Quality of life indicators - natural and living environment

Statistics Explained

Data from September 2021
Planned article update: September 2022

This article is part of a Eurostat online publication that focuses on quality of life indicators , providing recent statistics for the European Union (EU) . The publication presents a detailed analysis of various dimensions that can form the basis for a deeper analysis of the quality of life, complementing gross domestic product (GDP) which has traditionally been used to provide a general overview of the economic situation and social developments.

This article focuses on the eighth dimension — **natural and living environment** — of the nine dimensions of the quality of life indicators that form part of a framework endorsed by an expert group on quality of life indicators . Although the environment is usually discussed within the context of sustainability, it is equally important for an individual's quality of life. Environmental conditions not only affect human health and well-being directly, but also indirectly, as they may have adverse effects on ecosystems, biodiversity, or even more extreme consequences such as natural disasters or industrial accidents. Many Europeans have become increasingly vocal over their desire to enjoy the benefits that are offered by a high-quality environment, from basic rights such as the provision of clean water to more intangible aspects such as noise-free residential and work environments or easy access to nature and green spaces.

Environmental indicators are relatively abundant: however, from a quality of life perspective, they are often too specific. That said, some environmental indicators may provide valuable information on the quality of life, especially those that analyse an individual's assessment of their environment. The information presented below combines indicators for self-reported exposure to pollution, grime and noise with data from the European Environmental Agency (EEA) concerning the exposure of urban populations to fine particulate matter (a form of air pollution linked — among other sources — to emissions from diesel engines). Since environmental factors may affect an individual's choices (for example, deciding where to live), these aspects are also examined from the perspective of potential links between the risk of poverty and exposure to such environmental conditions, bearing in mind that people at risk of poverty often live in areas characterised by environmental issues and that these issues may, in turn, impact on their quality of life (for example, by affecting their health or by decreasing the value of the property in which they live).

Key messages

- In the EU, self-reported exposure to pollution, grime and environmental problems decreased from 2014 to 2017 (from 15.2 % to 14.2 %), but the trend has since been reversed, almost returning to the starting level (namely, 15.1 %) in the last available year (2019).
- Across most of the EU Member States, people at risk of poverty were more likely to face a higher risk of exposure to pollution, grime and environmental problems than the average for the whole population.
- Between 2007 and 2019, urban populations in the EU became less exposed to particulate matter air pollution.

- In 2019, the exposure of urban populations to particulate matter air pollution was below the level recommended by the World Health Organisation in twelve of the EU Member States.

  More than one in six inhabitants in the EU reported a concern over noise pollution from neighbours or from the street in 2019.

- In 2019, the issue of noise pollution was particularly evident among people at risk of poverty and living in cities.

Exposure to pollution, grime and other environmental problems

On average, 15.1 % of the EU population declared they had been exposed to pollution, grime and environmental problems, ranging from 33.9 % in Malta to 5.9 % in Croatia in 2019

There is evidence to suggest that environmental problems and pollution are associated with lower levels of subjective well-being. The share of the EU population that reported that they had been exposed to pollution, grime and other environmental problems dropped almost continuously from 15.2 % in 2010 to 14.2 % in 2017, but has since then increased, reaching a level of 15.1 % in 2019. (see Figure 1).

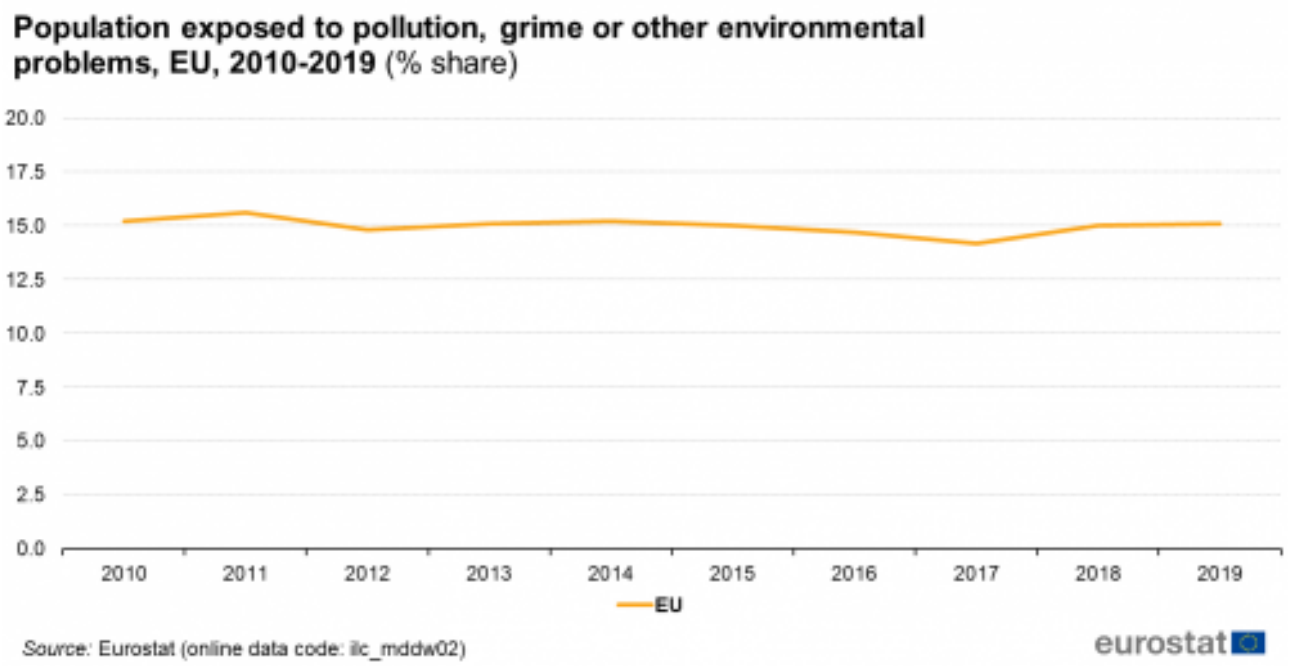
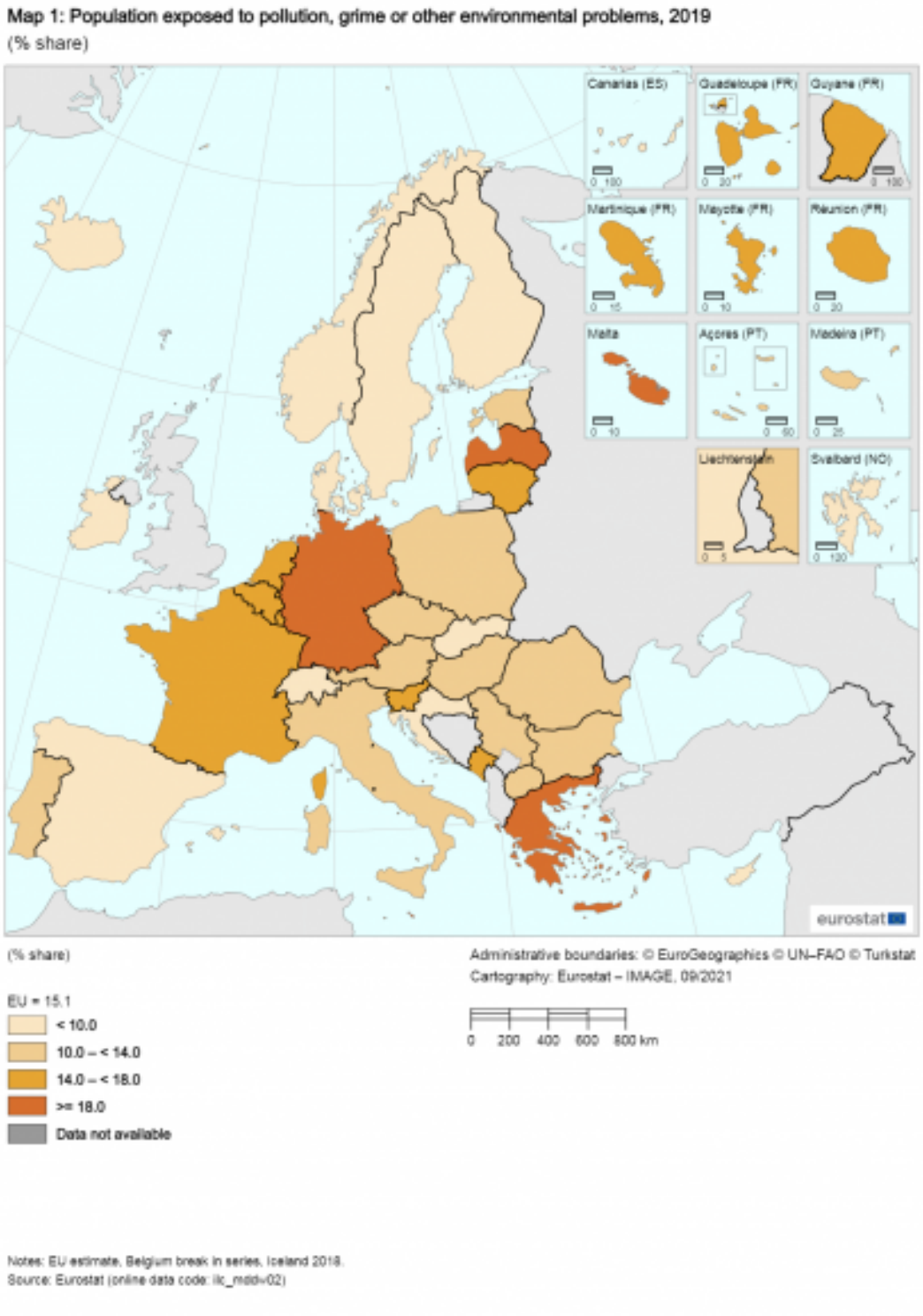


Figure 1: Population exposed to pollution, grime or other environmental problems, EU, 2010-2019 (% share) Source: Eurostat (ilc_mddw02)

This average, however, conceals considerable variations between the different EU Member States. In 2019, Malta recorded by far the highest share (33.9 %) of its population reporting that they had been exposed to pollution, grime or other environmental problems, while the next highest shares were recorded in Germany (25.2 %) and Greece (20.2 %). Two Baltic Member States (Latvia and Lithuania), as well as Slovenia and Luxembourg also recorded rates of exposure to pollution, grime or other environmental problems that were above the EU average (see Map 1). At the other end of the range, the three Nordic Member States (Denmark, Finland and Sweden), together with Croatia, Ireland and Cyprus recorded some of the lowest exposure rates to pollution, grime or other environmental problems (within the range of 5.9-9.4 % of their populations).



Notes: EU estimate, Belgium break in series, Iceland 2018.
Source: Eurostat (online data code: ilc_mddw02)

Map 1: Population exposed to pollution, grime or other environmental problems, 2019 (% share)
Source: Eurostat (ilc_mddw02)

In 2019, the self reported risk of being exposed to pollution, grime or other environmental problems was higher than the average for the total population among people at risk of poverty (see Figure 2); some 15.9 % of the EU population at risk of poverty faced these problems, which was 0.8 percentage points above the average.

This pattern of greater exposure to pollution, grime or other environmental problems among the population at risk of poverty was repeated in a majority of the EU Member States. In 2019, these types of risk were particularly prevalent among the population at risk of poverty in Bulgaria, Hungary and the Netherlands where the share of the population exposed to pollution, grime or other environmental problems was 5.0-7.8 percentage points higher than the average for the total population; relatively large gaps were also recorded in Luxembourg, France, Belgium and Germany (differences of 3.5-4.0 percentage points). By contrast, there were twelve Member States where exposure to pollution, grime or other environmental problems was lower than average among the population at risk of poverty; this was particularly the case in Malta and Lithuania. The different situations among the Member States may reflect, at least to some degree, population distributions across the various territories. For example, in most of western Europe it is common to find people at risk of poverty concentrated in cities (where pollution, grime and other environmental problems may be greater), whereas in some parts of eastern Europe it is more common to find people at risk of poverty living in rural areas (that are generally characterised by lower levels of pollution, grime and environmental problems).

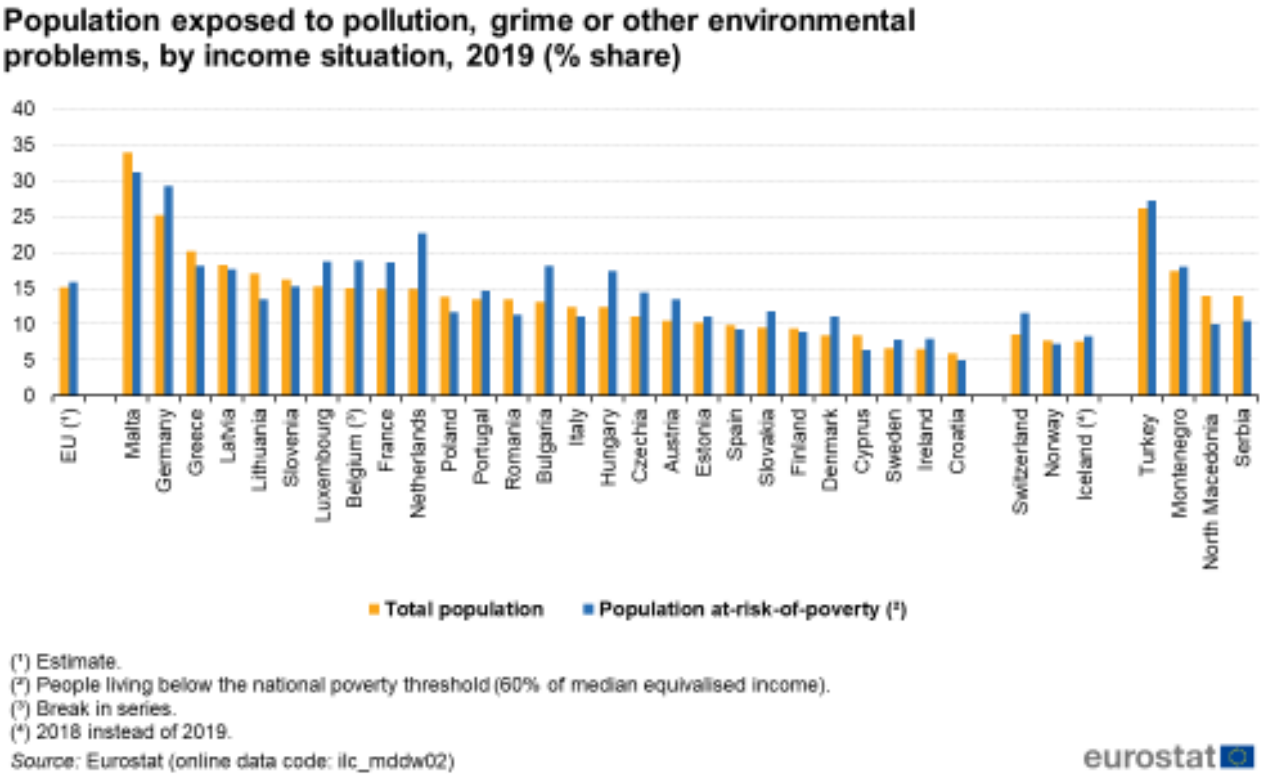


Figure 2: Population exposed to pollution, grime or other environmental problems, by income situation, 2019 (% share) Source: Eurostat (ilc_mddw02)

Exposure to pollution, grime and other environmental problems by degree of urbanisation

Figure 3 presents the self reported exposure to pollution, grime or other environmental problems by degree of urbanisation. Here again, as in the previous paragraph, it becomes evident that city dwellers are more likely to be affected by those problems than people living in rural areas. The difference can be quite substantial in terms of percentage points reaching more than 20 pp in Germany (21.6 pp) and even 30 percentage points in Greece (31.3 pp). Seven Member States saw pp differences between ten and twenty, all other EU countries had less than 10 percentage points between people living in cities and those living in rural areas. There were six countries where the difference in pollution exposure was under 5 percentage points. This was the case in Ireland (3.7 pp), Hungary (3.2 pp), Cyprus (2.6 pp), Luxembourg (1.3 pp) as well as in Slovakia and Estonia (both 1.0 pp).

In absolute numbers, more than 30 % of city dwellers declared that they had been exposed to pollution in Greece (35.1 %), Malta and Germany (both 36.0 %) which was the highest level recorded. Seven Member States had more than 20 % of their city population declaring that they had been affected by environmental problems and 13 more countries between 10 and 20 %. Only four EU countries had less than 10 % of their city population reporting exposure to pollution. These were Slovakia (9.4 %), Cyprus (8.9 %), Ireland (8.8 %) and Croatia (7.9 %).

As regards the rural population, nine Member States had 10 % or more of their respective population exposed environmental problems with Luxembourg (13.0 %), Slovenia (13.7 %) as well as Latvia and Germany (both at 14.4 %) on top of the list. Moreover, 13 EU countries saw between five and ten percent of their rural population reporting exposure to pollution. By contrast, only four countries had less than five percent of their rural population exposed to environmental issues. These were Spain (4.1 %), Greece (3.8 %), Sweden (3.3 %) and Croatia (2.7 %).

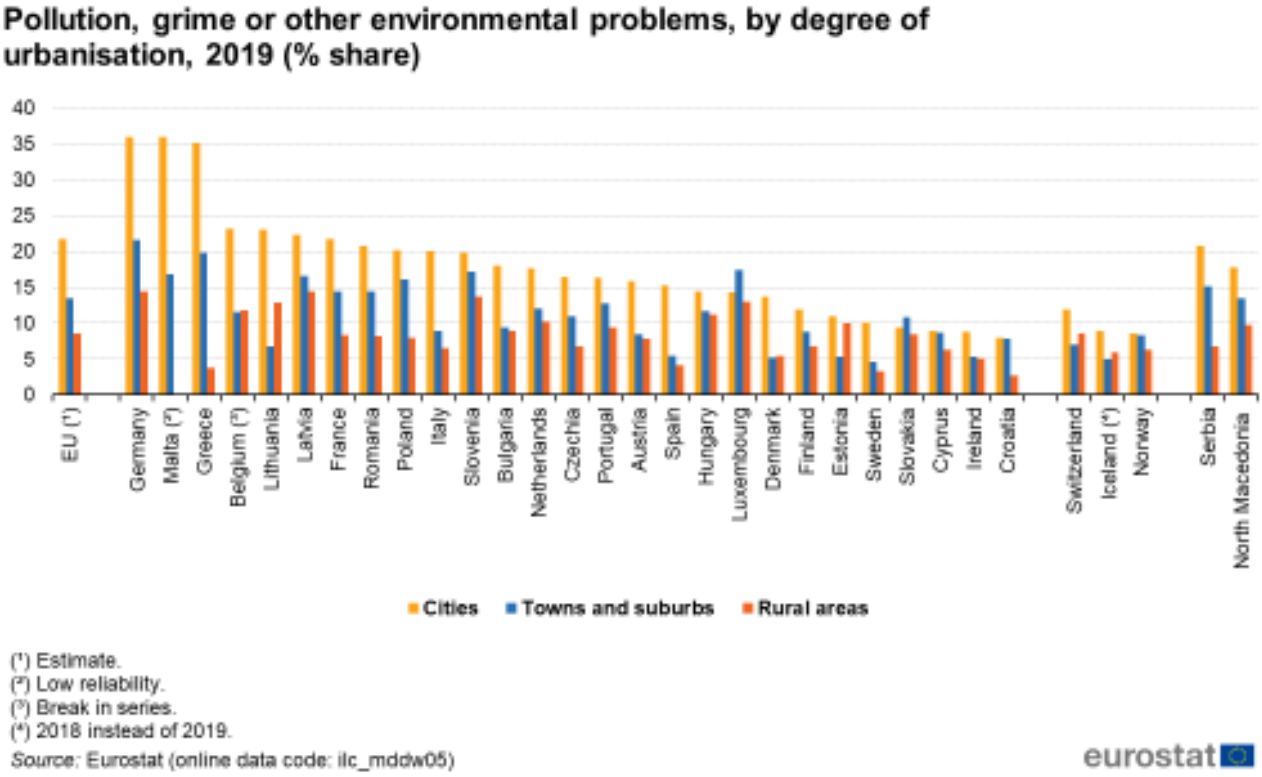


Figure 3: Pollution, grime or other environmental problems, by degree of urbanisation, 2019 (% share) Source: Eurostat (ilc_mddw05)

Urban population exposure to air pollution

In 2019, the EU's urban population was potentially exposed to 20.5 μg/m^3 of particulate matter (PM10), slightly above the WHO target set at 20 μg/m^3

Particulate matter consists of very small floating liquid and solid particles in the air. They are a form of air pollution and originate from a variety of sources that are linked to the burning of fossil fuels, for example, diesel engines, wood stoves or coal-powered energy plants. Exposure to particulate matter over the medium to long-term can be dangerous for an individual's health, in particular for respiratory and cardiovascular systems, potentially leading to heart and/or lung diseases, as these particles are small enough to be carried into the internal organs where they can lead to inflammation.

According to the OECD , research has shown that the concentration of air pollutants, such as particulate matter, may adversely affect life satisfaction and subjective well-being. While an aggregate measure for total air quality is not yet available, the concentration of fine particulates in the air is considered as an adequate proxy.

The concentration of particulate matter (defined here as those whose diameter is less than 10 micrometres or 10 μm, hereafter referred to as PM10) in the air has been a focus for environmental policymakers over several decades. Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air was the first legislation to set EU targets for limiting the amount of pollutants in the air; it included an upper limit of 40 micrograms of PM10 per cubic meter of air (40 $\mu g/m^3$), which was later confirmed by Directive 2008/50/EC on ambient air quality and cleaner air for Europe. In its 2005 update to *Global air quality guidelines* , the World Health Organisation reviewed the scientific evidence available and considered its implications in the form of a set of revised guidelines for selected air pollutants; it set a guideline of 20 $\mu g/m^3$ for PM10.

On average, the urban population of the EU was potentially exposed to 29.3 $\mu g/m^3$ of PM10 in 2007. The level of this air pollutant fluctuated in the period prior to the global financial and economic crisis and peaked at 28.0 $\mu g/m^3$ in 2011. Thereafter, the risk of exposure to particulate matter in the EU generally followed a downward path. By 2019, the EU's urban population was potentially exposed to 20.5 $\mu g/m^3$ of PM10. While this figure remained above the WHO target of 20 $\mu g/m^3$, it did mark an overall fall of 30.0 % when compared with PM10 concentrations in 2007.

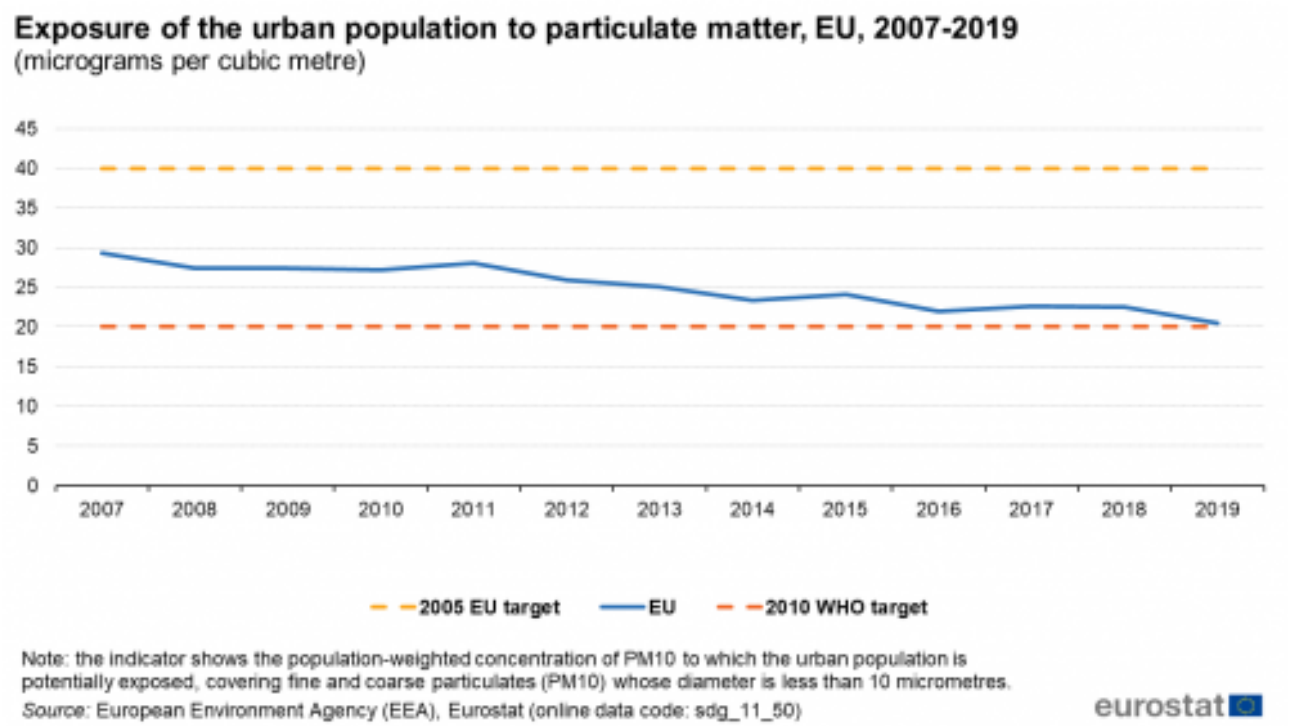


Figure 4: Exposure of the urban population to particulate matter, EU, 2007-2019 (micrograms per cubic metre; $\mu g/m^3$) Source: Eurostat (sdg_11_50)

Figure 5 provides a comparison of the situation between 2010 and 2019 concerning the potential exposure of urban populations to air pollution. In 2019, there were twelve EU Member States where this form of air pollution was below the WHO's threshold of 20 $\mu g/m^3$; these were Spain, the Netherlands, Belgium, Portugal, France, Austria, Denmark, Germany, Ireland, Sweden, Estonia and Finland, where the lowest concentration of PM10 was recorded (10.2 $\mu g/m^3$). By contrast, concentrations of particulate matter were considerably higher than the WHO target in the urban areas of Croatia (30.9 $\mu g/m^3$) and Bulgaria (30.4 $\mu g/m^3$), these two countries being the only Member States to record potential exposure to levels above 30 $\mu g/m^3$.

A comparison between 2010 and 2019 reveals that there was generally a fall in the potential exposure of urban populations to PM10 across the EU Member States. The only exceptions, meaning an increase in this form of

air pollution, were recorded in Luxembourg and Denmark, where average urban PM10 concentrations rose by 3.3 and 4.4 points, respectively. On the other hand, the potential exposure of urban populations to particulate matter fell at a rapid pace in several Member States. This was particularly the case in Cyprus where this type of air pollution was reduced by almost half (45.8 %), while PM10 concentrations fell by more than 30 % in five more member states, namely Bulgaria, Austria, Czechia, Poland and France (ranging from 37.2 % to 30.4 %). There were nine more EU countries where the reduction was more than one fifth of the initial value.

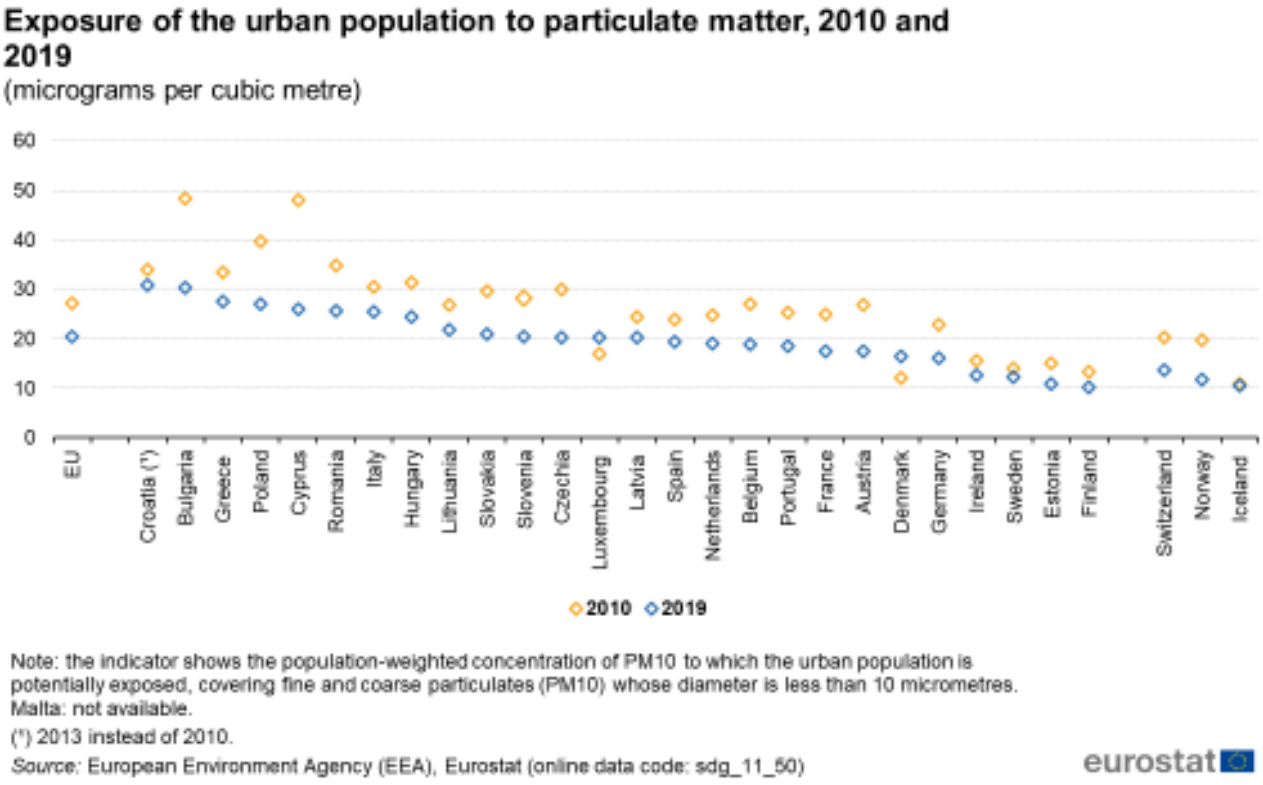


Figure 5: Exposure of the urban population to particulate matter, 2010 and 2019 (micrograms per cubic metre; $\mu g/m^3$) Source: Eurostat (sdg_11_50)

Noise pollution from neighbours or from the street

17.3 % of the EU population declared they had been exposed to noise pollution from neighbours or the street in 2019, 3.3 pp lower than in 2010

Noise pollution is formally defined as exposure to ambient sound levels that are beyond usual comfort levels. It can have serious direct and indirect health effects, for example, leading to hypertension, high stress levels, sleeping disorders and, in extreme cases, tinnitus or hearing loss. The information that follows is based on self-reported disturbance from noise originating from neighbours or the street; it provides one measure of the impact that noise may have on an individual's quality of life.

In 2010, about one fifth (20.6 %) of the EU population reported exposure to noise pollution that was beyond their comfort levels (see Figure 6). This share fell almost continuously between 2010 and 2017 and by the end of the period under consideration it was 3.3 percentage points lower, at 17.3 %.

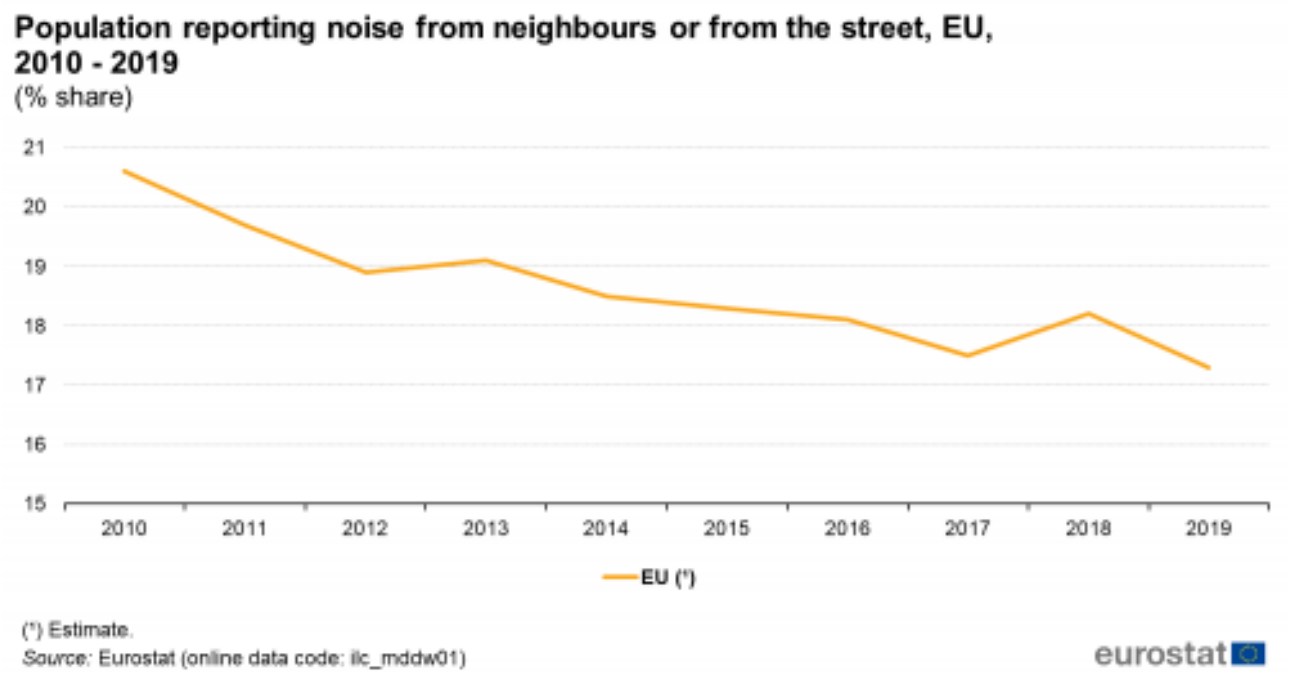


Figure 6: Population reporting noise from neighbours or from the street, EU, 2010-2019 (% share) Source: Eurostat (ilc_mddw01)

Across the EU Member States, the share of the population reporting noise from neighbours or from the street ranged from no more than 1 in 10 persons in Croatia, Ireland and Estonia (all at 8.2 %) up to more than one fifth of the population in Denmark (20.1 %), Luxembourg (20.2 %), Portugal (22.7 %) and more than one quarter of the population in Germany (26.1 %), the Netherlands (26.6 %) and Malta (28.3 %).

People at risk of poverty were more likely to suffer from noise. In the EU, one fifth (20.0 %) of the population at risk of poverty in 2019 was subjected to noise from neighbours or from the street; this figure was 2.7 percentage points higher than the average share for the total EU population. This pattern was repeated in the majority of the EU Member States, with the only exceptions being Latvia, Greece, Romania, Croatia, and Cyprus (note that a relatively high share of people at risk of poverty in all of these Member States are living in rural areas). By contrast, in western Member States it was more common to find poverty concentrated in cities and this may explain, at least to some degree, why the share of the population reporting noise was more than 10 percentage points higher among people at risk of poverty than the average for the whole population in the Netherlands, while significant differences were also recorded in Denmark (9.5 pp) and France (8.8 pp).

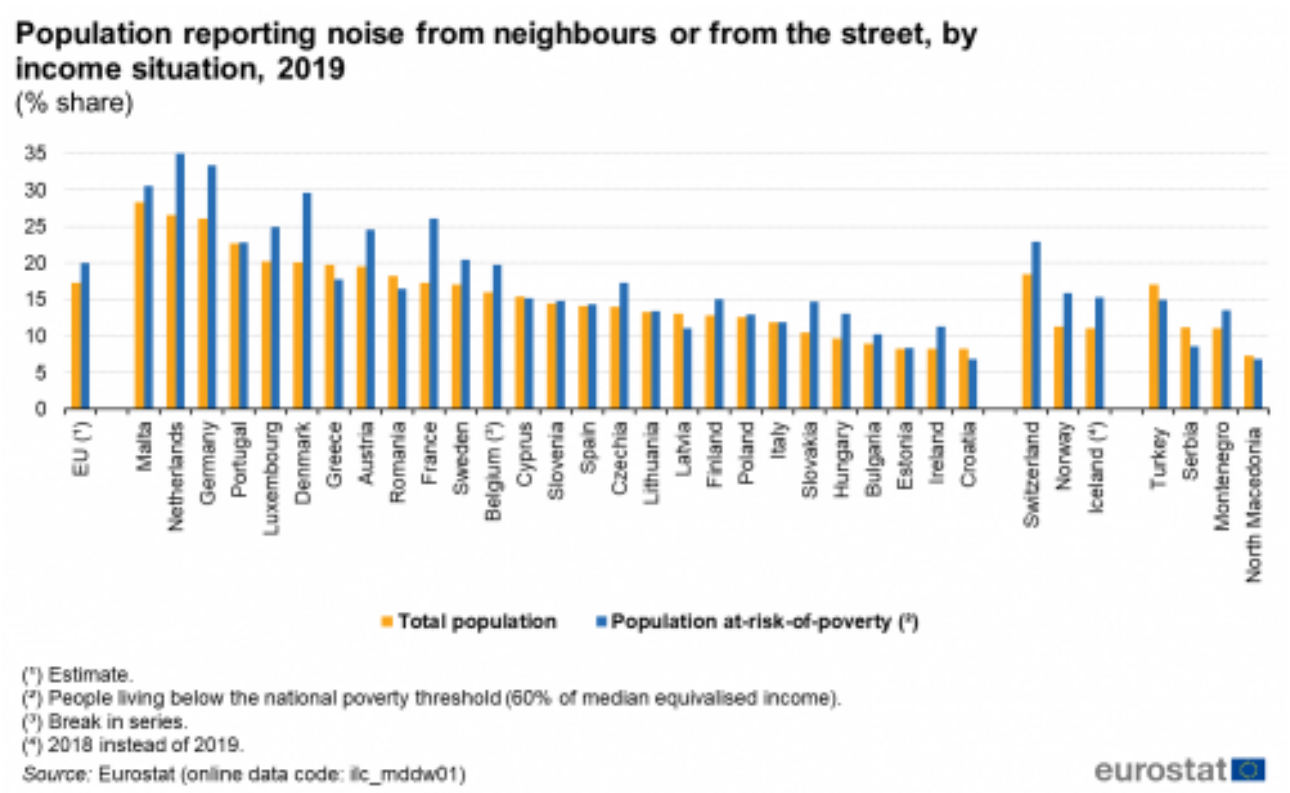


Figure 7: Population reporting noise from neighbours or from the street, by income situation, 2019 (% share) Source: Eurostat (ilc_mddw01)

Noise pollution from neighbours or from the street by degree of urbanisation

In 2019 more than 24 % of people living in cities reported noise from neighbours or from the street across the EU. This figure is more than twice as high as the 10.4 % who reported the same issue while living in rural areas (see Figure 8).

There were four Member States where more than 30 % of city dwellers were affected by the problem, in particular Portugal, Greece, the Netherlands and, on top of the list, Germany with 34.1 %. In 18 countries noise in the cities was lower than the EU average. Out of those three Member States reported figures under 10 %, namely Estonia, Croatia and Slovakia where the lowest level was recorded at 8.1 %. Slovakia was also the only country where (slightly) more people in rural areas were affected by noise from the neighbours or from the street. On the other hand, people in towns and suburbs in Slovakia seemed to be more affected by noise pollution (14.5 pp reported having this issue). Everywhere else the situation was reverse, i.e. city dwellers suffering more from street noise than people living in rural areas. The difference in noise pollution was more than 27 percentage points in Greece, the only country recording a difference higher than 20 p.p. In eleven Member States the differences were between 10 and 20 p.p. and in thirteen countries lower than 10 percentage points.

Regarding rural areas, the highest level of noise pollution was recorded in Germany as 18.8 % of the population were affected by that problem. Ten more EU countries saw more than 10 % of their rural dwellers being exposed to noise from the street or from neighbours. All other Member States had less than 10 % suffering from that issue, and two countries even below 5 %, namely Bulgaria (4.5 %) and Ireland (3.9 %).

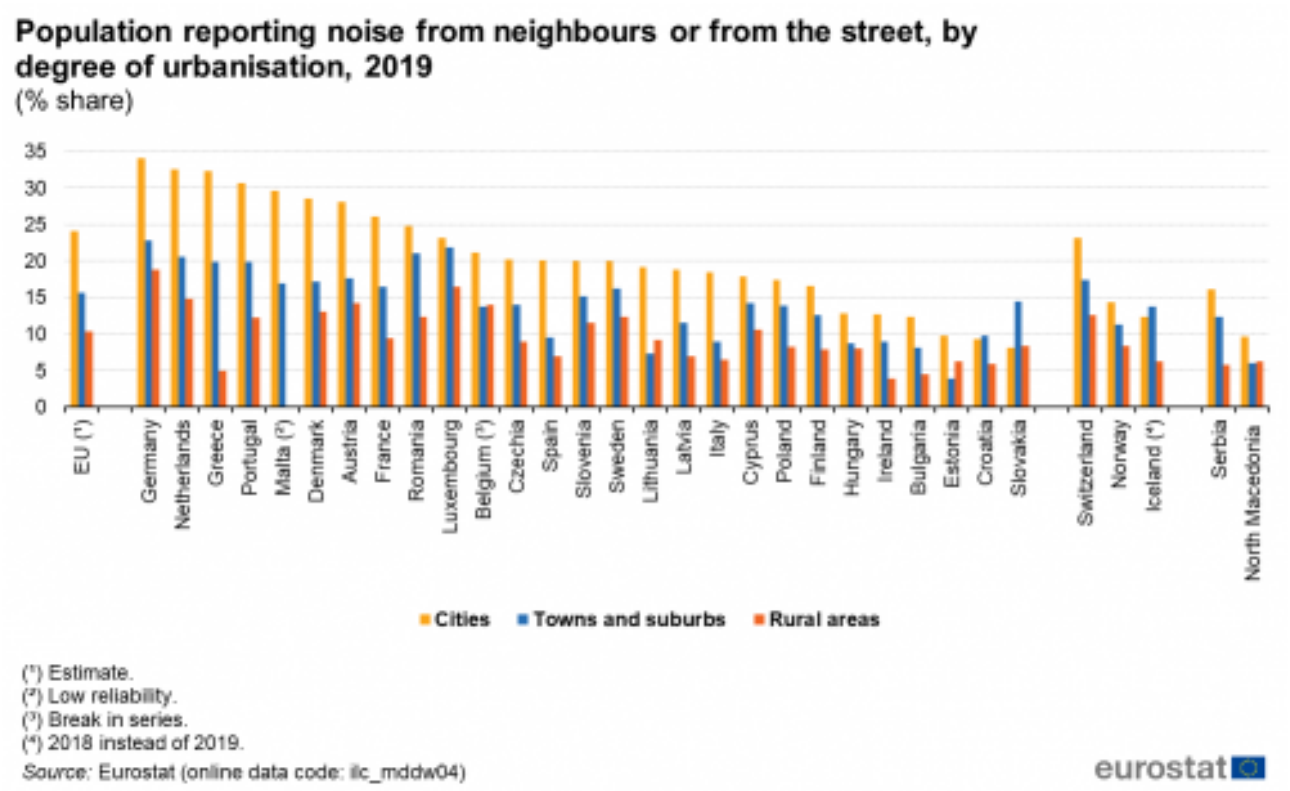


Figure 8: Population reporting noise from neighbours or from the street, by degree of urbanisation, 2019 (% share) Source: Eurostat (ilc_mddw04)

Source data for tables and graphs

- Quality of life — Natural and living environment

Data sources

Most of the data used in this article are derived from EU statistics on income and living conditions (EU-SILC) . An individual's quality of life is predominantly affected by inherently local environmental factors: as such, an effective analysis of the quality of life can be provided through surveys that collect information based on self-reporting of subjectively perceived environmental issues, rather than aggregated measures of environmental conditions (air pollution or emissions).

Although not covered here, note that in the 2013 ad hoc module on subjective wellbeing, EU-SILC extended its coverage of this topic by providing measures of self-reported satisfaction with recreational and green areas and self-reported satisfaction with the immediate living environment (see the EU-SILC ad-hoc module for 2013).

Urban population exposure to air pollution by particulate matter on the other hand is the only indicator in this article with a different source, the European Environment Agency . This indicator is also used as a Sustainable Development Goal indicator. It is used for the assessment of progress towards the objectives and targets of Sustainable development in the European Union , in particular Goal 11 Sustainable cities and communities .

Context

The natural and living environment dimension of the quality of life framework refers to environmental aspects that impact on an individual's quality of life. Environmental conditions affect human health, well-being and other quality of life aspects, both directly, for instance through pollution, and indirectly, for example, by having an impact on property prices which could in turn affect an individual's economic prosperity. At the same time, growing environmental awareness means that an increasing share of the EU's population values their rights to access (often intangible) environmental resources.

The EU's seventh Environment Action Programme (7th EAP) provides guidance for the EU's environment policy through to 2020, as well as a more long-term vision through to 2050. Its key objectives are to: protect, conserve and enhance the EU's natural capital; turn the EU into a resource-efficient, green and competitive, low-carbon economy; while safeguarding EU citizens from environmental pressures that present a risk to health and well-being. Within its action programme the EU has committed to considerably reduce noise pollution: for example, by changes to the way that cities are designed or reducing noise at source. The Environmental Noise Directive (Directive 0049/2002/EC) is the EU's main policy instrument to assess and manage environmental noise; it does not apply to noise from domestic activities, created by neighbours, at work places or inside means of transport.

Other articles

- Air pollution statistics - emission inventories
- Living conditions in Europe - housing
- Quality of life indicators (online publication)

Main tables

- Income and living conditions (t_ilc) , see:

Material deprivation (t_ilc_md)

Environment of the dwelling (t_ilc_mddw)

- Sustainable development indicators , see:

Goal 3 — Good health and well-being (sdg_03)

Goal 11 — Sustainable cities and communities (sdg_11)

Goal 12 — Responsible consumption and production (sdg_12)

Goal 13 — Climate action (sdg_13)

Database

- Income and living conditions (ilc) , see:

Material deprivation (ilc_md)

Environment of the dwelling (ilc_mddw)

EU-SILC ad-hoc modules (ilc_ahm)

2014 — Material deprivation (ilc_mdm)

2013 — Personal well-being indicators (ilc_pwb)

2012 — Housing conditions (ilc_hcm)

Dedicated section

- Quality of life
- Sustainable development goals

Publications

- Quality of life in Europe - Facts and Views

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