending with climate and environment by 2025[169] with an EUR 250 billion contribution to the Green Deal Investment Plan by 2027.

The table below gives an overview of the EU funds earmarked specifically to Germany for the 2021-2027 period. These funds are also supplemented by other EU funding programmes available to all Member States.

Table 3: Key EU funds allocated to Germany (current prices), 2021-2027

Instrument	Country funding allocation (million EUR)
Cohesion policy	**Total: 18 457.5**[170]
ERDF	1 0912.6
ESF+	6 527.1
ETC (ERDF)	1 017.8[171]
Just Transition Fund	**2 477.6** [172]
EAFRD/rural development under CAP Strategic	**5 461.8**[174]

[154] European Commission, LIFE Programme
[155] LIFE Country overview Malta 2021 (europa.eu)
[156] European Commission, Horizon 2020 Environment and resources data hub
[157] European Investment Bank, approved and signed EFSI financing, 2015-2020
[158] EIB loans in EU countries in 2014-2020, EIB Open Data Portal
[159] The EIB Group jointly works with the European Commission in implementing several programs that finance environmental implementation: InvestEU, the successor of EFSI, Pillar II and III of the Just Transition Mechanism. The EIB Group stands as a key implementing partner for InvestEU with responsibility for managing 75 % of the overall budgetary capacity of the mandate.
[160] EIB 2021 Activity Report
[161] European Commission, 2021-2027 long-term EU budget & NextGenerationEU
[162] COM(2019) 640.
[163] Interinstitutional Agreement, OJ L 433I.
[164] European Commission, EU taxonomy for sustainable activities
[165] EU Green Bond Standard - 2021/0191 (COD).
[166] COM(2021) 390
[167] COM(2021) 82
[168] The strategy would support improved insurance gap coverage including through the natural catastrophe markets as reflected with the EIOPA (the Association for European Insurance and Occupational Pension Authorities) dashboard on insurance protection gap for natural catastrophes. See: The pilot dashboard on insurance protection gap for natural catastrophes
[169] EIB Climate Bank Roadmap 2021-2025, November 2020
[170] European Commission, 2021-2027 Cohesion policy EU budget allocations.
[171] Interreg initial allocations per MS including ETC transnational and ETC cross-border co-operation.
[172] European Commission, 2021-2027 Cohesion policy EU budget allocations.

Plans 2023-2027[173]	
European Maritime, Fisheries and Aquaculture Fund (EMFAF)	**211.8**[175]
Recovery and Resilience Facility (RRF) 2021 – 2026[176]	**25 613.5**[177] (grants)

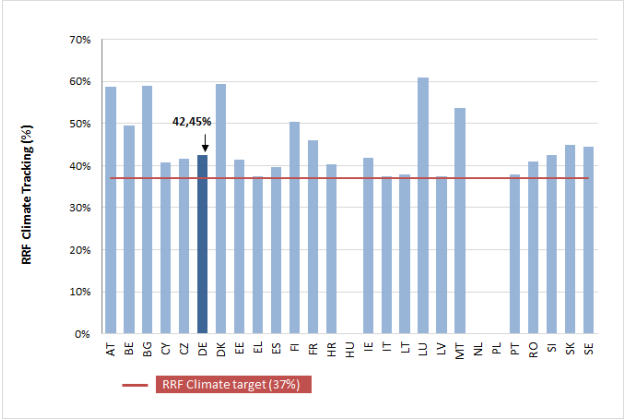
In Germany, the programming for the majority of EU funds (ERDF, EAFRD and EMFAF) is well under way. As regards the ERDF the main priorities under the 'green objective' are energy efficiency, climate adaptation including using ecosystem-based approaches, followed by biodiversity and Green Infrastructure, circular economy and urban mobility.

The negotiations have been concluded under the RRF. As part of the EU's Recovery Package, Germany requested EUR 25.6 billion of grants through the Recovery and Resilience Fund, of which 42.5 % will support climate objectives. This is above the 37 % climate expenditure target, the minimum level required under the RRF Regulation[178]. Green investments will go to:

- making the transport sector greener by supporting electric cars, the renewal of the local public transport fleet and rail;
- decarbonising industry with a focus on renewable hydrogen;
- increasing the energy efficiency of residential buildings through renovation.

Overall, the plan ensures that direct actions can be taken at local levels for the green transition, while protecting or restoring the environment, and in compliance with the do-no-significant-harm principle[179].

Figure 41: Climate expenditure in RRPs, 2021-2026[180]



Under NextGenerationEU, the Commission will issue up to EUR 250 billion of EU green bonds (one third of the NGEU total) until 2026 that will comply with the general spirit of the DNSH principle, but will not be subject to the currently developed Delegated Acts related to the EU Taxonomy and will not fully align with the proposed EU green bond standard.

In December 2020, the EIB Group adopted the Climate Bank Roadmap outlining the role of the institution in climate action and environmental sustainability for the next decade also setting to align 50 % of its lending activity with that by 2025. The EIB's contribution to the European Green Deal Investment Plan is expected to amount to around to EUR 250 billion throughout to 2027 in terms of investments in EU mandates (i.e. under EU instruments and through the EU budget).

National environmental protection expenditure

Total national environmental protection expenditure (including all relevant current and capital expenditure)[181] in the EU-27 was EUR 272.6 billion in 2020, representing 2 % of the common GDP being quite stable over time. While absolute expenditure is concentrated in a few countries, as a share of GDP, most countries spend

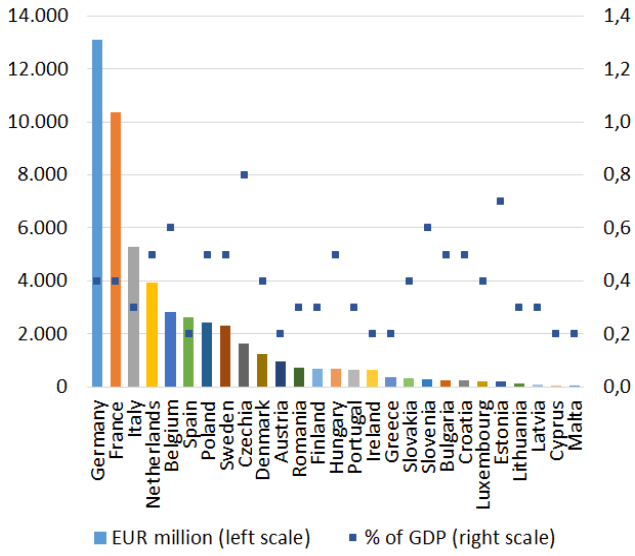
[174] Regulation (EU) no 2021/2115, Annex XI.
[173] European Commission, CAP strategic plans.
[175] Regulation (EU) no 2021/1139, Annex V.
[176] The actual reforms and investments under the RRF have to be implemented until 31 December 2026.
[177] Council Implementing Decision, FIN 519.
[178] Regulation (EU) no 2021/241.
[179] C(2021) 1054 final.

[180] European Commission. The contributions to climate objectives have been calculated using Annex VI of the RRF Regulation (EU) 2021/241.
[181] At economy level, including final consumption, intermediate consumption and capital expenditure of households, corporations and governments related to environmental protection goods and services. It excludes EU funds, while may include some international expenditure beyond domestic. Data source: Environmental Protection Expenditure Accounts (EPEA), Eurostat. EPEA accounts are based on the CEPA 2000 classification, excluding climate, energy and circular economy.

between 1-2 %, with Germany being slightly above that (2.2 %).

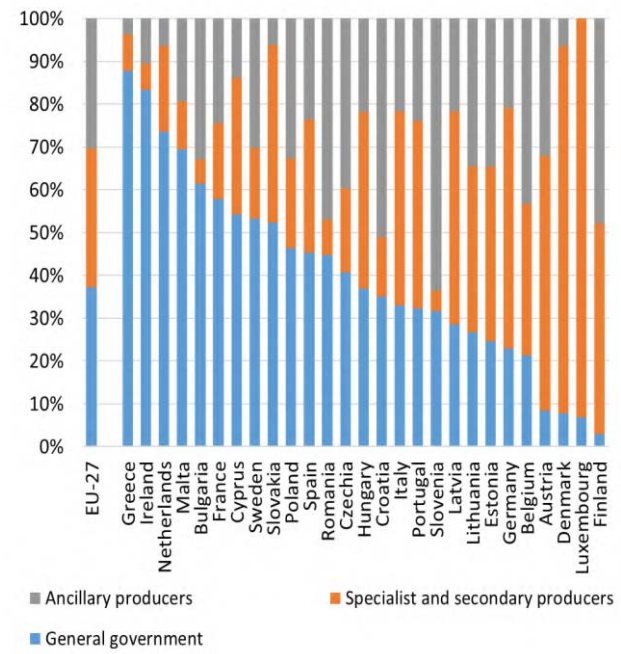
Of the above total, the EU-27's capital expenditure (Capex) on environmental protection (i.e. investment) amounted to EUR 56.3 billion in 2018, lowering to EUR 54.5 billion in 2020, representing around 0.4 % of GDP. Most Member States invested 0.2-0.5 % of their GDP in environmental protection, including Germany (0.4 %). During 2014-2020, this totalled to around EUR 376 billion of environmental investment in the EU27, and to EUR 84.3 billion for Germany.

Figure 42: Direct and indirect environmental protection investments in the EU-27 (EUR million and % of GDP), 2018[182]



By institutional sector, around 23 % of Germany's environmental protection investments (capital expenditure) came from the general government, over a half (56 %) from specialist producers (of environmental protection services, e.g. waste and water companies) and 21 % from industry (business) that normally pursues environmental activities as ancillary to their main activities. At EU level, 37 % comes from governments, 33 % from specialist producers and 30 % from industry (business).

Figure 43: EU-27 Member States' environmental protection investments (Capex) by institutional sectors (Total economy = 100%), 2018[183]



Breakdown of investment by environmental topic is partially available, at the level of institutional sectors only (rather than at economy level), due to different reporting patterns. At Germany's general government level, 40 % of environmental protection investments went to the protection of air, 36 % to wastewater and 13 % to environmental research and development. The country's specialist producers (of environmental protection services) mostly focused on wastewater (72 %), waste management received 27 % of respective investments. The industrial and business sector focused on several areas: wastewater (37 %), air protection (33 %), waste management (14 %) and water and soil protection (11 %) to name the most significant and clearly classified areas.

The total annual European green bond issuance[184] in 2020 was USD 156 billion (EUR 137 billion[185]), growing from USD 117 billion (EUR 105 billion) in 2019, also including some non-EU European countries. By EU-27 Member States only, the 2020 annual green bond issuance was EUR 124 billion. 83 % of the green bonds

[182] Eurostat, Environmental Protection Expenditure Account, 2021.

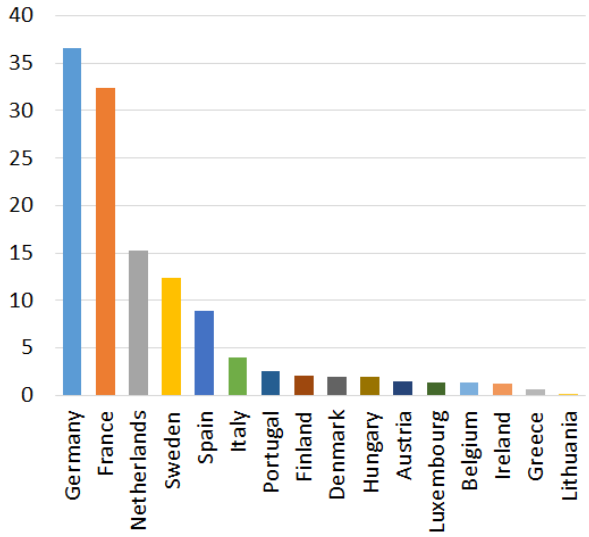
[183] Eurostat, Environmental Protection Expenditure Accounts (env_epe).

[184] Green bonds were created to fund projects that have positive environmental and/or climate benefits. The majority of green bonds issued are green "use of proceeds" or asset-linked bonds. The very first green bond was issued in 2007 with the AAA-rated issuance from multilateral institutions, the European Investment Bank (EIB) and the World Bank.

[185] At Eurostat's annual average EUR/USD exchange rates.

issued by European countries served energy, buildings or mobility objectives between 2014-2020, 8 % supported water and waste, with further 6 % supporting land use – with links to ecosystem conservation & restoration, based on the Climate Bonds Taxonomy being broadly similar to the EU Taxonomy[186]. In 2020, EU green bond issuance by Germany amounted to EUR 36 644 million.

Figure 44: Annual EU green bond issuance in 2020 (EUR billion)

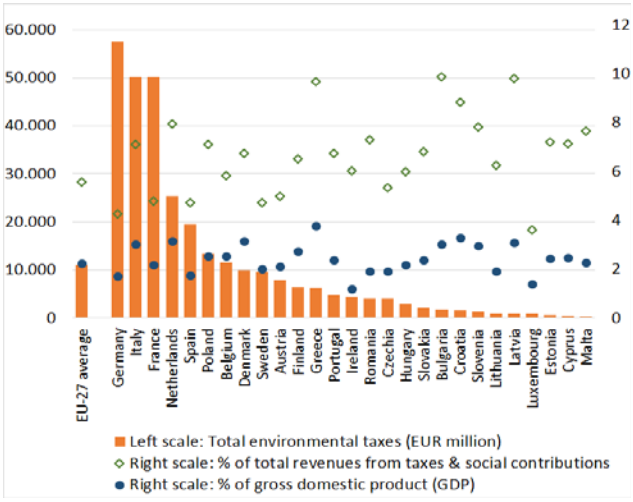


Green budget tools

Green taxation and tax reform

Germany's revenue from environmentally-related taxes are among the lowest (rank 24) in the EU compared to GDP, with 1.71 % in 2020 (EU-average: 2.24%). 83 % of the total constituted energy tax, and transport taxes 17%. Taxes on pollution and resources are very low (0.01% of the total). Germany applies economic instruments to encourage recycling, like 'pay-as-you-throw' schemes[187].

Figure 45: Environmental taxes in the EU-27, 2020[188]



The European Green Deal underlines that well-designed tax reforms can boost economic growth and resilience, foster a fairer society and a just transition by sending the right price signals and incentives to economic actors. The European Green Deal creates the context for broad-based tax reforms, fossil fuel subsidies removal, shifting the tax burden from labour to pollution, also accounting for social considerations[189]. The application of the 'polluter pays principle' (PPP)[190] stipulating that polluters should bear the cost of measures to prevent, control and remedy pollution; is facilitated by the EU Commission's TSI flagship on greening taxes.

Environmentally-harmful subsidies

Addressing and removing environmentally-harmful subsidies (EHS) is a further step towards wider fiscal reforms[191].

Fossil fuel subsidies are costly for public budgets and adversely impact the achievement of the European Green Deal objectives (climate neutrality, air quality, zero pollution and lowering health impacts). In many cases they also go against incentives for investments in green technologies, and do not contribute to levelling the playing field. Fossil fuel subsidies amounted to about EUR 55 billion until 2019 . They rose by 4% between 2015 and 2019, however some countries, such as Latvia, Lithuania, Sweden, Greece or Ireland, managed to decrease

[186] Interactive Data Platform at www.climatebonds.net. Further information on Climate Bonds Taxonomy: https://www.climatebonds.net/standard/taxonomy

[187] European Commission, Green taxation and other economic instruments, 2021

[188] Eurostat, Environmental taxes accounts (env_eta).

[189] COM (2019/640 final), p.17.

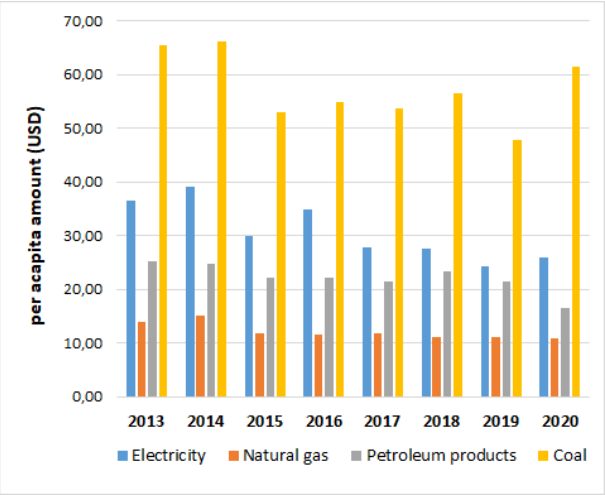
[190] Article 191(2) of the Treaty on the Functioning of the European Union: "Union policy on the environment (…) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay".

[191] European Commission, *Study on Assessing the Environmental Fiscal Reform Potential for the EU28*, January 2016 Eunomia EFR Final Report MAIN REPORT.pdf (europa.eu)

subsidies for fossil fuels. In the EU, subsidies on petroleum products, in sectors such as transport and agriculture, kept on growing over this period, whereas subsidies on coal and lignite decreased, largely owing to diminishing role of solid fuels in electricity generation. As a share of GDP, fossil fuel subsidies ranged from 1.2 % in Hungary to less than 0.1 % in Malta in 2019 (0.4 % on aaverage in the EU). Fossil fuel subsidies came to EUR 12.2 billion in Germany in 2019, representing 0.36 % of GDP.

In 2020, the total amount of fossil fuel subsidies decreased to EUR 52 billion (due to falling consumption trends amid the COVID-19-related restrictions) which, without Member State actions, are likely to rebound as economic activity picks up from 2020[192]. Further details on the fossil fuel trends in Germany in 2015 -2020 are shown below.

Figure 46: Trends in natural gas, petroleum products, electricy and coal subsidies in Germany[193]



% GDP	2013	2014	2015	2016	2017	2018	2019	2020
Electricity	0.08	0.08	0.07	0.08	0.06	0.06	0.05	0.06
Natural gas	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
Petroleum	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04
Coal	0.14	0.14	0.13	0.13	0.12	0.12	0.10	0.13

The 'polluter pays principle' (PPP) is a principle of EU environmental law enshrined in Article 191 of the European Treaties[194]. Application of the principle means that polluters bear the costs of their pollution including the cost of measures taken to prevent, control and remedy pollution and the costs it imposes on society. The European Court of Auditors concluded that, while the principle is generally reflected in the EU's environmental policies, its coverage remains incomplete and is applied unevenly across sectors and Member States[195].

Current green budgeting practices

Green budgeting encompasses various climate and environmental tagging and tracking practices in budgets and some EU Member States already use green budgeting elements[196]. Green budgeting helps identify and track green expenditure and green revenues to increase transparency on the environmental implications of budgetary policies, improving policy coherence and supporting green policies (including climate end environmental objectives)[197].

EU climate proofing and sustainability proofing guidance have also been developed, as tools to assess project eligibility and compliance with environmental legislation and criteria[198]. The EU Commission established a green budgeting reference framework [199] and launched a technical support flagship (TSI) on green budgeting in 2021 to assist Member States in developing or further developing national green budgeting frameworks to reap the benefits for policy coherence and for the green transition. Germany did not participate in the EU Commission's green budgeting flagship started in 2021.

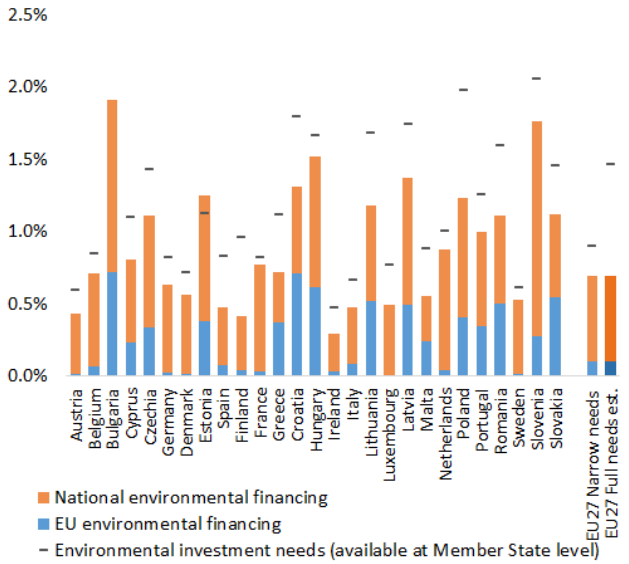
Overall financing compared to the needs

Overall environmental financing for investments is estimated to have been 0.6-0.7% of GDP in the 2014-2020 period in the EU, taking into account major EU funds and national financing. This ranged from 0.3% (Ireland) to 1.91% (Bulgaria), linked to the level of environmental challenges in Member States. The overall EU environmental investment needs in the 2021-2027 period are estimated to range between 0.9-1.5% of the

[192] State of the Energy Union report. COM(2021) 950 and Annex
[193] OECD, Fossil Fuel Subsidy Tracker.
[194] Article 191(2) of the Treaty on the Functioning of the European Union: *"Union policy on the environment (…) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay"*.
[195] European Court of Auditors, Special Report 12/2021: The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions
[196] European Commission, Green Budgeting Practices in the EU: A First Review, 2021.
[197] European Commission, European Commission Green Budgeting Reference Framework. European Commission, Green Budgeting in the EU Key insights from the 2021 Commission survey.
[198] European Commission, Technical guidance on sustainability proofing for the InvestEU Fund.
[199] European Commission, Green Budgeting Reference Framework, based on the review of the OECD Paris Collaborative on Green Budgeting initiative, 2017.

projected GDP (2021-2027), suggesting an overall environmental financing gap of 0.6-0.8% of GDP (EU level), unchanged financing levels assumed[200].

Figure 47: Total environmental financing baseline (2014-2020) and estimated needs (2020-2030) in the EU27 (% of GDP)[201]



Germany's overall environmental financing for investments came to an estimated 0.63% of GDP in 2014-2020, overwhelmingly relying on national financing sources. The overall environmental investment needs in 2021-2027 are estimated to reach over 0.82 % of GDP (reflecting data available at country level), suggesting a potential environmental financing gap of at least 0.19% of GDP, likely to be higher when also accounting for needs estimated currently at EU-level only (e.g. water protection, circularity, biodiversity strategy etc.) – to be addressed for environmental implementation.

2022 priority action

- To ensure an increased level of financing for the environment to cover the investment needs foreseen and to close the investment gaps.

[200] DG Environment data analysis. EU financing sources covered: ESI Funds (ERDF, CF, ESF, YEI, EAFRD, EMFF), Horizon 2020, LIFE, EFSI (EU amount), EIB loans. National financing: total national environmental protection capital expenditure (investments) - source: Eurostat EPEA dataset. Cut-off date for data: end 2021. N.B. The total financing may be higher, in particular through further indirect investments, requiring further analysis in the future.

[201] Eurostat, ESI Funds Open Data, 2021.

6. Environmental governance

Information, public participation and access to justice

Citizens can more effectively protect the environment if they can rely on the three 'pillars' of the Aarhus Convention:
(i) access to information;
(ii) public participation in decision making;
(iii) access to justice in environmental matters.

It is of crucial importance to public authorities, the public and businesses that environmental information is shared efficiently and effectively[202]. Public participation allows authorities to make decisions that take public concerns into account. Access to justice is a set of guarantees that allows citizens and NGOs to use national courts to protect the environment[203]. It includes the right to bring legal challenges ('legal standing')[204].

The INSPIRE Directive aims at establishing a European spatial data infrastructure for sharing environmental spatial information between public authorities across Europe, assisting in policy-making across boundaries and facilitating public access to this information. Geographic information is needed for good governance at all levels and should be readily and transparently available

Germany's performance has been reviewed based on the country's 2021 country fiche[205]. Progress on data identification and documentation has been slow while implementation levels are good. However, more efforts are needed to:

- make the data more widely accessible, and
- prioritise environmental datasets in implementation, especially those identified as high-value spatial datasets for implementing environmental legislation[206].

Table 4: Country dashboard on the implementation of the INSPIRE Directive, 2016-2020[207]

	2016	2020
Effective coordination and data sharing		
Ensure effective coordination	■	■
Data sharing without obstacle	■	■
INSPIRE performance indicators		
i. Conformity of metadata	■	■
ii. Conformity of spatial data sets[208]	■	■
iii. Accessibility of spatial data sets through view and download services	■	■
iv. Conformity of network services	■	■

Legend

■ Implementation of this provision is well advanced or (nearly) completed. Outstanding issues are minor and can be addressed easily. Percentage: >89%

■ Implementation of this provision has started and made some or substantial progress but is still not close to be complete. Percentage: 31–89%

■ Implementation of this provision is falling significantly behind. Serious efforts are necessary to close implementation gap. Percentage: <31%

Public participation

Regarding environmental impact assessments (EIAs) and strategic environmental assessments (SEAs), EIA portals at federal and Länder level with a similar layout allow facilitates the general public to participate by way of electronic tools. Each project contains basic information including short summaries, details on public participation, on progress made on the authorisation procedure and on the final decision on the approval of the project including an explanation of how the reasoned

[202] The Aarhus Convention, the Access to Environmental Information Directive (Directive 2003/4/EC) and the INSPIRE Directive, (Directive 2007/2/EC) together create a legal foundation for the sharing of environmental information between public authorities and with the public. This EIR focuses on the INSPIRE Directive's implementation.
[203] These guarantees are explained in the Commission Notice on access to justice in environmental matters, OJL 275, 18.8.2017 and a related Citizen's Guide.
[204] This EIR focuses on the means implemented by Member States to guarantee rights of access to justice, legal standing and to overcome other major barriers to bringing cases on nature and air pollution.
[205] European Commission, INSPIRE-in-your-Country
[206] European Commission, list of high value spatial data sets

[207] INSPIRE knowledge base
[208] The deadlines for implementation of the spatial data interoperability were in 2016 still in the future: 23/11/2017 for Annex I data and 21/10/2020 for Annex II and III data. It must be also considered that this conformity indicator will in many cases never reach 100 % conformity as majority of the countries provide as-is-data sets in addition to the INSPIRE harmonised data sets.

assessment, in particular comments from the public, were taken into account in the decision.

Baden-Württemberg's 'Participation portal' represents a noteworthy initiative. It lists all the possibilities that citizens have to get their voices heard and to participate in public policies.

Access to justice

Recognised environmental organisations are granted legal standing in all cases explicitly specified in the Environmental Appeals Act (*Umweltrechtsbehelfs-gesetz*).

The Federal Nature Conservation Act (*Bundesnaturschutzgesetz,* BNatSchG) and a number of Länder nature conservation acts grant legal standing to recognised nature conservation organisations in specified areas of nature conservation, (see § 64 BNatSchG). In these cases, recognised non-governmental organisations (NGOs) can challenge, for example, decisions to grant an exemption from rules for the protection of Natura 2000 sites or for protected areas of marine environment.

There are some difficulties in challenging plans or programmes. Environmental organisations have limited standing for the cases described in this category, as they have access to justice exclusively with regard to the subject matters listed in § (1) sentence 1 of the Environmental Appeals Act (*Umwelt-Rechtsbehelfsgesetz*, UmwRG). If plans or programmes do not fall within the scope of § 1 (1) sentence 1 no. 4 UmwRG there is limited direct access to justice in the cases of this category. In principle, neither individuals nor NGOs have standing to challenge national regulatory acts, except when requesting a 'preventive declaratory judgment' to stop an upcoming criminal sanction or where an 'incident review' might offer the possibility to challenge the validity of the underlying regulatory act, which is not an option if the regulatory act does not require further implementing acts. There have so far not been enough court judgments up to now and there is no clear legal framework. It is therefore not sufficiently clear if there is effective access to justice with regard to e.g. the designation of conservation areas by legislative decrees and not requiring a SEA.

Information on access to justice in environmental matters is available on the websites of the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (*Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz*) and the Federal Environment Agency (*Umweltbundesamt)*.

2022 priority actions

- Improve access to spatial data and services by creating stronger links between the Federal INSPIRE website and regional portals, identify and document all spatial datasets required for the implementation of environmental law[209], and make the data and documentation at least accessible 'as is' to other public authorities and the public through the digital services envisaged in the INSPIRE Directive.
- Better inform the public about their access to justice rights, in particular by referring in judicial and administrative portals to the Commission eJustice fact sheets on access to justice in environmental matters[210].
- Improve legal clarity on access to courts by the public when it comes to challenging administrative or regulatory decisions and omissions also in the planning context.
- Provide publicly available information and statistics on public participation and contributions to EIAs/SEAs at federal and Länder levels.

Compliance assurance

Environmental compliance assurance covers all the work undertaken by public authorities to ensure that industries, farmers and others fulfil obligations to protect water, air and nature, and managing waste[211].
It includes support measures provided by the authorities such as:
(i) compliance promotion [212];
(ii) inspections and other checks that they carry out, i.e. compliance monitoring [213];
(iii)the steps that they take to stop breaches, impose sanctions and require damage to be remedied, i.e. enforcement[214].
Citizen science and complaints enable authorities to focus their efforts better. Environmental liability [215] ensures that the polluter pays to remedy any damage.

[209] European Commission, INSPIRE.
[210] European Commission, e-justice.
[211] The concept is explained in detail in the Communication on "EU actions to improve environmental compliance and governance" COM(2018)10 and the related Commission Staff Working Document, SWD(2018)10.
[212] This EIR focuses on the help given to farmers to comply with nature and nitrates legislation.
[213] This EIR focuses on inspections of major industrial installations.
[214] This EIR focuses on the availability of enforcement data and co-ordination between authorities to tackle environmental crime.
[215] The Environmental Liability Directive, 2004/35, creates the framework.

Compliance promotion and monitoring

Public information on compliance with the Habitats, Birds and Nitrates Directives exists in Germany at both federal and Länder level although it is scattered across various authorities' (or professional associations') websites.

While general information is available on the German Environment Ministry's website about the Habitats and Birds Directives, practical information and guidance is provided via the Federal Agency for Nature Conservation's website (*Bundesamt für Naturschutz).* It has published a manual on the implementation of the Habitats Directive and provides access to a platform with detailed information to ensure compliance with the rules of the Nature Directives, mainly for construction projects. The web pages contain links to European-level sources of information and reports. The level of practical information on the Nitrates Directive has improved, as the adoption of a recent piece of legislation on fertilisers in Germany has prompted the production of specific guidance and information for farmers on compliance with the new rules.

Good practices identified include the availability of fact sheets on every single protected habitat and bird in Germany, as well as interactive map and platform to help construction project managers evaluate the biodiversity impact and promote compliance. On nitrates, a web application on the nitrate situation of groundwater in relation to specific monitoring sites and regional pressures supports the implementation of the Nitrates Directive.

Inspection plans for sites falling under the Industrial Emissions Directive are drawn up at Länder level and can be delegated at 'sub-Länder' level. Information on inspection plans and inspections conducted are available on the websites of the respective Länder authorities. The provision of information on the outcomes of the inspection (follow-up, recommendations, repeated violations) varies across the Länder (some being available only upon individual request), and no centralised information or platform is available that gather inspection plans in the 16 German Länder or statistics at federal level.

Complaint handling and citizen science

Complaint handling on environmental matters is decentralised in Germany. No statistical data on complaints, their handling or outcome is easily available to the public. At Länder level, the existence and quality of the complaint handling systems vary, with Berlin and Baden-Württemberg setting setting good examples. In the latter, a consultation is currently ongoing to improve the platform and its features.

Environmental damage reporting/complaints is encouraged in four Länder by a mobile application '*My environment*', an innovative approach for citizens to notify environmental damage and report sightings of specific protected species.

Germany set up a citizen science platform in 2013, '*Citizens Create Science*, funded by the Federal Ministry of Education and Research. The programme lists and connects projects or initiatives and promotes citizen science via information and events. No public promotion of data reporting on environmental issues or cases of environmental damage has been identified.

Enforcement

Information and statistics on compliance enforcement in environmental matters can only be detected under the angle of criminal law or violations of illegal trade in protected species regulation. There is no centrally recorded data on environmentally related administrative offences. In general, there are no reporting obligations for environment-related administrative offences. The Federal Statistical Office gathers information on prosecuted cases. Ad hoc research projects by the environmental authorities are nevertheless available (and upcoming).

A publication from the Federal Environment Agency in December 2021 provides the status and development of environmental crimes in Germany based on police and court statistics[216].

Sectoral agreements exist between the federal authorities and those of the Länder (e.g. Federal Government/Länder Working Group on Nature Conservation, Landscape Management and Recreation, andthe Federation/Länder Working Group on Waste).

Coordination of administrative, police and judicial authorities' actions is organised at Länder level. Regulatory or soft law instruments overseen by the respective Länder ministries have been identified in the Länder studied, i.e. Bavaria, North Rhine-Westphalia, Thuringia and Baden-Württemberg. A Federal Environment Agency study, however, highlights the limitation of these agreements.

In North Rhine-Westphalia, the agreement provides for the establishment of coordinating offices in general prosecutors' offices in charge of environmental matters, as well as a representative for environmental crime within district police authorities. Good examples include the informal cooperation between federal and Länder

[216] https://www.umweltbundesamt.de/publikationen/umweltdelikte-2019.

criminal offices, as well as the authoritative role of the Federal Agency for Nature Conservation.

Environmental Liability Directive

Authorities provide general information on environmental liability, in particular via the Federal Environment Agency and the Federal Agency for Nature Conservation. However, thee is a lack of information on the specific cases falling under the Environmental Liability Directive (ELD) or other cases at federal level , as they are not publicly available. A publicly available registry or central database of environmental incidents could not be identified. However, according to the German Environment Ministry a new provision was added to the Federal Environmental Damage Act (Umweltschadensgesetz) in 2021. This will lead to a new report by Germany on ELD cases planned for April 2022 and will be available after that date.

As of 2020, Germany had the highest level of cover in the EU on financial security for ELD liabilities.

The main recommendations of the 2019 EIR report were to act on information spread across many different sites. There has been some progress on this. A proactive approach at the federal level with centralised information and links to the relevant websites of the 16 Länder could help to solve this issue.

2022 priority actions

- Provide information to the public about compliance monitoring and enforcement in environmental matters as well as on the outcome of administrative and criminal enforcement actions and the follow-up to detected breaches of cross-compliance.
- Publish information on environmental damages detected (possibly via a registry or database on ELD incidents) and promote reporting by citizens and NGOs to increase compliance.
- Improve the complaint handling architecture. This could consist of a centralised federal webpage, and/or the creation of a federal-level complaint handling platform to report environmental damage.

Effectiveness of environmental administrations

Those involved in implementing environmental legislation at EU, national, regional and local levels need to have the knowledge, tools and capacity to ensure that the legislation and the governance of the enforcement process bring about the intended benefits.

Administrative capacity and quality

The federal authorities and the Länder share legislative competence. Most environmental policies (waste disposal, air protection, water and nature protection) are 'concurrent' (shared) competences, where the Länder have the right to adopt their own provisions in the absence of federal legislation. In practice, most environmental legislation (especially as regards EU law) is adopted at national level and implemented by the Länder. Länder-level legislation generally supplements national laws, especially in determining which authorities are responsible. The slow pace in digitalisation of public administration procedures impacts efficiency.

The enforcement of legislation is mainly the responsibility of the Länder, resulting in different administrative rules and practices across the country, especially when it comes to nature rules. Also, the organisation and staffing levels of the Länder administrations tend to vary. As legislative competence is divided between the federal level and the Länder, and implementation is spread over several levels, effective cooperation and coordination in a system of multi-level governance is crucial. Several Bund/Länder working groups have been set up, e.g. on industrial emissions, soil protection, nature conservation, water management and chemical safety[217].

Coordination and integration

The revised Environmental Impact Assessment (EIA) Directive[218] provides an opportunity to streamline the regulatory framework on environmental assessments.

The Commission encourages the streamlining of the environmental assessments to reduce duplication and avoid overlaps in environmental assessments applicable to projects. Moreover, streamlining helps reduce unnecessary administrative burden and accelerates decision-making, provided it is done without compromising the quality of the environmental assessment procedure[219]. Germany started streamlining of environmental assessments under the EIA and Habitats Directives already prior the revision of the EIA Directive. Coordinated procedures have been put in place

[217] For an overview, see: Umweltministerkonferenz

[218] Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

[219] The Commission issued a guidance document in 2016 regarding the setting up of coordinated and/or joint procedures that are simultaneously subject to assessments under the EIA Directive, Habitats Directive, Water Framework Directive, and the Industrial Emissions Directive, OJ C 273, 27.7.2016, p. 1.

for the EIA, the Water Framework Directive and the Industrial Emission Directive.

Reforms through the Commission's Technical Support Instrument (TSI)

The Commission supports environmental implementation and the green transition through the EU financing programmes. But it also gives support by granting technical assistance such as through the TSI and peer-to-peer learning through Taiex peer-to-peer exchanges.

Apart from the 2022 TSI project related to digitilisation of the East Atlantic Flyway for birds in the Wadden Sea (together with Denmark and the Netherlands), Germany has not been very active in seeking the support of the TSI for environmental reforms. The Commission encourages Germany to use this tool in the coming years.

TAIEX EIR peer-to-peer

The Commission launched the TAIEX EIR Peer-to-Peer tool to facilitate peer-to-peer learning between environmental authorities.

During the reporting period, Germany participated in several workshops including two in 2019: the first on trans-boundary waste crime in the Polish-German border region and the second on the life cycle approach and circularity in policy and procurement planning. Germany then hosted France for a study visit on environmental impact assessments. . In 2021, Germany participated in the multi-country EIR workshops on zero pollution and ammonia- reducing technology and measures.