SDG 6 - Clean water and sanitation

Statistics Explained

Ensure availability and sustainable management of water and sanitation for all

Data extracted in April 2022.
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EU trend of SDG 6 on clean water and sanitation

This article is a part of a set of statistical articles , which are based on the Eurostat publication 'Sustainable development in the European Union — Monitoring report on progress towards the SDGs in an EU context — 2022 edition' . This report is the sixth edition of Eurostat's series of monitoring reports on sustainable development, which provide a quantitative assessment of progress of the EU towards the SDGs in an EU context.

SDG 6 calls for ensuring universal access to safe and affordable drinking water, sanitation and hygiene, and ending open defecation. It also aims to improve water quality and water-use efficiency and to encourage sustainable abstractions and supply of freshwater.

Context

Access to water is a basic human need. Provision of drinking water and sanitation services is a matter of public and environmental health in the EU. Clean water in sufficient quantity is also of paramount importance for agriculture, industry and the environment and plays a crucial role in providing climate-related ecosystem services. The most important pressures on Europe's water resources are pollution, for example from agriculture as well as untreated or insufficiently treated municipal and industrial waste water discharges, and hydrological or physical alterations of water bodies. Also, over-abstraction can be a severe issue in southern Europe, in particular during the summer months and in densely populated areas. Consequently, protecting the quality of Europe's water resources and ensuring their sustainable and efficient use are key elements of EU water policy.

Clean water and sanitation in the EU: overview and key trends

Monitoring SDG 6 in an EU context focuses on sanitation, water quality and water use efficiency. While the EU has further progressed on access to sanitation, trends in the area of water quality have been mixed over the past few years, with partly rising concentrations of pollutants in both surface and groundwater. Progress on water use efficiency cannot be assessed due to the seasonal variability of the balance between water abstraction and renewable fresh water resources.

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)
Sanitation		
People living in households without basic sanitary facilities (such as bath, shower, indoor flushing toilet)	↑ (1)	↑
Population connected to at least secondary waste water treatment	↗	↗
Water quality		
Biochemical oxygen demand in rivers	↑ (2)	↗ (2)
Nitrate in groundwater	↘ (3)	↘ (3)
Phosphate in rivers	↑ (2)	↓ (2)
Inland water bathing sites with excellent water quality (*)	:	↘
Water use efficiency		
Water exploitation index (WEI+)	:	:

(*) Multi-purpose indicator.
(1) Past 10-year period.
(2) Data refer to an EU aggregate based on 18 Member States.
(3) Data refer to an EU aggregate based on 19 Member States.

Table 1: Indicators measuring progress towards SDG 6, EU

Symbol	With quantitative target	Without quantitative target
◎	Trends for indicators marked with this 'target' symbol are calculated against an official and quantified EU policy target. In this case the arrow symbols should be interpreted according to the left-hand column below. Trends for all other indicators should be interpreted according to the right-hand column below.	
↑	Significant progress towards the EU target	Significant progress towards SD objectives
↗	Moderate progress towards the EU target	Moderate progress towards SD objectives
↘	Insufficient progress towards the EU target	Moderate movement away from SD objectives
↓	Movement away from the EU target	Significant movement away from SD objectives
:	Calculation of trend not possible (for example) time series too short)	

Table 2: Explanation of symbols for indicating progress towards SD objectives and targets

Sanitation

Provision of drinking water and the adequate treatment of sewage are matters of public and environmental health. As a vital resource, water is considered a public good in the EU. Water utilities are subject to strict regulation regarding the quality and efficiency of services. The indicators chosen to monitor sanitation are the share of the population having neither a bath, nor a shower, nor indoor flushing toilet in their household and the share of the population connected to at least secondary waste water treatment.

Most EU citizens have access to basic sanitation and are connected to secondary waste water treatment

Overall, connection rates and the quality of water services in the EU were already high more than 10 years ago, and have continued to improve. The share of the population that have neither a bath, shower, nor indoor flushing toilet in their household fell from 2.2 % in 2015 to 1.5 % in 2020. Data also show that the share of the EU population connected to secondary waste water treatment has increased continuously since 2000, reaching 80.9 % in 2019.

Conventional primary waste water treatment mainly removes suspended solids and only reduces organic water pollution by 20–30 %. Secondary treatment processes, which are typically applied after primary treatment, remove about 70 % of organic pollution. Growth in the share of people connected to secondary treatment indicates that the Urban Waste Water Treatment Directive, which was first implemented in the 1990s, has helped to reduce pollution and improve water quality in Europe's rivers.

Different levels of access to water services and sanitation persist between Member States

Almost every household in the EU had basic sanitary facilities in 2020, and most countries reported that less than 1 % of their population were still living in households without a bath, shower or a flushing toilet. However, in some countries, this share remains comparatively high. In particular, Romania reported figures far above all other Member States, with 21.2 % of the population not having access to basic sanitary facilities in 2020. Relatively high shares were also reported by Lithuania, Bulgaria and Latvia with values between 6.4 % and 7.0 % in the same year. These figures highlight the strong link between access to basic sanitary facilities and poverty, which can be seen across the EU. In 2020, 5.2 % of poor people in the EU lacked access to a bath, shower or toilet in their households, compared with only 0.7 % of those living above the poverty threshold .

Connection to secondary waste water treatment is another important facility for enhancing access to sanitation. Connection rates to secondary treatment have increased slowly but continuously across the EU, with 80.9 % of the EU population being connected in 2019. This is about 10 percentage points higher than in 2004, when the connection rate was 70.4 %. Between 2014 and 2019, connection rates increased in almost all reporting Member

States. The lowest-scoring countries were in south-east Europe. It is important to note that connection rates are not expected to reach 100 % in most cases because in some areas connection costs can be disproportionately high, in particular for rural areas with a low population density . The Urban Waste Water Treatment Directive only obliges bigger agglomerations to introduce secondary treatment, while requiring smaller agglomerations to apply an appropriate treatment (when waste water is collected) or other alternative solutions to reach the same level of protection for water bodies.

Water quality

Diffuse pollution by agriculture, accidental spillage of harmful substances and discharge of untreated or insufficiently treated domestic and industrial waste water, as well as atmospheric deposition of pollutants such as mercury, can pose a threat to human and environmental health. These pressures, along with changes to the structure and flow of water bodies, pose a barrier to sustainable development. Water quality monitoring distinguishes between different kinds of chemical pollution such as organic pollution by nutrients, pesticides and pathogens. In this report, water quality is monitored through four indicators looking at nutrients in freshwater and at bathing water quality[1].

Improved waste water treatment has led to less organic pollution in European rivers

Heavy organic pollution, caused by municipal waste water and effluents from industry or livestock, can lead to the deoxygenation of water, killing fish and invertebrates. Thanks to improved waste water collection and treatment as well as mature treatment, organic pollution in European rivers has been decling, though the trend has slowed in recent years. A proxy for organic water pollution is the amount of oxygen needed for microbes to digest organic pollution under standard conditions, expressed as biochemical oxygen demand (BOD). BOD values of rivers in Europe range from less than 1 milligram per litre (mg/L) (very clean) to more than 15 mg/L (heavily polluted).

Data available for 18 Member States show an overall decline of BOD in EU rivers, from 2.9 mg/L in 2004 to 2.5 mg/L in 2019. The trend, however, has not been continuous. While BOD levels had been falling until 2011, they had climbed back to 2.8 mg/L by 2015 but have been falling again since then. Overall, BOD levels in EU rivers have fallen by 13.8 % over the past 15 years, and by 2.7 % over the past five years. The overall decrease in BOD values is mainly linked to a general improvement in waste water collection and treatment throughout Europe.

Eutrophication is still a major issue for Europe's aquatic environment

An assessment of European waters published by the European Environment Agency (EEA) in 2018 concludes that although nutrient pollution has fallen since the 1990s, it is still the main reason why 28 % of EU surface water bodies[2]have not achieved good water quality. In some regions, pollution of rivers with nitrate/ammonia (N) and phosphorous (P) is still causing severe eutrophication in coastal waters. Eutrophication can lead to algal blooms and oxygen depletion of surface waters, which in turn can harm fish, invertebrates and whole ecosystems.

The main sources of nutrient inputs are the use of fertilisers and animal waste in agriculture, as well as poorly treated waste water from industry[3]. Nitrates (NO3), among other chemicals, can infiltrate and contaminate groundwater bodies. They are the most common cause of poor chemical status of groundwater in the EU (18 % of groundwater bodies by area across 24 Member States are in poor status because of nitrates)[4]. This is particularly problematic because groundwater is an important source of drinking water in Europe.

They show a long-term stagnation of NO3concentrations at around 21 milligrams per litre (mg/L), with a slight upward trend in recent years, increasing by 2.7 % between 2014 and 2019. Additionally, between 2016 and 2019, 14.1 % of groundwater stations showed NO3concentrations above the threshold considered unfit for drinking, which

[1] Chemical water quality is not evaluated in this report because of a lack of a comprehensive series of suitable data.

[2] European Environment Agency (2018), European waters — Assessment of status and pressures 2018 , EEA Report No 7/2018, p. 63.

[3] European Environment Agency (2017), Emissions of pollutants to Europe's waters — sources, pathways and trends , ETC/ICM report, p. 17.

[4] European Environment Agency (2018), European waters — Assessment of status and pressures 2018 , EEA Report No 7/2018, p. 52.

is set at 50 mg/L by the Nitrates Directive[5]. The long-term stagnation of nitrate concentrations in EU groundwater is a result of opposing trends for individual groundwater bodies across Member States[6].

Data on phosphate (PO4) concentrations in EU rivers are available for 18 Member States. They show a marked improvement between 2007 and 2013, after which, however, the trend levelled off and even started increasing again. Thus, while the phosphate concentration of 0.06 mg/L recorded in 2019 is considerably below the values reported in the early 2000s, it is 13.2 % higher than in 2014. The overall positive long-term trend is to some extent the result of measures implemented under the Urban Waste Water Treatment Directive over the past 30 years, especially the introduction of phosphate-free detergents. The recent turnaround may be related to the slower decrease in phosphorus emissions from the agricultural sector[7] as well as increasing phosphorus fertiliser consumption in some Member States[8].

The share of inland bathing waters with excellent water quality has fallen in recent years

Contamination of water by faecal bacteria continues to pose a risk to human health. This is especially the case when it is found at bathing water sites, where it can cause illness among swimmers. Overall, the share of inland water bathing sites with excellent water quality in the EU increased between 2011 and 2017 but has been declining since then. The recent downward trend has been caused by a stagnation in the absolute number of bathing sites with excellent water quality, while the total number of bathing sites included in the assessment rose. According to the latest European Environment Agency (EEA) data, 77.7 % of inland water bathing sites showed excellent bathing water quality in 2020, compared with 81.1 % five years earlier. The major sources of bathing water pollution are sewage and water draining from farmland. Such pollution increases during heavy rains and floods which wash sewage overflow and polluted drainage water into rivers and seas.

Water use efficiency

SDG 6 also calls for a focus on water use efficiency in order to use freshwater resources sustainably and reduce water stress. The regionalised water exploitation index (WEI+) aims to illustrate the pressure on renewable freshwater resources due to water demand, which is largely affected by population trends and socio-economic developments; and climate conditions, which control the availability of renewable freshwater resources.

Water stress is low in most EU countries, but shows a strong seasonal variability

Water stress occurs when water demand exceeds available water resources at a specific place and time. Situations where the ratio between water abstraction and long-term average available water resources exceeds 20 % are generally considered as an indication of water scarcity, while values above 40 % indicate severe water scarcity, meaning the use of freshwater resources is unsustainable[9]. A look at annual national mean WEI+ values shows water stress appears to be a local phenomenon in Europe. At the EU level, the annual WEI+ is rather stable, increasing only slightly from 8.0 % in 2002 to 8.4 % in 2017.

In 2017, Spain and Greece showed water stress with mean annual WEI+ values above 20 %, while Cyprus showed

[5] European Commission (2021), Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2016–2019 p. 4.

[6] European Environment Agency (2020), Nutrients in freshwater in Europe .

[7] European Environment Agency (2020), Nutrients in freshwater in Europe; and Eurostat (2018)

[8] Eurostat (2018), Statistics Explained, Agri-environmental indicator - mineral fertiliser consumption .

[9] European Environment Agency (2020), Use of freshwater resources in Europe .

severe water stress with a mean annual WEI+ value of 70 %. However, annual national values can mask regional and seasonal water stress, which is in fact common in many European regions. This is particularly the case in a number of large metropolitan areas across the continent and in southern Europe, where more than half of the population regularly experiences water stress. In southern Europe, water stress is typically greatest over the summer months, when water demand from agriculture and tourism is at its highest and precipitation is low. In contrast, metropolitan areas with high energy production tend to face water stress during autumn and winter.

Although water stress has become a constant companion in the EU, it is still a local and seasonal phenomen[10]. An assessment of river basin districts between 1990 and 2015 by the EEA concluded that, over the 15-year period from 2000 to 2015, water scarcity affected on average 14 % of the total EU territory, with the highest values observed in 2000 (21 %) and 2015 (20 %). In 2015 — a year with relatively high actual water evaporation from land surface and transpiration from vegetation and low precipitation levels — the share of the European population exposed to water scarcity was around 30 %. Most of these people were living in densely populated cities, on small Mediterranean islands and in agricultural areas of southern Europe[11].

Presentation of the main indicators

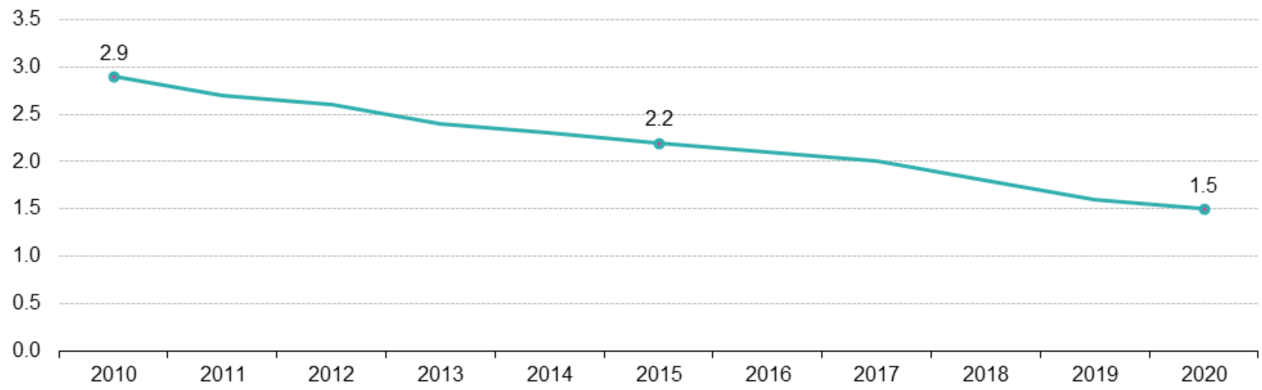
People living in households without basic sanitary facilities (such as bath, shower, indoor flushing toilet)

This indicator reflects the share of total population having neither a bath, nor a shower, nor an indoor flushing toilet in their household. Data presented in this section stem from the EU Statistics on Income and Living Conditions (EU-SILC) .

[10] European Environment Agency (2021), Water resources across Europe — confronting water stress: an updated assessment , EEA Report No 12/2021.

[11] European Environment Agency (2018), Use of freshwater resources (CSI 018), Indicator assessment; and European Environment Agency (2018), Environmental indicator report 2018, EEA Report Np 19/2018.

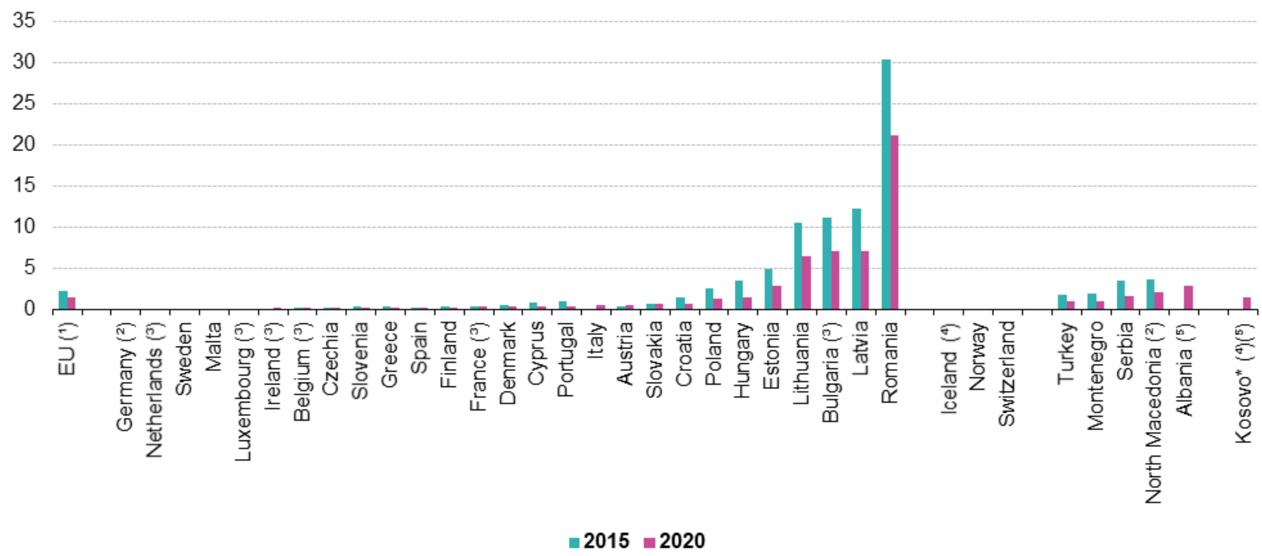
Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, EU, 2010-2020
(% of population)



Note: Estimated data.
Source: Eurostat (online data code: sdg_06_10)

Figure 1: Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, EU, 2010-2020 (% of population) Compound annual growth rate (CAGR) for the total rate: – 6.4 % per year in the period 2010–2020; – 7.4 % per year in the period 2015–2020. Source: Eurostat (sdg_06_10)

Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, by country, 2015 and 2020
(% of population)



(¹) Estimated data.
(²) 2019 data (instead of 2020).
(³) Break(s) in time series between the two years shown.
(⁴) 2018 data (instead of 2020).
(⁵) No data for 2015.
(*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.
Source: Eurostat (online data code: sdg_06_10)

Figure 2: Population having neither a bath, nor a shower, nor indoor flushing toilet in their household, by country, 2015 and 2020 (% of population) Source: Eurostat (sdg_06_10)

Population connected to at least secondary wastewater treatment

LONG TERM
2004-2019

SHORT TERM
2014-2019

This indicator measures the percentage of the population connected to waste water treatment systems with at least secondary treatment. Thereby, waste water from urban or other sources is treated by a process generally involving biological treatment with a secondary settlement or other process that removes organic material and reduces its biochemical oxygen demand (BOD) by at least 70 % and chemical oxygen demand (COD) by at least 75 %. Data presented in this section stem from the Water Statistics of the European Statistical System (ESS).

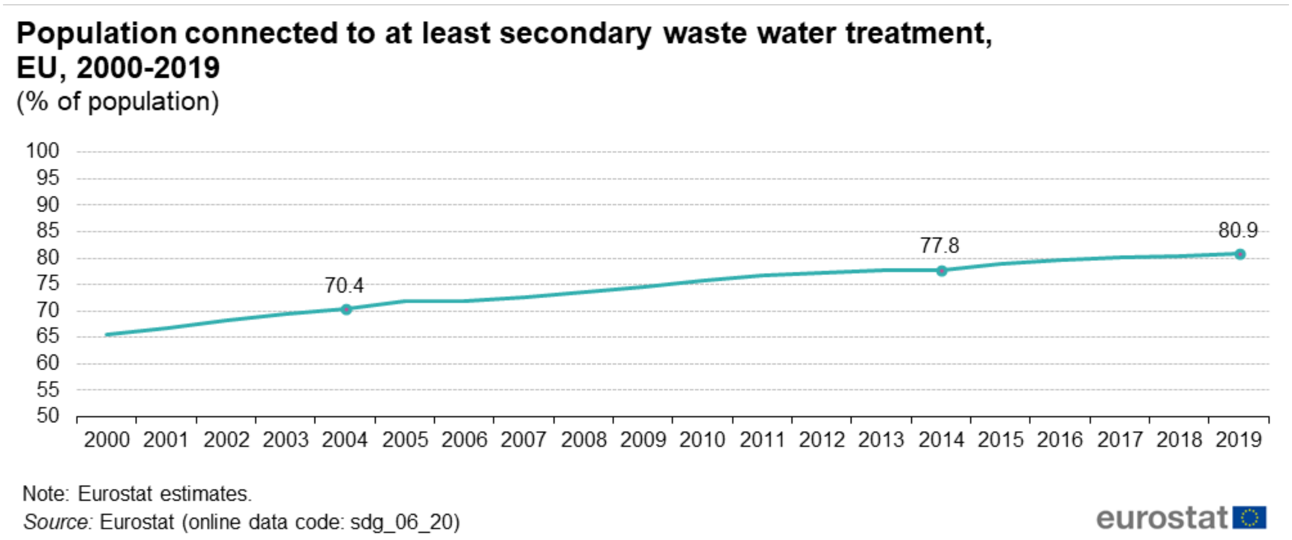


Figure 3: Population connected to at least secondary waste water treatment, EU, 2000–2019 (% of population) Compound annual growth rate (CAGR): 0.9 % per year in the period 2004–2019; 0.8 % per year in the period 2014–2019 Source: Eurostat (sdg_06_20)

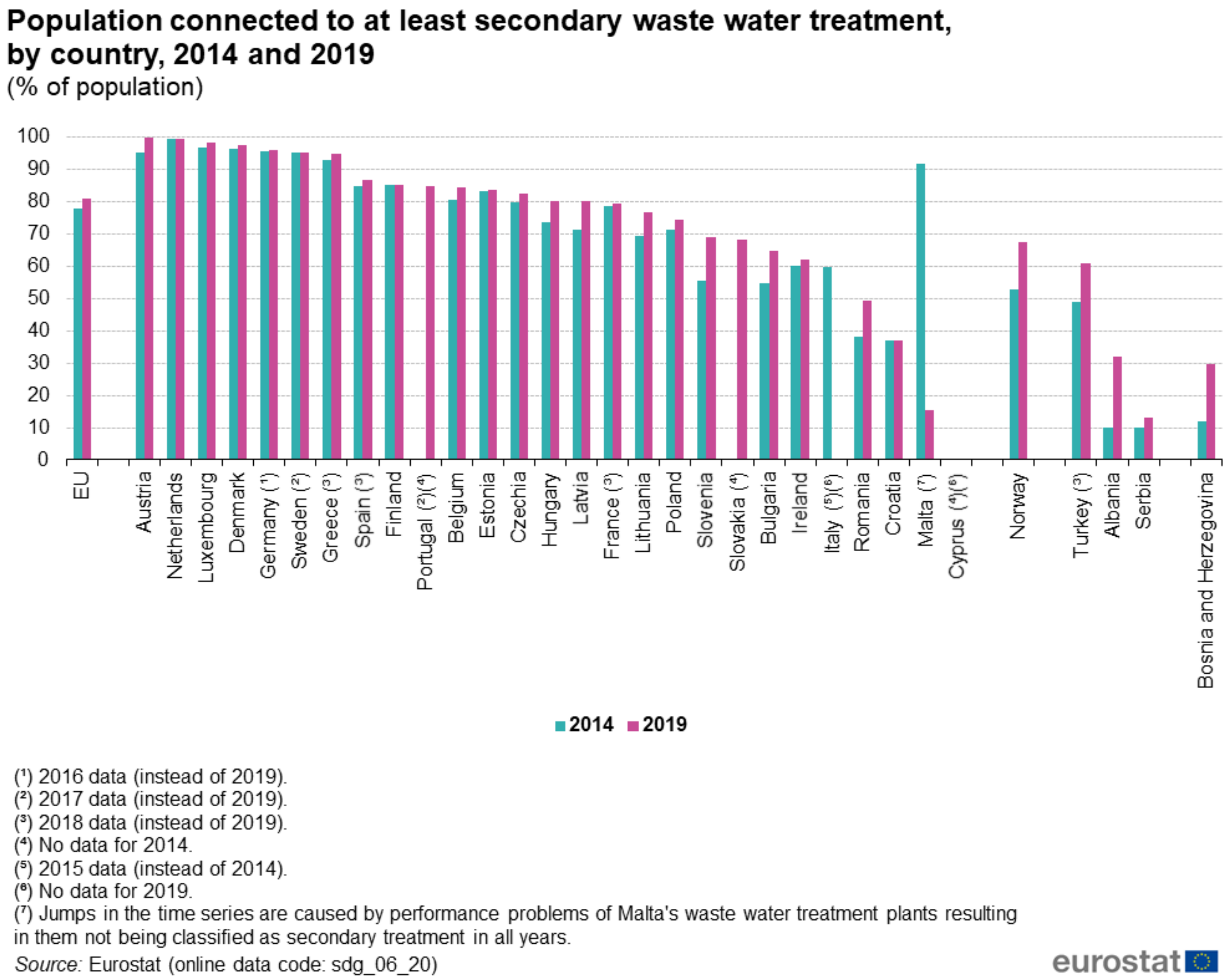


Figure 4: Population connected to at least secondary wastewater treatment, by country, 2014 and 2019 (% of population) Source: Eurostat (sdg_06_20)

Biochemical oxygen demand in rivers

This indicator measures the mean annual five-day biochemical oxygen demand (BOD5) in rivers, weighted by the number of measuring stations. BOD5 is a measure of the amount of oxygen that aerobic microorganisms need to decompose organic substances in a water sample over a five-day period in the dark at 20 °C. High BOD5 values are usually a sign of organic pollution, which affects water quality and aquatic environment. Organic pollution caused by discharges from waste water treatment plants, industrial effluents and agricultural run-off increase BOD. The cleanest rivers have a five-day BOD of less than 1 milligram per litre (mg/L). Moderately polluted rivers show values ranging from 2 to 8 mg/L. Data presented in this section stem from the EEA Waterbase database on the status and quality of Europe's rivers.

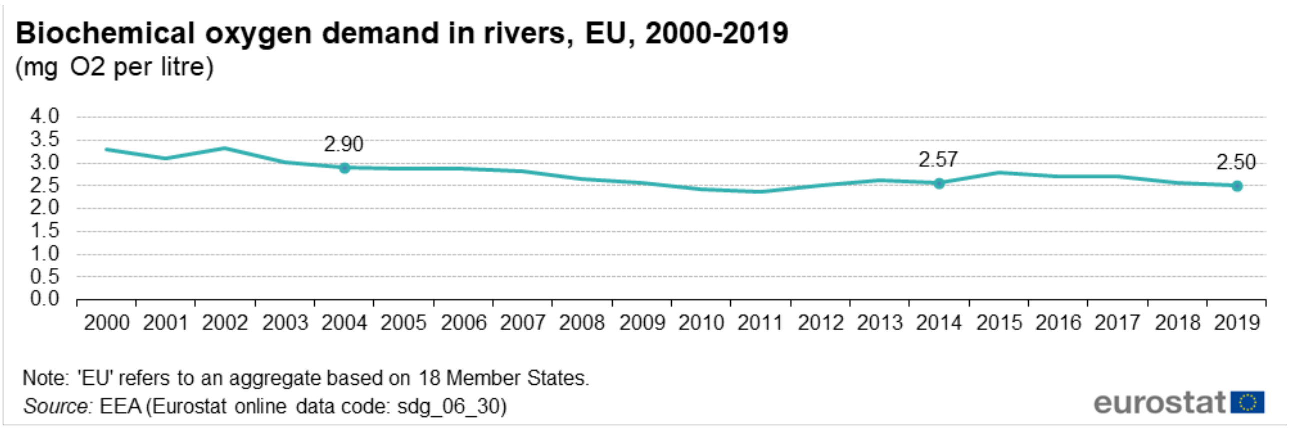


Figure 5: Biochemical oxygen demand in rivers, EU, 2000-2019 (mg O2 per litre) Compound annual growth rate (CAGR): – 1.0 % per year in the period 2004–2019; – 0.6 % per year in the period 2014–2019. Source: EEA (Eurostat (sdg_06_30))

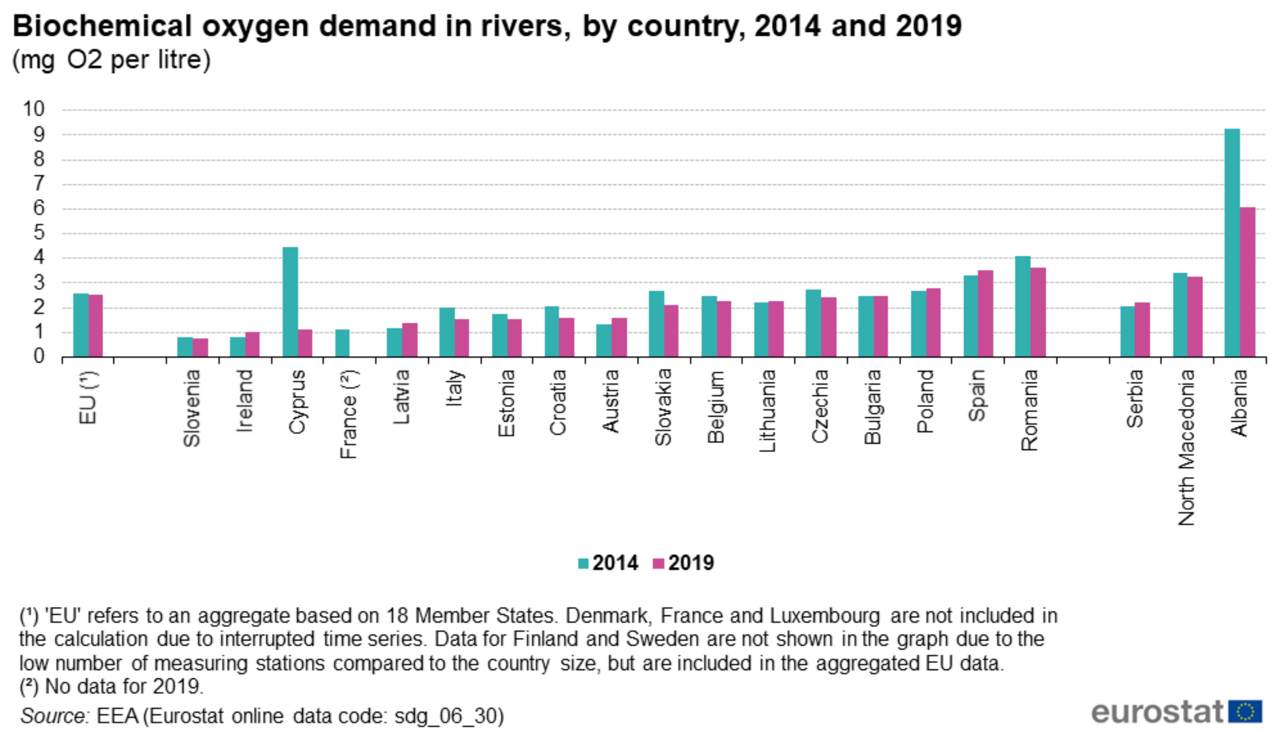


Figure 6: Biochemical oxygen demand in rivers, by country, 2014 and 2019 (mg O2 per litre).png Source: EEA (Eurostat (sdg_06_30))

Nitrate in groundwater

LONG TERM
2004-2019

SHORT TERM
2014-2019

This indicator refers to concentrations of nitrate (NO3) in groundwater measured as milligrams per litre (mg NO3/L). Data are taken from well samples and aggregated to annual average concentrations for groundwater bodies in Europe. Only complete series after inter/extrapolation are included. The indicator is relatively robust in presenting the overall trend in water quality, however, the distribution of measuring stations over groundwater bodies might mask exceedances of nitrate levels in
certain polluted areas. The data stem from the EEA Waterbase database on the status and quality of Europe's rivers.

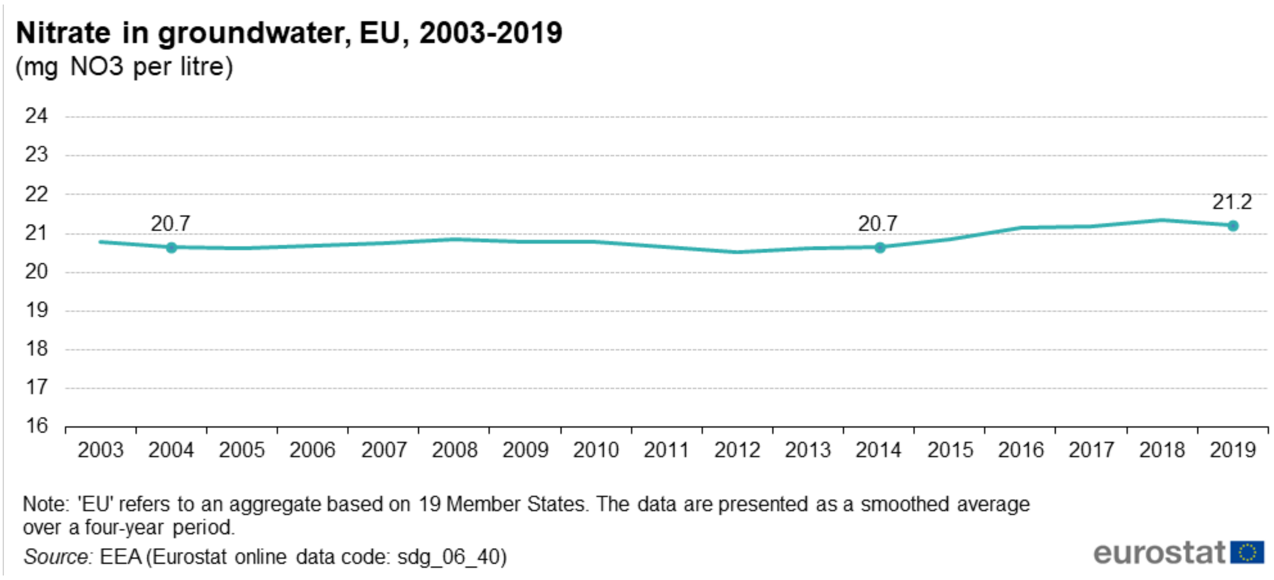


Figure 7: Nitrate in groundwater, EU, 2003-2019 (mg NO3 per litre) Compound annual growth rate (CAGR): 0.2 % per year in the period 2004–2019; 0.5 % per year in the period 2014–2019 Source: EEA (Eurostat (sdg_06_40))

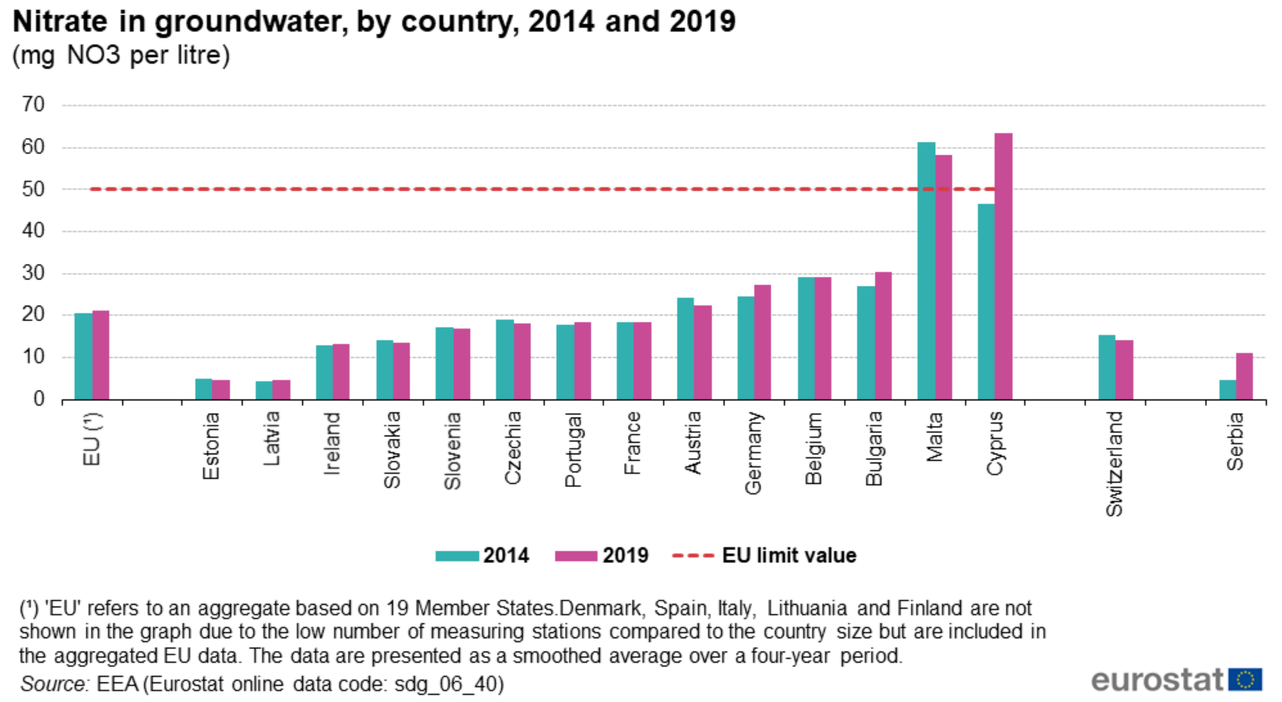


Figure 8: Nitrate in groundwater, by country, 2014 and 2019 (mg NO3 per litre) Source: EEA (Eurostat (sdg_06_40))

Phosphate in rivers

This indicator measures the concentration of phosphate (PO4) per litre in the dissolved phase from water samples from river stations and aggregated to annual average values. At high concentrations phosphate can cause water quality problems, such as eutrophication , by triggering the growth of aquatic plants including algae. The data stem from the EEA Waterbase database on the status and quality of Europe's rivers.

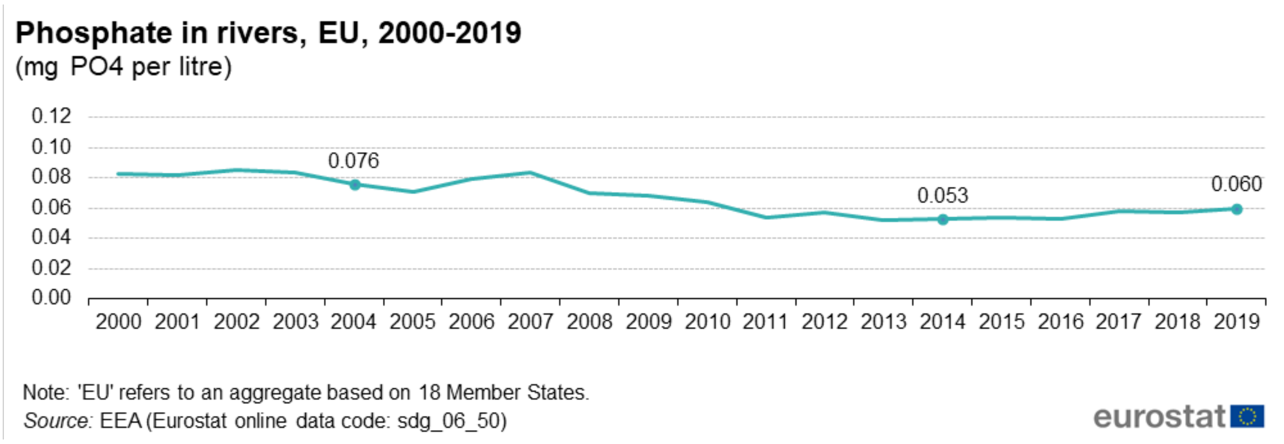


Figure 9: Phosphate in rivers, EU, 2000-2019 (mg PO4 per litre) Compound annual growth rate (CAGR): –1.6 % per year in the period 2004–2019; 2.5 % per year in the period 2014–2019. Source: EEA (Eurostat (sdg_06_50))

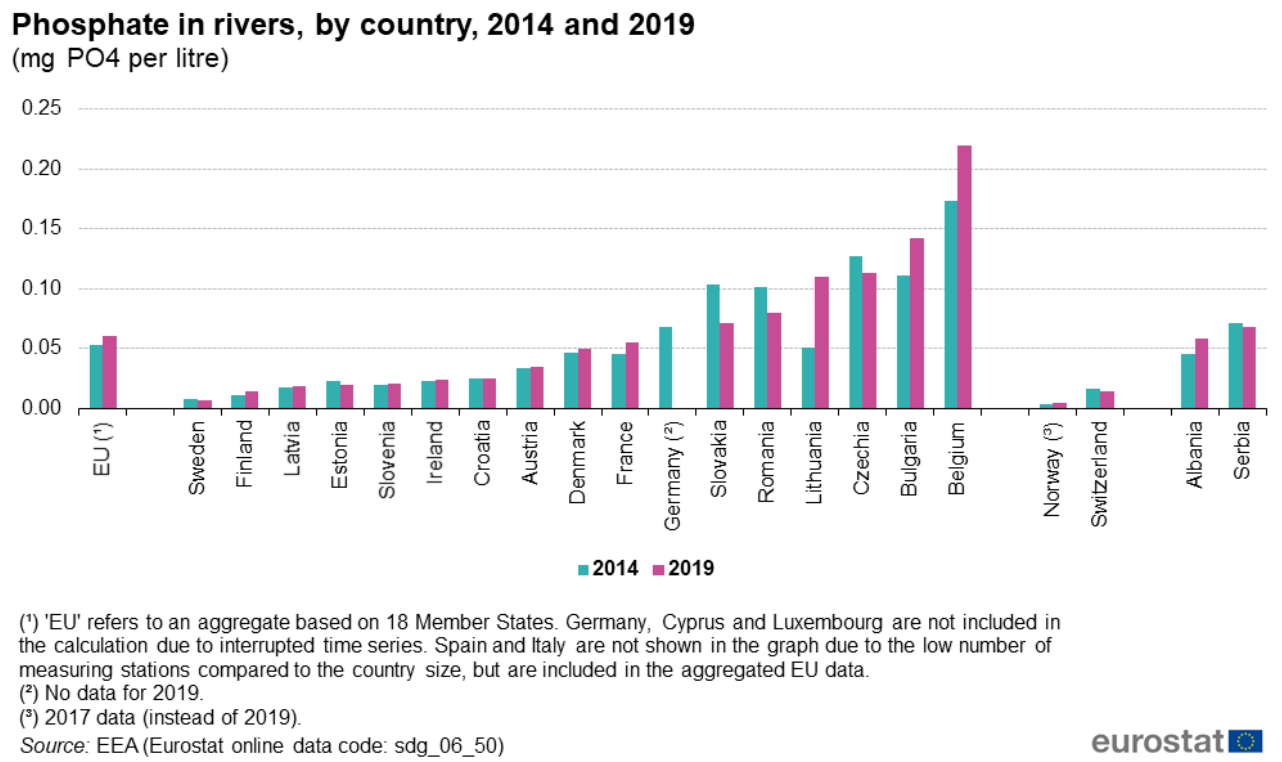


Figure 10: Phosphate in rivers, by country, 2014 and 2019 (mg PO4 per litre) Source: EEA (Eurostat (sdg_06_50))

Water exploitation index

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The regionalised water exploitation index (WEI+) measures total fresh water use as a percentage of the long-term annual average available water (LTAA) from renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much is returned after use to the environment via basins. The difference between water abstraction and return is regarded as water consumption, and in combination with LTAA, illustrates the pressure on renewable freshwater resources due to water abstraction. In the absence of Europe-wide agreed formal targets, values above 20 % are generally considered to be a sign of water scarcity, while values equal or greater than 40 % indicate situations of severe water scarcity[12], meaning the use of freshwater resources is unsustainable. Annual calculations of the WEI+ at national level do not reflect uneven spatial and seasonal distribution of resources and may therefore mask water stress which occurs on a seasonal or regional basis. The indicator is a result of data modelling by the EEA based on data from the WISE SoE-Water quantity database (WISE 3) and other open sources (JRC, Eurostat, OECD, FAO) and including gap filling methods.

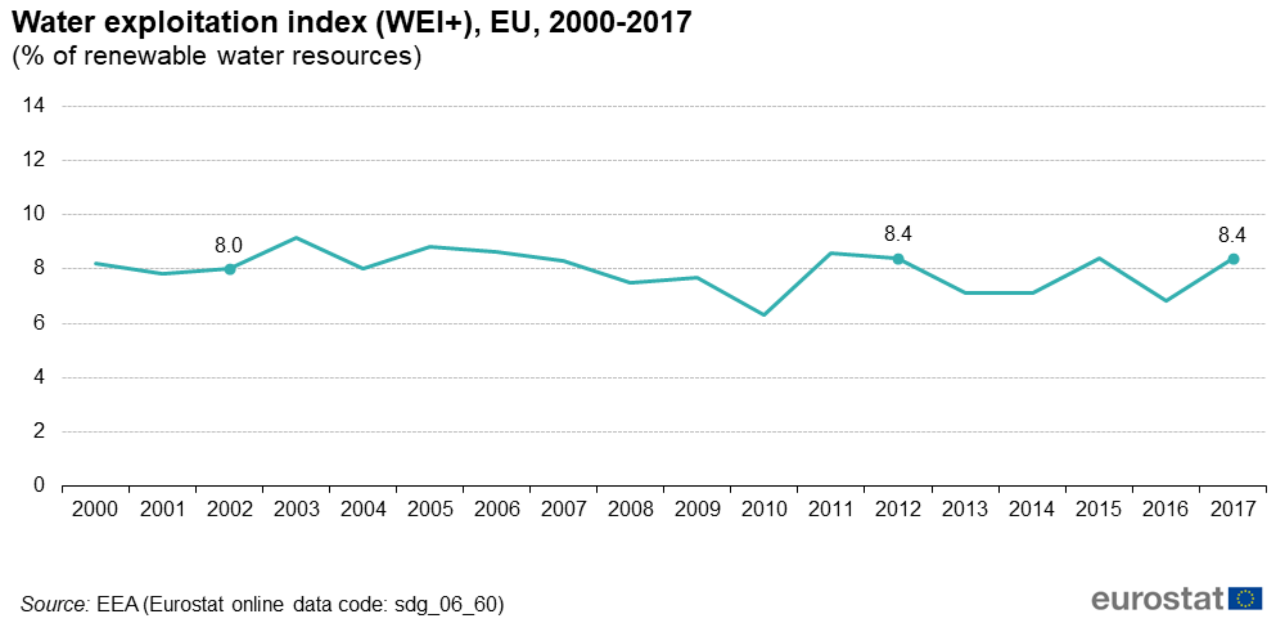

Figure 11: Water exploitation index plus (WEI+), EU, 2000-2017 (% of renewable water resources) Source: EEA (Eurostat (sdg_06_60))

[12] European Environment Agency (2020), Use of freshwater resources in Europe.

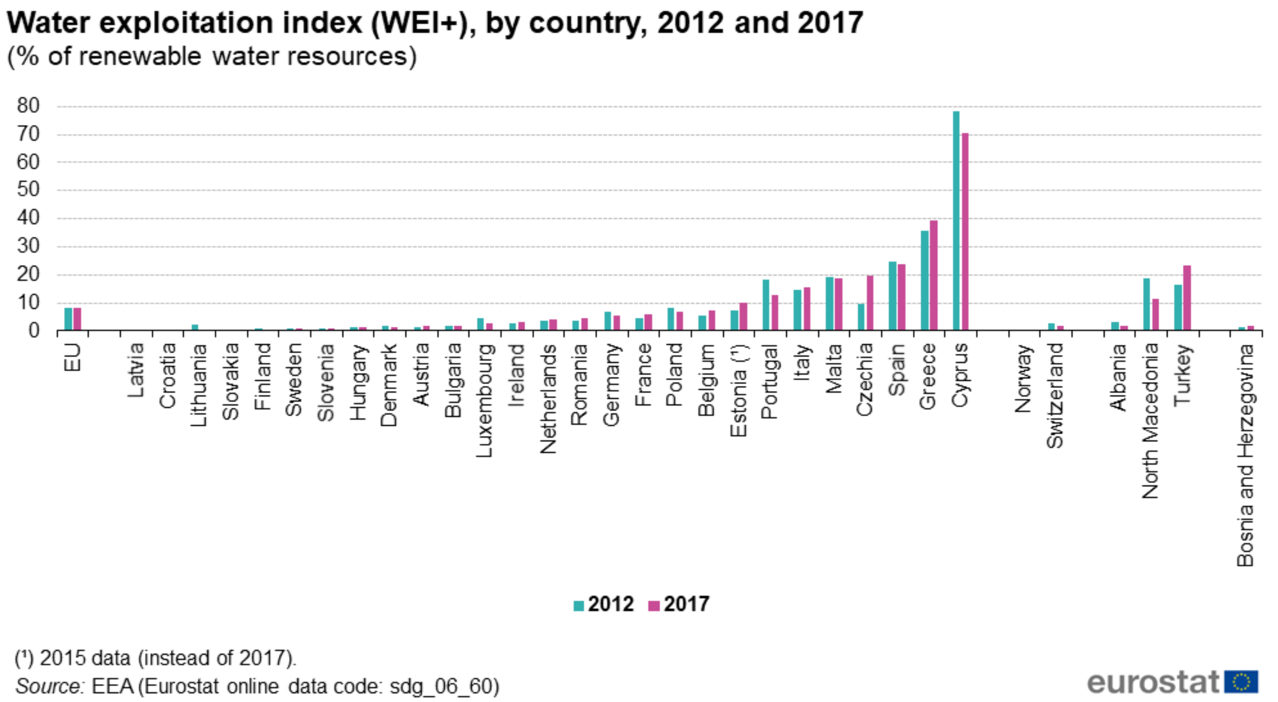

Figure 12: Water exploitation index plus (WEI+), by country, 2012 and 2017 (% of renewable water resources)
Source: EEA (Eurostat (sdg_06_60))

See also

- All articles on sustainable development goals

Database

- Sustainable development indicators

Dedicated section

- Sustainable development indicators

Methodology

More detailed information on EU SDG indicators for monitoring of progress towards the UN Sustainable Development Goals (SDGs), such as indicator relevance, definitions, methodological notes, background and potential linkages, can be found in the introduction of the publication 'Sustainable development in the European Union — Monitoring report on progress towards the SDGs in an EU context — 2022 edition' .

Publications

Further reading on clean water and sanitation

- EEA (2017), Emissions of pollutants to Europe's waters — sources, pathways and trends, ETC/ICM Report 3/2017, European Environment Agency, Copenhagen.
- EEA (2018), European waters — Assessment of status and pressures 2018, ETC/ICM Report No 7/2018, European Environment Agency, Copenhagen.

- EEA (2019), The European environment — State and outlook 2020, Chapter 4: Freshwater, European Environment Agency, Copenhagen.
- European Commission (2019), Commission Staff Working Document, Fitness Check of the Water Frameowrk Directive, Groundwater Directive, Environmental Quality Standards Directive and Floods Directive, SWD(2019) 439, Brussels.
- European Commission (2019), Commission Staff Working Document — Executive summary of the fitness check of the WFD, GWD and EQSD, SWD(2019) 440, Brussels.
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- UN Water (2018), SDG 6 Synthesis Report 2018 on Water and Sanitation.
- EEA (2021), Water resources across Europe — confronting water stress: an updated assessment. ETC/ICM Report 12/2021, European Environment Agency, Copenhagen.
- EEA (2021), Drivers of and pressures arising from selected key water management challenges. A European overview, ETC/ICM Report 9/2021, European Environment Agency, Copenhagen.

External links

Further data sources on clean water and sanitation

- EEA, Urban waste water treatment.
- EEA, Nutrients in freshwater in Europe.
- EEA, Water intensity of crop production in Europe.
- EEA, Use of freshwater resources in Europe.
- Eurostat, Water statistics.