Natural capital

European Environment Agency

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Eutrophication of terrestrial ecosystems due to air pollution

Indicator	Indicator past trend		Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Exposure of terrestrial ecosystems to eutrophication due to air pollution	EU 	EEA 	Reduce areas of critical load exceedance with respect to eutrophication by 43 % from 2000 levels — Air Pollution Thematic Strategy	
The area where ecosystems are exposed to eutrophication because of excess atmospheric nitrogen deposition has decreased. According to a scenario assuming that current legislation is fully implemented, it will, nevertheless, fall short of the 2020 objective				

The Seventh Environment Action Programme (7th EAP) includes the objective of reducing the impact of air pollution on ecosystems and biodiversity, with the long-term aim of not exceeding critical loads and levels. Critical loads represent the upper limit of the levels of one or more air pollutants deposited to the Earth's surface that an ecosystem can tolerate without being damaged. Currently, the most important impact of air pollution on ecosystems and biodiversity is eutrophication. The EU Thematic Strategy on Air Pollution includes, as a long-term objective for 2020, a 43 % reduction in the areas or ecosystems exposed to eutrophication as a result of air pollution, i.e. areas where eutrophication critical loads are exceeded.

The EU ecosystem area where the critical loads for eutrophication were exceeded decreased to 63 % in 2010. The area in exceedance is projected to further decrease to 54 % in 2020 for the EU, assuming that current legislation is fully implemented. The reduction in ecosystem areas exposed to eutrophication as a result of air pollution is estimated to be approximately 31 % between 2000 and 2020 and is below the 43 % reduction milestone suggested by the air pollution thematic strategy for this period. The improvements are primarily a result of reductions in eutrophying nitrogen emissions to the air. However, these emissions and, in particular, ammonia (NH_3) and nitrogen dioxide (NO_2) emitted from the agriculture and transport sectors, respectively, will remain significant contributors to eutrophication caused by air pollution. The eutrophication reduction objective will therefore not be met unless further specific and targeted mitigation measures are put in place. Dietary changes resulting in less meat and dairy farming and the reduced use of petrol and diesel in cars could also contribute to reductions.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

The 7th EAP (EU, 2013) includes the objective of reducing the impact of air pollution on ecosystems and biodiversity, with the long-term aim of not exceeding critical loads and levels. Currently, the most important impact of air pollution on ecosystems and biodiversity is eutrophication caused by airborne nitrogen pollution. Excessive atmospheric deposition of nitrogen to ecosystems results in loss of sensitive species, increased growth of species that benefit from high nutrient levels, changes to habitat structure and function, the homogenisation of vegetation types, etc.

Policy targets and progress

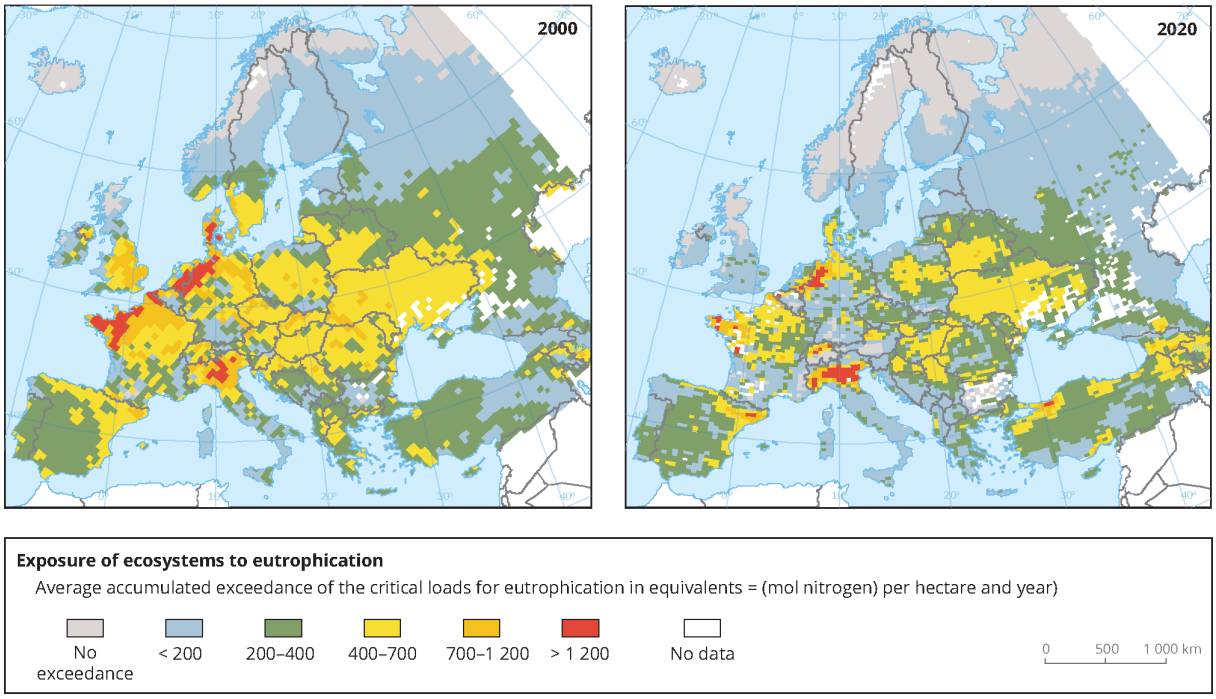
The EU Thematic Strategy on Air Pollution includes an objective for 2020, relative to 2000, of a 43 % reduction in areas or ecosystems exposed to eutrophication, i.e. areas where eutrophication critical loads are exceeded (EC, 2005a). The reference measure for this objective is the area in exceedance in 2000 (EC, 2005b). This is in line with the long-term objective of not exceeding critical loads.

In 2000, the area of ecosystems where the critical load was exceeded was about 78 % of the total in the EU Member States (approximately 60 % in all 33 EEA member countries for which data were available, including the 28 EU Member States) and decreased in 2010 to 63 % in the EU (55 % in all 33 EEA member countries). Assuming that current legislation is fully implemented, the area in exceedance is projected to be 54 % in the EU (48 % in all 33 EEA member countries) in 2020 (EEA, 2015). The reduction is approximately 31 % for the EU, as well as for all the 33

EEA member countries, between 2000 and 2020, which is below the 43 % reduction milestone suggested by the air pollution thematic strategy for this period.

Nevertheless, as illustrated in Figure 1, the magnitude (though not the area) of the exceedance is projected to reduce considerably in most areas, except for a few 'hot spot' areas, particularly in Belgium, Germany and the Netherlands, as well as in northern Italy. The risk of eutrophication increases slightly when only Natura 2000 protected areas are addressed (EEA, 2014).

Figure 1. Exposure of ecosystems to eutrophication – area and magnitude of exceedance in 2000 and 2020



Source: CCE (Coordination Centre for Effects), UNECE.

Note: The maps show areas where critical loads for eutrophication of freshwater and terrestrial habitats are exceeded

The main sources of eutrophication are emissions of nitrogen compounds to the atmosphere. Nitrogen oxide (NO_x) emissions for the EU decreased by approximately 43 % between 2000 and 2014 (EEA, 2016a). This reduction has been primarily due to the introduction of three-way catalytic converters for cars. However, emission reductions from modern vehicles have not been as large as was originally anticipated. Standard diesel vehicles, for example, can emit up to seven times more NO_x in real world conditions than in official tests (EEA, 2016b).

NH_3 emissions have not fallen by as much. In 2014, they had fallen by approximately 9 % compared with their value in 2000 for the EU. Agriculture dominates emissions of NH_3 (AIRS_PO3.2, 2016).[1]; they amount to approximately 95 % of total emissions in the EEA-33

region. Emissions primarily arise from the decomposition of urea in animal wastes and uric acid in poultry wastes.

A key driver behind the observed reductions was the implementation of the National Emission Ceilings Directive (EU, 2001), which regulates, inter alia, emissions of the eutrophying air pollutants NO_x and NH_3. However, eutrophying emissions not only from the agriculture and road transport sectors but also from shipping and air travel have been and will remain significant contributors to eutrophication caused by air pollution.

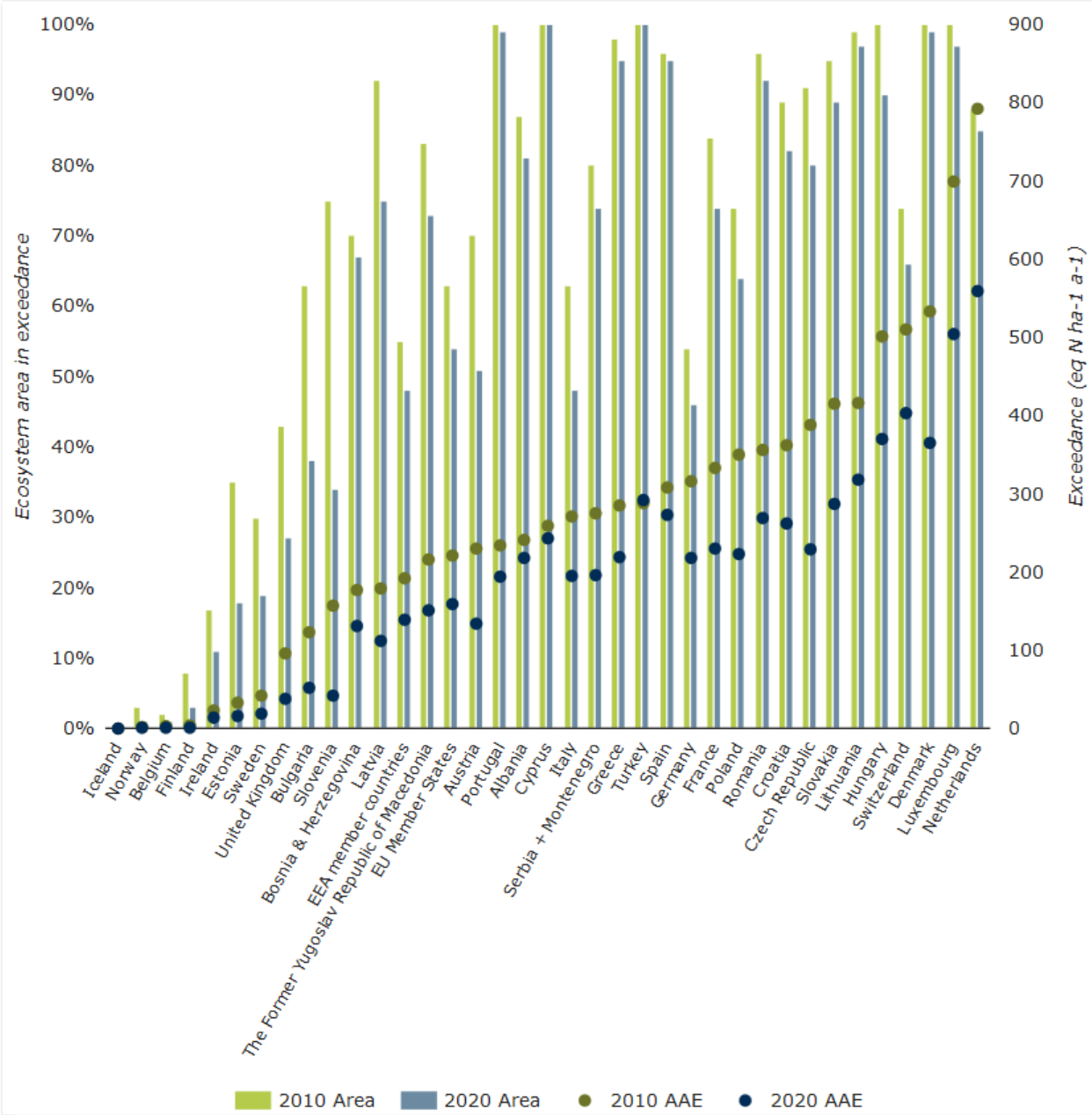
Further reductions in eutrophying air pollutant emissions are expected, inter alia, as a result of the 2012 amended Gothenburg Protocol, which sets air pollutant emission ceilings for 2020 (UNECE, 2012). Nevertheless, as illustrated by the results of the current legislation scenario (Figure 1), the decreases anticipated for 2020 are not expected to contribute sufficiently to reductions in the ecosystem area exposed to excess nitrogen deposition and affected by eutrophication. In 2020, more than 50 % of the ecosystem areas are expected to be at risk of eutrophication in the EU.

The 2020 thematic strategy objective will therefore not be met unless additional measures to mitigate nitrogen emissions are introduced, through further specific and targeted (technical) measures, particularly in the agriculture and transport sectors. Dietary changes resulting in less meat and dairy farming and the reduced use of petrol and diesel in cars could also contribute to reductions.

Country level information

Figure 2 shows the percentage of the area by country where the critical loads for eutrophication were exceeded in 2010 and the areas where exceedance is expected in 2020. Although a decrease is predicted by 2020, if current legislation is implemented, the area showing exceedance will be above 50 % in most countries (see bars). Extremely high magnitudes of exceedance can be found in Denmark, Hungary, Luxembourg, the Netherlands and Switzerland, caused by high deposition rates and/or ecosystems that are very sensitive to an excess supply of nitrogen from the atmosphere (see dots), for example nutrient-poor grasslands.

Figure 2. The ecosystem area at risk of eutrophication and the magnitude of exceedance in each country



Note: AAE is the average accumulated exceedance, showing the magnitude of exceedance in equivalents (mol nitrogen/ha per year). The data are based on the revised Gothenburg Protocol emission reduction agreements of 2012 (assuming for the 2020 scenario that current legislation is fully implemented). Data for Serbia and Montenegro are presented as aggregated data.

Outlook beyond 2020

The updated air pollution strategy proposed by the European Commission in late 2013 aims to achieve a situation in which the EU ecosystem area exceeding critical loads for eutrophication is reduced by 35% by 2030, relative to 2005 (EC, 2013). This target would not be met if only current legislation was fully implemented. In the EU, the area at risk of eutrophication is projected to decrease only slightly by 2030. The 35 % reduction target would be met in 2030 if the maximum number of technically feasible reduction measures was implemented (EEA, 2015).

As part of the air pollution strategy package, the European Commission has put forward a revised National Emission Ceilings (NEC) Directive. This proposes more ambitious national commitments to reduce emissions, compared with the current Directive (EC, 2001), for the two eutrophying air pollutants, NO_x and NH_3, among other things. These new ceilings will be applicable from 2020 and 2030 and will contribute to the achievement of the objective of 35% by 2030.

Beyond 2030, a time horizon of 2050 has been proposed as an aspirational year in which to achieve Europe's long-term objectives, i.e. that air pollution does not lead to unacceptable harm to human health and the environment.

About the indicator

The indicator shows area and quantitative information for ecosystems where atmospheric nutrient nitrogen deposition is above the critical load. A critical load is a "quantitative estimate of an exposure to one or more pollutants, below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge" (UNECE, 2015). Deposition loads of eutrophying airborne pollutants above the critical loads are termed an 'exceedance'.

Exposure in an ecosystem for which information on critical loads is available, is calculated as the average accumulated exceedance (AAE). The AAE is the area-weighted average of exceedances, accumulated over all sensitive habitats (or ecosystem points) defined in a grid cell.

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AIRS briefings

1. AIRS_PO3.2, 2016, Air pollutant emissions

> Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency

Agricultural land: nitrogen balance

Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Gross nutrient balance in agricultural land: nitrogen		Manage the nutrient cycle in a more sustainable way (nitrogen) — 7th EAP	
Overall, the agricultural nitrogen balance shows an improving trend. However, on average, the EU still has an unacceptable level of nitrogen losses from agricultural land to the environment and further efforts are needed to manage the nutrient cycle for nitrogen sustainably in the EU			

The Seventh Environment Action Programme (7th EAP) calls for further efforts to manage the nutrient cycle in a more sustainable way and to improve efficiency in the use of fertilisers. Currently, nitrogen losses from agricultural land, namely from fertiliser use, to the environment have a significant negative impact on biodiversity and ecosystems. These nitrogen losses to the environment in the EU have decreased considerably over the period examined (2000–2013), with expected positive effects on soil, water and air quality and, consequently, on biota and ecosystems. The causes of these improvements include nitrogen management practices; of these, the most important are changes in fertiliser application techniques. However, on average, the EU still has an unacceptable surplus of nitrogen in agricultural land in view of the consequent losses to the environment, and further efforts are needed to manage the nutrient cycle for nitrogen in a sustainable way in the EU.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

The 7th EAP (EU, 2013) calls for further efforts to manage the nutrient cycle in a more sustainable way and to improve efficiency in the use of fertilisers. Excessive nutrient losses affect soil, air and water quality, have a negative impact on ecosystems and have the potential to cause significant problems for human health. This nutrient pollution also results in significant economic losses and increased costs for society (e.g. in relation to tourism and recreation, human health and drinking water treatment). If not applied correctly (e.g. taking account of weather conditions, stage of crop growth, dosage, etc.), fertilisers cause excess nutrients to be released to the wider environment by run-off into surface water (AIRS_PO1.9, 2016).[1] or leaching into groundwater. Eutrophication caused by excess nutrients can result in increases in weeds and algae, reduced oxygen levels and subsequent biodiversity loss. These impacts can be reduced by balancing nutrient inputs with the outputs of the agricultural system (i.e. nutrients contained in grazed and harvested crops) in order to limit nutrient losses to the environment. Both nitrogen and phosphorus are important sources of nutrient pollution, although, nitrogen losses are currently the most significant nutrient losses, in particular from agricultural production that have a negative impact on ecosystems. Therefore, this briefing focuses on the nitrogen balance in agricultural land.

Policy targets and progress

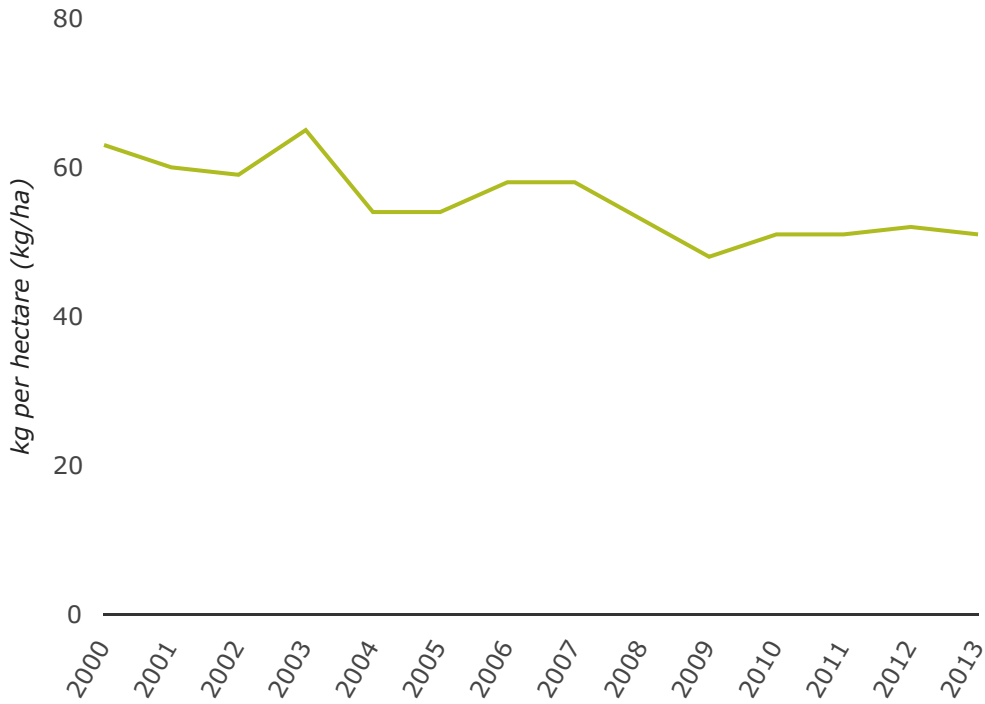
There are no environmental acquis objectives that match the 7th EAP objective of managing the nutrient cycle in a more cost-effective, sustainable and resource-efficient way. Nevertheless, several directives relate to the nutrient cycle. The EU Nitrates Directive (EU, 1991) aims to reduce water pollution by nitrates from agricultural sources and prevent pollution of ground and surface waters. To achieve this, the Directive sets legally binding maximum concentrations of nitrates in drinking water, limits the annual application of nitrogen fertiliser and livestock manure and designates periods during which nitrogen application is prohibited. There are several other EU directives that are relevant to the impact of excessive nutrient use in agriculture, namely the EU Water Framework Directive (EU, 2000) through its legal obligation to protect and restore the quality of all inland and coastal waters across Europe, the Directive on Sewage Sludge (EU, 1986) through its regulation of the use of sewage sludge in agriculture, as well as legal instruments of the Common Agricultural Policy (CAP), which encompass environmental requirements (cross-compliance) and targeted environmental measures that form part of the Rural Development Programmes. Achieving a gross nutrient balance that implies acceptable losses to the environment, although not a stated aim of these directives, is a key contributor to achieving some of the aims of these directives.

In the period between 2000 and 2013, the gross balance between nitrogen added to and removed from agricultural land in the EU showed an improving trend (Figure 1), meaning that

the gap between inputs and outputs is closing and, therefore, the overall nitrogen balance is improving. The surplus of nitrogen applied to agricultural land fell by about 19 %, from 63 kg per hectare in 2000 to 51 kg per hectare in 2013 (Figure 1).

The causes of these improvements include nitrogen management practices; of these, the most important are changes in fertiliser application techniques (Eurostat, 2015) as a result of the implementation of specific measures of the Common Agricultural Policy and EU legislation.

Figure 1. Gross nitrogen balance, EU



Data sources: Eurostat. Gross nutrient balance on agricultural land

Assessing whether the nitrogen cycle is managed sustainably holds many challenges, and determining a sustainable level of nitrogen balance is not trivial. A zero balance for nitrogen might not be realistic because of the inevitable losses of nitrogen to air (mainly ammonia) and water (mainly nitrate). The main focus should be on reducing losses to the minimum level possible — for instance through resource-efficient agricultural practices — and on reaching a better understanding of acceptable losses of these nitrogen compounds to the environment. This can be estimated through a critical loads (inputs) approach, which is a quantitative estimate of the upper limit of pollution exposure at which harmful effects to the environment (water,

ecosystems, species) can be avoided. Work is ongoing to improve our understanding of critical loads for the EU's ecosystems (EEA, forthcoming).

When considering critical loads of nitrogen in surface water and in air with respect to biodiversity (habitat quality) in 2010 (EEA, 2015a; EEA, forthcoming), the amounts of nitrogen applied to the system were found to still substantially exceed acceptable inputs and related losses, despite the decreasing trend in the nitrogen balance. This is confirmed by the reported eutrophication pressure on the EU's protected species and habitats (EEA, 2015b) (AIRS_PO1.7, 2016)[2], (AIRS_PO1.8, 2016).[3]

Reductions in fertiliser use and livestock numbers are helping to improve the nitrogen balance, but agriculture remains an important source of nitrogen in surface waters (EU, 2010). Agriculture, particularly runoff from agricultural land, is typically contributing 50 – 80 % of the total nitrogen load in European surface waters (EEA, 2005), affecting nitrogen levels in freshwater (EEA, 2015c) and transitional, coastal and marine waters (EEA, 2015d). Mineral fertilisers deliver on average slightly more than 45 % of the nitrogen input in the EU, while nearly 40 % comes from organic fertilisers, i.e. manure (EEA, forthcoming).

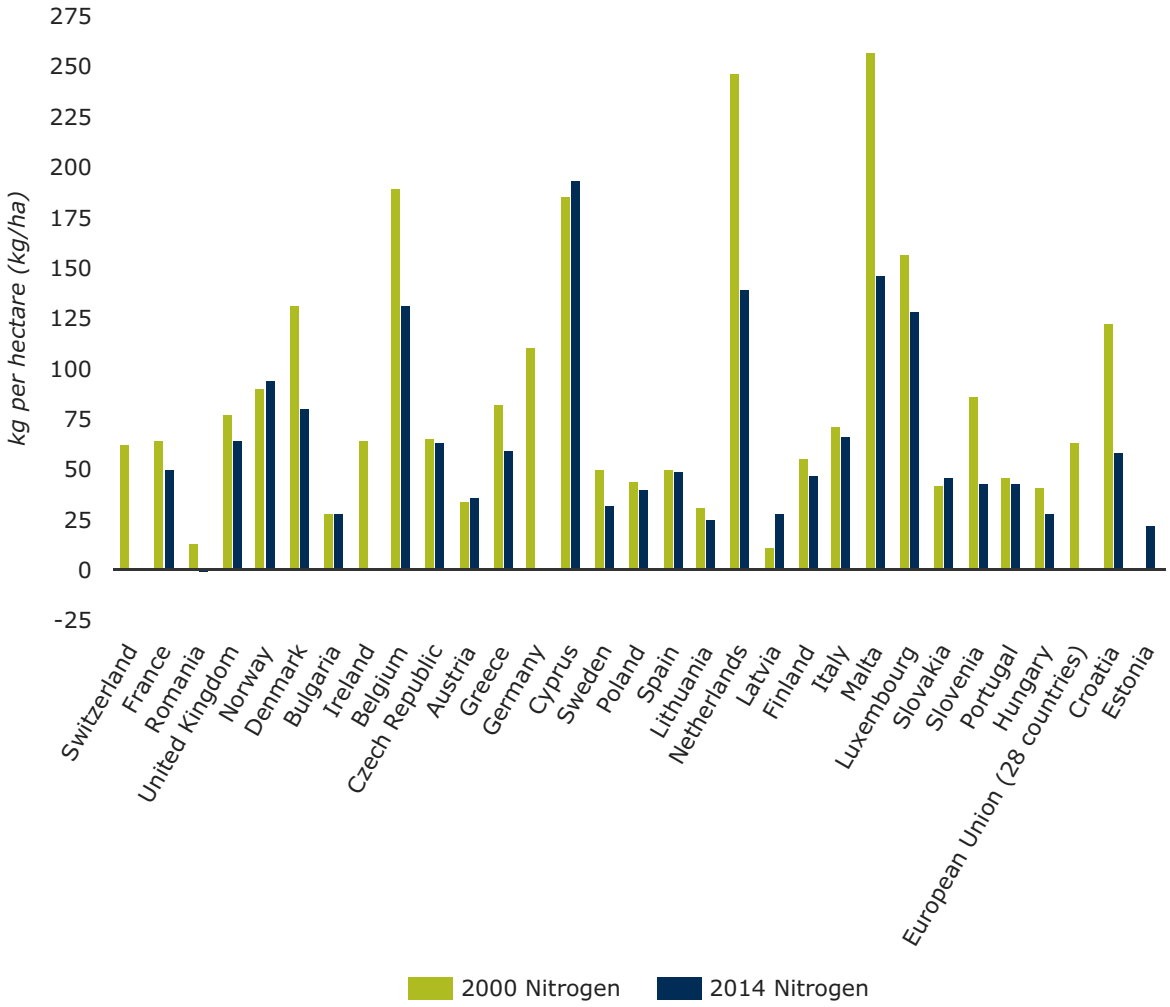
Within the EU, mineral fertilisers are applied to agricultural soils mainly as straight nitrogen fertilisers in the form of ammonium nitrate. Since the 1990s, although the total agricultural surface area has decreased, the area of certain crops that receive high application rates of ammonium nitrate, such as wheat and oilseed rape, has increased. Nitrogen in mineral fertilisers is particularly soluble to facilitate uptake by crops, but this also makes it susceptible to run-off following heavy rainfall and to leaching to groundwater (Eurostat, 1999). In countries with intensive livestock production, critical losses to water and air (with related effects on biodiversity) occur predominantly as a result of excess manure inputs (EEA, forthcoming). Manure inputs, in particular, contribute to ammonia (NH_3-N) emissions.

In conclusion, overall, the agricultural nitrogen balance shows an improving trend. However, on average, the EU still has an unacceptable surplus of nitrogen in agricultural land in relation to losses to the environment, so further efforts are needed to manage the nutrient cycle for nitrogen in a sustainable way in the EU.

Country level information

Agricultural nitrogen balances show an improvement from 2000 to 2013 in the majority of European countries, with the exception of some countries: Austria, Czech Republic, Latvia, Lithuania, Norway, Poland, and Slovakia (Figure 2).

Figure 2. Gross nitrogen balance, by country



Note:
Due to methodological issues or missing data, balances have been estimated by Eurostat for: Malta, Belgium, Denmark, Cyprus, Italy, Spain, Luxembourg, France, Lithuania, Latvia, Bulgaria, Romania, and Greece. The results of these countries can only be regarded as a rough indication of the gross nitrogen balance.

Data sources: Eurostat. Gross nutrient balance on agricultural land

In most countries, implementation of the Nitrates Directive and other agricultural improvements has tended to stabilise or reduce nitrogen inputs, potentially reducing environmental pressures (Eurostat, 2015).

Although decreasing in most Member States, agricultural nitrogen surpluses are still high in some parts of Europe, in particular in Western Europe and in some Mediterranean countries. Even in countries with low national averages, there can be regions with high loadings, depending on agricultural intensity, including livestock density.

Outlook beyond 2020

Future trends in the use of mineral fertilisers will depend on a number of factors, in particular on future EU agricultural and environmental policies. According to the Food and Agriculture Organization of the United Nations (FAO), while fertiliser use is set to decline marginally in western Europe until 2018, it is set to increase in central and eastern Europe, mainly because of an increase in ammonia production capacity (ammonia is used to produce fertilisers) in eastern Europe (FAO, 2015), which is likely to increase fertiliser production, with the subsequent risks of excessive nutrient application.

Some of the actions likely to influence nutrient use in EU countries result from further uptake of agri-environmental measures that focus on the reduction of inputs. These include measures to further implement the Nitrates Directive and increased use of soil sampling and fertiliser advice programmes to encourage the trend towards optimal application.

About the indicator

The indicator estimates the potential surplus (or deficit) of nitrogen in agricultural land. It calculates the balance between nitrogen added to an agricultural system and nitrogen removed from the system annually in kilograms of nitrogen per hectare of agricultural land. The input side of the balance counts mineral fertiliser application and manure excretion as well as atmospheric deposition, biological fixation and biosolids (compost, sludge and sewage) input, while the output side of the balance represents the removal from grassland (grazing and mowing) and the net crop uptake (removal) from arable land. The gross nitrogen balance takes an 'extended soil' surface or 'land' surface as the system boundary, meaning that it also includes the nitrogen losses from animal housing and manure management (e.g. storage) systems.

The data used are partly based on experts' estimates of various physical parameters for the country as a whole. Differing assumptions mean that the balances should only be considered as consistent within a country and that comparison between countries should be made with caution. There may also be large regional variations within a country, and therefore national figures should be interpreted with care. In fact, gross nitrogen balance calculations are available up to NUTS 3 level (NUTS is the Nomenclature of Territorial Units for Statistics). Further downscaling is possible but introduces additional uncertainty in the data. Nevertheless, higher resolution data provide an insight into the variations and intensity of regional and local nitrogen losses, and subsequent negative impacts on regional and local ecosystems and biodiversity.

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AIRS briefings

1. AIRS_PO1.9, 2016, Surface waters

2. AIRS_PO1.7, 2016, EU protected species

3. AIRS_PO1.8, 2016 EU protected habitats

> Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency

Urban land expansion

Indicator	Indicator past trend		Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Land take	EU 	EEA 	Keep the rate of land take below 800 km^2 on average per year from 2000–2020 in order to keep on track to achieve the aim of no net land take by 2050 — Resource Efficiency Roadmap	
The EU annual average land take from 2000–2012 was above the 800-km^2 milestone. Nevertheless the average annual land take in 2006–2012 was less than in 2000–2006. It is uncertain if a further reduction will take place and at what rate				

The Seventh Environment Action Programme (7th EAP) includes an objective that land is managed sustainably, and promotes the objective of no net land take by 2050. Losing land to the development of buildings and other artificial surfaces affects biodiversity and the delivery of ecosystem services. Between 2000 and 2012, the average area of land taken each year for development in the EU was estimated at 888 km^2. This is above the 800 km^2 per year for 2000–2020 that was identified in the Roadmap to a Resource Efficient Europe as an upper benchmark in order to stay on target to achieve no net land take by 2050. Key drivers behind land take have been increasing urbanisation and related economic activity, and increased mobility. The average estimate of annual land take in the latest assessment period (2006–2012) was 845 km^2 per year. This is an improvement compared with the 930 km^2 per year estimated for 2000–2006. It is uncertain whether a further reduction will take place during the next assessment period (2012–2018) and at what rate, particularly if the return to economic growth, with consequent pressure on land, continues.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

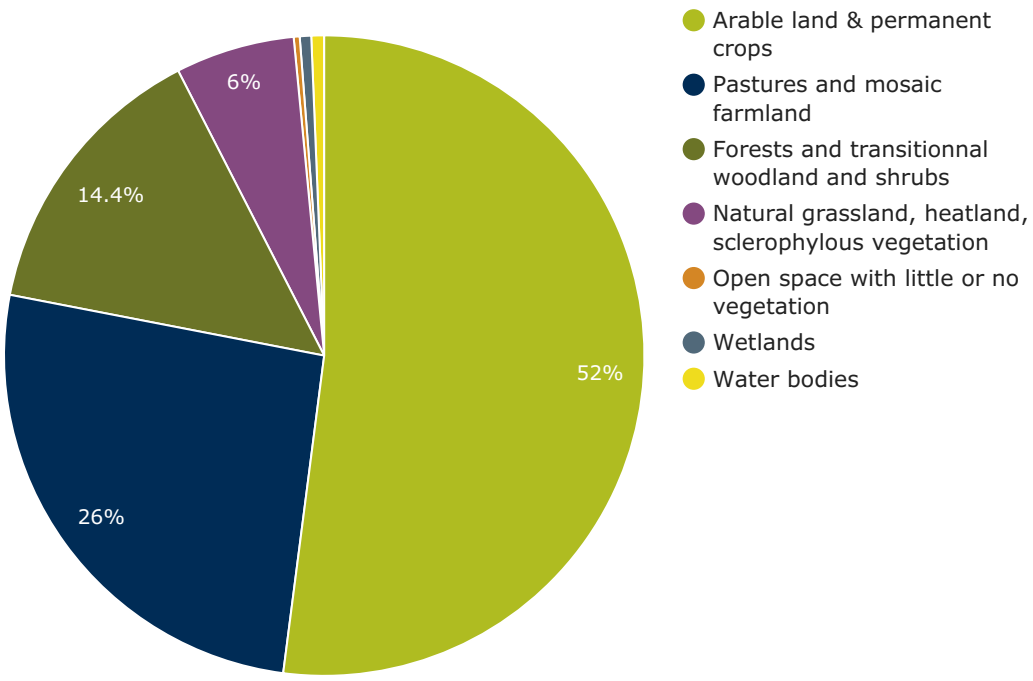
The 7th EAP includes an objective that land is managed sustainably, and promotes the objective of no net land take by 2050 (EU, 2013). Agricultural land and, to a lesser extent, forests and other semi-natural and natural areas are lost to the development of buildings and other artificial surfaces. This leads to loss of fertile land and affects biodiversity, as it decreases habitats, the living space of important species, and fragments the landscapes that support and connect them. Land occupied by man-made surfaces and dense infrastructure is also a significant source of water, soil and air pollution. The sealing of land by these surfaces can also negatively impact the water balance and increase the frequency and intensity of flooding. Land take is also a matter of land use efficiency and an aspect of a wider land degradation issue, addressed by the United Nations (UN) Sustainable Development Goals, particularly goal 15.3 on land.

Policy targets and progress

There is no specific objective in the environmental acquis that matches the 7th EAP objective of sustainable land management, and promotion of no net land take by 2050. However, the Roadmap to a Resource Efficient Europe (EC, 2011) states that 'if we are to reach the state of no net land take by 2050, following a linear path, we would need to reduce land take to an average of 800 km^2 per year (for the EU) in the period 2000–2020'. This average figure is used in this briefing as the benchmark to assess progress. In the 2000–2012 period, for the EU the estimated average annual land take was 888 km^2 (EEA, 2016), which is considerably above the level required to achieve the long-term objective of 'no net land take'. However, estimated average annual land take has decreased from 930 km^2 per year in the 2000–2006 period to 845km^2 per year in the subsequent 2006–2012 period (EEA, 2016).

Based on the average for the EU-28, 52 % of all areas that changed to artificial surfaces were arable land or permanent crops in 2006 (47 % for the EEA-33) (Figure 1). Pastures and mixed farmland were, on average, the category of land that was the next most taken, representing 26 % of the total (27 % for the EEA-33), while forests and transitional woodland shrub made up 14 % (16 % for the EEA-33). As these land cover types are substituted to varying degrees by impervious cover, the provision of important services provided by soils, such as storing and filtering water, and the transformation of nutrients and contaminants deteriorates. This specific issue is discussed in more detail in the soil section of the recent SOER 2015 (The European environment — State and outlook 2015; EEA, 2015).

Figure 1. Relative contribution of land-cover categories lost to uptake by urban and other artificial land development (2006-2012), EU

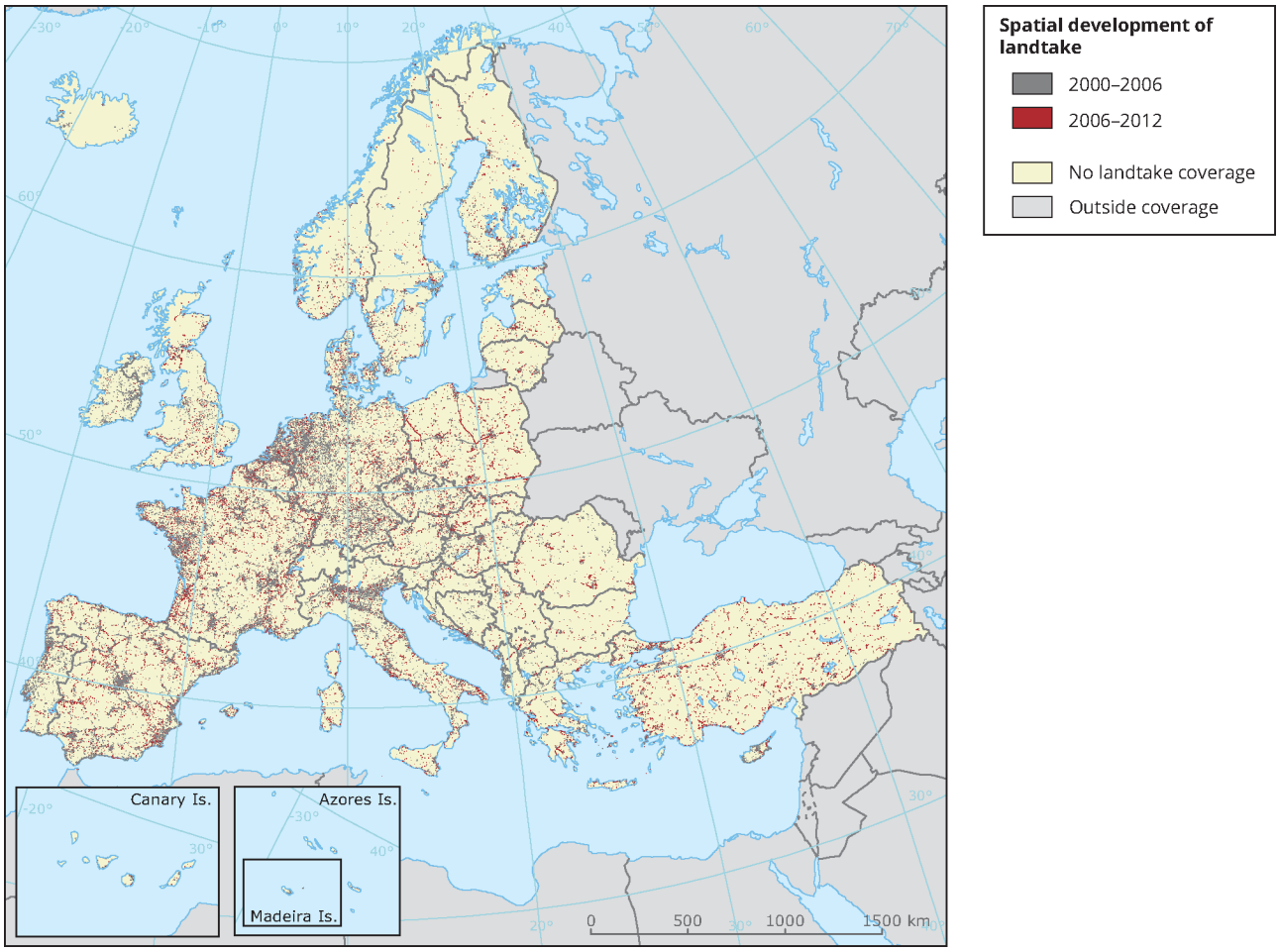


Data sources: EEA. Corine Land Cover 2006 - 2012 changes (Copernicus)

From the perspective of the types of development that occur on the land that is taken, at the EU level the largest area, 32 %, was taken by construction sites between 2006 and 2012. These sites represent transitional areas that will turn into some form of urban development in the future. The second largest area, 23 %, was taken for industrial and commercial sites. Housing, services and recreation made up 20 % of the overall increase in urban and other artificial areas. The proportion of newly created mines, quarries and dumpsites was 18 % in the EU-28. Although land take for transport infrastructures is underestimated in the Corine Land Cover dataset, it still covered 7 % of the area taken. A similar pattern emerges when looking at all 33 EEA member countries (EEA, 2016).

Land use in Europe is shaped by the links between economic activity, increased mobility and growth in transport infrastructure and a number of other drivers, such as the increasing demand for living space per person. Regional urbanisation rates vary substantially, with coastal and mountainous regions among the most affected because of the increasing demand for artificial surfaces related to transport, recreation and leisure in these areas (see Figure 2).

Figure 2. Spatial development of land take in EEA member and cooperating countries



Data source: EEA, Spatial development of landtake

As the proportion of land used for production (agriculture, forestry, etc.) in Europe is one of the highest in the world, conflicting land use demands require decisions that involve difficult trade-offs. The decisions on trade-offs between land uses are effectively implemented through spatial planning and land management practice in the individual countries. Although the subsidiarity principle assigns land and urban planning responsibilities to national and regional government, most European policies have a direct or indirect effect on land planning and urban development. Where properly implemented, the Strategic Environmental Assessment (SEA; EC, 2001) and Environmental Impact Assessment (EIA; EC, 2014) Directives can improve the consideration of environmental aspects in spatial planning.

The average annual land take between 2000 and 2012 lay above the trajectory required to achieve the long-term goal of no net land take. However, annual land take declined between the 2000–2006 and 2006–2012 observation periods. If the amount of land taken reduces significantly

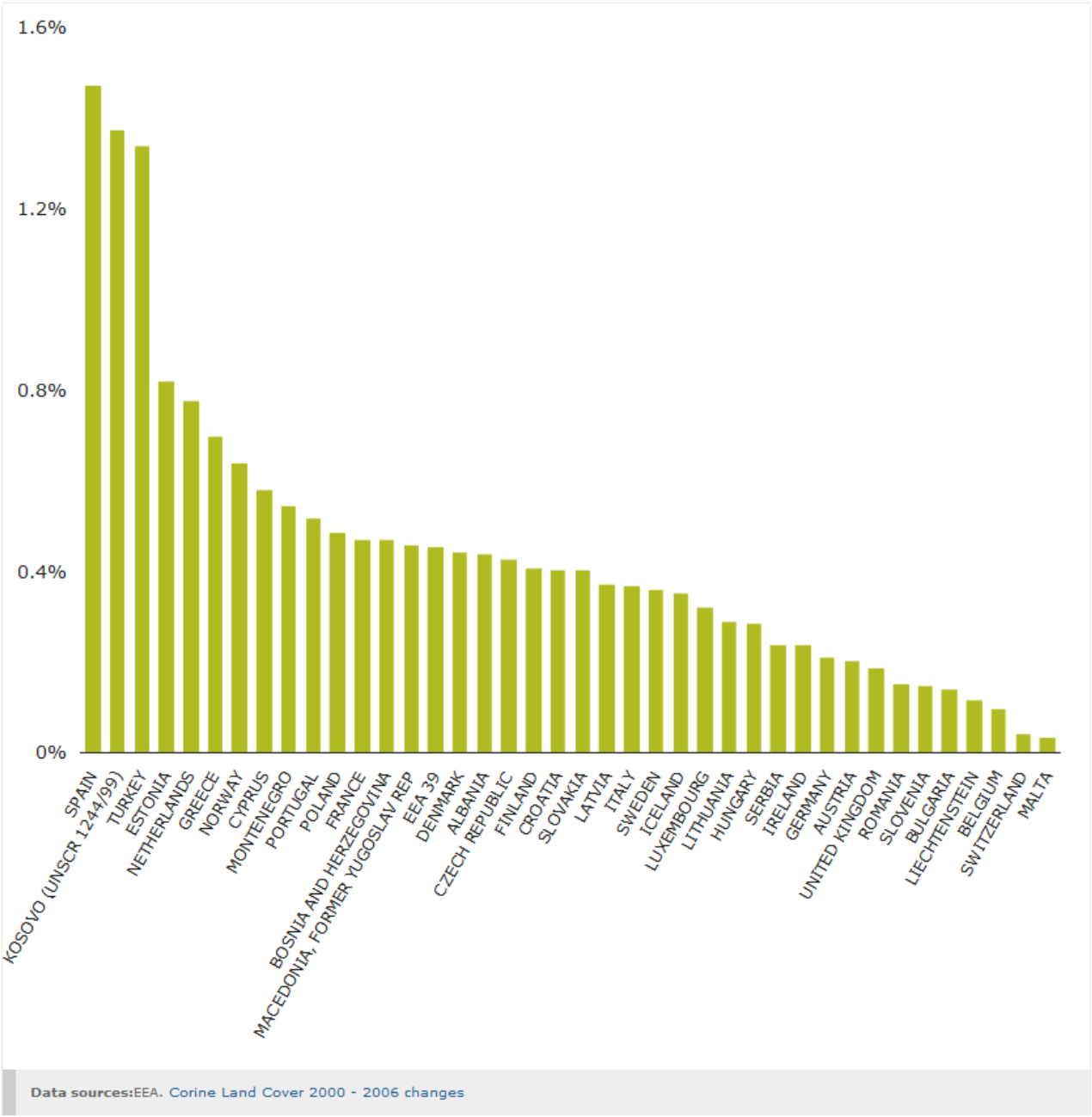
during the next observation period, Europe could reach the required trajectory. However, it is uncertain whether a further reduction will take place and at what rate, particularly given the recent period of economic recovery following the economic downturn. The outlook to 2020 therefore remains uncertain.

One way to reduce the rate of land take in future is through the redevelopment of brownfield land. Brownfield sites are derelict and underused or even abandoned former industrial or commercial sites, which may have real or perceived contamination problems (EC, 2012). These sites are mainly found in urban areas of industrialised regions. Redevelopment of brownfield sites gives many environmental advantages: relieving pressure on rural areas and greenfield sites, reducing the costs of pollution, allowing more effective use of energy and natural resources and facilitating economic diversification. Another way to reduce the rate of land take in future is by higher density development, i.e. more buildings or a higher population on a given area of land (EEA, forthcoming).

Country level information

Figure 3 shows the mean annual rate of land take in EEA member and cooperating countries (EEA-39) between 2006 and 2012. The graph ranks countries on the basis of increases in land take as a percentage of the initial artificial land stock in 2006. Perhaps surprisingly, the countries with the highest percentage of land take include those that are already highly urbanised and therefore had an already high initial percentage of artificial land stock in 2006. Countries that enjoyed strong economic growth between 2006 and 2012 also had high levels of land take, indicating the need for further decoupling.

Figure 3. Mean annual land take per EEA-39 country, 2006–2012, as a percentage of 2006 artificial land



Data sources: EEA. Corine Land Cover 2000 - 2006 changes

Outlook beyond 2020

If the urban population of Europe continues to grow, the pressure to develop on natural and semi-natural land will continue. If the objective of 'no net land take by 2050' is to be met, new developments in future should increasingly have to either take place on brownfield land or fill in gaps between existing developments (densification), or land take should have to be compensated for by reclaiming of artificial land back to arable or semi-natural land cover types. Such developments could be driven by establishing incentives for 'land recycling', e.g. encouraging developers to use brownfield land or encouraging spatial planning that favours increasing urban density. The extent to which land take can be reduced in the longer term will also be influenced by the ability of the EU and individual Member States to coordinate their spatial planning and environmental protection objectives.

About the indicator

The indicator shows the amount of land that is converted from natural and semi-natural areas, including forested and agricultural areas, to artificial surfaces used for urban and economic purposes. It includes areas sealed by the construction of buildings and infrastructure, as well as surface mining, urban green areas and sport and leisure facilities.

The indicator is based on the interpretation of satellite imagery from 1990, 2000, 2006 and 2012 (the most recent). The main dataset (Corine Land Cover) used by the indicator does not map features with an area less than 25 ha (5 ha for change) and less than 100 m across. This leads to the exclusion of small areas of land and small changes due to man-made features, particularly in the peri-urban countryside, and it also means that most land taken by linear transport infrastructure (e.g. roads and railways) is not captured, as it is too narrow to be picked up. On the other hand, land take areas accounted for contain unsealed surfaces such as suburban gardens and other smaller green plots.

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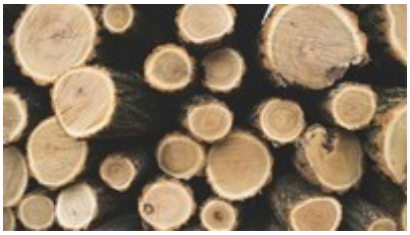
Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency

Forest utilisation



Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Forest: growing stock, increment and fellings		Forest management is sustainable — 7th EAP (focus solely on forest utilisation)	
Since 1990, EU forests overall have been harvested at a lower rate than they have grown (at around 60 – 70 %), indicating sustainable forest management in relation to the forest utilisation rate. Despite expected increased harvesting of forests, the overall forest utilisation is expected to remain sustainable up to 2020			

The Seventh Environment Action Programme (7th EAP) includes an objective that forests be managed sustainably. One aspect of sustainability is the sustainable use of forest resources. The utilisation rate of forests describes how much of the forest has been harvested in relation to its increase in growing stock. More explicitly, this indicator expresses the ratio between the felling of trees and the annual increment (in terms of forest volume on forest land available for wood supply). This ratio is commonly used as a proxy for the sustainable production and use of forest resources. Forest utilisation rates below 100 % indicate that the amount of timber taken out of the forest is in balance with what is left within the forest. Since 1990, the utilisation rate has remained around 60 – 70 % for the EU. It is likely that the utilisation rate will increase in the coming years because of increased harvesting of forests to meet increased demands for wood and because of the older age-class structure of forests in Europe. Nevertheless, it is not expected that the average utilisation rate of forests will increase above 100 %.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

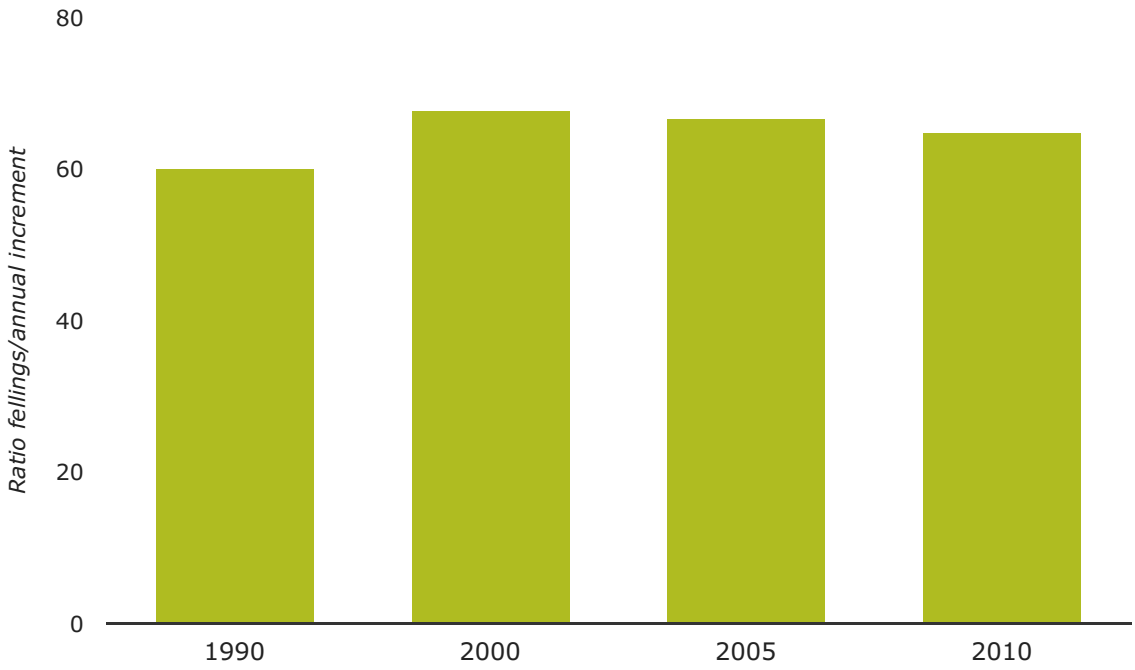
The 7th EAP sets out to ensure that 'forest management is sustainable' by 2020 (EU, 2013). Sustainable forest management means 'using forests and forest land in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems' (EC, 2013). Forests are essential natural resources hosting a major part of the biodiversity in Europe. Forests also sequester and store carbon, filter water and provide recreational opportunities. This briefing focuses on one aspect of sustainable forest management, namely forest resources, in terms of how the forest utilisation rate affects the forest growing stock. This is used as a measure of the sustainability of the production and use of forest resources and thus the pressure from society and human demand for wood. The utilisation rate does not reflect the structures and processes necessary to maintain biodiversity and the various forest ecosystem services.

Policy targets and progress

The environmental acquis does not include a specific target addressing sustainable forest management and the EU does not have a common forest policy. Forest sustainability and environmental issues are, nevertheless, embedded in almost all the nature and environmental policies of the EU. The EU Forest Strategy (EC, 2013) aims to coordinate these forest-related policies and to identify the key principles that are needed to ensure the sustainability and multifunctionality of forests in Europe. The strategy will be reviewed in 2018 in order to assess progress in its implementation.

Figure 1 shows that the forest utilisation rate (the ratio between the felling of trees and their annual growth) for the EU has remained relatively constant during the period examined (1990–2010). On average, the indicator stayed well below 100 %, varying between 60 % and 68 % (Forest Europe, 2015; EEA, 2016).

Figure 1. Forest utilisation rate, EU



NOTE: The indicator covers only the following 22 countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

Data sources: Forest Resources Assessment. Forests in the ECE region: Trends and challenges in achieving the global objectives on forests, United Nations, Geneva

The forest utilisation rate reflects the development of felling as well as the development of annual increment. Both components of the indicator have increased over the period examined (Forest Europe, 2015; EEA, 2016). The demand for wood has been increasing. The forest area in the EU has increased by 13 million ha since 1990 (8 %). The growing stock has also expanded by 7.4 million m^3 (38 %) over the period examined. This increase in growing stock is not only linked to the increase in forest area but also to a number of other reasons across the EU, in particular increased growth rates, low levels of harvesting and increased focus on multifunctional use of forests (ecosystem services from forests).

The expected trend in the EU is an overall increased use of renewable materials and energy as well as the use of forests to provide other ecosystem services. This may mean use of more wood extracted from forests in the EU. Views on the use of wood as renewable biomass are under revision, as the carbon neutrality as well as the resource efficiency of such a use of wood have been questioned. The forest area is expected to remain stable or slightly increase. The growing stock is also expected to stay relatively stable overall, but with regional differences. The expected trend by 2020 may be a slight short- to medium-term increase in the forest utilisation

rate indicator to meet increased demands and due to the maturing age structure of forests in Europe. Overall, despite expected increased harvesting of forests, overall forest utilisation is expected to remain less than 100 %, so it is considered sustainable.

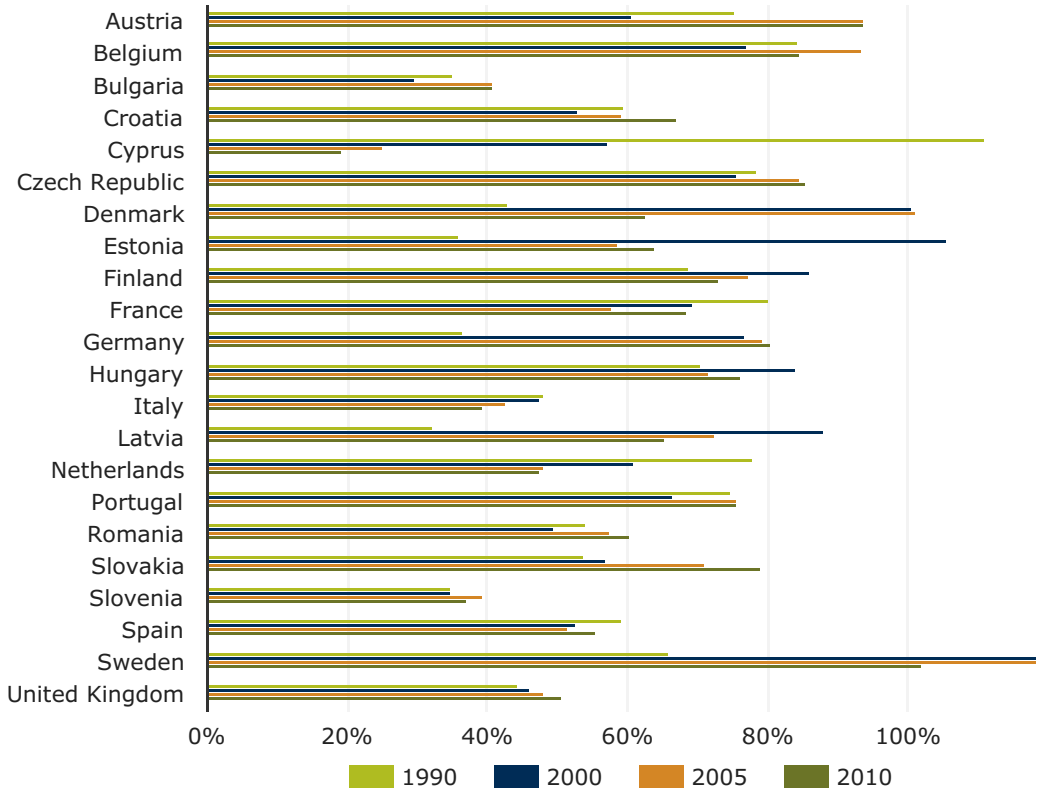
Country level information

Twenty-two EU countries reported on their forest utilisation rates in the 1990–2010 period (Forest Europe, 2015). The information underpinning this indicator has not been updated since 2010. In most countries that reported their forest utilisation rate, it remained below 100 % for the 1990–2010 period (Figure 2).

Forest utilisation rates vary widely across the countries and over time, from 25 % to more than 100 %. Some countries have experienced severe storms in recent decades, which caused large natural losses as well as reductions in increment. This partly explains some of the high utilisation rates of some countries.

It should be stressed that medium- or short-term exceedance of the forest utilisation rate does not necessarily mean that the use of forest resources is unsustainable, as it may reflect harvesting of mature stands or severe storms, for example. From a sustainable forest management perspective, it is the long-term utilisation rate of forests that should stay below 100 %.

Figure 2. Forest utilisation rates



Note:
Only the 22 EU countries with complete time series for the 1990-2010 period are included.

Data sources: Forest Resources Assessment. UNECE - FAO Forest resources assessment

Outlook beyond 2020

The outlook for the forest utilisation rate indicator will depend on the demand for biomass as a renewable energy source (UNECE and FAO, 2011). Biomass demand is expected to increase beyond 2020 as part of the EU's efforts to transition to a low-carbon economy by 2050 (EC, 2011) and in line with the 7th EAP's 2050 low-carbon economy vision. An increased demand for biomass could increase the demand for wood and with this the utilisation rate unless the annual increment also increases (Berndes et al., 2016).

However, some stakeholders consider that the use of wood directly from the forest for renewable energy may not be resource efficient (Berndes et al., 2016). Forest industries are concerned about whether or not the demand for other forest products and resources can be met. Nevertheless, the majority of wood biomass comes from residue feedstocks in a cascading use of wood. The use of wood is likely to be even more resource efficient if considered as a component of a circular economy. Such resource efficiency might also have an impact on the amount of harvested wood needed to meet society's needs for timber and fuel (Berndes et al., 2016).

Climate change is also a factor that will affect the composition and distribution of current forest resources. Desertification is expected to spread in the south of Europe while forest cover is projected to increase with higher altitudes and latitudes. The resulting impact of climate change on forest utilisation rates has not been explored.

Overall, the expected outlook is an increased forest utilisation rate; however, it is not expected to increase beyond 100 % in the long term.

About the indicator

The forest utilisation rate is the ratio between the annual volume felled and the volume of annual growth in the stock of living trees. The ratio is used widely to assess the current and future availability of wood. A ratio below 100 % indicates that the growing stock, the timber reserve, is stable. In the long term, the volume felled must not exceed the volume of growth. However, the indicator needs cautious interpretation, as it depends directly on the volume of annual growth. Average annual increment is calculated as the increase in growing stock volume over a year. An increase in growing stock results from maturing forests and an increase in forest area. The correct assessment of the volume of growing stock in Europe should be based on additional information on diameter class distribution, which is not available at European level.

The forest utilisation rate indicator only partly describes sustainable forest management. The indicator indirectly relates to an increased stock of carbon in forest biomass, which is a service provided by forests that mitigates climate change. The indicator has no link to biodiversity or forest condition, as it does not indicate whether or not biodiversity and other services are protected or maintained. Aspects of forest biodiversity are included in the EU protected species briefing (AIRS_PO1.7, 2016),[1] the EU protected habitats briefing (AIRS_PO1.8, 2016)[2] and the Common birds and butterflies briefing (AIRS_PO1.6, 2016).[3]

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2. AIRS_PO1.8, 2016, EU protected habitats
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> Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency

Marine fish stocks

Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Status of marine fish stocks		Ensure healthy fish stocks — Common Fisheries Policy and Marine Strategy Framework Directive	
The EU is improving the state of its commercial fish species in only North-east Atlantic and Baltic waters. As the 2020 objective of healthy commercial fish populations applies to all marine waters, it is unlikely to be met			

The Seventh Environment Action Programme (7th EAP), in line with the Marine Strategy Framework Directive (MSFD), requires the EU to meet its 2020 objective of achieving good environmental status (GES) of the marine environment, which means that the different uses made of Europe's seas are conducted at a sustainable level. Fishing is one of the main pressures affecting GES, in particular the state of commercial fish species. Historically, fishing beyond sustainable levels has made it difficult to reach the objective of healthy fish populations. Currently, around 58 % of fish stocks in Europe's seas are not in GES. The situation has started to improve, albeit with strong regional differences. In the North-East Atlantic Ocean and the Baltic Sea, clear signs of the recovery of fish stocks have been visible since the early 2000s. In the Mediterranean and Black Seas, the situation remains critical given the prevalence of overfishing and a significant lack of knowledge on the status of fish stocks. Given this context, the 2020 objective of healthy fish populations is unlikely to be met for all of Europe´s seas, and further collective action is required.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

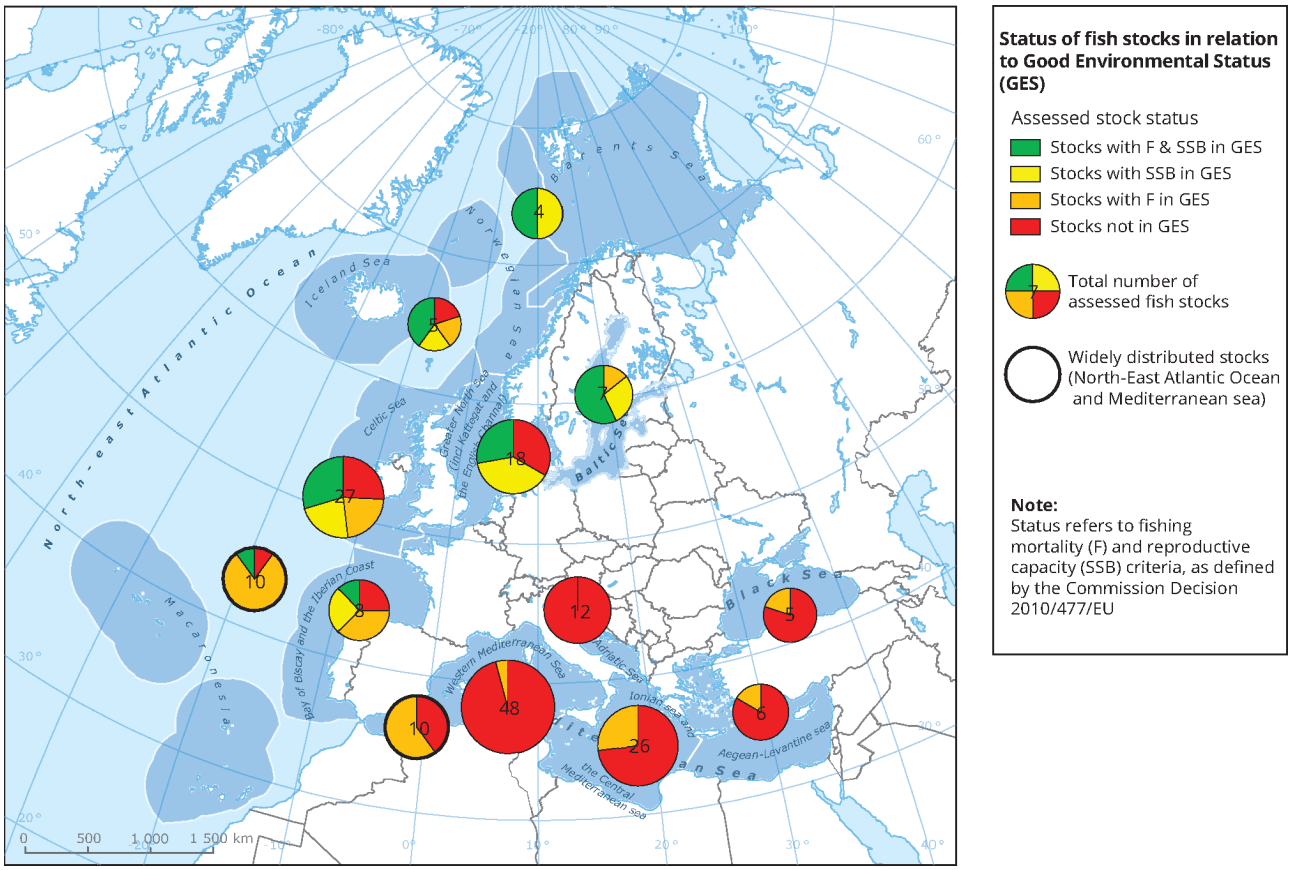
The 7th EAP stipulates that the EU shall ensure that by 2020 the impact of pressures on all marine waters is reduced to achieve or maintain GES, as required by the MSFD (EU, 2013a). Fishing is one of the main pressures affecting the marine environment, in particular the state of commercial fish species. Ensuring healthy fish populations is essential for well-functioning ecosystems, but also to sustain fishing as a source of healthy food in the long term.

Policy targets and progress

Safeguarding healthy commercial fish populations is one of the 11 descriptors of the MSFD (EU, 2008) for achieving GES. This objective is closely related to the objectives of the new Common Fisheries Policy (CFP) (EU, 2013b), in particular the objective of ensuring the maximum sustainable yield (MSY) for all stocks by 2015 where possible, and at the latest by 2020.

Currently, around 58 % of the assessed fish stocks in Europe's seas are not in GES, whereas only 12 % of fish stocks are in GES when assessing both the level of fishing mortality and reproductive capacity (EEA, 2015a). In addition, there are strong regional differences, as shown in Figure 1. The status of fish stocks is especially critical in the Mediterranean and Black Seas.

Figure 1. Status of fish stocks in regional seas around Europe

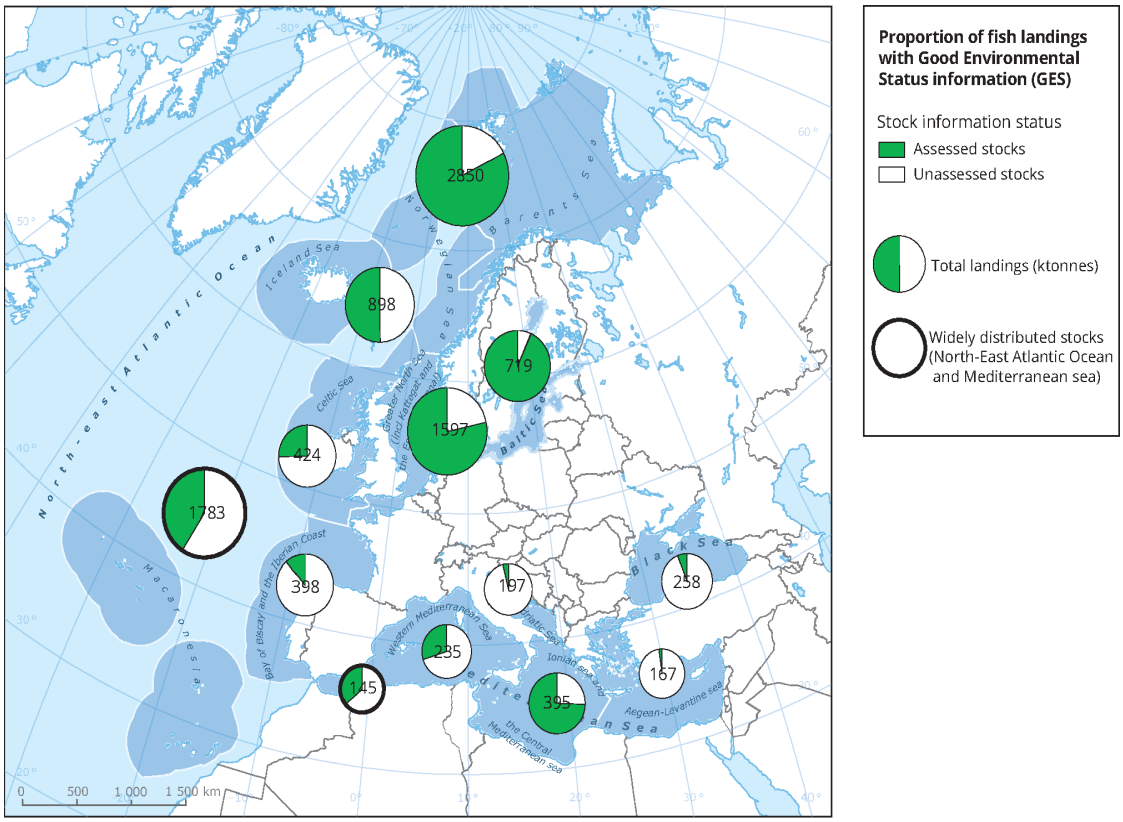


Note:
This figure shows the proportion of assessed stocks per regional sea that are in good environmental status (GES). The numbers on the charts indicate the number of fish stocks. Status refers to fishing mortality (F) and reproductive capacity (SSB) criteria, as defined by the Commission Decision 2010/477/EU, which sets criteria and methodological standards on GES of marine waters. The GES criterion on healthy age- and size-distribution cannot be assessed at present. Stocks in the Northeast Atlantic and Baltic waters were assessed based on advice from the International Council for the Exploration of the Sea (ICES) for 2013. Stocks in the Mediterranean and Black seas, and widely distributed stocks, were most recently assessed by the General Fisheries Commission for the Mediterranean (GFCM) and the International Commission for the Conservation of Atlantic Tunas (ICCAT) respectively, which varied between 2008 and 2012.

Source: Black Sea stock assessment , Mediterranean stock assessments , North-East Atlantic Ocean and Baltic sea stock assessments
Provided by Scientific, Technical and Economic Committee for Fisheries (STECF)

Moreover, a lack of information on the status of stocks was observed for a large (40 %) proportion of fish stocks (EEA, 2015a). Figure 2 shows that there are also strong regional differences in terms of availability of information. An assessment of status is not possible for 68 % of the total landings from the Mediterranean and Black Seas, compared with 35 % of those from the North-East Atlantic Ocean and Baltic Sea (EEA, 2015b).

Figure 2. Proportion of fish landings with Good Environmental Status information



Note:
This figure shows the proportion of commercial fish landings per regional sea with GES assessment information, as defined by Commission Decision 2010/477/EU, which sets criteria and methodological standards on the GES of marine waters. GES assessment information relates to fishing mortality (F) and reproductive capacity (SSB) criteria, since the criterion on healthy age- and size-distribution cannot be assessed at present. Landings data for all fish stocks are from 2010, given the availability of data for the Mediterranean and Black Seas.

Source: Black Sea stock assessment , Mediterranean stock assessments , North-East Atlantic Ocean and Baltic sea stock assessments
Provided by Scientific, Technical and Economic Committee for Fisheries (STECF) .

It is clear that the overall use of fish stocks in Europe currently remains beyond the limit for long-term environmental sustainability. Historical trends in fish landings show that total landings in Europe's seas reached a peak in the mid-1970s, but have been mostly declining ever since (Pastoors and Poulsen, 2008; Gascuel et al., 2014). The observed consistent decrease in landings suggests that the overall levels of exploitation remain too high for ensuringhealthy populations of commercial fish.

Important signs of improvement are being observed in the North-East Atlantic Ocean and Baltic Sea. Since the early 2000s, better management of fish stocks has contributed to a clear decrease in fishing pressure in these two regional seas (EEA, 2015b; EC, 2015). Between 2002 and 2015, the number of stocks exploited at sustainable levels (i.e. fishing at or below MSY) increased

from 2 to 26 (EC, 2015). Signs of recovery in the reproductive capacity of several fish stocks have started to appear (EEA, 2015a). If these efforts continue, meeting the 2020 objective for healthy fish stocks in the North-East Atlantic Ocean and Baltic Sea could be possible. In contrast, there is little likelihood that the 2020 policy objective will be met in the Mediterranean and Black Seas (EC, 2015). Given this, despite the EU's commitment to ensuring better governance for sustainable fisheries in the Mediterranean region, the 2020 objective of healthy commercial fish populations is unlikely to be met for all marine waters and further collective action is required.

Outlook beyond 2020

Fishing management measures, when effectively implemented, can have a positive effect on the state of fish stocks, as can be seen in the North-East Atlantic Ocean and Baltic Sea. However, ensuring healthy fish populations does not depend solely on fishing at environmentally sustainable levels, although it is a necessary condition. Healthy fish populations depend on healthy marine ecosystems but, today, our use of Europe's seas and their natural capital is not sustainable (EEA, 2015b). Europe's marine ecosystems continue to display symptoms of degradation and loss of resilience, which will be exacerbated by the effects of climate change. These systemic changes are still complex and to a large extent poorly understood, but they are closely linked to the loss of biodiversity. Without an integrated approach to the management and protection of Europe's seas — which would make ecosystem-based management a reality, as required by both the MSFD and the CFP — the outlook beyond 2020 for productive seas and healthy fish populations calls for concern.

About the indicator

The indicator assesses the status of fish stocks in Europe's regional seas, which represent the populations of commercial fish and shellfish species, in relation to their GES. The indicator also provides an overview of the availability of information to provide a GES analysis. The indicator follows the GES methodological standards as currently defined by Commission Decision 2010/477/EU (EC, 2010). It measures GES by assessing two criteria — the level of fishing mortality (i.e. fishing pressure) and the reproductive capacity of fish stocks (i.e. spawning stock biomass) — against their sustainable reference levels (i.e. MSY or a proxy). The third GES criterion on healthy age and size distribution cannot be assessed at present. The indicator reflects the current level of implementation of the MSFD and data availability for an assessment at the EU level.

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Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency

Common birds and butterflies

Indicator	Indicator past trend		Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Abundance and distribution of selected species (common birds and grassland butterflies)	**EU** Birds ▲ Butterflies ▲	**EEA** Birds ▲	Meet the headline target of the EU Biodiversity Strategy: to halt the loss of biodiversity and the degradation of ecosystem services	●
It is highly unlikely that the objective will be achieved by 2020 given the continuing declining trends apparent for certain groups, such as grassland butterflies and farmland birds				

The Seventh Environment Action Programme (7th EAP) states that, by 2020, the loss of biodiversity and the degradation of ecosystem services should be halted. Population trends in common birds and grassland butterflies are among key indicators in monitoring this. Between 1990 and 2013, common bird populations decreased by around 15 % in the EU; the decline of common farmland birds was more pronounced at 34 %, whereas common forest birds declined by 13 %. A significant decline of 30 % is also apparent for grassland butterflies, which are species with a high sensitivity to habitat fragmentation and degradation.

The main reasons for the continued decline in these species' populations are primarily changing rural land use, intensification and specialisation of farming or land abandonment in areas with natural constraints.

Since 1990, there has been a continuing marked downward trend in populations of farmland birds and grassland butterflies in the EU. Although the decline of all common birds and forest birds has largely levelled off since 2000, no trend towards recovery has been observed for the index, which signifies that loss of biodiversity has not been halted. Based on these historical trends and despite the increased introduction of biodiversity measures into the Common Agricultural Policy and the efforts already captured under the Nature (Birds and Habitats) Directives and the EU Biodiversity Strategy, it is highly unlikely that the objective will be achieved by 2020.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

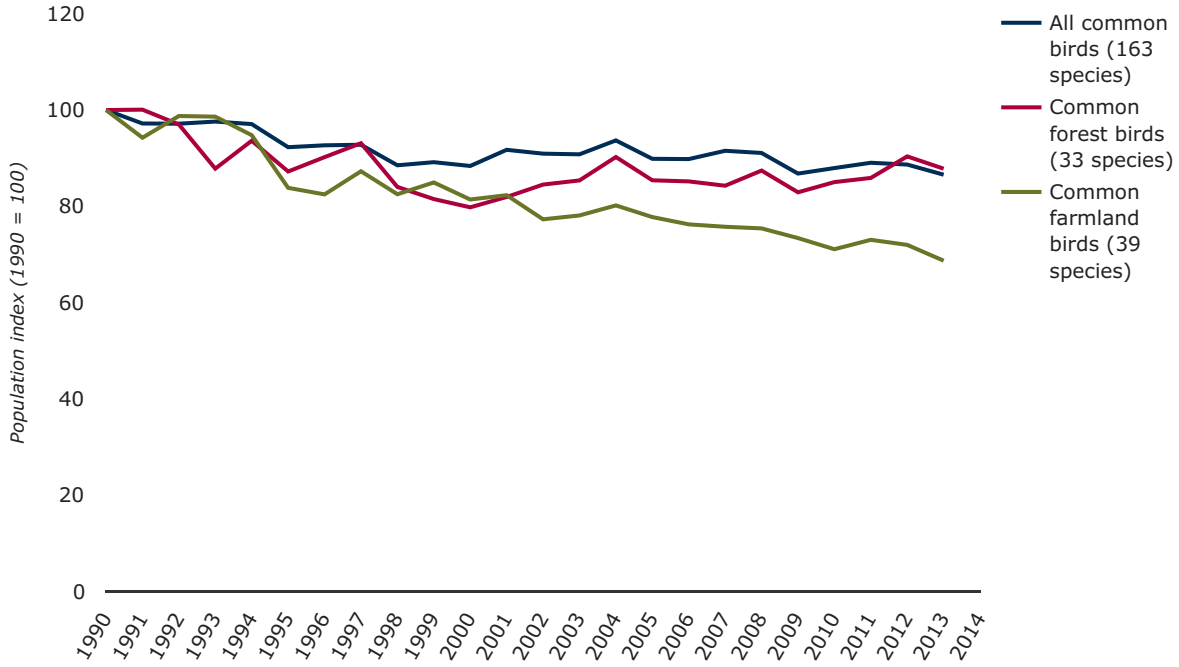
The 7th EAP (EU, 2013) contains the objective of halting, by 2020, the loss of biodiversity and the degradation of ecosystem services, as well as restoring them as far as feasible. The EU is losing biodiversity. Biodiversity is not only important in its own right, it also provides society with a wide range of ecosystem services upon which we depend, such as food, freshwater, pollination etc. This briefing examines trends in populations of common farmland and forest birds, and grassland butterflies. These are considered by the scientific community to be excellent barometers of the overall biodiversity and of the health of ecosystems, as they occur in many habitats and are sensitive to environmental change. For aspects of legally protected biodiversity and habitats, see the briefings on EU protected species (AIRS_PO1.7, 2016)[1] and habitats (AIRS_PO1.8, 2016).[2]

Policy targets and progress

Halting and reversing the loss of biodiversity and the degradation of ecosystem services by 2020 is the central aim of the EU Biodiversity Strategy (EC, 2011). This includes preserving 'common biodiversity' such as common birds and grassland butterflies. This aligns with the 7th EAP objective of halting, by 2020, the loss of biodiversity and the degradation of ecosystem services.

Since 1990, common bird populations have decreased by around 15 % in the EU; the decline of common farmland birds was more pronounced at 34 %, whereas common forest birds declined by 13 %. The trends remain very similar when Norway and Switzerland, two other EEA member countries for which data are available, are also included in the indicator coverage; for more information see the EEA indicator: abundance and distribution of selected species (EEA, 2016).

Figure 1. Long term trends for common bird species in 23 EU countries*

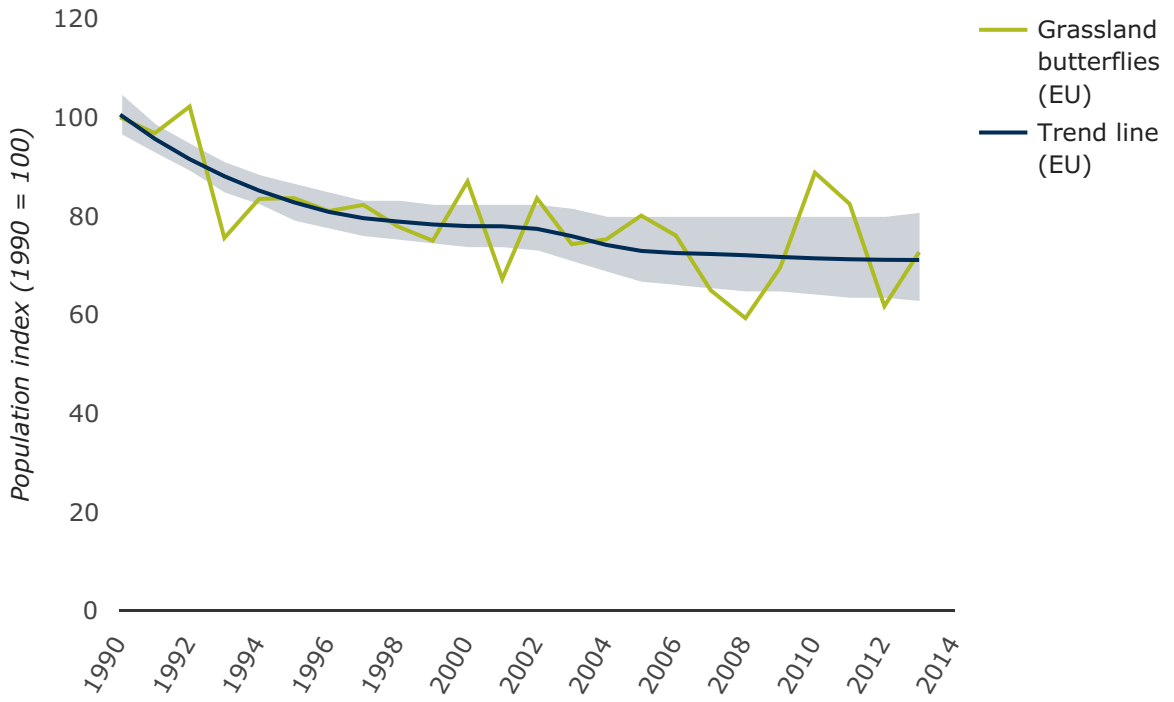


Data sources: a. EBCC. Common Birds in Europe, population index b. Birdlife International c. Royal Society for the Protection of Birds d. Statistics Netherlands e. EEA – Indicator CSI050

Note: * 23 EU Member States = all EU Member States except Croatia, Lithuania, Luxembourg, Malta and Romania.

The negative trend in farmland-related biodiversity is confirmed by the population index for grassland butterflies in Figure 2 (species with a high sensitivity to habitat degradation and loss), for which a significant decline of 30 % has been observed since 1990.

Figure 2. Long term trends for grassland butterflies in 14 EU countries



Note:
The shaded area represents 'confidence limits'.

Data sources: a. BCE. European Butterfly Indicator for Grassland species b. Statistics Netherlands c. EEA – Indicator CSI050

The long-term trends for common farmland birds and forest birds, as well as grassland butterflies, as shown in Figures 1 and 2, demonstrate that the EU has experienced a major decline in biodiversity associated with agro-ecosystems and grasslands (EEA, 2015). This was primarily due to habitat change — including loss, fragmentation and degradation — of natural and semi-natural habitats. The habitat change was mainly caused by homogenisation and loss of habitat as a result of agricultural intensification and land abandonment, intensely managed forests and some loss of habitats to urbanisation (EEA, 2015).

This negative trend shows no sign of changing, despite progress in enacting and implementing European policies (such the Birds and Habitats Directives (EU, 1992 and 2009) and the Water Framework Directive (EU, 2000)), as well as the environmental measures within the Common Agricultural Policy (CAP). Unfortunately, to date the CAP has not influenced agricultural practices enough to reduce overall loss of biodiversity. The outcomes of the latest Habitats Directive reporting round demonstrate the lack of any substantial progress in the conservation status of grasslands. The vast majority of assessments of the conservation status of agricultural

habitats, as well as of woodland and other forest habitats, remain unfavourable (over 86 % and 80 %, respectively).

The environment-related elements set out in the EU reform package, in particular for EU agriculture and cohesion policies, backed by the initiatives for greening the EU budget under the Multi-Annual Financial Framework 2014–2020, are designed to support those objectives. Greening of the CAP aims to promote environmentally beneficial agricultural and forestry practices such as crop diversification, the protection of permanent grassland and grazing land, and sustainable agroforestry. Rural Development Programmes 2014–2020 address restoring, preserving and enhancing ecosystems through payments to cover the cost of farmers adopting environment- and climate-friendly land management practices.

The mid-term review of the EU Biodiversity Strategy comprehensively assessed progress towards the headline target (and towards all six targets) and concluded that the EU is not on track to meet the objective of halting biodiversity loss and the degradation of ecosystem services by 2020 (EC, 2015). The continuing declining trends apparent for regularly monitored groups, such as grassland butterflies and farmland birds, despite environmental measures implemented so far, illustrate well that it is highly unlikely that the objective will be achieved by 2020.

Outlook beyond 2020

It is difficult to forecast how soon biodiversity, as illustrated by the abundance of bird and grassland butterfly populations, will recover, as their state is influenced by a complex combination of environmental factors and policy measures. Substantial positive impacts of the CAP reform and the measures anticipated under the Multi-Annual Financial Framework 2014–2020 on common species associated with farmland might become visible in the 2020–2030 period, as long as these policies are implemented thoroughly and on a large scale throughout the EU. On the other hand, other factors that could adversely impact the outlook beyond 2020 include the negative impact of climate change on biodiversity and ecosystems, particularly on these specialist species groups that are dependent on non-intensive agriculture and forest ecosystems. The increased competition for land could also intensify agricultural production in the EU, through land take via urbanisation (AIRS_PO1.3, 2016)[3], as well as for the production of renewable energy and biofuels (AIRS_PO2.6, 2016)[4].

About the indicator

This indicator shows trends in the abundance of common birds and grassland butterflies over time across their European distribution. It is an index indicator (relative values, 1990 set to 100). Birds and butterflies are excellent barometers of the overall health of ecosystems, mainly because they occur in many habitats and are sensitive to environmental change. The data collection methods are scientifically sound, and birds and butterflies are familiar groups of species well known to the public. Common birds are monitored in 25 European countries (23 EU Member States (all EU-28, except Croatia, Lithuania, Luxembourg, Malta and Romania) plus Norway and Switzerland). Butterfly monitoring has a more limited geographical coverage, with data available from 14 EU countries (Belgium, Estonia, Finland, France, Germany, Ireland, Lithuania, Luxembourg, Poland, Slovenia, Spain, Sweden, the Netherlands and the United Kingdom).

Footnotes and References

EC, 2011, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (COM(2011) 244 final).

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EU, 1992, Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7–50).

EU, 2000, Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p. 1–73).

EU, 2009, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ L 20, 26.1.2010, p. 7–75).

EU, 2013, Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet', Annexe A, paragraph 28a (OJ L 354, 28.12.2013, p. 171–200).

AIRS Briefings

1. AIRS_PO1.7, 2016, EU protected species, European Environment Agency .
2. AIRS_PO1.8, 2016, EU protected habitats, European Environment Agency.
3. AIRS_PO1.3, 2016, Urban land expansion, European Environment Agency.
4. AIRS_PO2.6, 2016, Renewable energies, European Environment Agency .

Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency

Natural capital

EU protected species

Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Species of European interest		Ensure that 34 % of species assessments under the Habitats Directive are in a favourable or improved conservation status, and that 78 % of species assessments under the Birds Directive show a secure or improved status — EU Biodiversity Strategy.	
The EU has shown limited progress in improving the conservation status of EU protected species and the pressures on species remain. It is therefore unlikely that the 2020 target will be met			

The Seventh Environment Action Programme (7th EAP) includes the objective of halting biodiversity loss and the degradation of ecosystem services by 2020. Preserving and restoring species of European interest is a key element in this. The overall aim of the EU Birds and Habitats Directives — the cornerstones of EU biodiversity legislation — is to ensure that species of European interest are in a good status. According to the EU Biodiversity Strategy to 2020, 34 % of species assessments (under the Habitats Directive) should be in a favourable or improved conservation status [(1)] and 78 % of birds assessments (under the Birds Directive) should show a secure or improved status. According to the latest assessments covering the 2007–2012 period, 28 % of species assessments are in favourable or improving status, while 61 % of bird species assessments have a secure or improved status. Despite limited progress, with recovery of some species due to dedicated conservation efforts and improved site management, species continue to face pressures including habitat loss and modification, and pollution arising from factors such as agriculture and forestry. It is therefore unlikely that the 2020 target will be met.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

The 7th EAP (EU, 2013) includes the objective of halting the loss of biodiversity and the degradation of ecosystem services by 2020. Preserving and restoring species of European interest, which constitute an important part of the EU's biodiversity, is a key element, not only for the intrinsic value of these protected species, but also because protecting their habitats supports a wider range of biodiversity and contributes to ensuring the continued delivery of ecosystem services — water purification, pollination, recreation etc. — which benefit EU citizens.

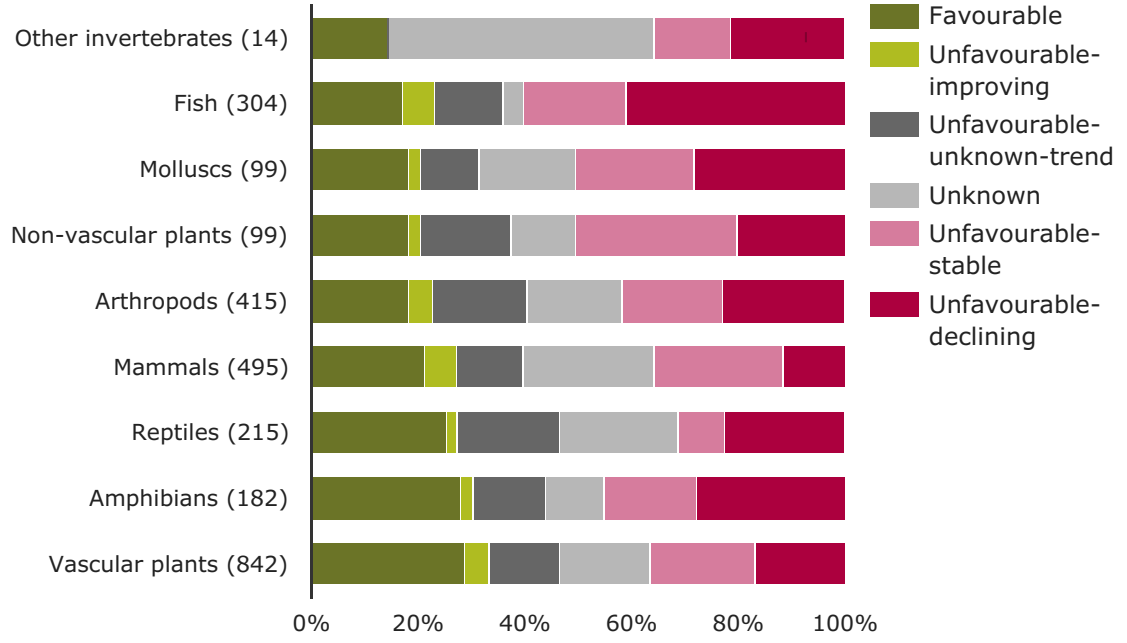
Policy targets and progress

In line with the 7th EAP objective, the overall aim of the EU Biodiversity Strategy (EC, 2011) includes halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020. The EU Birds and Habitats Directives (EU, 1992 and 2009) aim to ensure that species of European interest are maintained or restored to good status throughout their natural range within the EU. Target 1 of the Biodiversity Strategy sets out the specific goal that, by 2020, 34 % of species assessed under the Habitats Directive should have a favourable or improved conservation status, and that 78 % of species assessed under the Birds Directive should have a secure or improved status.

The latest assessments (covering the 2007–2012 period) for the conservation status and trends for species under the Habitats Directive show that the total proportion of these species having either favourable (23 %) or improved (4 %) status was 27 % (the adjusted 2020 target is 34.5 %). A total of 22 % are still deteriorating and 14 % are without a known trend.

As can be seen in Figure 1, the majority of species are assessed as being in unfavourable status (60 %). For all taxonomic groups, moreover, the number of species whose status is deteriorating is significantly higher than those whose status is improving towards favourable status. The largest negative trend is observed in fish, molluscs and amphibians. With more than 66 % of assessments categorised as 'unknown' and only 7 % as favourable, the status of marine species gives rise to particular concern.

Figure 1: Conservation status and trends for species assessed as unfavourable under the Habitats Directive (2007-2012), EU



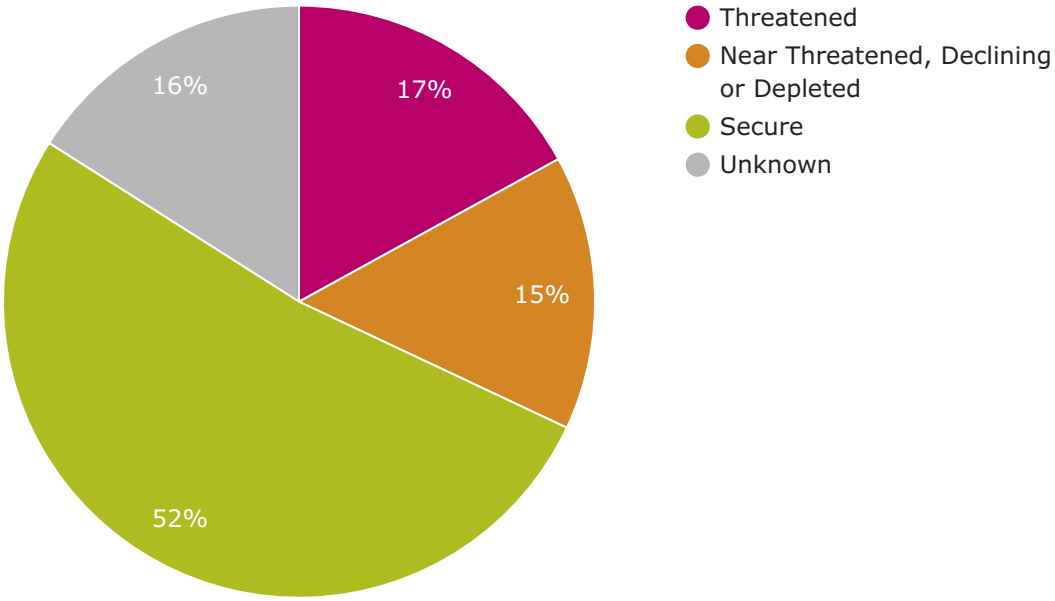
Note:
These are species from the Habitats Directive. The number of assessments is indicated in parenthesis. The total number of assessments is 2 665.

Data sources:
a. DG ENV. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
b. EEA. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
c. EEA – Indicator CSI007

For birds, the total proportion of species assessments with either secure status (52 %) or non-secure but improving status (8.5 %) was around 61 % of species (the target for 2020 is 78 %). The proportion of secure species did not change compared with the assessment in 2004 (EC, 2015; EEA, 2015a).

The EU population status of bird species (see Figure 2) indicates that around 15 % are near threatened, declining or depleted, while another 17 % of species are threatened. It should also be noted that the EU population status for another 17 % of bird species remains unknown. Populations of some common birds appear to be stabilising but other species — especially those linked to fragile freshwater, coastal and agricultural ecosystems — continue to decline (EC, 2015).

Figure 2: EU population status of bird species



Note:
The total number of assessements is 447 (only species were assessed).

Data sources:
a. EEA. Status and trends of bird populations (Article 12, Birds Directive 2009/147/EC)
b. DG ENV. Status and trends of bird populations (Article 12, Birds Directive 2009/147/EC)
c. EEA – Indicator CSI007

There has been limited progress, with recovery of some species due to dedicated conservation efforts and improved site management. The EU-wide network of nature conservation areas (Natura 2000) has been expanded to cover 18 % of EU land and is now considered complete (the coverage of protected marine areas has increased to 6 % but still requires additional effort). Conserving and managing the Natura 2000 network effectively through implementation of conservation measures under the Birds and Habitats Directives is central to improving the conservation status of EU protected species. It is also important to enhance the network's coherence through developing green infrastructure, such as wildlife corridors.

Nonetheless, EU protected species continue to face many pressures: the highest ranked pressures and threats to terrestrial species are reported to be agriculture (including both intensification and abandonment) and changes to hydrology (especially in wetlands) (EEA, 2015a). Many of these threats and pressures arise from a wide range of sectors and policies (including agriculture, fisheries, forestry, transport etc.) and are expected to continue. Consequently, the fate of European biodiversity is closely intertwined with developments in these areas, including implementation of the Common Agricultural Policy reform. The

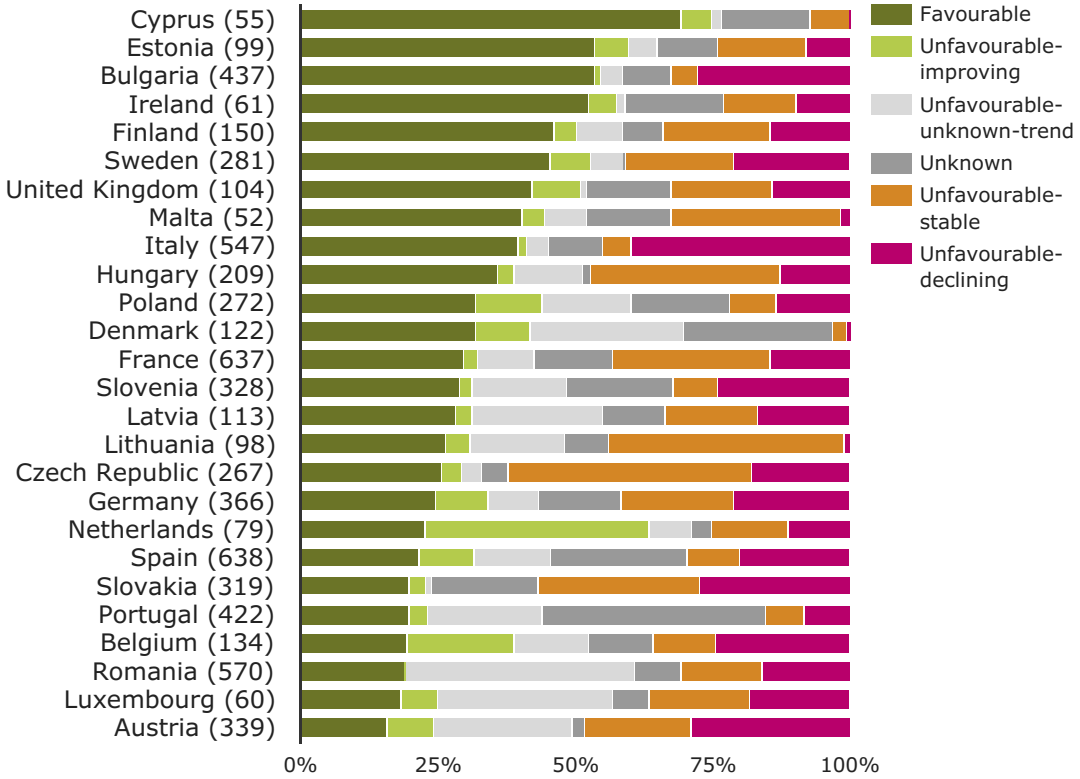
adequate integration of biodiversity considerations into certain economic sectors and regional policies therefore remains critical in attempting to reduce pressures on biodiversity (EEA, 2015b).

Given the limited progress in improving the conservation status of species and the ongoing cumulative pressures on their habitats, it is unlikely that the 2020 target will be met.

Country level information

At the EU Member States level, almost half of the countries have 30 % or less of species assessments considered as favourable, and only four Member States (Ireland, Bulgaria, Estonia and Cyprus) have more than 50 % of species assessments as favourable (see Figure 3). The proportion of species assessments classified as unfavourable–declining exceeds 20 % in nine countries: Austria, Belgium, Bulgaria, Germany, Italy, Slovakia, Slovenia, Spain and Sweden, while for Italy up to 40 % of its species assessments are classified as unfavourable–declining (see Figure 3).

Figure 3: Conservation status and trends of species assessed under the Habitats Directive (2007-2012), by country



Note:
These are species from the Habitats Directive. The number of assessments is indicated in parentheses. The total number of assessments is 6 759. Greece did not provide an Article 17 report.

Data sources:

a. EEA. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
b. DG ENV. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
c. EEA – Indicator CSI007

Outlook beyond 2020

Dedicated conservation efforts under the Habitats and Birds Directives can be expected to result in the recovery of some species, but achieving favourable conservation status for all EU protected species in the longer term is very challenging. Many species are expected to continue their decline beyond 2020 since widespread pressures are expected to be ongoing. Intensification of agriculture is expected to continue or increase in Eastern Europe, for example, and some pressures (including climate change and invasive alien species) are set to increase. The fate of marine species is a particular concern given the high proportion of 'unknown' assessments and given also that a substantial increase in the network of marine protected areas still needs to be implemented.

About the indicator

This indicator covers the status of and trends in: (1) around 450 wild bird species that are naturally present in the EU (Birds Directive, EU, 2009); and (2) more than 1 250 other species of wild animals and plants (Habitats Directive, EU, 1992) considered to be rare, threatened or endemic. The protected species are often collectively referred to as species of European interest. They cover many taxonomic groups, trophic levels and habitats.

Conservation status of species under the Habitats Directive is assessed every 6 years (latest period 2007–2012) at the national and EU biogeographical levels. Population status of species of the Birds Directive is also assessed every 6 years (first period 2008–2012) at the EU level.

Assessments cover the status of the species and their evolution during this period (trend). The indicator thus reflects combined results for both status and trend.

For bird species, the population status is categorised as 'secured', 'near threatened, declining or depleted', 'threatened' or 'unknown', and conservation trends (for 'near threatened, declining or depleted' and 'threatened' species) categorised as 'increasing', 'stable', 'fluctuating', 'deteriorating', or 'unknown'.

For other species, conservation status is categorised as 'favourable', 'unfavourable–inadequate', 'unfavourable–bad' and 'unknown', and conservation trends (for unfavourable assessments) as 'unfavourable–improving', 'unfavourable–stable', unfavourable–deteriorating' and 'unfavourable–unknown'.

Footnotes and references

[1] The official target is that 25 % of assessments must be favourable or improving. Due to changes resulting from better data or changes in methodology, the target has been 'backcasted' so that 34.5 % of assessments must be favourable or improving. See also page 146 in EEA, 2015a.

EC, 2011, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (COM(2011) 244 final) (http://ec.europa.eu/environment/marine/pdf/1_EN_ACT.pdf) accessed 14 November 2016.

EC, 2015, Report from the Commission to the European Parliament and the Council 'Mid-term review of the EU Biodiversity Strategy to 2020 — EU assessment of progress towards the targets and action' (COM(2015) 478 final) (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015DC0478&from=EN) accessed 14 November 2016.

EEA, 2015a, State of nature in the EU, EEA Technical Report No 2/2015, European Environment Agency (http://www.eea.europa.eu/publications/state-of-nature-in-the-eu) accessed 14 November 2016.

EEA, 2015b, SOER 2015 —The European environment — State and outlook 2015, European Environment Agency (http://www.eea.europa.eu/soer) accessed 14 November 2016.

EEA, 2016, 'Species of European interest (SEBI 003)', European Environment Agency (http://www.eea.europa.eu/data-and-maps/indicators/species-of-european-interest/species-of-european-interest-assessment) accessed 14 November 2016.

EU, 1992, Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7–50).

EU, 2009, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (OJ L 20, 26.1.2010, p. 7–75).

EU, 2013, Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet', Annexe A, paragraph 28a (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013D1386&from=EN) accessed 14 November 2016.

EU protected habitats

Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Habitats of European interest		Ensure that 34 % of habitat assessments under the Habitats Directive are in a favourable or improved conservation status — EU Biodiversity Strategy	
The EU has shown limited progress in improving the conservation status of EU protected habitats and the pressures on these habitats remain. It is therefore unlikely that the 2020 target will be met			

The Seventh Environment Action Programme (7th EAP) includes the objective of halting loss of biodiversity and degradation of ecosystem services by 2020. The Habitats Directive is one of the cornerstones in EU biodiversity legislation and aims to preserve and restore EU protected habitats. According to the Biodiversity Strategy to 2020, 34 % of habitat assessments should be in a favourable or improved conservation status by 2020. The latest assessment from 2007–2012 shows that only 16 % of the assessments of habitats have a 'favourable' conservation status and only 4 % of assessments have shown an improvement compared with 2001–2006. Habitats continue to face pressures from, for example, land use change and pollution. In addition, habitat status often takes a long time to improve when conservation and other measures are first implemented. It is therefore unlikely that the 2020 target will be met.

For further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

The 7th EAP (EU, 2013) includes the objective of halting loss of biodiversity and degradation of ecosystem services by 2020. Preserving and restoring the EU's protected habitats is a key element in achieving this. An EU-wide network of protected habitats in good conservation status is crucial, not only for the intrinsic value of these habitats and the species that depend on them, but also because protecting them is important to ensure provision of a wide range of ecosystem services—natural flood protection, air and water quality regulation, pollination, recreation, etc.—for the benefit of EU citizens.

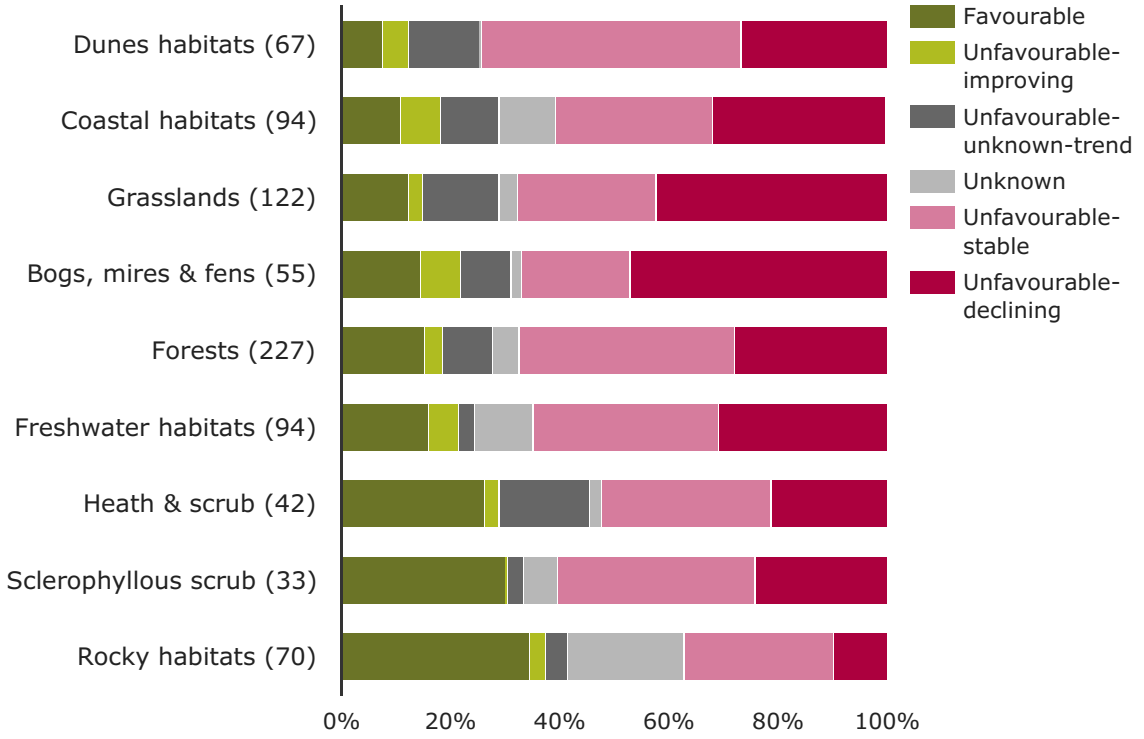
Policy targets and progress

In line with the 7th EAP objective, the overall aim of the Biodiversity Strategy to 2020 (EC, 2011) is to halt loss of biodiversity and degradation of ecosystem services in the EU by 2020. The Habitats Directive (EU, 1992) aims to ensure that the habitats of European interest are in a good status. Target 1 of the Biodiversity Strategy to 2020 sets out the specific goal that, by 2020, 100 % more habitat assessments under the Habitats Directive show a favourable or improved conservation status. In practice this means that, by 2020, 34 % of habitats assessments should have either reached a favourable conservation status or shown a significant improvement in their status.

Overall results for conservation status and trends reported under the Habitats Directive for the 2007–2012 period show that only 16.4 % of habitat assessments have a favourable conservation status, while 77 % are unfavourable. Of the unfavourable assessments, only 4.4 % have improving trends, 33 % are stable and 30 % show ongoing deterioration. Consequently, only around 21 % of habitat assessments have reached the target condition, which is still some way short of the 2020 target of 34 % (EC, 2015; EEA, 2015a). For habitats associated with agricultural ecosystems (grassland and cropland), 39 % of assessments showed deterioration compared with the previous reporting period (EC, 2015).

Looking at conservation status by main habitat group (see Figure 1), favourable conservation status is lowest for dune habitats and highest for rocky habitats (mostly in high mountain areas and away from human activities). For conservation status trends, 'unfavourable and deteriorating' is particularly high for bogs, mires and fens, but also for grasslands. Marine habitats assessments also give rise for concern: only 9 % were in a favourable conservation status, 66 % were considered to be in unfavourable status and 25 % were categorised as having 'unknown' status. However, it should be noted that the number of marine habitats covered under this Directive is very low.

Figure 1. Conservation status and trends of habitats assessed under the Habitats Directive (2007-2012), EU



Note: The number of assessements is indicated in parentheses. The total number of assessments is 804.

Data sources:

a. DG ENV. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
b. EEA. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
c. EEA – Indicator SEBI005

Overall, the conservation status of EU protected habitats has not improved, and habitats of European interest show a worse conservation status and trend than species of European interest.

Several factors contribute to this. Firstly, habitat restoration can often take a long time to get from the initial implementation of measures to the achievement of tangible improvement in conservation status. A key component in the implementation of the Habitats and Birds Directives is the Natura 2000 network, an EU-wide network of nature conservation areas. The terrestrial Natura 2000 network designation is now considered largely complete (18 % of EU land). The coverage of protected marine areas has increased to 6 % but still requires substantial additional effort. The effective management and restoration of Natura 2000 sites is central to improving the conservation status of habitats. In 2012, however, only 58 % of Natura 2000 sites

had management plans, or had such plans in development (EEA, 2015a). Similarly, other measures that can benefit conservation status are still being implemented across the EU, e.g. policy measures anticipated under the Birds and Habitats Directives, the Common Agricultural Policy reform and the increased integration of biodiversity objectives in the EU's financial instruments.

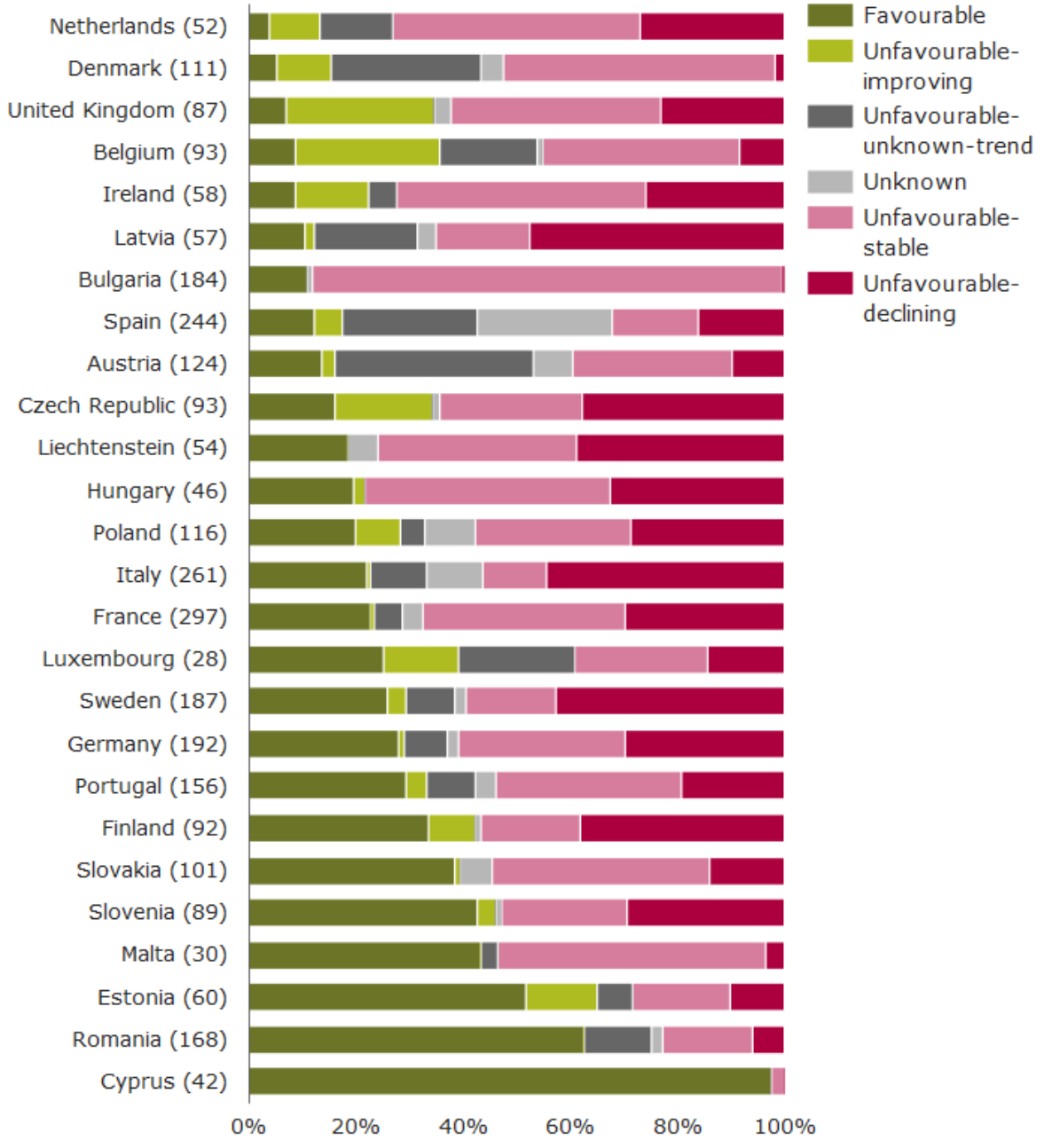
Finally, EU terrestrial habitats continue to be subject to many pressures, including agricultural practices such as modification of cultivation techniques, overgrazing, abandonment of pastoral systems, and the use of fertilisers and pesticides, as well as human-induced modifications of natural conditions (mostly related to hydrological changes). For marine habitats, the main reported pressure and threat is pollution. Many of these threats and pressures arise from a wide range of sectors and policies (including agriculture, fisheries, forestry and transport) and are expected to be ongoing. Consequently, the fate of European biodiversity is closely intertwined with developments in these areas. The adequate integration of biodiversity considerations into certain economic sectors and regional policies remains critical, therefore, in attempting to reduce the pressures on biodiversity (EEA, 2015b).

Given the limited progress in improving the conservation status of EU protected habitats and the ongoing cumulative pressures on these habitats, it is very unlikely that the 2020 target for conservation status of habitats will be met.

Country level information

At the level of EU Member States, the majority of assessments indicate a low proportion of habitats in a favourable condition, with notable exceptions—Cyprus, Estonia, Malta, Romania and Slovenia—reporting more than 40 % of habitat assessments as 'favourable'. The countries reporting the most habitat assessments with 'unfavourable' status are all in northern Europe—Belgium, Denmark, the Netherlands and the United Kingdom (see Figure 2). This pattern can probably be attributed mainly to the relatively intensive agriculture practised in these Member States. As for the conservation status trends within the reporting period (2007–2012), there are overall more declining than improving habitat assessments.

Figure 2. Conservation status and trends of habitats assessed under the Habitats Directive (2007-2012), by country



Note:
The number of assessments is indicated in parentheses. The total number of assessments is 3022. Greece did not provide an Article 17 report.

Data sources: a. DG ENV. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
b. EEA. Conservation status of habitat types and species (Article 17, Habitats Directive 92/43/EEC)
c. EEA – Indicator SEBI005

Outlook beyond 2020

Achieving favourable conservation status for EU protected habitats in the longer term is challenging. This is due to the expected continuation of many environmental pressures, with some pressures such as climate change set to increase, and to the time lag between the implementation of restoration measures and the desired outcomes in terms of habitat conservation status. Marine habitats are especially challenging because of their currently poor status, and a substantial increase in the network of protected marine areas still needs to be implemented.

About the indicator

The indicator covers habitats that are considered to be of European interest (listed in Annex I of the Habitats Directive). The Habitats Directive protects 233 rare and characteristic natural and semi-natural habitat types (e.g. types of grasslands, wetlands, dunes) within the territory of the EU. Their conservation status is assessed by all EU Member States every 6 years, and these assessments and other data from the Member States are subsequently used to make EU-level assessments. There have been two reporting rounds so far (2000–2006 and 2007–2012).

The indicator measures conservation status for habitat types in terms of 'favourable', 'unfavourable–inadequate', 'unfavourable–bad' and 'unknown'. Furthermore, the indicator measures trends for assessments with unfavourable conservation status: 'unfavourable–improving', 'unfavourable stable', 'unfavourable–deteriorating', 'unfavourable–unknown'. The assessments are based on four parameters: (1) trends and status of range; (2) trends and status of the area; (3) structure and function including typical species; and (4) future prospects.

Footnotes and references

EC, 2011, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (COM(2011) 244 final) (http://ec.europa.eu/environment/marine/pdf/1_EN_ACT.pdf) accessed 14 November 2016.

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Environmental indicator report 2016 – In support to the monitoring of the 7th Environment Action Programme, EEA report No30/2016, European Environment Agency

Surface waters

Indicator	EU indicator past trend	Selected objective to be met by 2020	Indicative outlook of the EU meeting the selected objective by 2020
Status in surface waters	NA(1)	Achieve good status of transitional and coastal waters and freshwaters — Water Framework Directive	
Considering the large proportion of surface waters failing to meet 'good' ecological status, it is unlikely that the objective of achieving good status of waters will be met by 2020			

The Seventh Environment Action Programme (7th EAP) includes the goal of the Water Framework Directive (WFD) that good status should be achieved, enhanced or maintained in transitional, coastal and fresh waters. Achieving good ecological status in surface waters is a critical aspect of this. The quality of Europe's surface waters has improved over the past decades, thanks to higher standards of wastewater treatment, for example, and reductions in agricultural inputs of nitrogen and phosphorus. Pollution from agriculture (in particular nitrogen losses from agricultural land) and urban and industrial wastewater nevertheless remain significant. Hydromorphological pressures are also affecting many surface water bodies, mainly from hydropower, navigation, agriculture, flood protection and urban development resulting in altered habitats. Overall, in 2009 only 43 % of surface water bodies were in good or high ecological status and, in 2015, 53 % of water bodies are expected to reach good ecological status, making it unlikely that the objective of achieving good status of waters will be met. Full implementation of the management measures under the Water Framework Directive, in combination with full implementation of other relevant directives (e.g. Urban Waste Water Treatment, Nitrates Directive) is needed in order to restore the ecological status or potential of surface waters.

For the further information on the scoreboard methodology please see Box I.1 in the EEA Environmental indicator report 2016

Setting the Scene

One of the goals of the 7th EAP (EU, 2013) is that the impact of pressures on transitional, coastal and freshwaters (including surface and groundwaters) should be significantly reduced to achieve, maintain or enhance good status, as defined by the Water Framework Directive. This briefing addresses only surface waters. Surface waters are the majority of the volume of EU waters and are important habitats, providing key support to society and the economy throughout Europe, while clean, unpolluted waters are essential for our ecosystems. Surface waters have traditionally been the disposal route for human, agricultural and industrial waste, which has damaged their water quality. They have also been altered (by dams, canalisation etc.) to facilitate agriculture and urbanisation, to produce energy and to protect against flooding, all of which can result in damage to their hydromorphology.

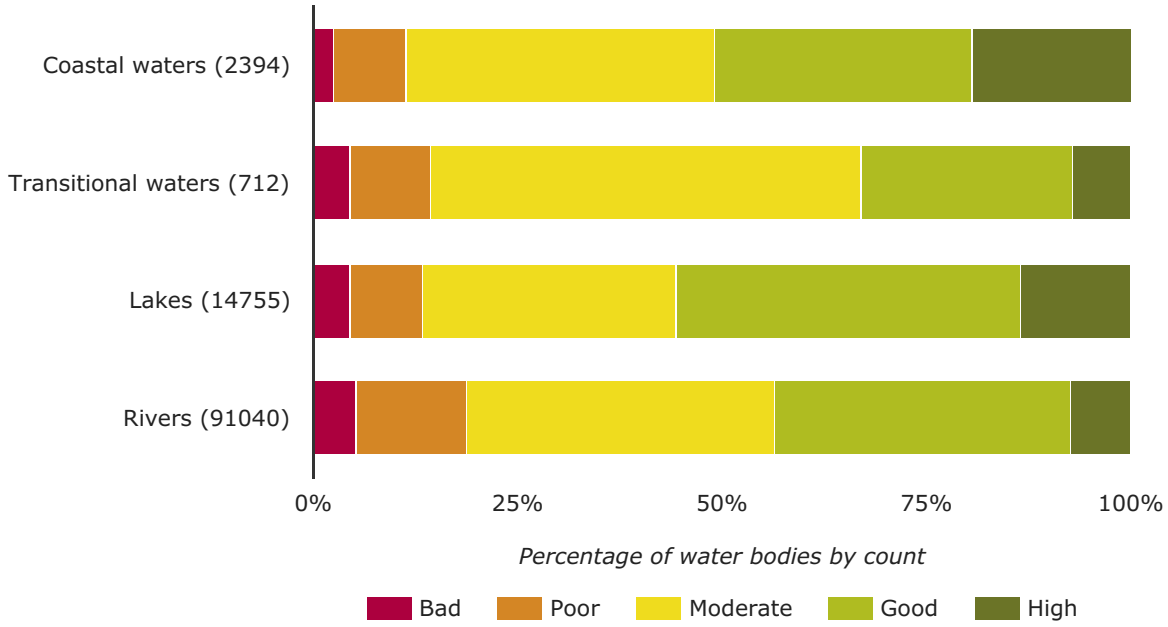
Policy targets and progress

The main aim of EU water policy is to ensure that a sufficient quantity of good quality water is available for people's needs and the environment. The Water Framework Directive (EU, 2000) stipulates that EU Member States should aim to achieve good status in all bodies of surface water and groundwater by 2015 unless there are grounds for exemption. The 7th EAP mirrored this objective and called for all European water bodies to reach 'good' status by 2020.

During the last 30 years, significant progress has been made in reducing the pollution in numerous European water bodies, in particular thanks to improved wastewater treatment. Water quality in Europe has therefore improved significantly in recent decades, and the effects of pollutants have decreased (EEA 2015a, 2015b). Pollution from agriculture (in particular nitrogen losses from agricultural land) and urban and industrial wastewater nevertheless remain significant. For decades, sometimes centuries, humans have altered European surface waters (straightening and canalisation, disconnection of flood plains, land reclamation, dams, weirs, bank reinforcements, etc.) to facilitate agriculture and urbanisation, produce energy and protect against flooding. These activities have resulted in damage to the morphology and hydrology of the water bodies, i.e. to their hydromorphology.

Based on the first river basin management plans reported in 2008, more than half of the surface water bodies in Europe are in less than good ecological status or potential, and will need mitigation and/or restoration measures to meet the Water Framework Directive objective (Figure 1). Rivers and transitional waters are on average in a worse condition than lakes and coastal waters. Concerns about the ecological status of surface water bodies are most pronounced for central and north-western Europe, in areas with intensive agricultural practices and high population densities. The status of coastal and transitional waters in the Black Sea and greater North Sea regions is also of concern.

Figure 1. Ecological status or potential of classified rivers, lakes, coastal and transitional waters, EU



Data sources: EEA. WISE WFD Database

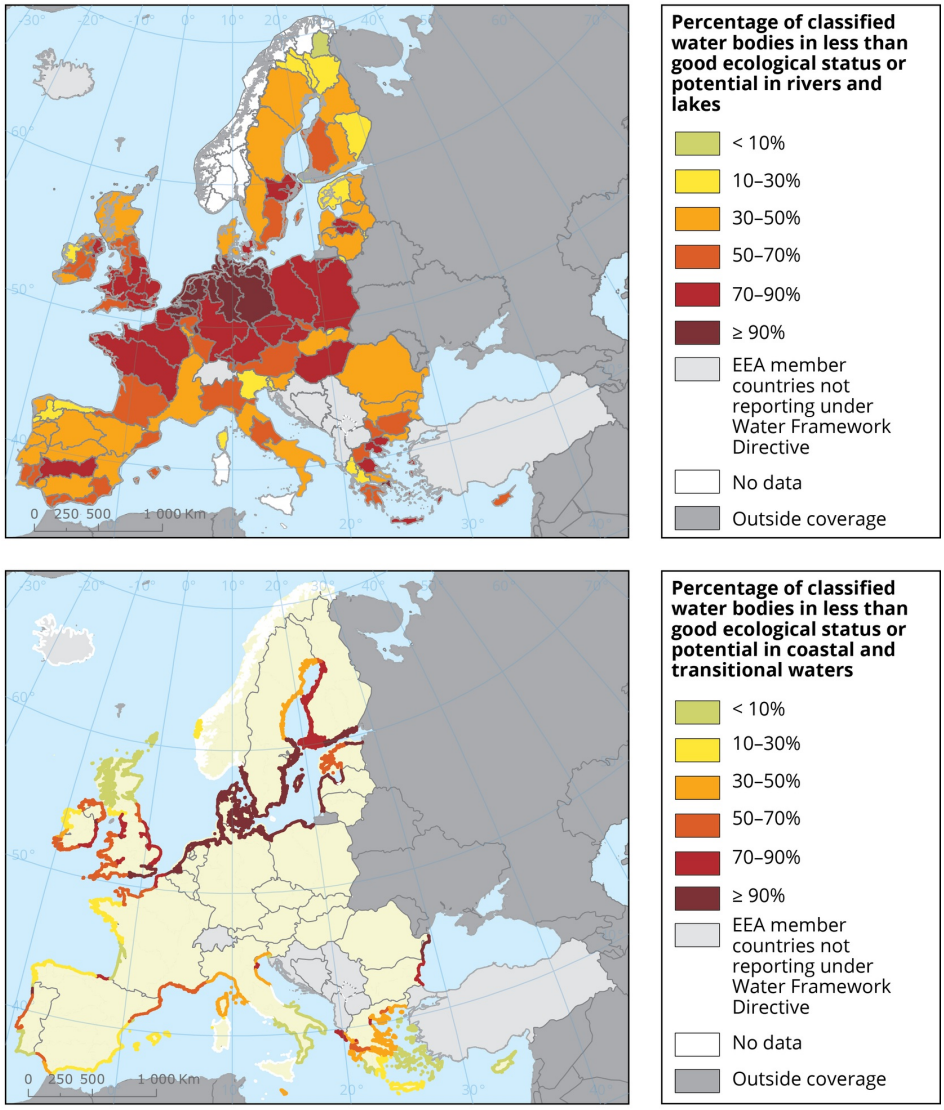
In 2009, 43 % of surface water bodies were in good or high ecological status and, in 2015, 53 % of water bodies were expected to reach good ecological status. This is far from meeting the objective of good ecological status and only constitutes a modest improvement in ecological status. Given this modest improvement and despite ongoing efforts, it is unlikely that the objective of achieving good status of waters will be met.

Country level information

As Figure 2 illustrates, there are differences between river basin districts with regard to the percentage of their water bodies that have 'good' ecological status. Surface water bodies in north-western Europe have the lowest status and/or greatest potential for improvement. In Belgium (Flanders), northern Germany and the Netherlands, more than 90 % of surface waters are reported to be in 'less than good' (i.e. moderate, poor or bad) ecological status or potential. Other problem areas are in the Czech Republic, southern England, northern France, southern Germany, Hungary and Poland, as well as several individual river basin districts in other EU Member States, where 70–90 % of freshwater bodies (lakes and rivers) are reported to be in 'less than good' status or potential. The status of coastal and transitional waters, in the

Black Sea and greater North Sea regions is also of great concern.

Figure 2. Percentage of classified surface water bodies in different river basin districts holding less than good ecological status or potential, for rivers and lakes (top panel) and for coastal and transitional waters (bottom panel)



Note: Switzerland data sets on river and lake water quality reported in the framework of EEA priority data flows are not compatible with the EU Water Framework Directive assessments and are not included above.

Source: WISE WFD Database.

Outlook beyond 2020

Further efforts will be required beyond 2020 to achieve a 'good' status for all surface waters. To achieve good status, Member States will have to address the pressures affecting water bodies. Pollution will be one pressure (e.g. run-off from agriculture, wastewater from households and industry); morphological changes, overabstraction and hydrological changes affecting water flow would also play a role. Full implementation of the Water Framework Directive throughout all sectors will be needed to reduce these pressures, and in individual river basins it will be necessary to commit users from each sector (e.g. the agriculture sector) to focusing on delivering healthy water bodies with good status.

About the indicator

Achieving good status involves meeting certain standards for the ecology, chemistry, morphology and quantity of waters. In general terms, good status means that water shows only a slight change from what would normally be expected under undisturbed conditions (i.e. with a low human impact). This indicator is defined as the number of surface water bodies reaching at least 'good' ecological status or 'good' ecological potential. Ecological status and potential is a criterion for the quality of the structure and functioning of surface water ecosystems. More specifically, a surface water body has reached good ecological status when 'the values of the biological quality elements for the surface water body type show low levels of distortion resulting from human activity, but deviate only slightly from those normally associated with the surface water body type under undisturbed conditions' (EU, 2000).

The ecological status is used here as a proxy for the overall status of waters. This is because the ecological status is influenced by water quality (e.g. pollution levels of all types) as well as by the amount of available water. In addition, surface waters constitute the majority of EU waters. Water quantity issues are addressed in the Freshwater use briefing (AIRS_PO2.4, 2016),[1] which covers both surface and groundwaters.

The indicator covers only the current status of surface waters and not past trends. New data will become available in 2017 and the next version of the indicator will include trends.

Footnotes and references

(1) Time Series not yet available

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1. AIRS_PO2.4, 2016, Freshwater use, European Environment Agency.

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For references , please go to https://www.eea.europa.eu/airs/2016/natural-capital or scan the QR code.

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