8TH EAP THEMATIC PRIORITY OBJECTIVE
Zero pollution and a toxic-free environment

4 Zero pollution and a toxic-free environment

Pursuing zero pollution to achieve a toxic-free environment

EU citizens are already benefiting from years of successful environmental policies that have contained or reduced the emissions of key pollutants to the air, water and soil. However, pollution still harms human health and the environment. The 8th Environment Action Programme (EAP) ([1]) pursues a zero pollution goal to achieve a toxic-free environment by 2030. The European Commission's zero pollution action plan ([2]), a key deliverable of the European Green Deal ([3]), underpins the implementation of the 8th EAP and includes actions to reduce pollution by 2030 and, by 2050, achieve levels that are no longer harmful to human health and natural ecosystems.

To capture progress on efforts to reduce pollution, the European Commission's 8th EAP monitoring framework ([4]) includes two indicators and corresponding 2030 targets:

- An indicator on premature deaths attributed to exposure to fine particulate matter to monitor whether the EU will reduce such deaths by at least 55% compared to 2005 levels by 2030.
- An indicator on nitrates in groundwater to monitor whether the EU will reduce by at least 50% nutrient losses into safe groundwater resources by 2030.

The indicator assessment results are summarised further below. With the implementation of existing legislation and new legislation taking effect, a reduction in premature deaths attributed to fine particulate matter is expected to be sufficient to meet the 2030 target. For groundwater quality, it is uncertain but unlikely that nutrient losses to groundwater could be reduced by 50% by 2030, due to lack of progress so far despite legislation that has been in place for several decades. Most of these losses result from excessive fertiliser use. Some progress is expected by 2030 thanks to extra initiatives under the European Green Deal.

The methodology used to determine the prospects of meeting the 2030 targets is described in Annex 2. It is also explained in the following key:

Methodology key

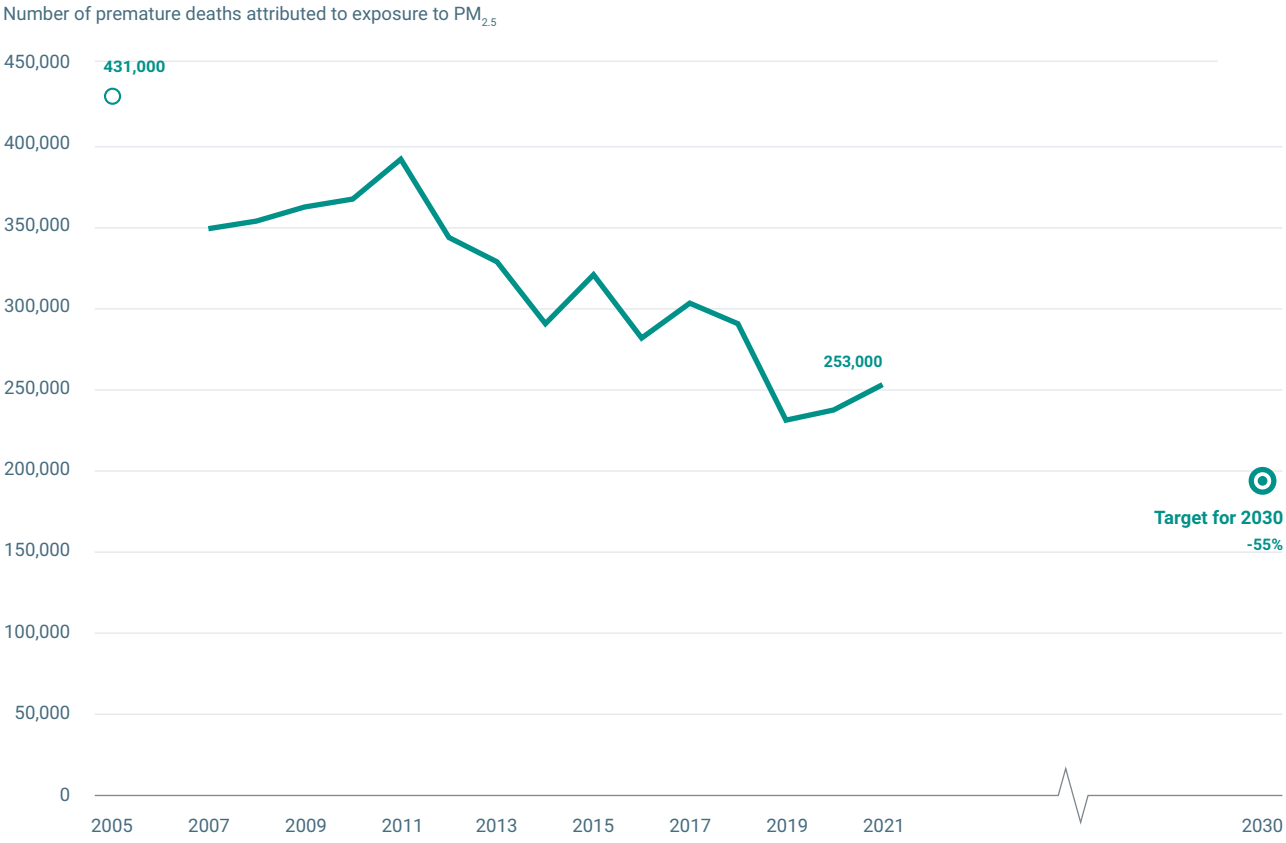
Will the objective be met by 2030?	
It is very likely	i.e. it answers 'yes' with a high degree of confidence to the question
It is likely but uncertain	i.e. it answers 'maybe yes' to the question
It is unlikely but uncertain	i.e. it answers 'maybe no'
It is very unlikely	i.e. it answers 'no' with a high degree confidence
It is unclear	i.e. the prospects cannot be determined (e.g., insufficient data/evidence, no correlation between indicator and selected objective)

Premature deaths due to air pollution (exposure to fine particulate matter):

Will they be reduced by 55% from 2005 levels by 2030?

Very likely. The target will be overreached and reach 68% if the trend of the past 10 years continues to 2030.

Figure 4.1 **Premature deaths attributable to exposure to fine particulate matter, EU**



Source: EEA.

Relevance and policy target

- Air pollution is a major cause of mortality and disease in Europe and is the largest environmental health risk ([5]). The air pollutant deemed to cause the most severe impacts on human health is fine particulate matter ($PM_{2.5}$) ([6]).

- The European Commission's zero pollution action plan sets a target of reducing the health impacts of air pollution (estimated by the number of premature deaths attributable to $PM_{2.5}$) by at least 55% by 2030, compared to the 2005 level.

Indicator past trend (2005-2021): decrease ↓
Latest value (2021): 253,000 premature deaths attributable to exposure to fine particulate matter

- Between 2005 and 2021, the number of premature deaths in the EU attributable to exposure to $PM_{2.5}$ fell by 41%. Despite ongoing improvement, there were 253,000 such deaths in the EU in 2021.

- The decline in premature mortality was the result of implementing EU and derived national and local policies to improve air quality and to reduce emissions of air pollutants. These policies succeeded in reducing $PM_{2.5}$ emissions from domestic heating, their main source, as well as from other sources such as transport, industry and agriculture ([7]).

2030 outlook

- It is very likely that the 2030 55% zero pollution action plan reduction target will be met.

- The target will be exceeded and will reach 68% if the trend of the past 10 years continues to 2030.

- The Zero pollution outlook 2022, published by the European Commission Joint Research Centre, expects that the target will be overreached if the foreseen clean air measures, with the climate and energy polices of the Fit for 55 package ([8]), are implemented. The outlook predicts a reduction of 66% by 2030 if these conditions are met ([9]).

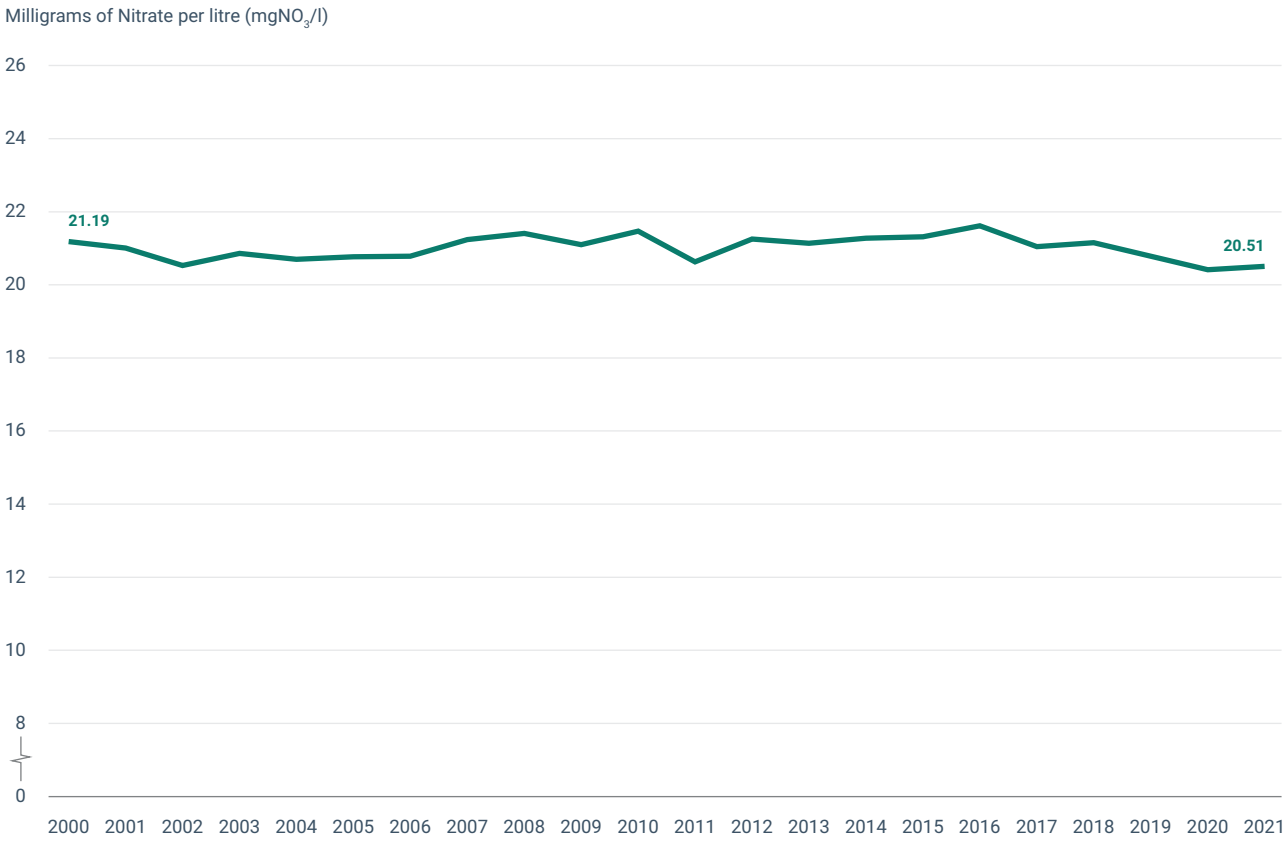
For more references and additional information, including at country level, see the full indicator version.

Nitrates in groundwater:

Will nutrient losses into safe groundwater resources decrease by at least 50% by 2030?

Unlikely but uncertain. There has not been significant change so far in the average nitrate concentrations in groundwater despite legislation in place. However, some improvement is expected by 2030.

Figure 4.2 **Nitrates in groundwater, EU**



Source: EEA.

Relevance and policy target

- Nutrients such as nitrogen not absorbed by plants are lost to the environment. When present in excessive amounts, they become pollutants. This includes high levels of nitrate (NO_3) in groundwater, which poses a threat to the environment and to human health ([10])([11]).

- The European Green Deal, with its initiatives of the zero pollution action plan and the biodiversity ([12]) and farm to fork ([13]) strategies, set a goal for the EU to reduce nutrient losses to the environment (air, water and soil) by 50% by 2030.

- Several directives address nitrogen losses to the environment. The drinking water ([14]) and groundwater ([15]) directives set the maximum allowable concentration for nitrate at 50mg NO_3/l to protect human health and drinking water resources.

Indicator past trend (2000-2021): stable →
Latest value (2021): 20.5 milligrams of average nitrate concentration per litre of groundwater

- Despite legislation in place addressing nutrient pollution, average NO_3 concentration in EU groundwater did not change significantly from 2000 to 2021, remaining at approximately 21mg NO_3/l. In the most recent analysis of groundwater concentrations reported under the nitrates directive ([16]) covering the period 2016-2019, 14.1% of groundwater stations exceeded the maximum allowable concentration of 50mg NO_3/l which is very similar to the 13.1% observed in the previous reporting period of 2012-2015 ([17]).

- Mineral fertilisers and manure are the main sources of nitrate concentrations in EU groundwater. An estimated 80% of the nitrogen discharge to the EU aquatic environment comes from agriculture ([18])([19]).

2030 outlook

- It remains unlikely but uncertain that nutrient losses to groundwater will decrease by 50% by 2030 across the EU. However, in recognition of the seriousness of the problem, the broad portfolio of measures under the European Green Deal and its Farm to Fork and Biodiversity strategies, zero pollution ambition and the European Climate Law ([20]), in combination with the new common agricultural policy (CAP, 2023-2027) ([21]), should lead to improvements.

- A recent analysis by the European Commission Joint Research Centre modelled a future impact of improvements in domestic wastewater treatment, reduction of nutrient emissions to air and measures under the CAP 2023-2027 needed to achieve the Biodiversity Strategy and Farm to Fork targets. In combination, these measures could reduce the nutrient load in European seas by about 30% for nitrogen and 20% for phosphorous, where the CAP measures are particularly relevant for groundwater. While these projected reductions are substantial, they are only an element of the target of 50% reduction in nutrient losses and on their own will not result in reaching the target ([22]).

For more references and additional information, including at country level, see the full indicator version.

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