EUROPEAN COMMISSION

Brussels, 4.4.2019
SWD(2019) 137 final

COMMISSION STAFF WORKING DOCUMENT

**The EU Environmental Implementation Review 2019
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 2019:
A Europe that protects its citizens and enhances their quality of life**

{COM(2019) 149 final} - {SWD(2019) 111 final} - {SWD(2019) 112 final} -
{SWD(2019) 113 final} - {SWD(2019) 114 final} - {SWD(2019) 115 final} -
{SWD(2019) 116 final} - {SWD(2019) 117 final} - {SWD(2019) 118 final} -
{SWD(2019) 119 final} - {SWD(2019) 120 final} - {SWD(2019) 121 final} -
{SWD(2019) 122 final} - {SWD(2019) 123 final} - {SWD(2019) 124 final} -
{SWD(2019) 125 final} - {SWD(2019) 126 final} - {SWD(2019) 127 final} -
{SWD(2019) 128 final} - {SWD(2019) 129 final} - {SWD(2019) 130 final} -
{SWD(2019) 131 final} - {SWD(2019) 132 final} - {SWD(2019) 133 final} -
{SWD(2019) 134 final} - {SWD(2019) 135 final} - {SWD(2019) 136 final} -
{SWD(2019) 138 final} - {SWD(2019) 139 final}

EN   **EN**

Table of Contents

Executive summary

Germany and the Environmental Implementation Review (EIR)

In the 2017 EIR report, the main challenges identified with regard to the implementation of EU environmental policy and law in Germany were:

- improving air quality;

- addressing water pollution; and

- completing the process of designating sites for the Natura 2000 network.

Germany has not yet organised an EIR national dialogue whereby it could have addressed these challenges.

In 2017, the Commission launched the TAIEX-EIR Peer-to-Peer (**EIR P2P**) as a new tool facilitating peer-to-peer learning between environmental authorities. German experts participated in three expert workshops on air quality, exchanging knowledge and experience of effective measures to reduce emissions from domestic heating, air quality plans in urban areas where pollutant levels are exceeded, and reducing road transport emissions.

Progress since the 2017 EIR

On **air quality**, there has been **some progress** in reducing emissions as a whole, however, there are still 35 out of 89 zones that report NO$_2$ concentrations above the target value in 2017. The Commission decided to refer Germany to the Court of Justice of the EU. Germany should **take effective and timely measures to reduce air pollution** through NO$_2$ by further lowering emissions from cars, in particular diesel cars in urban areas. Targeted and proportionate vehicle access restrictions may be one effective means. Also, it should cut ammonia emissions by introducing low-emission agricultural techniques.

Germany is **advanced as regards urban wastewater** treatment. However, **nitrate pollution** of surface water, and especially ground water, remains a serious concern and only marginal progress has been made in reducing it. Excess nitrates contribute to eutrophication the North and Baltic Seas, and the costs of removing them from drinking water are rising. **Effective measures** are needed to address excess nitrate deposition, especially in areas with high livestock density, to achieve compliance with the Nitrates Directive. The assessment of the second river basin management plans has shown that **only 10 % of surface water bodies have good ecological status.**

On **nature conservation**, **some progress** has been made in **designating special areas of conservation (SACs) for the Natura 2000 network** and stepping up conservation measures for protected species and habitats to maintain or restore good conservation status. However, despite some local success stories, Germany needs to **intensify its efforts** to stop and reverse negative trends on some habitat types and species.

Germany is progressing in its transition to a circular economy. It is among the **best performers in the EU as regards waste managemen**t and has already reached the EU's 2020 municipal waste recycling target. However, it also generates far more waste than the EU average, which has remained stable over the last five years. Germany is encouraged **to step up its efforts to prevent waste**, in particular single-use plastics, and to make reuse and recycling more economically attractive.

Germany is very active in international environment policy and in implementing the UN **sustainable development goals** (SDGs); it was among the first countries to carry out a voluntary national review on their implementation.

Examples of good practice

Germany's strong performance on eco-innovation has helped to develop a successful and highly competitive environmental goods industry, particularly in the fields of clean energy and water technology.

Baden-Württemberg's agro-environment measure pays farmers who manage species-rich grassland with at least four wildflower species, and thus promote grassland biodiversity.

Bavaria's Natura 2000 award for municipalities, supported by an EU-LIFE project, is an example of good practice in awareness-raising.

Part I: Thematic areas

1.   Turning the EU into a circular, resource-efficient, green and competitive low-carbon economy

Measures towards a circular economy

The Circular Economy Action Plan emphasises the need to move towards a life-cycle-driven 'circular' economy, reusing resources as much as possible and bringing residual waste close to zero. This can be facilitated by developing and providing access to innovative financial instruments and funding for eco-innovation.

Following the adoption of the Circular Economy Action Plan in 2015 and the setting up of a related stakeholder platform in 2017, the European Commission adopted a new package of deliverables in January 2018[1]. This included additional initiatives such as: (i) an EU strategy for plastics; (ii) a Communication on how to address the interplay between chemical, product and waste legislation; (iii) a report on critical raw materials; and (iv) a framework to monitor progress towards a circular economy[2].

Among the key indicators for monitoring the transition to a circular economy is the circular (secondary) use of material. On this, Germany scored 11.4 % in 2017 (close to the EU average of 11.7 %). The number of people employed in the circular economy is also in line with the EU average (1.47 % of total employment in 2017, as compared with 1.73 %).

In the 2017 Special Eurobarometer 468 on attitudes of EU citizens towards the environment[3], 86 % of German citizens said they were concerned about the effects of plastic products on the environment (EU average 87 %). 89 % said they were worried about the impact of chemicals (EU average 90 %).

Generally, there is clear support in German society and government (as confirmed in the new coalition agreement) for strengthening and further developing circular economy initiatives. Germany, however, does not have a dedicated circular economy strategy at national level.

One key programme to promote the transition to a circular economy is the 2016-2019 ProgRess II resource efficiency programme[4], which is now in its second phase. In addition to waste policy, its 123 measures cover sustainable building and sustainable urban development, and the resource efficiency of information and communications technology (ICT) products.

The national programme for sustainable consumption (*Nationales Programm für nachhaltigen Konsum*)[5], introduced in 2016, seeks to give consumers more information on the impacts of their consumption, while mapping alternatives to increase efficiency and sustainable consumption. The programme sets out action in six areas to help Germany achieve its sustainable consumption objectives. Also, a national network for sustainable consumption has been set up.

Germany was quick to implement Directive (EU) 2015/720[6] through an agreement with the retail sector to charge for plastic bags. Initial results are impressive: in 2017, consumption fell by a third, to 25 bags per person.

The number of EU Ecolabel products and EMAS-licensed organisations (EMAS is the European Commission's Eco-Management and Audit Scheme – a programme to encourage organisations to behave in a more environmentally sustainable way) in a country can give a rough measurement of the circular economy transition. These two indicators show to what extent the transition is engaging the private sector and other national stakeholders. These two indicators also show the commitment of public authorities to policies that support the circular economy. In September 2018, Germany had 4441 products and 321 licences registered in the EU Ecolabel scheme, of a total of 71707 prodcuts and 2167 licences in the EU (putting it fourth after Spain, Italy and France when it comes to registered products)[7]. Currently, there are more than 100 different ecolabels in Germany, according to the *Ecolabel Index*[8]. As of May 2018, Germany was the Member State with the highest

---

[1] European Commission, 2018 Circular Economy Package.
[2] COM(2018) 029.
[3] European Commission, 2017, Special Eurobarometer 486, *Attitudes of European citizens towards the environment*.
[4] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Germany 2016, *Deutsches Ressourceneffizienzprogramm (ProgRess II)*.
[5] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Germany 2016, *Nationales Programm für nachhaltigen Konsum*.
[6] Directive (EU) 2015/720.
[7] European Commission, *Ecolabel facts and figures*.
[8] Big Room Inc., Ecolabel Index

number of organisations registered in EMAS, with 1 237 entries.

As regards resource productivity[9] (how efficiently the economy uses material resources to produce wealth), Germany remains in the mid-range of Member States (EUR 2.27/kg, against an EU average of EUR 2.04/kg). Figure 1 shows a steady increase between 2010 and 2017.

Figure 1: Resource productivity 2010-2017[10]
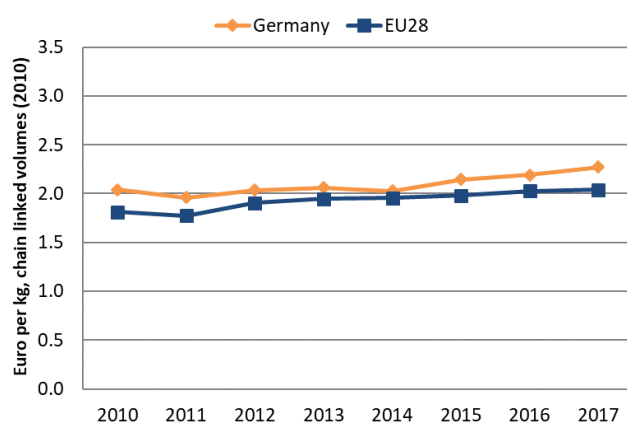
SMEs and resource efficiency

German SMEs continue to score around the EU average in the environmental dimension of the Small Business Act (see Figure 2). An above-average number offer green products or services and the proportion that have taken resource-efficiency measures is above average. Public support is easily accessible.

The latest Eurobarometer on 'SMEs, resource efficiency and green markets'[11] asked companies about both recent resource-efficiency actions they had taken and additional resource-efficiency actions they planned to take in the next 2 years. The Eurobarometer then compared these responses with responses given to the same questions in 2015. A steep rise in the number of investing firms indicates that German SMEs are catching up when it comes to using the opportunities of resource efficiency. In all, 38 % of German companies (as compared with an EU average of 22 %) relied on external support in their efforts to be more resource efficient. Germany stands out for the balance between public and private sources
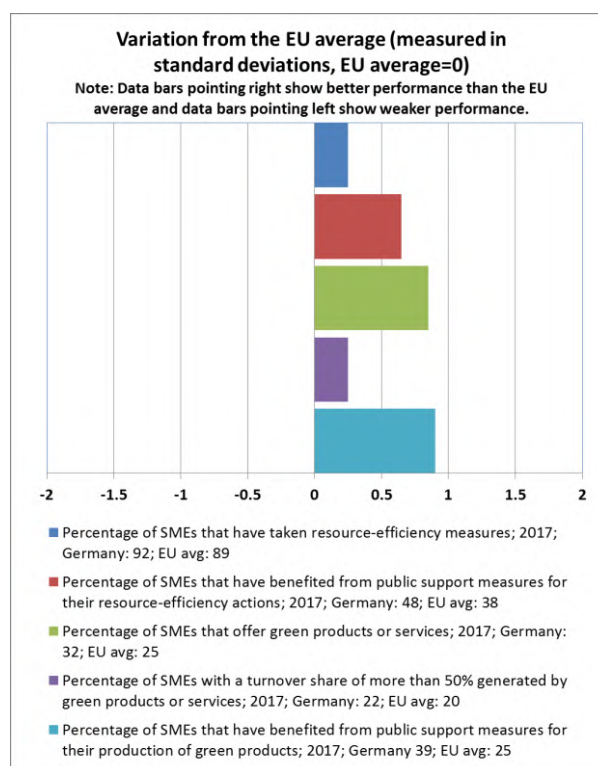
of finance and consultancy. Public-sector assistance shows the steepest increase (+13 %).

Figure 2: Environmental performance of SMEs[12]

Enterprises rely little on private-sector consultants and much more on the public administration and business associations. This makes the latter largely responsible for developing the next generation of support instruments for more advanced aspects of the circular economy. Companies' openness to cooperating with external partners is a strength in this respect.

Eco-innovation

In 2018, Germany ranked seventh on the *European Innovation Scoreboard* and was the eighth worst Member State in terms of improving its performance (1.3 percentage points decrease since 2010 in relation to EU average.)[13] However, the picture is brighter as regards eco-innovation: Germany ranks third in the 2017 Eco-innovation index (see Figure 3) and its performance has been well above the EU average since 2010.

The key drivers of Germany's environment policy provide impetus for eco-innovation in the country. Its population is highly receptive to environment-friendly consumption, its dependency on imported resources drives efforts to better use secondary resources, and it engages in extensive inter- and trans-disciplinary research relating to social-ecological challenges.

---

[9] Resource productivity is defined as the ratio between gross domestic product (GDP) and domestic material consumption (DMC).
[10] Eurostat, *Resource productivity*.
[11] Flash Eurobarometer 456, *SME, resource efficiency and green markets*, January 2018. The eight areas covered were 'save energy', 'minimise waste', 'save materials', 'save water, 'recycle by reusing material internally', 'design products easier to maintain, repair or reuse', 'use renewable energy' and 'sell scrap materials to another company'.

[12] European Commission, 2018 SBA fact sheet - Germany, p. 15.
[13] European Commission, European Innovation Scoreboard 2018.

Figure 3: 2017 Eco-innovation index (EU=100)[14]
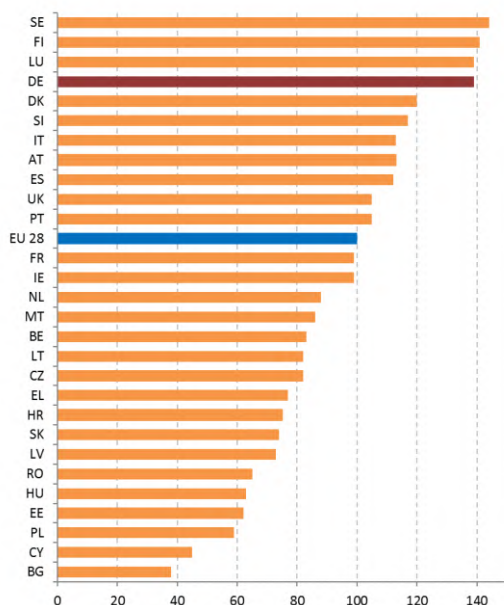
Germany's Eco-innovation action plan (Eco-AP) is still under development. In 2013, it decided to work towards an eco-AP as a national contribution to the EU Eco-AP. A research project was conducted between 2014 and 2016 to develop the basis of the national plan. In 2017, a second call was issued, for a three-year project to develop the plan further in eight areas and recommend specific goals and measures.

Figure 4: Germany's Eco-innovation performance

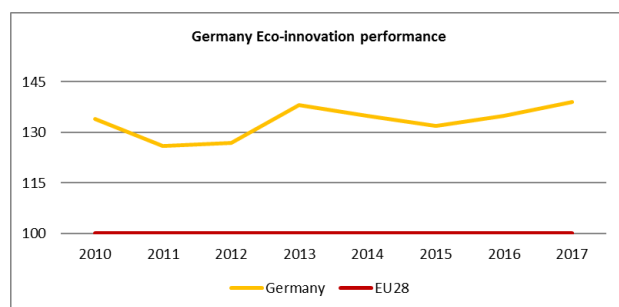Germany could make further progress on eco-innovation by going beyond technical solutions and promoting innovation processes that connect production and consumption systems. Its current focus on traditional RTD policies and monitoring should be broadened to meet this challenge. This would involve extending the scope of eco-innovation policies and ensuring better coordination between sectors and policy areas.

2019 priority action

- Further strengthen the existing circular economy policy framework.

---

[14] Eco-innovation Observatory, *Eco-innovation Scoreboard 2017*.

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; and
(iii) limiting energy recovery to non-recyclable materials and phasing out landfilling of recyclable or recoverable waste.

This section focuses on management of municipal waste [15] for which EU law sets mandatory recycling targets[16].

Germany is among the top performers in the EU with regard to waste management. As shown in Figure 5, municipal waste generation has remained stable for the last five years (633 kg *per capita* in 2017), but is above the EU average[17] (487 kg/y *per capita*).

Figure 5: Municipal waste by treatment in Germany 2010-2017[18]
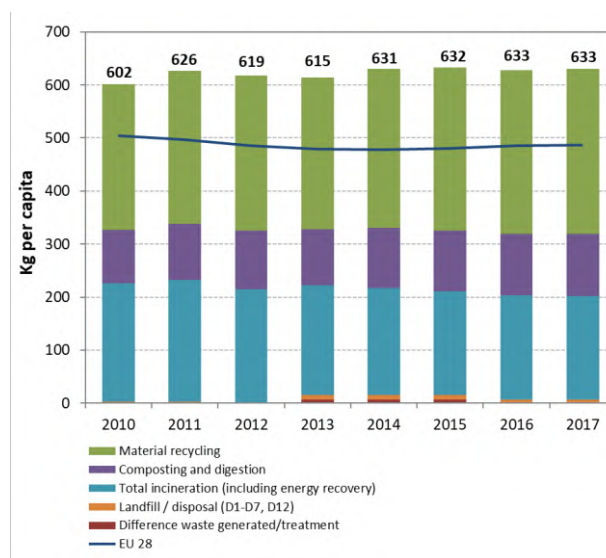
Figure 5 shows that recycling is the most common treatment in Germany and that recycling, composting

---

[15] Municipal waste consists of mixed waste and separately collected waste from households and from other sources, where such waste is similar in nature and composition to waste from households. This is without prejudice to the allocation of responsibilities for waste management between public and private sectors.
[16] See Article 11.2 of Directive 2008/98/EC. This Directive was amended in 2018 by Directive (EU) 2018/851, and more ambitious recycling targets were introduced for the period up to 2035.
[17] In the EIR, we refer to the data that Member States report annually to ESTAT on the basis of the joint questionnaire; this provides for a common base line.
[18] Eurostat, *Municipal waste by waste operations*.

and landfilling levels have remained stable in recent years.

Germany recycles a lot of its municipal solid waste (68 %). The incineration rate (including energy recovery) stands at 31 %. Landfilling is practically non-existent (1 %), as measures were taken in 2005 to effectively ban the landfilling of waste with a high calorific value.

Germany has already reached the EU 2020 recycling target of 50 %[19] and is well above the EU average of 45 % (see Figure 6). However, more effort will be needed if it is to comply with the post-2020 recycling targets, in particular for incineration[20].

Figure 6: Recycling rate of municipal waste 2010-2017[21]

Germany's incentive systems to promote waste prevention and participation in separate collection ('pay as you throw' (PAYT) schemes) are highly efficient. Extended producer responsibility (EPR) systems are in place for different waste streams.
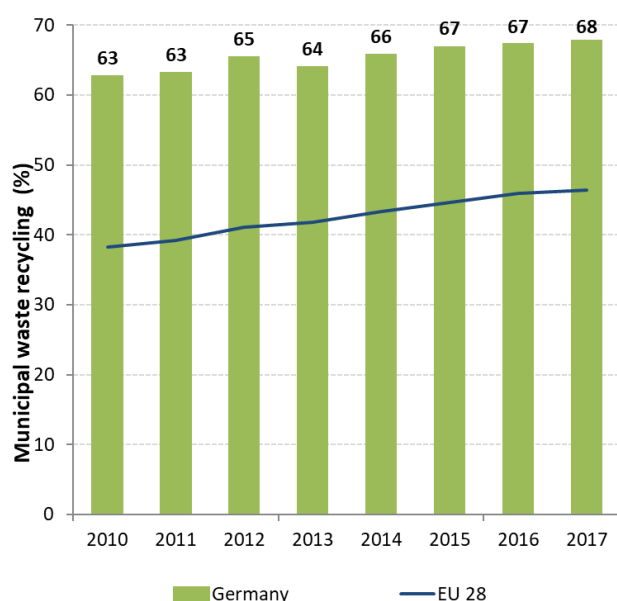
2019 priority actions

- Introduce new policy instruments, including economic instruments, to promote prevention, make reuse and recycling more economically attractive.
- Shift reusable and recyclable waste away from incineration.

[19] Member States may choose a method other than that used by ESTAT (and referred to in this report) to calculate their recycling rates and track compliance with the 2020 target of 50 % recycling of municipal waste.
[20] 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 to 2035. These targets will be taken into consideration to assess progress in future Environmental Implementation Reports.
[21] Eurostat, *Recycling rate of municipal waste*.

Climate change

The EU has committed to undertaking ambitious climate action internationally as well as in the EU, having ratified the Paris Climate Agreement on 4 October 2016. The EU targets are to reduce greenhouse gas (GHG) emissions by 20 % by 2020 and by at least 40 % by 2030, compared to 1990. As a long-term target, the EU aims to reduce its emissions by 80-95 % by 2050, as part of the efforts required by developed countries as a group. Adapting to the adverse effects of climate change is vital to alleviate its already visible effects and improve preparedness for and resilience to future impacts.

The EU emissions trading system (EU ETS) covers all large greenhouse gas emitters in the industry, power and aviation sectors in the EU. The EU ETS applies in all Member States and has a very high compliance rate. Each year, installations cover around 99 % of their emissions with the required number of allowances.

Figure 7: Change in total GHG emissions, 1990-2017 (1990=100 %)[22]
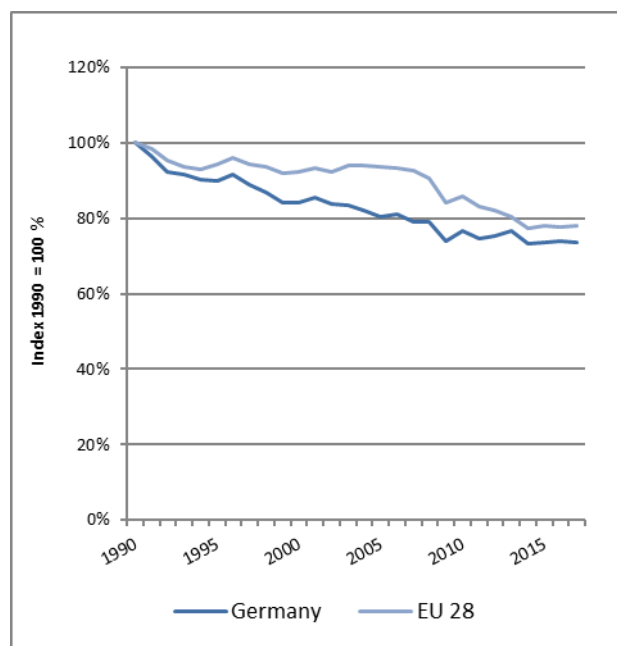
For emissions not covered by the EU ETS, Member States have binding national targets under the effort-sharing legislation. Germany's emissions were lower than its annual emission allocations (AEAs) each year from 2013 to 2015, but slightly higher in 2016, requiring the use of flexibilities to ensure compliance with its obligations under the Effort-Sharing Decision (ESD). In 2017, ESD

[22] Annual European Union greenhouse gas inventory 1990–2016 (EEA greenhouse gas data viewer). *Proxy GHG emission estimates for 2017Approximated EU greenhouse gas inventory 2017* (European Environment Agency). Member States national projections, reviewed by the European Environment Agency.

emissions exceeded the annual emission allocations by 7 percentage points (figure 8). For 2020, its national target under the EU Effort Sharing Decision is to reduce emissions by 14 % from 2005 levels. Its 2030 target under the Effort-Sharing Regulation is a 38 % reduction as compared with 2005.

In November 2016, the German cabinet adopted a well-elaborated climate action plan, with overall and sectoral objectives for 2030 and 2050 in line with the Paris Agreement. For each sector (energy supply, buildings, mobility, industry and business, agriculture, land use and forestry), it provides guiding principles for 2050, transformation pathways, milestones and strategic measures. It is subject to regular review and updates through scientific input and public dialogue, and annual evaluation and monitoring, followed by a progress report (climate action report) to the *Bundestag*.

Figure 8: Targets and emissions for Germany under the Effort-Sharing Decision and Effort-Sharing Regulation – Germany[23]
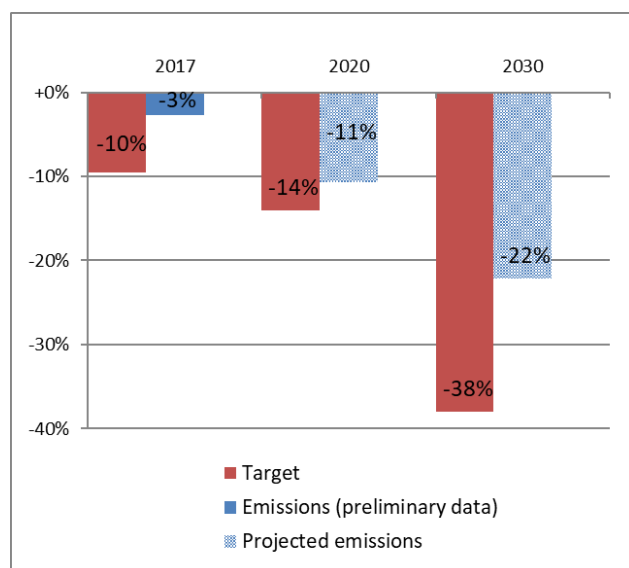
Germany has submitted a draft national energy and climate plan (NECP) under the Regulation on the Governance of the Energy Union and Climate Action.

Transport accounts for almost a quarter of the EU's GHG emissions and is the main cause of air pollution in cities. Transport emissions in Germany increased by 8 % from 2012 to 2016.

Under the F-gas regulation, Member States must implement training and certification programmes and rules for penalties and notify these measures to the

Commission by 2017. Germany has notified the Commission of its measures in both these areas.

Figure 9: GHG emissions by sector (Mt. CO$_2$-eq.) (historical data 1990-2016; projections 2017-2030)[24]
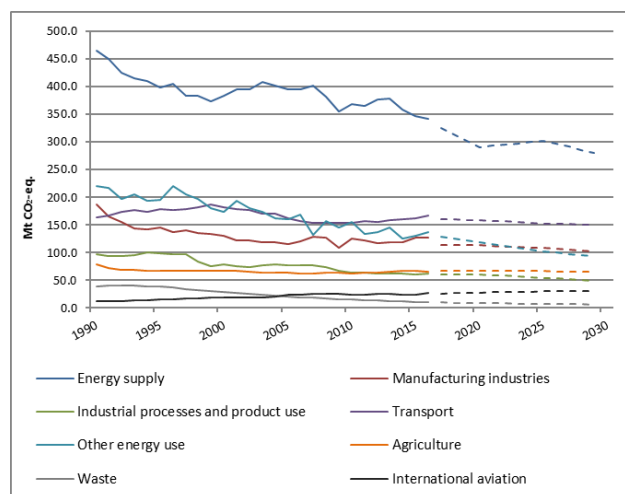
Under the F-gas regulation, Member States must implement training and certification programmes and rules for penalties and notify these measures to the Commission by 2017. Germany has notified the Commission of its measures in both these areas.

The Kyoto Protocol governs the accounting of GHG emissions and removals from forests and agriculture. Preliminary accounting for 2013-2016 depicts net credits of, on average, -38.7 Mt CO$_2$-eq, which corresponds to 33.2% of the EU-28 accounted sink of -115.7 Mt CO$_2$-eq.

The EU strategy on adaptation to climate change, adopted in 2013, aims to make the EU more resilient to climate change by promoting action by Member States, better-informed decision-making and adaptation in key vulnerable sectors. By adopting a coherent approach and providing for improved coordination, it seeks to enhance preparedness and capacity of all governance levels to respond to the impacts of climate change.

In 2008, Germany adopted a national adaptation strategy (*Deutsche Anpassungsstrategie*, DAS), which presents a sectoral and geographical overview of the effects of climate change. In 2011, it adopted an action plan (*Aktionsplan Anpassung der Deutschen Anpassungsstrategie*, APA) operationalising the action set out in the DAS. The APA follows a sectoral approach based on the following key sectors: human health, buildings, water regime, water management, coastal and marine protection, soil, biological diversity, agriculture,

---

[23] *Proxy GHG emission estimates for 2017Approximated EU greenhouse gas inventory 2017* (European Environment Agency)*. Member States national projections, reviewed by the European Environment Agency.*

[24] Annual European Union greenhouse gas inventory 1990–2016 (EEA greenhouse gas data viewer). *Proxy GHG emission estimates for 2017Approximated EU greenhouse gas inventory 2017* (European Environment Agency)*. Member States national projections, reviewed by the European Environment Agency.*

forestry and forest management, fisheries, energy industry, financial services industry, transport and transport infrastructure, trade and industry, and tourism. Germany produced a first monitoring report was in 2015 and further reports are planned every four years.

Total revenues from the auctioning of EU ETS emission allowances in 2013-2017 came to EUR 4 648 million, all of which was spent on climate and energy measures.

2019 priority action

In this report, no priority actions have been included on climate action, as the Commission will first need to assess the draft national energy and climate plans which the Member States had to send by end of 2018. These plans should increase the consistency between energy and climate policies and could therefore become a good example of how to link sector-specific policies on other interlinked themes such as agriculture-nature-water and transport-air-health.

2. Protecting, conserving and enhancing natural capital

Nature and biodiversity

The EU biodiversity strategy aims to halt the loss of biodiversity in the EU by 2020. It requires full implementation of the Birds and Habitats Directives to achieve favourable conservation status of protected species and habitats. It also requires that the agricultural and forest sectors help to maintain and improve biodiversity.

Biodiversity strategy

In 2015, Germany prepared its *Nature conservation action programme 2020* [25] to give fresh impetus to implementation of the 2007 national strategy on biological diversity[26] and address a persistent negative trend in biodiversity due to failure to implement key policy changes.

Setting-up a coherent network of Natura 2000 sites

The Birds and Habitats Directives require Member States to establish a coherent national network of Natura 2000 sites. The Commission assesses compliance with this requirement individually for each species and habitat type occurring on the national territory of the Member States. The latest update of this assessment was carried out by the Commission with the assistance of the European Environment Agency (EEA). On the basis of this latest update, Germany's terrestrial Natura 2000 network under the Birds and Habitats Directives is now considered to be complete.

By end-2017, the network covered 15.5 % of Germany's land area (EU average: 18.2 %), with Special Protection Areas (SPAs) under the Birds Directive amounting to 11.3 % (EU average: 12.4 %) and Sites of Community Interest (SCIs) under the Habitats Directive 9.4 % (EU average: 13.9 %).

The latest assessment of the Natura 2000 network shows that there are minor insufficiencies in SCI designation for the terrestrial component of the network in a limited number of *Länder*[27].

Designating Natura 2000 sites and setting conservation objectives and measures

By the end of 2017, Germany had designated only 79.4 % of its SCIs as special areas of conservation (SACs) within the meaning of Article 4(4) of the Habitats Directive and established conservation objectives and management measures in order to achieve or maintain good conservation status within the meaning of Article 6(1) in only 69.3 % of the SACs. These failings are the subject of an infringement procedure.

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

The main pressures come from agriculture in the form of changes of agricultural practices and intensification. The agricultural sector benefits from exemptions from many nature protection regulations[28].

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

The 2017 EIR referred to the Member States' latest report, from 2012, on the conservation status of habitats and species; new data will be available for the next EIR.

Overall, it is acknowledged that improvements in the status of species and habitats have been reported in Germany recently, but that efforts still need to be stepped up to reverse the documented declines of species and habitats that depend on agricultural habitats, many of which are affected by land-use changes and excessive nitrogen emissions.

---

[25] Germany, Nature conservation action programme 2020.
[26] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Germany 2007, *Nationale Strategie zur biologischen Vielfalt*.

[27] For each Member State, the Commission assesses whether the species and habitat types in Annexes I and II to the Habitats Directive are sufficiently represented by the sites designated to date. This is expressed as a percentage of species and habitats for which further areas need to be designated in order to complete the network in that country. A scientific reserve is given where further research is needed to identify the most appropriate sites to be added for a species or habitat. The current data, which were assessed in 2014-2015, reflect the situation until December 2013.
[28] For example, 'good agricultural land use' and 'good farming practice' activities are exempted from national nature protection provisions in the *Länder*.

There are positive examples of Natura 2000 being promoted in some *Länder*, e.g. the Natura 2000 award for municipalities in Bavaria, as developed in the course of an EU-LIFE project, On the other hand, country dwellers in most regions do not recognise Natura 2000 areas, as they are not always marked as such.

2019 priority actions

- Complete the Natura 2000 designation process, 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.
- Develop and promote smart and streamlined implementation approaches, in particular for appropriate assessment procedures and species permitting procedures, ensuring the necessary knowledge and data availability and strengthen communication with stakeholders.
- Ensure that pressures from agriculture are adequately addressed and that the sector complies fully with nature protection law.

Maintaining and restoring ecosystems and their services

The EU biodiversity strategy aims to maintain and restore ecosystems and their services by including green infrastructure in spatial planning and restoring at least 15 % of degraded ecosystems by 2020. The EU green infrastructure strategy promotes the incorporation of green infrastructure into related plans and programmes.

The EU has provided guidance on the further deployment of green and blue infrastructure in Germany[29] and a country page on the Biodiversity Information System for Europe (BISE)[30]. This information will also contribute to the final evaluation of the EU Biodiversity Strategy to 2020.

In Germany, green infrastructure (GI) is implemented through the Federal Nature Conservation Act (*Bundesnaturschutzgesetz*[31], which regulates the national ecological network (covering at least 10 % of German territory), and other strategies and programmes in sectors such as landscape planning. The national GI strategy (*Bundeskonzept Grüne Infrastruktur* (BKGI)),

adopted in 2017[32], takes a spatial, integrated approach that helps to incorporate existing nature conservation and landscape management practice and models into national planning processes, such as floodplain development, national road planning, defragmentation and expansion of ecological networks.

GI is integrated in several policy areas – mainly flood protection, urban policy and (to a lesser degree) agriculture, where more could be done, given the significant pressure of farming on ecosystems. GI elements can also be found in the 2020 forest strategy, which uses forest multifunctionality as a guiding concept. As regards transport policy, the defragmentation programme (*Bundesprogramm Wiedervernetzung)* ensures that the construction of new roads includes green bridges and/or underpasses. Specific strategies that are still in development and will be gradually fed into the BKGI relate *inter alia* to landscapes of national importance for natural and cultural heritage, and include the national *Blaues Band* programme for the renaturation of rivers, and the national action plan conservation areas.

Funding for GI comes from the EU, but also from the Federal Government, the *Länder*, municipalities and the private sector. An analysis in May 2017 showed that the European Agricultural Fund for Rural Development (EAFRD) is the most important fund for nature conservation in Germany, followed by federal and regional funds[33]. It also demonstrated that a considerable financing gap threatens Germany's achievement of its nature conservation goals.

The BioCorridors project is a transborder GI project supported by the LIFE programme. It aims to secure ecological continuity and conserve biodiversity in the Vosges du Nord-Pfälzerwald transboundary biosphere reserve on the French-German border. The reserve covers 3 105 km² and comprises forest ecosystems, agricultural areas and important transboundary watercourses. The project focuses on restoring ecological corridors as a means to safeguard biodiversity in forests, water and open environments.

---

[29] European Commission, The recommendations of the green infrastructure strategy review report and the EU Guidance on a strategic framework for further supporting the deployment of EU-level green and blue infrastructure.
[30] Biodiversity Information System for Europe.
[31] Germany, The Federal Nature Conservation Act.

[32] Germany, The national green infrastructure strategy.
[33] Biodiversity Information System for Europe, Green Infrastructure in Germany.

Estimating natural capital

The EU biodiversity strategy calls on Member States to map and assess the state of ecosystems and their services[34] in their national territories by 2014, assess the economic value of such services and integrate these values into accounting and reporting systems at EU and national level by 2020.

At the MAES (mapping and assessment of ecosystems and their services) working group meeting held in Brussels in September 2018, it was shown that Germany has made some progress since January 2016 in implementing MAES (Figure 10). This assessment was made by the ESMERALDA project[35] and based on 27 implementation questions. The assessment is updated every 6 months.

Figure 10: Implementation of MAES (September 2018)

Source: Esmeralda project
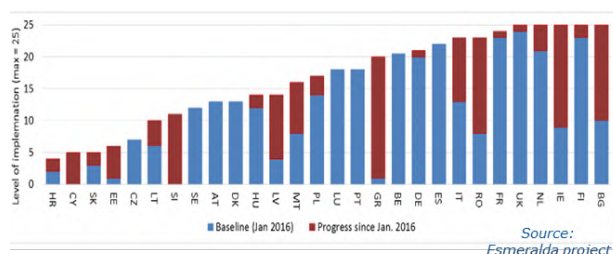
Invasive alien species

Under the EU biodiversity strategy, the following are to be achieved by 2020:
(i) invasive alien species identified;
(ii) priority species controlled or eradicated; and
(iii) pathways managed to prevent new invasive species from disrupting European biodiversity.
This is supported by the Invasive Alien Species (IAS) Regulation, which entered into force on 1 January 2015.

The report on the baseline distribution of invasive alien species (Figure 11), for which Germany is still reviewing its country- and grid-level data, shows that 25 of the 37 species on the first Union list have been observed in Germany. The most widely distributed is the raccoon (*Procyon lotor*), which is spreading into neighbouring countries.

Of the species that were subject to early detections reported by Germany:

- water hyacinth and coati (a mammal related to the raccoon) have been eradicated;

- measures are under way for cabomba (an exotic water plant), Asian hornet and ruddy duck (one detection); and

- measures still need to be notified for ruddy duck (two detections) and muntjac deer.

Figure 11: Number of invasive alien species of EU concern, based on available georeferenced information for Germany[36]

2019 priority action

- Germany should notify the planned eradication measures for ruddy duck (two notifications) and muntjac deer.

Soil protection

The EU soil thematic strategy underlines the need to ensure a sustainable use of soils. This entails preventing further soil degradation and preserving its functions, as well as restoring degraded soils. The 2011 Roadmap to a Resource Efficient Europe states that by 2020, EU policies must take into account their direct and indirect impact on land use.

Soil is a finite and extremely fragile resource, but it is increasingly being degraded in the EU.

The percentage of artificial land cover[37] (Figure 12) can be seen as a measure of the relative pressure on nature

---

[34] Ecosystem services are benefits provided by nature such as food, clean water and pollination on which human society depends.
[35] EU project, Esmeralda.

[36] Tsiamis K., Gervasini E., Deriu I., D`amico F., Nunes A., Addamo A., De Jesus Cardoso A., Baseline distribution of invasive alien species of Union concern, Ispra (Italy): Publications Office of the European Union; 2017, EUR 28596 EN, doi:10.2760/772692.
[37] Artifical land cover is defined as the total of roofed built-up areas (including buildings and greenhouses), artificial non-built-up areas

and biodiversity, and of environmental pressure on people living in urbanised areas. In its sustainability strategy, (*Deutsche Nachhaltigkeitsstrategie)* Germany set itself the target of restricting daily landtake to 30 ha by 2020. While the landtake rate is falling, it was unlikely that the target would be achieved, so the timescale has been extended to 2030[38].

Figure 12: Proportion of artificial land cover, 2015 (%)[39]
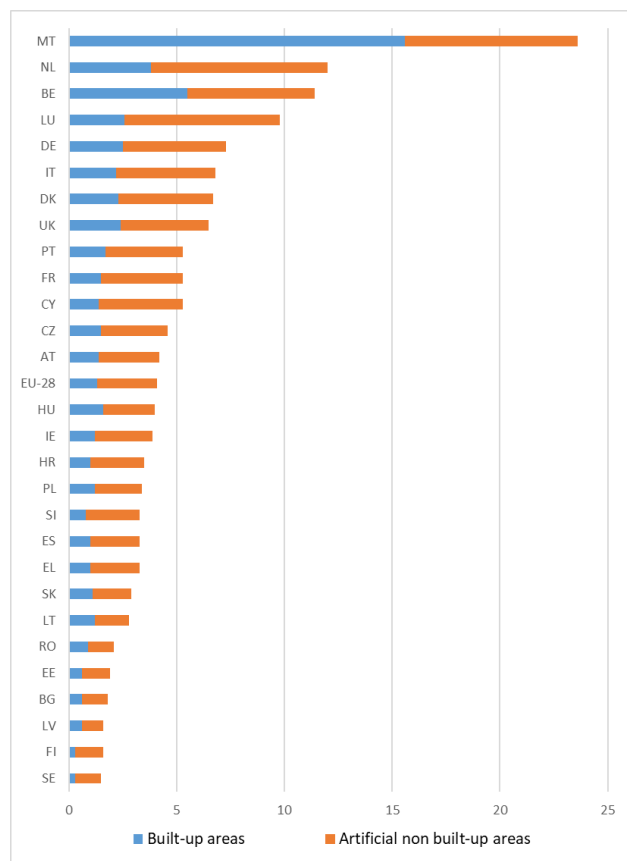
Germany ranks above the EU average as regards the proportion of artificial land cover (7.3 %, as compared with 4.1 %). The population density is 233.1/km^2, which is also above the EU average (118/km^2)[40].

More than half of Germany's surface area is used for agriculture.

Contamination can severely reduce soil quality and threaten human health or the environment. A recent

report of the European Commission[41] estimated that potentially polluting activities have taken or are still taking place on approximately 2.8 million sites in the EU. At EU level, 650 000 of these sites have been registered in national or regional inventories. 65 500 contaminated sites already have been remediated. Germany has registered 260 883 sites where potentially polluting activities have taken or are taking place, and already has remediated or applied aftercare measures on 38 242 sites.

Soil erosion by water is a natural process, but this natural process can be aggravated by climate change and human activities such as inappropriate agricultural practices, deforestation, forest fires or construction works. High levels of soil erosion can reduce productivity in agriculture and can have negative and transboundary impacts on biodiversity and ecosystem services, as well as on rivers and lakes (due to increased sediment volumes and transport of contaminants). According to the RUSLE2015 model[42], Germany has an average soil loss rate by water of 1.25 t/ha per year (t ha^{-a} yr^{-y}), as compared with a European mean of 2.46 t ha^{-a} yr^{-y}, which indicates that soil erosion is low on average[43].

Marine protection

EU coastal and marine policy and legislation require that by 2020 the impact of pressures on marine waters be reduced to achieve or maintain good environmental status (GES) and ensure that coastal zones are managed sustainably.

The Marine Strategy Framework Directive (MSFD)[44] aims to achieve good environmental status of the EU's marine waters by 2020. To that end, Member States must develop a marine strategy for their marine waters, and

---

(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).

[38] *Umweltbundesamt, Siedlungs- und Verkehrsfläche*.
[39] Eurostat, Land covered by artificial surfaces by NUTS 2 region.
[40] Eurostat, Population density by NUTS 3 region.

[41] Ana Paya Perez, Natalia Rodriguez Eugenio (2018), Status of local soil contamination in Europe: Revision of the indicator "Progress in the management Contaminated Sites in Europe".
[42] Panagos, P., Borrelli, P., Poesen, J., Ballabio, C., Lugato, E., Meusburger, K., Montanarella, L., Alewell, C., 'The new assessment of soil loss by water erosion in Europe', *Environmental Science and Policy* 54 (2015), pp. 438-447.
[43] These figures are the output from a model based on rainfall, support practices, land cover, soil and slope characteristics, and therefore should not be considered as values measured in-field. The actual soil loss rate can vary strongly within a Member State, depending on local conditions. Soil organic matter plays an important role in the carbon cycle and in climate change. Soils are the second largest carbon sink in the world after the oceans. Soil organic carbon (SOC) is an important indicator of soil health and biodiversity, and it provides nutrients for plants and improves water availability. The main anthropogenic driving forces for a decline of SOC are land-use change (especially conversion from grassland into cropland, and deforestation), drainage and loss of wetlands, and poor agricultural practices. A loss of soil organic matter can increase the risk of erosion and lead to a decline in soil structure and quality.
[44] Directive 2008/56/EC.

cooperate with the EU countries that share the same marine (sub)region.

Member States have to develop a strategy for their marine waters, and cooperate with those countries that share the same marine (sub)region.

For Germany, the Convention for the protection of the marine environment of the North-East Atlantic (OSPAR Convention) and the Baltic Marine Environment Protection Commission (Helsinki Commission) make an important contribution in this respect.

Under the marine strategies, Member States had to draw up programmes of measures and report them to the Commission by 31 March 2016. The Commission then assessed whether the measures were appropriate for achieving good environmental status (GES)[45].

Germany drew up an extensive programme of measures covering all aspects of the marine environment. Overall, it is considered to partially address the requirements of the Marine Strategy Framework Directive (MSFD)[46].

The measures address most relevant pressures and targets. For example, macro- and micro-marine litter is tackled through measures targeting shipping, fisheries, industry and tourism. Offshore activities in the North Sea are also targeted. Other measures address heat and set legal limits for noise.

Some aspects, such as seabed habitats, water column habitats and timelines, are partially addressed.

2019 priority actions

- Determine timelines for achieving GES, where these have not been reported.
- Provide more information about measures, establish more measures that have a direct impact on the pressures and quantify the expected reduction of the pressure as a result.
- Strengthen regional cooperation with Member States sharing the same marine region to address the main pressures.

---

[45]Commission Report assessing Member States' programme of measures under the Marine Strategy Framework Directive (COM(2018)562).

[46] Directive 2008/56/EC.

3. Ensuring citizens' health and quality of life

Air quality

> EU clean air policy and legislation require the significant improvement of air quality in the EU, moving the EU closer to the quality recommended by the World Health Organisation. Air pollution and its impacts on human health, 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 air quality legislation and defining strategic targets and actions beyond 2020.

The EU has developed a comprehensive body of air quality legislation [47], which establishes health-based standards and objectives for a number of air pollutants.

Emissions of several air pollutants have decreased significantly in Germany [48]. The reductions achieved between 1990 and 2014 (see previous EIR) continued in 2014-2016, with emissions of sulphur oxides (SO_x) down by 0.86 %, nitrogen oxides (NO_x) by 3.66 % and fine particulate matter ($PM_{2.5}$) [49] by 2.97 %. Meanwhile, emissions of non-methane volatile organic compounds (NMVOCs) increased by 2.25 % and emissions of ammonia (NH_3) by 0.15 % (see also Figure 13 on total $PM_{2.5}$ and NO_x emissions by sector).

Despite the reductions, additional efforts are needed to meet the reduction commitments (compared with 2005 levels) laid down in the new National Emissions Ceilings Directive [50] for 2020-2029 and any year from 2030.

Air quality in Germany continues to give cause for severe concern. For 2015, the EEA estimated that about 62 300 premature deaths were attributable to fine PM concentrations, 3 000 to ozone [51] concentration and over 13 000 to nitrogen dioxide (NO_2) [52] concentrations [53].

According to a special report from the European Court of Auditors [54] EU action to protect human health from air pollution has not had its expected impact. There is a risk that air pollution is being underestimated in some instances because it may not always be monitored in the right places. Member States are now required to report both real-time and validated air quality data to the Commission [55].

Figure 13: $PM_{2.5}$ and NO_x emissions by sector in Germany [56]
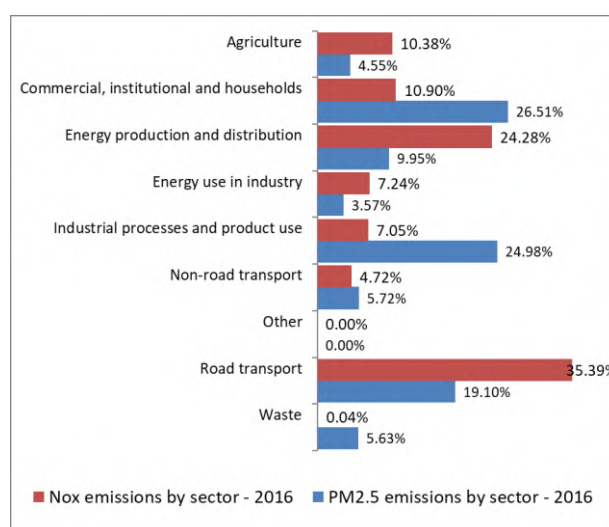
For 2017, exceedances related to the annual limit value for nitrogen dioxide (NO_2) in 35 (out of 89) air quality zones (including in Munich, Stuttgart, and Cologne).

---

[47] European Commission, Air Quality Standards, 2016.
[48] See EIONET Central Data Repository and Air pollutant emissions data viewer (NEC Directive).
[49] PM is a mixture of aerosol particles (solid and liquid) covering a wide range of sizes and chemical compositions. PM10 ($PM_{2.5}$) refers to particles with a diameter of 10 (2.5) micrometres or less. PM is emitted from many anthropogenic sources, including combustion, and is formed from gaseous pollutants in the air (secondary PM).
[50] Directive 2016/2284/EU.
[51] Low ground-level ozone is produced by photochemical action on air pollutants.
[52] NO_x is emitted during fuel combustion, e.g. from industrial facilities and road transport. It is a group of gases comprising nitrogen monoxide (NO) and nitrogen dioxide (NO_2).
[53] EEA, Air Quality in Europe – 2018 Report, p.64. See report for methodological details.

[54] European Court of Auditors, Special report no 23/2018: Air pollution - our health still insufficiently protected.
[55] Article 5 of Commission Implementing Decision 2011/850/EU of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (OJ L 335, 17.12.2011, p. 86).
[56] 2016 NECD data submitted by Member State to the EEA.

Exceedances have also been registered related to particulate matter (PM_{10}) in 1 (out of 86) air quality zones (Stuttgart). Furthermore, the target values regarding ozone concentrations are not being met in some instances[57]. Figure 14 shows the number of air quality zones with excessive levels of NO_2, $PM_{2.5}$ and PM_{10}.

Figure 14: Air quality zones exceeding EU air quality standards in 2017[58]
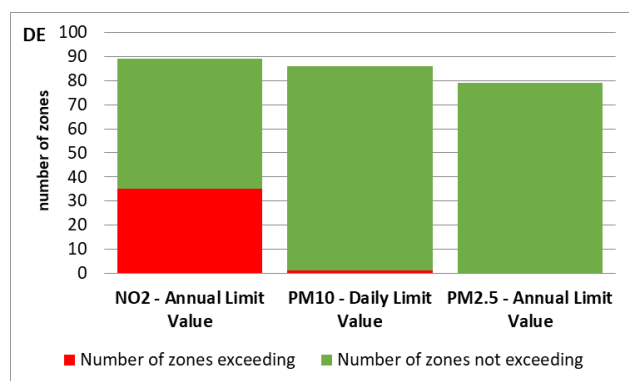
The Commission is following up the persistent breaches of air quality requirements (for PM_{10} and NO_2), which have severe negative effects on health and the environment, through infringement procedures against all the Member States concerned, including Germany. As regards NO_2, it has decided to refer Germany to the European Court of Justice[59]. The aim is to have adequate measures put in place to bring all zones into compliance.

The tax system can be used to implement clean air policy while also generating revenue: further alignment and equal treatment of transport fuels (e.g. diesel) would lead to environmental improvements and incentives to reduce NO_2 pollution.

2019 priority actions

- In the context of the forthcoming national air pollution control programme (NAPCP), take action to reduce the main emission sources, *inter alia* through the priority actions below.
- Accelerate reductions in NO_x emissions and NO_2 concentrations; this will require, for example, further reductions in transport emissions, in particular in urban areas (and, potentially, proportionate and targeted urban vehicle access restrictions).
- Accelerate reductions in $PM_{2.5}$ and PM_{10} emissions and concentration; this will require, for example, further reductions in emissions from energy generation and heat generation using solid fuels and/or promoting efficient and clean district heating.

- Reduce ammonia (NH_3) emissions to comply with currently applicable national emission ceilings, for example by introducing or expanding the use of low-emission agricultural techniques.
- Reduce emissions of volatile organic compounds (VOC).

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; and
(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[60] (IED).

The below overview of industrial activities regulated by the IED is based on the 'industrial emissions policy country profiles' project[61].

In Germany, around 8 900 industrial installations are required to have a permit under the IED. Industrial sectors in Germany with the most IED installations in 2015 were intensive poultry or pig rearing (25 %), chemicals (18 %), non-hazardous waste management (10 %) and hazardous waste management (9 %).

Figure 15: Number of IED industrial installations by sector, Germany (2015)[62]
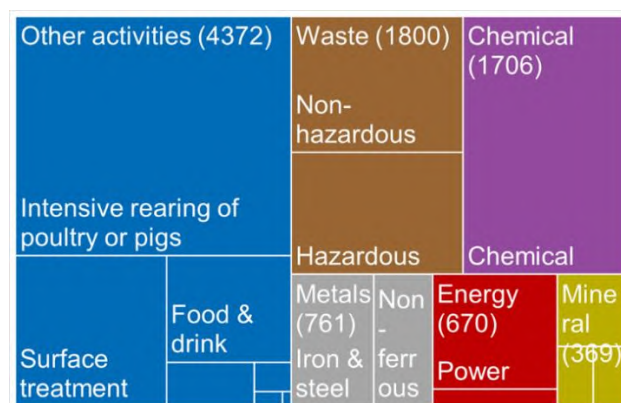
The sectors identified as contributing most emissions to air in Germany were:

---

[57] EEA, Eionet air quality portal and the related central data repository.
[58] EEA, EIONET Central Data Repository. Data reflects the reporting situation as of 26 November 2018.
[59] COM(2018) 330.

[60] 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).
[61] European Commission, Industrial emissions policy country profile – Germany.
[62] European Commission, Industrial emissions policy country profile – Germany.

- energy/power (SO$_x$, NO$_x$, arsenic (As) and mercury (Hg));
- energy (refining, gasification and liquefaction) and coke (nickel (Ni));
- iron and steel (chromium (Cr), lead (Pb) and polychlorinated dibenzodioxins and polychlorinated dibenzofurans (PCDD/F)); and
- 'other activities', mostly intensive poultry or pig rearing and surface treatment (NMVOCs, NH3, PM2.5, cadmium (Cd) and Pb). The breakdown is shown in the graph below.

Figure 16: Emissions to air from IED sectors and all other national total air emissions, Germany (2015)
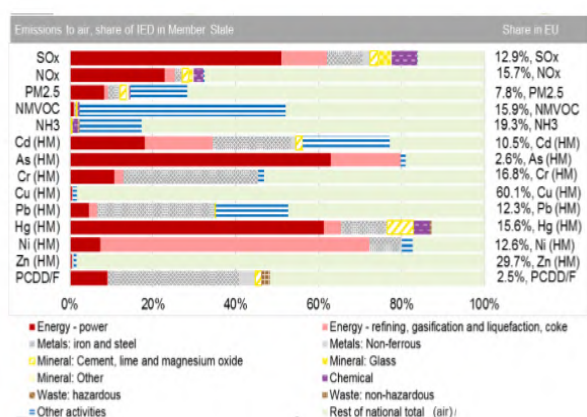
The energy refining, gasification and liquefaction and coke, chemicals, waste management sectors and 'other activities' were identified as making significant contributions to emissions to water, and the waste management, chemicals and metals sectors mainly contribute to hazardous waste generation.

The enforcement approach under the IED creates strong rights for citizens to have access to relevant information and to participate in the permitting process for IED installations. This empowers citizens, and NGOs to ensure that permits are appropriately granted and their conditions respected.

Best available techniques (BAT) reference documents (BREFs) and BAT conclusions are developed through the exchange of information between Member States, industrial associations, NGOs and the Commission. This ensures a good collaboration with stakeholders and a better application of the IED rules.

Thanks to the national competent authorities' efforts to apply the legally binding BAT conclusions and associated BAT emission levels in environmental permits, pollution has decreased considerably and continuously in the EU.

For example, by applying the recently adopted BAT emission levels for large combustion plants, emissions of sulphur dioxide will be cut on average by between 25 %

and 81 %, nitrogen oxide between 8 % and 56 %, dust between 31 % and 78 % and mercury between 19 % and 71 % at the EU level. The extent of the reduction depends on the situation in individual plants.

The Commission has welcomed the good cooperation with the administration to efficiently resolve issues due to late implementation of the BAT conclusion prohibiting the use of the mercury cell technique by chlor-alkali plants by 11 December 2017.

The challenges identified were emissions to air and water from intensive poultry and pig rearing.

2019 priority actions

- Review permits to comply with new BAT conclusions.
- Strengthen control and/or enforcement to ensure compliance with BAT conclusions.
- Address emissions to air and water from the sector of intensive poultry and pig rearing.

Noise

The Environmental Noise Directive [63] provides for a common approach to avoiding, preventing and reducing the harmful effects of exposure to environmental noise.

Excessive noise from aircraft, railways and roads is one of the main causes of health problems in the EU[64]. In 2017, the EEA calculated (on the basis of a limited set of data[65]) that environmental noise causes at least 2 200 premature deaths and 13 200 hospital admissions per year in Germany. Noise also disturbs the sleep of roughly 2 million people. Implementation of the Environmental Noise Directive is significantly delayed. On the basis of the latest full set of information that could be analysed (from 2012 for noise maps and 2013 for action plans), Germany has complied with the Directive only in respect of noise mapping. Despite steady progress, it has yet to produce action plans for a large number of agglomerations (i.e. population centres or places of economic activity) and major airports, roads and railways.

These instruments, adopted after a public consultation had been carried out, should include the measures to keep noise low or reduce it.

2019 priority action

- Complete the action plans for noise management.

---

[63] Directive 2002/49/EC.
[64] WHO/JRC, 2011, *Burden of disease from environmental noise*, Fritschi, L., Brown, A.L., Kim, R., Schwela, D., Kephalopoulos, S. (eds), World Health Organisation, Regional Office for Europe, Copenhagen, Denmark.
[65] EEA, *Noise fact sheets 2017*.

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.

The existing EU water legislation [66] puts in place a protective framework to ensure high standards for all water bodies in the EU and addresses specific pollution sources (for example, from agriculture, urban areas and industrial activities). It also requires that the projected impacts of climate change are integrated into the corresponding planning instruments e.g. flood risk management plans and river basin management plans, including programme of measures which include the actions that Member States plan to take in order to achieve the environmental objectives.

Water Framework Directive

Germany has adopted and reported the second generation river basin management plans. The European Commission has assessed their status and development since adoption of the the first plans.

The **most significant pressures** on rivers in Germany are diffuse agriculture pollution (65% of river water bodies affected), diffuse atmospheric deposition (61%), and changes to their physical shape due to agriculture (39%) and flood protection (31%). For groundwater bodies the most significant pressure comes from agriculture (41%).

The most widespread and **significant impact** on surface water bodies is chemical pollution (99%) and altered habitats due to morphological changes (concerns all transitional water bodies, 93% of rivers and 35% of lakes).

The most significant impact on groundwater is chemical pollution (40% of ground water bodies), followed by nutrient pollution (12%) and abstractions exceeding groundwater resources (4%).

Surveillance monitoring as regards the **ecological status in surface water bodies** has risen, but the number of operational monitoring sites in coastal waters and transitional waters has fallen slightly.

Only 10 % of surface water bodies have good ecological status or potential as illustrated in Figure 17. This shows that Germany has a long way to go to achieve the good status or potential objectives defined in the Water Framework Directive.

Figure 17: Ecological status or potential of surface water bodies in Germany[67]
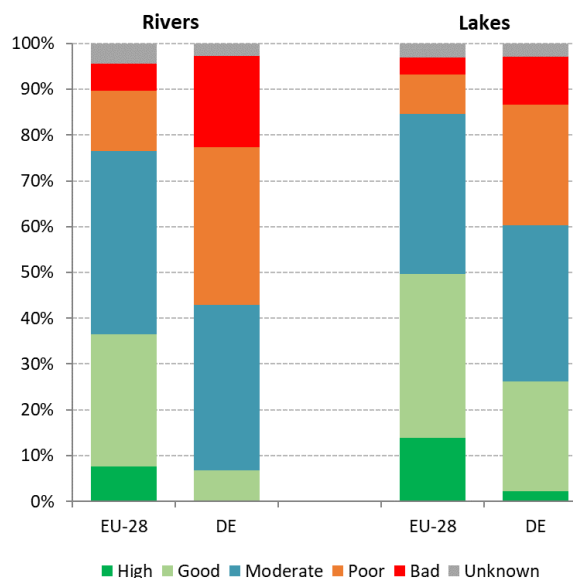
Between the first and second river basin management plans the proportion of surface water bodies with **good chemical status** fell from 88% to 0%. This pattern occurred across Germany and water body categories. The primary reason for this is that all monitoring samples showed levels of mercury that do not meet the relevant environmental quality standard. For this reason the assessment 'failing to achieve good' has been extrapolated to all surface water bodies.

The monitoring situation of **quantitative status of groundwater** bodies has improved. There was a slight increase in the total number of groundwater bodies failing good quantitative status – up from 2.7% to 3.5%.Germany provided an enormous volume of data entries relating to gaps and indicators for the scale and progress of implementationof measures until 2027. However, the data provided are often aggregated and could not be assessed sufficiently. Gap values are not provided for 2027. Germany should, for example, ensure that a comprehensive gap assessment for diffuse pollutant loads from agriculture (nutrients, agri-chemicals, sediment, organic matter) across all waters are completed and linked directly to mitigation measures

---

[66] This includes the Bathing Waters Directive (2006/7/EC), the Urban Waste Water Treatment Directive (91/271/EEC) (on discharges of municipal and some industrial wastewaters), the Drinking Water Directive (98/83/EC) (on potable water quality), the Water Framework Directive (2000/60/EC) (on water resources management), the Nitrates Directive (91/676/EEC) and the Floods Directive (2007/60/EC).

[67] EEA, WISE dashboard.

in the third RBMPs in order to facilitate the achievement of WFD objectives.

Bathing water

Figure 18 shows that, in 2017, of Germany's 2 287 bathing waters, 91.4 % were of excellent quality, 5.3 % of good quality and 1.3 % of sufficient quality (as compared with 90.8 %, 5.7 % and 1.3 % respectively in 2016). Eight bathing waters were of poor quality [68] . Detailed information is available from a national portal [69] and via the EEA's interactive map viewer[70].

Figure 18: Bathing water quality, 2014–2017[71]

*The category 'good' was introduced in the 2015 bathing water report
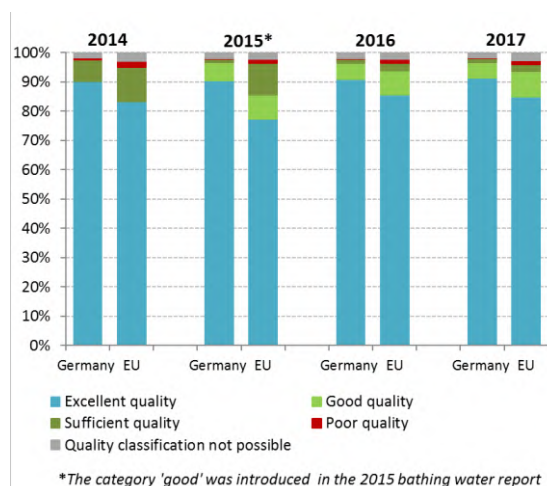
Urban Waste Water Treatment Directive

Germany demonstrates excellent levels of compliance with the Urban Waste Water Treatment Directive: 100 % of waste water is collected and 99.8 % undergoes secondary treatment.

Nitrates Directive

However, water pollution by nitrates in Germany remains a serious concern. Nitrate levels above 50 mg/l in drinking water can have considerable health impacts on populations, especially pregnant women and babies. Purifying excess nitrates from drinking water is a very costly process, mainly supported by households and public authorities.

There are continuing acute problems in groundwater and with eutrophication in the Baltic and North Seas, as shown in the latest report on the implementation of the Nitrates Directive[72] and other recent German reports[73].

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 grew by 3.5 % in 2012-2015 compared with 2008-2011.

Germany was referred to the Court of Justice of the EU for failing to take stronger 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. In 2017, Germany updated its programme of measures to tackle nitrate pollution through the reform of its legislation on fertilisers (*Düngegesetz* and *Düngeverordnung*[74]).

Floods Directive

The Floods Directive established a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences associated with significant floods. ermany has adopted and reported its first flood risk management plans under the Directive.

The Commission's assessment found that good efforts were made with positive results in setting objectives and designing measures focusing on prevention, protection and preparedness. However, Germany's flood risk management plan, like those of other Member States does not yet include concrete enough measures linked to the objectives set and an as complete as possible estimation of the cost of measures with identification of specific sources of funding. In addition, there is scope for clarifying the method for the prioritisation of measures.

2019 priority actions

- Take steps in order to improve trend monitoring for all relevant substances in all river basin districts, in a way that provides sufficient temporal resolution and spatial coverage.
- Complete a comprehensive gap assessment for diffuse pollutant loads from agriculture across all waters in all river basin districts and link it directly to mitigation measures.
- Implement the court ruling on the Nitrates Directive and strenghten its implementation to address the current serious water pollution, especially in agricultural-intensive areas.
- Take steps to clarify the method for selecting measures, including the use of cost/benefit analysis in relation to the flood risk management plans.

---

[68] EEA, European bathing water quality in 2016, 2017, p. 17.

[69] The German Environment Agency, national bathing water portal

[70] EEA, State of bathing waters.

[71] EEA, 2018, European bathing water quality in 2017, p. 21.

[72] European Commission, *Report on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015* (COM(2018) 257) and Commission staff working document SWD(2018) 246.

[73] e.g. report from the Federal Environment Agency (UBA), *Umwelt und Landwirtschaft* (2018).

[74] *Bundesministerium für Ernährung und Landwirtschaft*, 2017, *Düngegesetz und Düngeverordnung*.

Chemicals

The EU seeks to ensure that by 2020 chemicals are produced and used in ways that minimise any significant adverse effects on human health and the environment. An EU strategy for a non-toxic environment that is conducive to innovation and to developing sustainable substitutes, including non-chemical options, is being prepared.

The EU's chemicals legislation [75] provides baseline protection for human health and the environment. It also ensures stability and predictability for businesses operating within the internal market.

The 2016 European Chemicals Agency (ECHA) *Report on the operation of REACH and CLP*[76] (classification, labelling and packaging of substances and mixtures) showed that enforcement activities are still evolving. In the Forum for Exchange of Information on Enforcement, coordinated enforcement projects[77] have shown that enforcement activities can still be improved, in particular as regards registration obligations and safety data sheets, where a relatively high level of non-compliance has been found.

There is room for further improvement of national enforcement activities as regards harmonisation throughout the EU, including controls on imported goods. It is also clear that enforcement is still weak in some Member States, in particular with respect to the control of imports and supply chain obligations. The architecture of enforcement capabilities is still complex in most EU countries. The enforcement projects also revealed some differences among Member States (e.g. some tend to systematically report compliance levels above the EU average and others below).

In 2015, a Commission study highlighted the importance of harmonisation in the implementation of REACH at Member State level, in terms of market surveillance and enforcement, as a critical success factor in the operation of a harmonised single market[78].

In March 2018, the Commission published an evaluation of REACH [79]. The evaluation concludes that REACH delivers on its objectives, but that progress made is slower than anticipated. In addition, the registration dossiers often are incomplete. The evaluation underlines the need to enhance enforcement by all actors, including registrants, downstream users and in particular for importers, to ensure a level playing field, meet the objectives of REACH and ensure consistency with the actions envisaged to improve environmental compliance and governance. Consistent reporting of Member State enforcement activities was considered important in that respect.

Germany is involved in the R4R-European chemical regions for resource efficiency, which brings together research institutes, industry and regions in six countries[80].

In Germany, the competent authority for REACH, CLP and Biocides is the Federal Institute for Occupational Safety and Health (*Bundesanstalt für Arbeitsschutz und Arbeitsmedizin*, BAuA), which acts as the Commission's general contact point for the three regulations. It is also responsible for risk management and operates the national REACH-CLP-Biocides helpdesk.

Enforcement is the responsibility of the *Länder*, but BAuA provides them with scientific expertise, information services (e.g. training, brochures and guidelines) and legal support. It also acts as a focal point for their contacts with other European authorities.

The *Land* enforcement authorities conduct regular inspections on companies and products on the German market. They also run focused enforcement projects and check imports in cooperation with national customs authorities.

The authorities meet regularly in various working groups and committees, such as the Federal Government/*Länder* working committee on chemical safety (*Bund/Länder Arbeitsgemeinschaft Chemikaliensicherheit*, BLAC), in order to resolve common issues and ensure harmonised REACH, CLP and Biocides enforcement[81].

Making cities more sustainable

EU policy on the urban environment encourages cities to put policies in place for sustainable urban planning and design. These should include innovative approaches to urban public transport and mobility, sustainable buildings, energy efficiency and urban biodiversity conservation.

The population living in urban areas in Europe is projected to rise to just over 80% by 2050[82]. Urban areas pose particular challenges for the environment and human health, but they also provide opportunities for

---

[75] Principally for chemicals: REACH (OJ L 396, 30.12.2006, p.1.); for Classification, Labelling and Packaging, the CLP Regulation (: OJ L 252, 31.12.2006, p.1.), together with legislation on biocidal products and plant protection products.

[76] European Chemicals Agency, *Report on the operation of REACH and CLP 2016*.

[77] ECHA, On the basis of the projects REF-1, REF-2 and REF-3.

[78] European Commission (2015), *Monitoring the impacts of REACH on innovation, competitiveness and SMEs*.

[79] COM (2018) 116.

[80] European Commission, *Improving resource efficiency in SMEs*, 2017, p. 43.

[81] ECHA, National Inspectorates – Germany.

[82] European Commission, Eurostat, Urban Europe, 2016, p.9.

using resources more efficiently. The EU encourages municipalities to become greener through initiatives such as the Green Capital Award[83], the Green Leaf Award[84] and the Green City Tool[85].

Financing greener cities

Germany has assigned about EUR 885 million, or 8.2 % of its allocation from the European Regional Development Fund (ERDF) excluding technical assistance, to sustainable urban development[86]. Seven *Länder* are implementing measures to support sustainable urban development under Article 7 of the ERDF Regulation[87].

Germany participates in the European Urban Development Network[88], which consists of more than 500 cities across the EU implementing integrated actions in 2014-2020 on the basis of ERDF-financed sustainable urban development strategies.

Participation in EU urban initiatives and networks

German municipalities are generally involved in EU initiatives on environment protection and climate change. In 2011, Hamburg became the first German city to win the Green Capital Award and Essen was awarded the title in 2017. German cities are also actively involved in initiatives such as Eurocities and the EU Covenant of Mayors. As of June 2018, some 72 German cities had signed up to the Covenant under the coordination of the *Metropolregion* Rhein-Neckar and the Stuttgart region[89].

A total of 33 municipalities take part in the URBACT initiative to support sustainable urban development, through various thematic networks[90]. The city of Munich, for example, leads the Bright Mobility Management network, which seeks to promote environment-friendly transport and reduce car traffic and thus air pollution.

Several Horizon 2020 network projects have contributed to the sustainability of cities. The Civitas initiative brings together nine German municipalities in a common effort to achieve cleaner and better transport in cities[91].

These urban initiatives and networks should be welcomed and encouraged, as they can contribute to a better urban environment. In 2017, 35 % of German city dwellers considered that their residential area was affected by pollution, grime or other environmental problems, up from 32.9 % in 2016. This is far above the level for the EU as a whole (20 % in 2017)[92].

Nature and cities

More than 55 % of Germany's part of the Natura 2000 network is to be found in functional urban areas[93], far more than the EU average of 15 % (see Figure 19), as Germany created a dense network of relatively small protected sites that frequently overlap with urbanised areas.

Figure 19: Proportion of Natura 2000 network in functional urban areas (FUAs)[94]
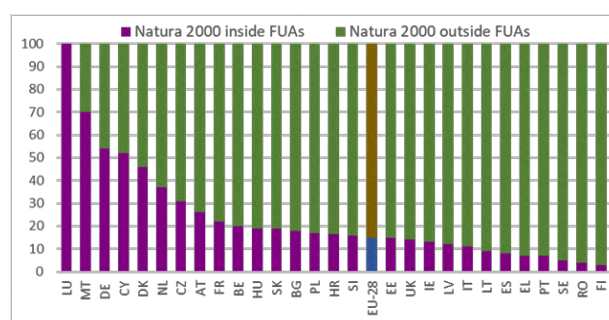
This represents huge potential, as cities can and must play a greater role in the management of vulnerable ecosystems and biodiversity.

In 2017, the Federal Government launched its first support programme for urban development – *Zukunft Stadtgrün* ('green urban future'). A total of 130 municipalities applied for a share of the EUR 50 million funding for measures to improve urban green areas. The programme is one of the most important instruments for the financing of sustainable urban development in Germany and was announced in a 2017 white paper (*Weißbuch Stadtgrün*)[95]. The 10 fields for action cover a variety of measures to make German cities greener and will help to implement the UN SDGs. In addition, there are options to finance GI measures under existing programmes such as *Soziale Stadt*[96] and *Stadtumbau*[97].

---

[83] European Commission, European Green Capital.
[84] European Commission, European Green Leaf Award.
[85] European Commission, Green City Tool.
[86] The German Federal Ministry for Economic Affairs and Energy, *Partnerschaftsvereinbarung*.
[87] Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006 (OJ L 347, 20.12.2013, p. 289–302).
[88] European Commission, *The Urban Development Network*.
[89] European Commission, Civitias Initiative .
[90] URBACT, Associated networks by country
[91] CIVITAS cities.

[92] European Commission, Eurostat, Pollution, grime or other environmental problems by degree of urbanisation.
[93] European Commission, Definition of Functional Urban Areas.
[94] European Commission, 7th report on economic, social and territorial cohesion, 2017, p. 121.
[95] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, *Green spaces in the city*, white paper.
[96] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Programme Soziale Stadt.
[97] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Programme Stadtumbau.

Urban sprawl

Large parts of Europe are affected by urban sprawl. In 2009, the degree of 'weighted urban proliferation' (WUP) in Europe (32 countries, i.e. EU-28 + four others[98]) was 1.64 urban permeation units (UPU)/m^2, with country values ranging from 0.1 to 6.6 UPU/m^2. The Scandinavian countries had the lowest values; Germany (33.83 UPU/m^2)[99][100] is just behind the Member States with the highest (the Netherlands and Belgium). The urban sprawl hotspot in the area around the River Rhine covers part of Germany, together with the Netherlands, Belgium and Luxembourg.

Traffic congestion and urban mobility

The number of road vehicles in Germany has risen to 63.7 million by 1st January 2018 [101], which is the highest rate to date. However, there are relatively fewer in big cities than in rural areas.

The time spent in traffic jams remains high: about 30 hours per year for the average driver [102], which is around the EU average[103]. Congestion and looking for parking has been estimated to cost EUR 110 billion per year, or about 4 % of GDP [104]. As transport is an intermediary service, this probably causes productivity losses in other sectors.

Bike ownership is growing constantly. The total of 73 million bicycles equates to nearly one bike per person, but still only 9 % of the people cycle to work. The car remains by far the most common means of transport for commuters. Overall, 68 % used a car in 2016, hardly any change from 2000 (67 %), regardless of the length of the commute. Only 13.8 % used public transport. In large cities, the picture is different: 31 % use public transport; in the city states of Berlin and Hamburg, the figure is over 40 %[105].

Generally, the transport sector is facing big changes, such as car-sharing, ride-sharing and electric and autonomous vehicles. Car-sharing is still vastly under-exploited as an option for more sustainable urban transport. A recent case study found that it accounts for less than 0.1 % of all passenger-kilometres by motor vehicle in Germany[106].

Among the main health and environmental challenges in urban areas, air quality – an area in which Germany is not in compliance with EU law – demands particular priority action.

Innovative approaches to traffic management and multimodal transport are being developed and tested in many cities. Shared mobility services can encourage a shift away from individual car use. Through the 'immediate action programme clean air' (*Sofortprogramm Saubere Luft 2017-2020*), the Federal Government is making funding of EUR 1 billion available for municipalities to electrify and retrofit public transport and taxi fleets. This amount was increased to 1.5 billion in December 2018. In 2017, it made EUR 300 million available over four years to promote the installation of new standard and high-speed charging stations for electric vehicles, and to extend existing infrastructure.

Most German cities have had urban transport plans (*Verkehrsentwicklungspläne*, VEPs) since the 1960s[107]. Although they are not legally binding for city councils, most cities and urban regions use such plans as an important tool for general land-use planning. They guide most infrastructure and mobility management decisions in cities. In recent years, VEPs have become more integrated, with most increasingly including elements of sustainable urban mobility plans (SUMPs). However, other planning documents (e.g. for land-use, ambient air quality improvement, noise abatement) are still separate and sometimes set somewhat different objectives.

[98] Iceland, Liechtenstein, Norway and Switzerland.

[99] Urban Permeation Units measure the size of the built-up area as well as its degree of dispersion throughout the region.

[100] EEA report No 11/2016, *Urban sprawl in Europe*.

[101] Federal Motor Transport Authority, *Jahresbilanz des Fahrzeugbestandes*.

[102] European Commission, European Transport scoreboard.

[103] Tom Tom Traffic Index.

[104] OECD Economic Surveys: Germany 2018.

[105] Statistisches Bundesamt, Berufspendler.

[110] Circular Impacts , *Car Sharing in Germany*, Best, Aaron & Hasenheit, Marius, Ecologic Institute, 2018.

[107] Eltis, Member State profile.

Part II: Enabling framework: implementation tools

4. Green taxation, green public procurement, environmental funding and investments

Green taxation and environmentally harmful subsidies

Financial incentives, taxation and other economic instruments are effective and efficient ways to meet environmental policy objectives. The circular economy action plan encourages their use. Environmentally harmful subsidies are monitored in the context of the European Semester and the energy union governance process.

Germany's revenues from environmental taxes are among the lowest in the EU, accounting for 1.86 % of GDP in 2016 (EU average: 2.44 %; see Figure 20), down from 2 % in 2014. Energy taxes account for 1.54 % of GDP, compared with an EU average of 1.88 %.

Revenues from consumption taxes also remained relatively low (10.3 % of GDP in 2016), whereas those from labour taxes as a share of GDP were relatively high in 2016 at 22 % of GDP (EU average 19.3 %)[108]. The decrease in the share of environmental taxes as a share of GDP is mainly due to the fact that tax rates on motor fuels have not been adjusted since 2003. As a result, they have been eroded by inflation down to the level they were at before the ecological tax reform programme implemented over the years 1999 to 2003.

In the context of the European Semester [109], the Commission has repeatedly pointed to the potential for shifting taxation to tax bases less detrimental to growth, including environmental taxes. Fossil-fuel subsidies have increased in the past decade, mainly due to the growing importance of energy tax relief for energy-intensive processes and various tax exemptions for commercial aviation, public transport and diesel used in agriculture and forestry[110]. Subsidies for natural gas have also risen in recent years, while tax expenditures to support the reconversion of the coal-mining industry are being phased out by 2020.

No progress has been made on reducing the 'diesel differential' (price-gap between diesel and petrol) since

2005. In 2016, the gap between petrol and diesel tax rates remained at 39 %, among the widest in the EU[111]. Excise tax rates were similar to those in 2015 (EUR 0.65/l for petrol and EUR 0.47/l for diesel)[112].

Figure 20: Environmental tax revenues as % of GDP (2017)[113]
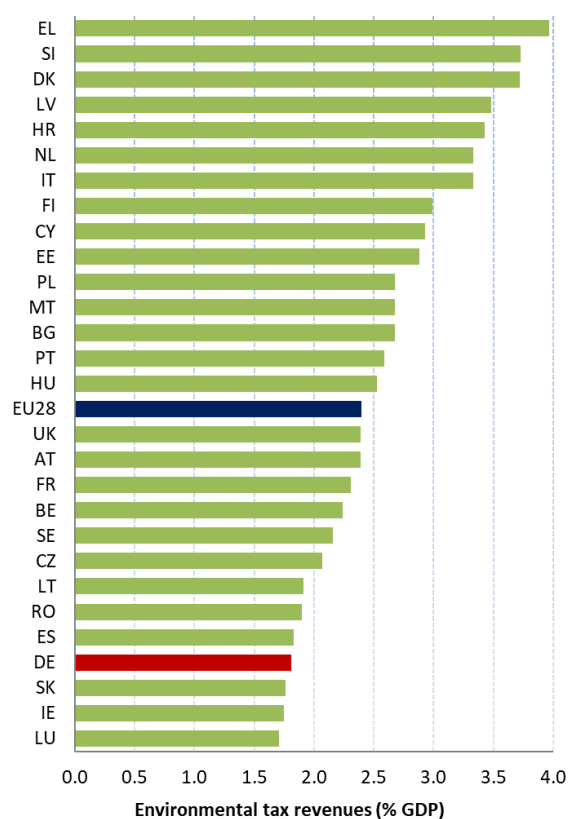
Germany's motor vehicle taxes are based on CO_2 emissions. The annual road tax consists of a basic tax and a CO_2 component. Cars with emissions below 95 g/km are exempt from the latter[114]. There are several incentives to purchase cars with lower CO_2 emissions – some linked to the annual road tax, tolls and congestion/low-emission

---

[108] European Commission, *Taxation trends report*, 2017.
[109] European Commission, the European Semester.
[110] OECD, Inventory of support measures for fossil fuels, 2018.

[111] EEA 2016, *Environmental taxation and EU environmental policies*, p.27.
[112] European Commission, Taxes in Europe database.
[113] Eurostat, Environmental tax revenues, 2018.
[114] European Automotive manufacturers association, CO2 based motor vehicle taxes in the EU.

zone charges, and others to the acquisition or use of public infrastructures [115]. The introduction of new emission testing standards on 1 September 2018 has led to an adjustment of taxes for newly registered cars based on more realistic CO_2 emissions[116].

One of Germany's most positive environmental fiscal measures is the results-based agri-environment measure in Baden-Württemberg, which pays farmers who have certain wildflower species on their grassland. The programme has been extended to six species for 2014-2020, with increased payment rates[117]. Another good example is biodiversity offsetting, which aims to avoid net losses of biodiversity and certain ecosystem services through compensation[118]. This measure has helped to reduce biodiversity loss in Germany, but it is still far from achieving all its objectives.

Green public procurement

The EU green public procurement policies encourage Member States to take further steps to apply green procurement criteria to at least 50 % of public tenders. The European Commission is helping to increase the use of public procurement as a strategic tool to support environmental protection.

The purchasing power of public procurement amounts to around EUR 1.8 trillion in the EU (approximately 14% of GDP). A substantial proportion of this money goes to sectors with a high environmental impact such as construction or transport. Therefore, green public procurement (GPP) can help to significantly lower the negative impact of public spending on the environment and can help support sustainable innovative businesses. The Commission has proposed EU GPP criteria[119].

Germany's integrated energy and climate protection programme includes a national GPP strategy that sets mandatory targets for all federal-level authorities to use lifecycle costing in their procurement procedures, in order to ensure energy-efficient and environment-friendly public procurement.

Guidelines, criteria lists and vendor questionnaires have been drawn up for numerous products and services (heat supply, office equipment, furniture, consumer electronics, cleaning and hygiene). A common decree requires that wood products procured by the federal administration demonstrably derive from sustainably managed forests. However, most public procurement is done on sub-central level and the *Länder* have their own provisions on the obligations to use sustainability criteria in public procurement. These obligations vary from Land to Land.

Training activities on sustainable public procurement are organised regularly and several tools have been developed to help contracting authorities use the available lifecycle-costing tools.

In its sustainable development strategy *(Deutsche Nachhaltigkeitsstrategie)*, the Federal Government committed itself to ensuring sustainability in specific administrative actions by improving sustainable procurement. A number of GPP targets in some product groups (textiles, recycling, paper, car fleet) are binding for Federal Government authorities. The proportion of electric vehicles purchased by the Federal Government is to reach at least 20 % by 2019.

A European Parliament study shows that Germany has partially implemented its GPP national action plan[120].

Environmental funding and investments

European Structural and Investment Fund (ESIF) rules oblige Member States to promote environment and climate in their funding strategies and programmes for economic, social and territorial cohesion, rural development and maritime policy.

Achieving sustainability involves mobilising public and private financing sources [121]. Use of the European Structural and Investment Funds (ESIFs)[122] is essential if countries are to achieve their environmental goals and integrate these into other policy areas. Other instruments such as Horizon 2020, the LIFE programme[123] and the European Fund for Strategic Investments (EFSI)[124] may also support the implementation and spread of good practices.

[115] European Commission, Taxes in Europe database.

[116] *Bundesministerium der Finanzen*, *Neue WLTP Tests und Kfz-Steuern*.

[117] Institute for European Environmental Policy, case studies on environmental fiscal reform, *Agri-environmental measure in Baden-Württemberg*.

[118] Institute for European Environmental Policy, case studies on environmental fiscal reform, *Biodiversity offsetting in Germany*.

[119] In the Communication 'Public procurement for a better environment' (COM (2008) 400) the Commission recommended the creation of a process for setting common GPP criteria. The basic concept of GPP relies on having clear, verifiable, justifiable and ambitious environmental criteria for products and services, based on a life-cycle approach and scientific evidence base.

[120] European Parliament, *Green public procurement and the action plan for the circular economy*, 2017, pp. 79-80.

[121] See, for example, Action plan on financing sustainable growth (COM(2018) 97).

[122] i.e. the European Regional Development Fund (ERDF), the Cohesion Fund (CF), the European Social Fund (ESF), the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF). The ERDF, the CF and the ESF are referred to as the 'cohesion policy funds'.

[123] European Commission, LIFE programme.

[124] European Investment Bank, European Fund for Strategic Investments, 2016.

European Structural and Investment Funds 2014-2020

Germany is receiving ESIF funding of EUR 27.9 billion in 2014-2020, through 48 national and regional programmes[125].

A total of EUR 3 051.4 million is dedicated to 'environment protection and resource efficiency'

- EUR 2283 million through the different EAFRD programmes;

- EUR 655.8 million through ERDF programmes; and

- EUR 112.6 million through the European Maritime and Fisheries Fund (EMFF) programme.

In addition, under the three above-cited funds (ERDF. EAFRD and EMFF) EUR 2 923.68 million is earmarked for the 'low carbon economy' Thematic Objective and EUR 2 728.96 million for 'promoting climate change adaptation and risk prevention and management' Thematic Objective.

Cohesion policy

Germany receives over EUR 19.2 billion in total cohesion policy funding for the 2014-2020 period, including EUR 0.9 billion for European territorial cooperation and EUR 7.5 billion from the ESF[126]. There are 32 ERDF operational programmes (OPs) and one national ESF OP.

The *Länder* are using ERDF funding for very diverse projects, from circular economy projects such as pilot testing processes and plants for the recovery of phosphorous from sewage sludge (Baden-Württemberg) to projects to finance Green Infrastructure in urban areas as part of integrated sustainable urban development (North Rhine-Westphalia) and programmes supporting nature protection and rehabilitation (several *Länder*).

Rural development

With regard to the integration of environmental

objectives into the common agricultural policy (CAP), the key areas for Germany (as for all Member States) are:

- using rural development funds to pay for environmental land management and other environmental measures, and not measures that could damage the environment; and

- ensuring effective implementation of the first pillar of the CAP with regard to cross-compliance and 'greening'.

Germany receives EUR 9 446 million in EARDF rural development funding, which is shared among 14 regional programmes (the one for the region of Berlin is merged with the one for Brandenburg and the one for Bremen with the one for Lower Saxony). Planned spending on the ecosystem priority (no 4) is EUR 4 685 million, which represents 49 % of the total budget. Another 21 % (EUR 2 053 million) is dedicated to agri-environment-climate measures, EUR 1 094 million to organic farming, EUR 87.5 million to supporting compliance with Natura 2000 obligations and EUR 1 015 million to payments for areas with natural constraints.

The national figures hide disparities among the *Länder*. Bavaria and Baden-Württemberg allocate more than 60 % for priority 4. Brandenburg and Hessen have a very low budget (less than 10 %) for agri-environment measures, while Bavaria and Baden-Württemberg put a big emphasis on the environment, with over 30 % of their budget allocated to such measures.

Figure 21: ESIF 2014-2020 – EU allocation by theme, Germany (EUR billion)[127]
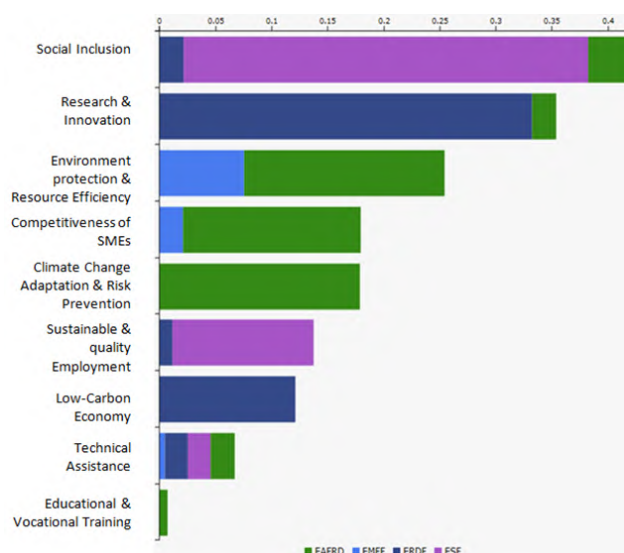
In general, the regional programmes are based on coherent strategies, with many agri-environment measures suited to addressing specific environmental

[125] European Commission, ESIFs country data for Germany.
[126] European Commission, Cohesion Policy and Germany, 2014.
[127] European Commission, ESIF data by country.

needs. Several *Länder* have improved existing biodiversity measures and made them more suitable to deliver on biodiversity protection and the conservation of endangered species and habitats, or have introduced new measures, some targeting the protection of insects and/or pollinators. However, more remains to be done to fully address Natura 2000 needs and the dramatic biodiversity losses occuring in rural areas. Rural development alone cannot tackle serious environmental problems such as water and air pollution, which require effective national legislation.

Germany's direct payments envelope for 2014-2020 is EUR 24 254 million, 30 % of which (EUR 7.28 million) is allocated to greening practices. An environmentally ambitious implementation of first-pillar greening would clearly help improve the environmental situation in areas not covered by the rural development pillar, including intensively farmed areas.

European Maritime and Fisheries Fund

Germany receives EUR 220 million in co-financing for the fisheries and maritime sector Several environmentally beneficial projects have been financed under priorities 1 (sustainable fisheries) and 2 (sustainable aquaculture) of its operational programme EUR 64 million (nearly 30 %) is dedicated to environmentally sustainable, resource-efficient, innovative aquaculture.

The Connecting Europe Facility (CEF)

The CEF is a key EU funding instrument developed specifically to direct investment towards European transport, energy and digital infrastructure to address identified missing links and bottlenecks and promote sustainability.

By the end of 2017, Germany had signed agreements for EUR 2.1 billion for projects under the CEF [128].

Horizon 2020

A number of Horizon 2020 projects in Germany or with German participation are aimed at achieving positive environmental impacts; for example:

- the FAIRWAY project[129], which explores agricultural practices as regards the use of pesticides and nitrogen in order to address major environmental and health challenges; and

- the BAMB project[130], which is developing and demonstrating integrated approaches to help the building sector in the transition to a circular economy.

LIFE programme

The EU allocated EUR 38 million to German projects in 2014-2017[131]. These include the LIFE Limicodra project to protect meadow birds in coastal areas of Western Pomerania, with a EU contribution of over EUR 2 million[132].

Altogether, LIFE projects represent an investment of EUR 953.8 million, of which EUR 398 million is from the EU budget.

European Investment Bank

In 2018 alone, the EIB Group (the European Investment Bank and the European Investment Fund)[133] loaned German businesses and public institutions EUR 4.84 billion, as shown in Figure 22. Of this, EUR 1.31 billion (27 %) went to environmental projects.

Figure 22: EIB loans to Germany in 2018[134]

Investment in EUR million (in 2018)
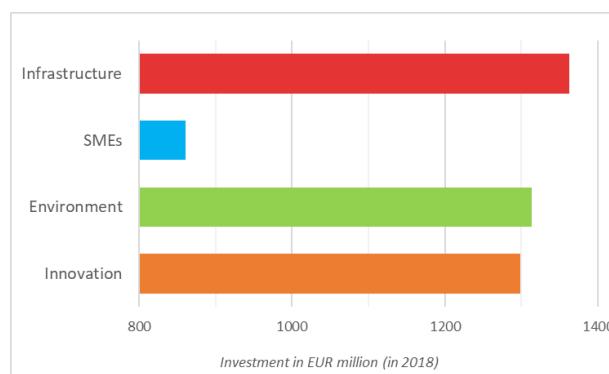
Over five years (2011-2015), the EIB invested EUR 33.3 billion in the German economy, of which 11 % which was for waste, sewage and urban projects.

Examples of environmental projects are the construction of a wind farm in the Baltic Sea and investments in the public transport infrastructure in Brandenburg.

European Fund for Strategic Investments

The European Fund for Strategic Investments (EFSI) is an initiative to help overcome the current investment gap in the EU. As of January 2019, it has mobilised EUR 7.3 billion in Germany, and the secondary investment triggered by this is expected to be EUR 34.7 billion[135].

The KSPG Automotive project concerns selected research and development investments mostly relating to technological innovations for combustion engines, contributing to greater efficiency and reduced emissions from automotive vehicles. This multi-country project

---

128 European Commission, European Semester Country Report for Germany, 2018, p. 12.
129 European Commission, FAIRWAY project.
130 European Commission, BAMB project.

131 Commission services, based on data provided by EASME.
132 European Commission, *LIFE Limicodra*.
133 The EIB Group includes EIB and EFSI investments and loans.
134 EIB, Germany and the EIB, 2018.
135 European Investment Bank, EFSI project map.

(involving Germany, France and Italy) receives EFSI financing of about EUR 250 million and the expected total investment amounts to EUR 528 million.

National environmental financing

Germany spent EUR 19.185 billion (0.6 % of GDP) on environmental protection in 2016, an increase of 6.7 % from 2015. Of this, 27 % was allocated to waste management (the average in the EU is 49.7 %), 23 % to wastewater management and 27.7 % to pollution abatement. Some 8.2 % of environmental expenditure (EUR 1 571 billion) was allocated to protecting biodiversity and the landscape. Between 2012 and 2016, general government funding for environmental protection came to EUR 88 849 billion, the second highest absolute figure in the EU[136].

Several programmes have been developed to finance projects relating to the environment, nature and climate protection, e.g. renewable energy and energy efficiency. EUR 17 million a year is made available through the longstanding *chance.natur – Bundesförderung Naturschutz* (nature protection) programme.

However, as was mentioned within the 'Maintaining and restoring ecosystems and their services' section, a considerable financing gap threatens Germany's achievement of its nature conservation goals. Although green infrastructure is integrated in several policy areas, more could be done given the significant pressure on ecosystems from sectors such as agriculture or transport.

In addition, more investment is needed in low-carbon infrastructure, including for transport, to achieve further emission reductions and climate objectives.

2019 priority action

- Ensure adequate funding for green infrastructure, e.g. through effective integration within priority action frameworks and agri-environment measures, public and private funding sources.

---

[136] Eurostat, *General government expenditure by function*, 2018.

5.   Strengthening 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; and
(iii) access to justice in environmental matters.

It is of crucial importance to public authorities, the public and business that environmental information is shared efficiently and effectively[137]. 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[138]. It includes the right to bring legal challenges ('legal standing')[139].

Environmental information

There are two main central websites in Germany for accessing environmental information: the website of the Ministry of the Environment (BMU)[140] and the national geoportal [141] . Information on legislation is easily accessible and all geodata are available on the geoportal, for monitoring and historical datasets; in some cases, similar *Land*-level websites need to be consulted to get a complete picture. There is a lot of information available and with the necessary effort it is possible to find it in most cases. The main problem is that it is spread over many different sites. On the other hand, all sites are completely available in English, provide a lot of user support and are in a clear, user-friendly format. There are some good examples at the *Land*-level, for instance on Hamburg's main city portal[142] or in Saxony[143]. These main portals are very comprehensive on all types of environmental information.

Germany's performance on the implementation of the INSPIRE Directive leaves room for improvement. It has been reviewed on the basis of the 2016 implementation report[144] and the most recent (2017) monitoring data[145]. Progress and implementation levels for coordination, dataset identification and data documentation are good. Additional efforts are needed to improve data access through services, streamline the conditions for data reuse and prioritise environmental datasets in implementation, in particular highvalue- spatial datasets for the implementation of environmental legislation[146].

Figure 23: Access to spatial data through view and download services in Germany (2017)
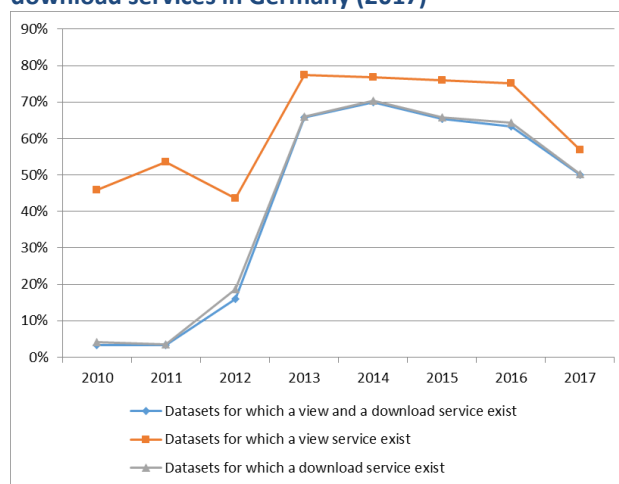
Public participation

In Germany, a number of cross-cutting and sector-specific laws regulate public participation. The *Öffentlichkeitsbeteiligungsgesetz* [147] aligned several pieces of legislation so as to streamline the provisions. Federal and *Land*-level administrative procedure acts (VwVfGs) complement the legal framework by requiring public authorities to advise parties to proceedings and inform them, *inter alia*, of their rights and obligations. Informal consultation mechanisms have been tested for some years in various areas of environmental policymaking [148] and new forms of early public participation are currently being tested, especially in the area of energy transition and related infrastructure, and

---

[137] The Aarhus Convention, the Access to Environmental Information Directive 2003/4/EC and the INSPIRE 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 INSPIRE.

[138] The guarantees are explained in Commission Notice on access to justice in environmental matters, OJL 275, 18.8.2017 and a related Citizen's Guide.

[139] This EIR looks at how well Member States explain access to justice rights to the public, and at legal standing and other major barriers to bringing cases on nature and air pollution.

[140] The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

[141] Geoportal.de.

[142] Hamburg's main city portal.

[143] Sachsen portal.

[144] INSPIRE country sheet - Germany, 2017.

[145] INSPIRE monitoring dashboard.

[146] European Commission, List of high value spatial datasets.

[147] Bundesgesetzblatt online, Öffentlichkeitsbeteiligungsgesetz

[148] For an overview and a description of various case studies, see Bock, S. and Reimann, B. (2017), *Beteiligungsverfahren bei umweltrelevanten Vorhaben* (Participation procedures in the context of environmental projects), report commissioned by the UBA;

project planning and implementation processes. In 2017, 91 % of respondents[149] agreed with the statement that 'as an individual you can play a role in protecting the environment in our country'.

Access to justice

Information on access to justice can be found on the websites of the BMU and the Federal Environment Agency (UBA), including information about case-law on air pollution plans. In May 2018, UBA and BMU published an information document about the Aarhus Convention ("Beteiligungsrechte im Umweltschutz - Was bringt Ihnen die Aarhus-Konvention?"). This up-to-date document contains information on access to justice in a practical and tailored way[150].

In general, German legislation provides for a subjective rights-based approach to legal standing rights-based approach to legal standing (i.e. the ability of a party to demonstrate sufficient connection to and harm from the law or action challenged). This has been restrictive in the past. However, the Environmental Appeals Act has been amended to implement Court of Justice access-to-justice case-law. Legal standing is provided for NGOs in nature cases under the Federal Act for the Protection of Nature and German courts follow Court of Justice case-law on air pollution.

Germany's readiness to uphold Court of Justice case-law on legal standing in air pollution and nature cases can be considered as a good practice.

2019 priority action

- Improve access to spatial data and services by making stronger linkages between the federal INSPIRE website and regional portals, identify and document all spatial datasets required for the implementation of

environmental law [151] and make the data and documentation at least accessible 'as is' to other public authorities and the public through the digital services provided for in the INSPIRE Directive.

Compliance assurance

Environmental compliance assurance covers all the work undertaken by public authorities to ensure that industries, farmers and others fulfil their obligations to protect water, air and nature, and manage waste[152]. It includes support measures provided by the authorities, such as:
(i) compliance promotion[153];
(ii) inspections and other checks that they carry out, i.e. compliance monitoring[154]; and
(iii) the steps that they take to stop breaches, impose sanctions and require damage to be remedied, i.e. enforcement[155].
Citizen science and complaints enable authorities to focus their efforts better. Environmental liability [156] ensures that the polluter pays to remedy any damage.

Compliance promotion and monitoring

The quality of online information for farmers on how to comply with nitrates and nature obligations is an indicator of how actively authorities promote compliance in fields where there are serious implementation gaps. Germany lacks clear official website information to help farmers comply with these obligations.

Major industrial installations present serious pollution risks. Public authorities are required to draw up inspection plans for them and to make inspection reports available to the public[157]. In Germany, the *Länder* are responsible for such plans. The three *Länder* that were looked at (Berlin [158], Lower Saxony [159] and North

---

[149] 2017 Special Eurobarometer 468 on attitudes of EU citizens towards the environment.
[150]Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Aarhus Convention publication.

[151] European Commission, MIWP action 2016.5: Priority list of datasets for e-reporting.
[152] 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.
[153] This EIR focuses on the help given to farmers to comply with nature and nitrates legislation.
[154] This EIR focuses on inspections of major industrial installations.
[155]This EIR focuses on the availability of enforcement data and co-ordination between authorities to tackle environmental crime.
[156] The Environmental Liability Directive 2004/35/EC , creates the framework.
[157] Article 23 IED.
[158]Senate Department for the Environment, Transport and Climate Protection, Berlin.
[159]Senate Department for the Environment, Transport and Climate Protection, Lower Saxony.

Rhine-Westphalia[160]) all publish information on their plans; North Rhine-Westphalia does this at district level.

Citizen science and complaint handling

Public engagement, including through citizen science, can deepen knowledge about the environment and help the authorities in their work. Germany has a central online platform, *Bürger schaffen Wissen* [161] (citizens create science), which is funded by the Ministry for Education and Research (*German Ministry for Education and Research* - BMBF) and has been established under a joint project involving *Wissenschaft im Dialog* and the *Museum für Naturkunde* in Berlin. Its main objective is to give an overview of citizen science projects in order to illustrate the concept of citizen science and so raise public awareness of it.

The availability of clear online information about how to make a complaint is an indicator of how responsive authorities are to complaints from the public. Complaint-handling in Germany is decentralised, with various websites providing information. A particularly positive example is the *Maerker Brandenburg* website[162], which operates as a one-stop shop for complaints. Citizens can select a municipality and write a complaint, which is then published on the website, along with the initial response and the eventual solution. A traffic light system uses red, amber and green markers to indicate the stage of handling the complaint has reached. The website is easy to access and navigate.

Enforcement

When monitoring identifies problems, a range of responses may be appropriate. However, the *Länder* do not publish online activity reports on administrative responses to detected non-compliance and there is no information on follow-ups, recommendations or repeated non-compliance. Similarly, no information is published on responses to breaches of cross-compliance as regards nitrates and nature. The Federal Statistical Office publishes annual reports on prosecutors' activities and the prosecution of crimes, including environmental ones. Waste crimes dominated in 2016. The German Environment Agency has carried out a research project on the status quo with regard to tackling environmental crime as well as on opportunities for development and will take up again special reports on environmental crime.

Tackling waste, wildlife and other environmental crimes is especially challenging and requires close cooperation and coordination between inspectors, customs authorities, police and prosecutors. Two *Länder* were looked at:

- in North Rhine-Westphalia, the Ministry of Justice has issued decrees on cooperation in the fight against environmental crime:

   o between the prosecutor's office and the police[163]; and

   o between environmental authorities, the prosecutor's office and the police[164]; and

- Lower Saxony has issued decrees with guidelines on:

   o the investigation of environmental law violations[165]; and

   o cooperation between prosecutors and the police in the investigation of organised crime, including in the environment sector[166].

Environmental liability

The Environmental Liability Directive (ELD) establishes a framework based on the 'polluter pays' principle to prevent and remedy environmental damage. The 2017 EIR focused on better information on environmental damage, financial security and guidance. The Commission is still collecting evidence on progress.

2019 priority actions

- Inform the public better about compliance promotion, monitoring and enforcement, at least by ensuring the availability to farmers of online information on how to comply with obligations on nitrates and nature.
- Publish more information on the outcomes of administrative enforcement action and the follow-up to detected breaches of cross-compliance as regards nitrates and nature.
- Improve financial security for liabilities and ELD-guidance and publish information on environmental damage.

---

[160]Senate Department for the Environment, Transport and Climate Protection, North Rhine Westphalia.
[161] The Citizens Science Platform.
[162] Maerker Brandenburg.

[163] The Ministry of Justice, North Rhine-Westphalia, Richtlinie für die Zusammenarbeit von Staatsanwaltschaft und Polizei vom 01.08.1999.
[164] The Ministry of Justice, North Rhine-Westphalia Zusammenarbeit zwischen den Umweltschutzbehörden/Fachdienststellen und den Strafverfolgungsbehörden vom 20.06.1985.
[165]Lower Saxony, *Richtlinien für die Verfolgung und Ahndung von Zuwiderhandlungen gegen Bestimmungen des Umweltschutzes vom 09.07.2018.*
[166]Lower Saxony, *Richtlinie über die Zusammenarbeit von Staatsanwaltschaft und Polizei bei der Verfolgung der Organisierten Kriminalität vom 20.05.2016*.

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 *Bund* 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*. *Land*-level legislation generally supplements national laws, especially in determining which authorities are responsible.

The enforcement of legislation is mainly the responsibility of the *Länder*, resulting in different administrative rules and practices across the country. Also, the organisation of the *Länder* administrations tends 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 established, e.g. on industrial emissions, soil protection, nature conservation, water management and chemical safety[167].

Germany scores 84.26 in the 2016 *Environmental Performance Index* (which ranks countries' performance on high-priority environmental issues), thus ranking 30th in the world and 20th in the EU[168].

Coordination and integration

As mentioned in the 2017 EIR, the transposition of the revised Environmental Impact Assessment (EIA) Directive[169] provides an opportunity to streamline the regulatory framework on environmental assessments. Germany was late in transposing the Directive and the Commission is waiting for it to submit missing information.

The Commission is in favour of streamlining environmental assessments so as to reduce duplication

and avoid overlaps between different assessments of the same project. Streamlining helps to reduce administrative burden and accelerates decision-making, without compromising the quality of the assessment procedure[170]. Germany has streamlined assessments under the EIA, Habitats and Water Framework Directives.

The EIA Directive and the Strategic Environmental Assessment (SEA) Directive[171] are implemented at national level through the EIA Act (*Umweltverträglichkeitsprüfungsgesetz*). The EIA is an integral part of the permitting procedure for projects. The authority responsible for approving the project or plan is also responsible for conducting the EIA or SEA. The EIA Act requires that authority to consult other authorities as part of the EIA or SEA procedure. This involves sending information on the project or plan and the environmental report to all affected authorities and collecting their assessment of the project or plan. The *Länder* have developed their own rules to complement the Act. For construction planning, the relevant rules have been included in the Building Code (*Baugesetzbuch*).

Sustained efforts have been made to centralise environmental laws in a single *Umweltgesetzbuch*, an important element of which would have been the creation of a single integrated approval procedure. However, these efforts have not been successful.

Adaptability, reform dynamics and innovation (e-government)

Since February 2003, the Federal Administrative Procedure Act[172] has allowed for electronic communication and this option has been included in the VwVfGs of the 16 *Länder*. The Federal e-Government Act, as adopted in 2013, requires authorities to provide for electronic communication[173]. The *Länder* have adopted similar e-government acts.

In general, Germany is lagging behind other Member States in the practical application of administrative electronic services as regards overall digitalisation and service delivery capacity and performance[174][175]. As regards having a fully developed digital channel for public services, in the 2018 DESI Report Germany had a score of

167 For an overview, see: *Umweltministerkonferenz*

168 YCELP, Global metrics for the environment, *Environmental Performance Index*, 2018.

169 Directive 2014/52/EU.

170 In 2016, the Commission issued a guidance document regarding the setting-up of coordinated and/or joint procedures that are simultaneously subject to assessments under the EIA, Habitats and Water Framework Directives and the IED (OJ C 273, 27.7.2016, p. 1).

171 Directive 2001/42/EC.

172 § 3a *Verwaltungsverfahrensgesetz*.

173 § 2 (1) *E-Government-Gesetz*.

174 Bahrke, M. *et al.* (2016), *eGovernment in Deutschland*, p. 90.

175 Wegrich, K. and Hammerschmid, G. (2017), *Public administration characteristics in Germany*, EUPACK study, p. 25.

50 out of 100 on digital public services, lower than the EU average of 58[176].

Enabling financing and effective use of funds

The BMU provides comprehensive information on environmental funding opportunities on its website[177]. In addition, a Federal Government web portal focuses on research funding in general and contains a dedicated section on environmental funding opportunities. [178]

The BMU also operates a web portal with information on the national climate initiative and associated funding opportunities. In this context, a service centre (*Service- und Kompetenzzentrum: Kommunaler Klimaschutz, SK:KK*) helps municipalities to initiate and implement municipal climate change mitigation (and, to some extent, adaptation) projects.

The *Länder* administer EU regional and agricultural funds (together with the European Commission), and so provide information and advice on funding. Moreover, there are some coordinating mechanisms in place for the ESI Funds at federal level[179].

2019 priority actions

- Complete the transposition of the revised EIA Directive.
- Germany can further improve its overall environmental governance (such as transparency, citizen engagement, compliance and enforcement, further streamlining as well as on e-government).

International agreements

The EU Treaties require the EU environmental policy to promote measures at international level to deal with regional or worldwide environmental problems.

The EU is committed to strengthening environmental law and its implementation globally. It therefore continues to support the Global Pact for the Environment process, which was launched by the United Nations General Assembly in May 2018[180]. The EIR is one of the tools to ensure that the Member States set a good example by respecting European Union environmental policies and laws and international agreements.

Germany's performance is among the best in the EU with regard to signing and ratifying multilateral environmental agreements.

Forests: EU Timber Regulation (EUTR)[181] / Forest Law Enforcement, Governance and Trade (FLEGT) Regulation[182]

Germany selects a number of operators every three months for checks, including detailed checking of shipments. Between March 2015 and February 2017, it conducted 309 checks on operators importing timber – a relatively low proportion of the estimated 25 000 such operators in Germany. There is no information available on the number of checks on operators that placed domestic timber on the EU market.

Germany has issued fines, confiscated timber and sent formal requests for business operation plans to operators who breached the EUTR, in particular the due diligence requirement. Operators found to be in breach of the EUTR are subject to follow-up checks.

Germany reported on cooperation (Article 12 EUTR) among its own competent authorities and with institutions in other EU countries, mostly as regards participation at FLEGT/EUTR Expert Group meetings and the *Ad hoc* Expert Group on FLEGT.

Genetic resources: Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising (ABS)[183]

Germany has designated its competent authorities and enacted sanctions for infringements of the EU ABS Regulation. It has submitted its due diligence declaration and first implementation report to the Commission. In 2018, Germany started its first compliance checks. It was the first EU Member State to receive a due diligence declaration and the first country worldwide to submit a checkpoint communiqué to the ABS Clearing House. With regard to cooperation (Article 12 EU ABS Regulation), Germany initiated a process for exchange of implementation experiences between competent authorities in the EU.

International wildlife trade: the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)[184]

Germany has established relevant national authorities to process (requests for) import, (re-)export and intra-EU trade documents on a regular basis. Reports on seizures of illegal shipments, in particular those reported every six months to TRAFFIC under its contract with the Commission and those exchanged through the EU-TWIX platform, testify to the activity of the customs authorities. In order to ensure full implementation of the

---

[176] European Commission, Digital Economy and Society Index Report 2018, Digital Public Services.

[177] *Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit*.

[178] *Die Bundesregierung, Förderberatung des Bundes*.

[179]Netzwerk ländlicher Raum

[180] UN General Assembly Resolution 72/277 and Organizational session of the ad hoc open-ended working group.

[181] Regulation (EU) No 995/2010.

[182] Council Regulation (EC) No 2173/2005.

[183] Regulation (EU) No 511/2014.

[184] The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

EU action plan against wildlife trafficking[185], Germany has launched capacity-building activities in support of enforcement agencies in non-EU countries, especially in Africa and Asia. Examples include the establishment of Africa Twix in Central Africa and financial contributions to the African Elephant Fund.

Sustainable development and the implementation of the UN SDGs

Sustainable development links environmental, social and economic policies in a coherent framework and therefore helps to implement environmental legislation and policies.

Germany adopted its first national sustainable development strategy (NSDS) in 2002[186] and has updated it on a regular basis, most recently in 2016 to align it with the SDGs[187].

An evaluation of the strategy was launched immediately after the completion of an international peer review in 2018. The review was coordinated by the Council for Sustainable Development (RNE), which is composed of 15 members from different sectors, advises the government on matters of sustainability and supports sustainable development by recommending fields of action and projects[188].

There are several mechanisms by which the NSDS feeds into public policymaking. The joint rules of procedure for federal ministries[189] require the ministries to subject new laws to a sustainability impact assessment. A Parliamentary Advisory Council for Sustainable Development [190] monitors the Government's sustainability policies and makes recommendations. Germany publishes regular updates and indicators on implementation of the SDGs[191].

National implementation of the UN 2030 Agenda for Sustainable Development is coordinated by the Federal Chancellery and all ministries are closely involved. In 2016, Germany was one of the first four EU countries to submit to the UN a voluntary national review on SDG implementation, which covers measures taken nationally and internationally[192].

As the NSDS is the Federal Government's strategy, it is not binding on the *Länder*. Nevertheless, cooperation between the two levels has been stepped up significantly. The *Länder* participated in the consultation process for the 2012 and 2016 progress reports.

While there are no specific funding programmes for SDG implementation, the BMU takes relevant action:

  − through its research plan, which allocates funds for research and development projects; and

  − by funding environmental organisations, climate initiatives and education for sustainable development.

---

185 European Commission, EU action plan against wildlife trafficking (COM(2016) 087).

186 Federal Government, information about policies for sustainable development.

187 Federal Government (2017), *Deutsche Nachhaltigkeitstrategie Neuauflage 2016*.

188 *Rat für nachhaltige Entwicklung*.

189 § 44(1) *Gemeinsame Geschäftsordnung der Bundesministerien*.

190 *Parlamentarischer Beirat für nachhaltige Entwicklung*.

191 Destatis, *Indikatoren der UN-Nachhaltigkeitsziele*.

192 UN, A voluntary national review on SDG implementation, Germany.