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REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

on the progress made on the implementation of Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants

1. INTRODUCTION

Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants (the Directive) is one of the legislative instruments that contribute to reaching the 2030 air pollution objectives of the Zero Pollution Action Plan ([1]). It sets national emission reduction commitments for each EU Member State for 2020-2029 and more ambitious ones as of 2030. It targets five air pollutants responsible for significant negative impacts on human health and the environment, namely: sulphur dioxide (SO_2); nitrogen oxides (NO_x); non-methane volatile organic compounds (NMVOC); ammonia (NH_3); and fine particulate matter ($PM_{2.5}$).

The Directive entered into force on 31 December 2016, repealing Directive 2001/81/EC ([2]) on national emission ceilings for certain atmospheric pollutants with effect from 1 July 2018. The Directive sets national reduction obligations for pollutant emissions, expressed as a percentage of the emissions of each pollutant in the baseline year 2005. These obligations have applied since 2020, with emissions data reported for the first time in 2022.

The Directive's emission reduction commitments for 2020 to 2029 correspond to the emission reduction commitments for 2020 onwards taken by the EU and its Member States under the revised Gothenburg Protocol ([3]) to the UNECE Air Convention ([4]). The Directive transposes those international obligations into EU law, and sets more ambitious commitments for 2030 onwards.

The Directive addresses overall national emissions. It is part of the EU legal framework on clean air, alongside the EU Ambient Air Quality Directive(s) ([5]) and EU legislation regulating air pollution at source ([6]). The effective implementation of clean air legislation is essential for achieving the two air-related 2030 targets of the Zero Pollution Action Plan, i.e.: (i) reducing by more than 55% the health impacts of air pollution (expressed as premature deaths due to $PM_{2.5}$ pollution) in the EU; and (ii) reducing by 25% the ecosystems area where air pollution threatens biodiversity (compared to 2005 levels).

Member States were required to fully transpose (i.e. integrate into national law) Directive (EU) 2016/2284 by 1 July 2018.

([1]) COM/2021/400 final

([2]) Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants, OJ L 309, 27.11.2001, p. 22.

([3]) 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to the Convention on Lang-range Transboundary Air Pollution, as amended on 4 May 2012 (amended Gothenburg Protocol). http://www.unece.org/env/lrtap/status/lrtap_s.html

([4]) 1979 Convention on Long-Range Transboundary Air Pollution (Air Convention). https://www.unece.org/environmental-policy/conventions/envlrtapwelcome/the-air-convention-and-its-protocols/the-convention-and-its-achievements.html

([5]) Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (OJ L 152, 11.6.2008) and Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (OJ L 23, 26.1.2005). The Commission proposed to revise these Directives on 26 October 2022 (COM(2022) 542 final/2). Council and Parliament reached a political agreement on a revised Directive in early 2024 (https://www.consilium.europa.eu/en/press/press-releases/2024/02/20/air-quality-council-and-parliament-strike-deal-to-strengthen-standards-in-the-eu/)

([6]) An overview is available at: https://environment.ec.europa.eu/topics/air/air-pollution-key-sectors_en

The Commission followed up on the eight instances of late communication of the transposition of the Directive with letters of formal notice, in line with Article 258 of the Treaty on the Functioning of the European Union (TFEU). All eight cases have since been closed.

The Commission has checked the conformity of the notified national measures, and initiated nine infringement procedures due to national legislation not being in line with the requirements of the Directive. All but one ([7]) of those procedures have since been closed.

According to Article 11(1) of the Directive, the European Commission has an obligation to inform the European Parliament and the Council on the implementation progress made.

A first implementation report was presented in 2020 ([8]). This second report comes 4 years after the previous one, as required by Article 11 of the Directive. It presents the progress made to date in implementing the Directive, and includes an assessment of its contribution to achieving the objectives set out in Article 1. More precisely, Article 11(1) of the Directive requires the Commission to report on progress towards:

- the indicative emission levels and emission reduction commitments referred to in Article 4 and, where applicable, the reasons for any non-achievement;
- ambient air quality levels in line with the air quality guidelines published by the World Health Organization;
- the EU's biodiversity and ecosystem objectives set out in the seventh environment action programme.

Article 11(1) also requires the Commission to:

- identify further measures required at EU and Member State level to achieve these objectives;
- report on the uptake of EU funds to support the measures taken to comply with the Directive's objectives;
- present the results of the Commission's examination of the national air pollution control programmes and their updates in line with the third subparagraph of Article 10(1);
- evaluate the health, environmental and socio-economic impacts of this Directive.

Article 11(2) further requires the Commission to investigate the need for further action, including possible legislative measures, where the report indicates that a non-achievement of the indicative emission levels and emission reduction commitments could be the result of ineffective EU source legislation, including its implementation at Member State level.

The fourth Clean Air Outlook, planned for the end of 2024, which follows on from the previous editions ([9]), will complement this report by providing information on the trajectory to compliance. More specifically, the 2024 Clean Air Outlook will provide a detailed analytical assessment of the extent to which Member States and the EU as a whole are on track to meet the Directive's emission reduction requirements and to improve air quality, thus reducing impacts on human health and on the environment, as well as of the costs and benefits of the needed measures and expected impacts.

([7]) The still open procedure is against Poland (https://ec.europa.eu/commission/presscorner/detail/en/INF_21_2743)
([8]) COM(2020) 266 final.
([9]) All available at: https://environment.ec.europa.eu/topics/air/clean-air-outlook_en

2. PAST AND PROJECTED ACHIEVEMENT OF THE EMISSION REDUCTION COMMITMENTS

2.1. Emission reduction achieved so far and compliance checks

The central obligation for Member States, as set out in the Directive, is to reduce emissions for the air pollutants SO_2, NO_x, NMVOC, NH_3 and $PM_{2.5}$ for the years 2020-2029 and from 2030 onwards. Member States' reduction commitments are expressed as a percentage of 2005 emission levels. Figure 1 presents changes in emissions of these pollutants at EU level, showing that emissions of all pollutants but ammonia have substantially decreased over time. This, however, hides discrepancies between Member States, whose changes over time are detailed in European Environmental Agency (EEA) publications ([10]).

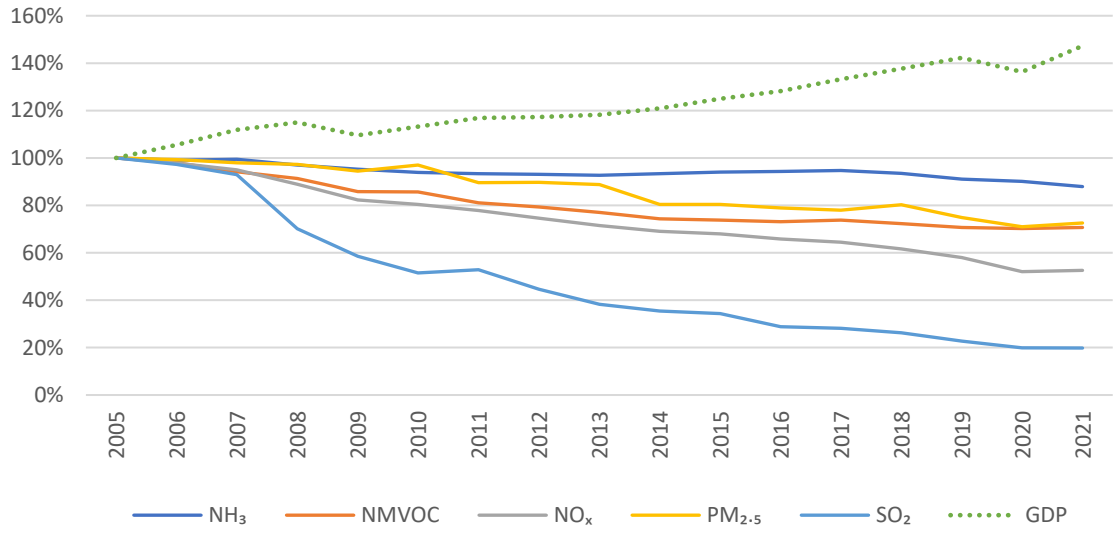


Figure 1: 2005-2021 trends in EU emissions of NH_3, $PM_{2.5}$, NMVOC, NO_X and SO_2, as percentages of 2005 levels, set against EU Member States' GDP as a percentage of the 2005 GDP (source: https://www.eea.europa.eu/publications/national-emission-reduction-commitments-directive-2023)

Based on the emission inventories reported every year by Member States under the Directive, the Commission checks compliance with the emission reduction commitments. Inventories contain emissions data with a 2-year time lag. The latest inventories reported by Member States in February 2024 include emissions data from 2022. In 2022, the Comission therefore checked, for the first time, Member States' compliance with the emission reduction commitments, on the basis of reviewed 2020 emissions data.

As shown in Table 1, overall compliance is relatively good for all pollutants except ammonia. In 2022, the Commission found 19 cases of non-compliance, spread over 14 Member States ([11]). While all five pollutants are concerned, most non-compliance cases relate to ammonia. As a consequence, the Commission issued letters of formal notice to these 14 Member States ([12]).

([10]) For pollutant trends per country, see: https://www.eea.europa.eu/data-and-maps/dashboards/necd-directive-data-viewer-7. For the latest state-of-play on distance to compliance per Member State and an overall assessment of progress, see: https://www.eea.europa.eu/publications/national-emission-reduction-commitments-directive-2023

([11]) Bulgaria, Denmark, Ireland, Spain, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Austria, Poland, Portugal, Romania and Sweden.

([12]) https://ec.europa.eu/commission/presscorner/detail/EN/inf_23_142

The 2023 compliance assessment, based on reviewed 2021 data, showed that most non-compliance cases have not been resolved, and that there were a few additional breaches ([13]). The Commission has followed up accordingly, with three ([14]) additional letters of formal notice and nine ([15]) reasoned opinions issued in November 2023 ([16]).

Table 1: Overview of non-compliance with emission reduction commitments based on 2020 and 2021 data

Pollutant	Member States non-compliant in 2020*	Member States non-compliant in 2021†
NH_3	11 MS: AT, BG, DK, ES, HU, IE, LT, LU, LV, PT, SE	10 MS: AT, BG, DK, HU, IE, LT, LU, LV, PT, SE
$PM_{2.5}$	3 MS: HU, LT, RO	3 MS: HU, PL, RO
NMVOC	2 MS: LT, PL	3 MS: LT, LU, PL
NO_x	2 MS: LT, RO	2 MS: LT, RO
SO_2	1 MS: CY	1 MS: CY

*According to inventories reported by Member States in 2022 (on which the letters of formal notice issued in January 2023 were based).
†According to inventories reported by Member States in 2023 (on which the letters of formal notice and reasoned opinions issued in November 2023 were based).

Inventories need to be of good quality for a reliable assessment of compliance. The Commission closely monitors the quality of inventories and supports Member States' efforts to improve them (see Section 5.1 of this report), including by conducting and publishing reviews of national inventories ([17]) and providing capacity building support.

When reviewing national inventories, the Commission verifies the transparency, accuracy, consistency, comparability and completeness of information provided.

According to the 2023 review ([18]), the quality of inventories was good for most Member States, but that there was some variation between countries, with a few inventories being of notably poorer quality. Significant areas for improvement exist across all sectors and pollutants, and include:

- over- or underestimated emissions and inconsistencies within data time series;
- lack of transparency on methodologies and recalculations compared to previous inventories;
- a need for more sophisticated methods to estimate emissions for key emission sources as well as for uncertainty analysis.

([13]) Croatia failed to submit its emissions inventory in 2023 and therefore received a letter of formal notice. It therefore does not appear in the compliance assessment for 2021 emissions.
([14]) Luxembourg, Poland and Romania.
([15]) Bulgaria, Cyprus, Ireland, Hungary, Latvia, Lithuania, Austria, Portugal and Sweden.
([16]) November infringement package (https://ec.europa.eu/commission/presscorner/detail/en/inf_23_5380).
([17]) See: https://environment.ec.europa.eu/topics/air/reducing-emissions-air-pollutants/emissions-inventories_en#review-of-national-emission-inventories
([18]) See the EU-wide assessment in the horizontal review report: https://circabc.europa.eu/ui/group/cd69a4b9-1a68-4d6c-9c48-77c0399f225d/library/a43a894a-191f-42c1-bb45-5dfc696ebdb3/details?download=true

The inventory reviews assess not only the quality of the inventory data but also whether a Member State's application for a flexibility according to Article 5 of the Directive can be accepted. Article 5(1) sets out the conditions under which Member States can adjust their inventories. An adjustment can notably be made when a Member State is applying improved inventory methods updated in line with scientific knowledge since the emission reduction commitments were first drawn up.

In 2021, one Member State submitted new adjustment applications, while several others resubmitted applications for previously approved adjustments. As of the 2022 inventory submission, the number of flexibility applications has fallen considerably. This is due to the introduction of emission reduction commitments expressed in percentages, while previously approved adjustments related to emission ceilings (still applicable from Directive 2001/81/EC as laid down in the transitional provision under Article 21(2) of the Directive) and are therefore no longer valid. Since this change, only one Article 5(1) adjustment application was received in 2022 and subsequently approved, and resubmitted in 2023 as a previously approved one. To date, the Commission has not received applications for any of the other flexibilities set out in Article 5 of the Directive.

2.2. Projected achievement of the 2020-2029 and 2030 onwards emission reduction commitments

Article 10(2) of the Directive requires Member States to submit, every 2 years, projections of air pollutant emissions for the years 2020, 2025 and 2030 ([19]), to assess the extent to which they are on track to meet their emission reduction commitments for 2020-2029 and for 2030 onwards. Projected emission levels for 2025 are also assessed against a linear trajectory between the 2020-2029 and 2030 emission reduction commitments (as per Article 4(2) of the Directive). Projections must cover a 'with measures' scenario (existing measures only) and, where relevant, a 'with additional measures' scenario (existing measures and planned additional measures) ([20]). If a Member State projects that it will meet all of its emission reduction commitments under existing measures, no 'with additional measures' scenario is required. The Commission also conducts its own modelling exercise to complement Member State projections to assess compliance prospects under different scenarios. The Third Clean Air Outlook ([21]) summarises the results of this modelling.

The latest reporting by Member States took place in 2023. 22 Member States ([22]) submitted projections in time to be reviewed in detail ([23]). For the 'with measures' scenario, non-compliance is most frequently projected for NH_3 emission reduction commitments (both for 2020-2029 and for 2030 onwards), highlighting the need for additional measures addressing NH_3 emissions. NMVOC, NO_x and $PM_{2.5}$ show similar occurences of projected

([19]) Article 10(2) refers to Annex I, Table C of Directive (EU) 2016/2284 which details the reporting requirements for emissions and projections.
([20]) Article 8(5) of Directive (EU) 2016/2284 refers to its Annex IV, Part 2 which details requirements for projections.
([21]) COM(2022) 673 final.
([22]) Croatia did not submit projections in 2023 (and therefore received a letter of formal notice), while Spain, Hungary and Slovenia submitted projections too late (after 15 May 2023, i.e. 2 months after the legal reporting deadline) and Portugal resubmitted their 2021 submission. These submissions could therefore not be quality checked as part of the detailed technical review and are not included in the summary here. As Germany submitted its projections after 26 April 2023 but before 15 May 2023, its submission was reviewed, but in less detail.
([23]) A detailed summary of the 2023 review of projections is available in the horizontal review report.

non-compliance. Except for a few specific cases, meeting the SO_2 emission reduction commitments does not currently appear to be an issue across the EU.

Under the 'with measures' scenario, the analysis further shows that 13 Member States ([24]) project in 2025 to fulfil *all* 2020-2029 emission reduction commitments, while the number falls to eight ([25]) for the 2030 commitments (see Annex 1 to this report). All Member States not reaching their emission reduction commitments with existing measures need to put in place additional measures. However, two Member States that project non-compliance with one or more emission reduction commitments in their 'with measures' scenario did not report a 'with additional measures' scenario ([26]).

In parallel, of the 15 Member States that reported a 'with additional measures' scenario ([27]), four still fail to project compliance with all of the emission reduction commitments, both in 2025 and in 2030 ([28]). These Member States (along with those projected to be in non-compliance in the 'with measures' scenario and not reporting a 'with additional measures' scenario) will need to put in place additional measures to fulfil their emission reduction commitments.

Projections submitted by Member States were also assessed against the linear reduction trajectory between the 2020-2029 and the 2030 emission reduction commitments (as per Article 4(2) of the Directive). While 13 Member States project their 2025 emissions to be in line with the 2020-2029 emission reduction commitment under the 'with measures' scenario, this number drops to eight ([29]) when assessed against the linear reduction trajectory in 2025 (this analysis uses the 'with measures' scenario since there will be very little time for additional measures to deliver effects by 2025).

Projections need to be of good quality for a reliable assessment of the future risk of non-compliance. This also allows Member States to adopt well-targeted additional measures addressing the sectors and sources of pollution where more effort is required. The Commission reviews Member States' emission projections for each reporting cycle (every 2 years) ([30]) and takes into account the latest reporting guidelines. In 2023, the Commission adopted a delegated act ([31]) making targeted amendments to two annexes of the Directive that require Member States to use, as of 2025, the latest template ([32]) for the reporting of projections adopted under the UNECE Air Convention. This will produce emission projections in higher resolution by disaggregating source sectors in the same way as it is done for inventories, giving Member States an improved basis for designing targeted additional measures. Already in 2023, while not yet mandatory to use, around half of the Member States reported their projections in the more disaggregated version of the submission template.

([24]) Belgium, Bulgaria, Cyprus, Czechia, Germany, Denmark, France, Greece, Italy, Malta, the Netherlands, Slovakia and Finland.
([25]) Belgium, Cyprus, Czechia, Denmark, Greece, Italy, the Netherlands and Finland.
([26]) Austria and Sweden.
([27]) See Chapter 3.3 in the 2023 horizontal review report.
([28]) For 2025: Estonia, Ireland, Lithuania and Poland. For 2030: Bulgaria, Ireland, Luxembourg and Malta.
([29]) Belgium, Cyprus, Czechia, Denmark, Greece, Italy, the Netherlands and Finland.
([30]) See: https://environment.ec.europa.eu/topics/air/reducing-emissions-air-pollutants/national-air-pollution-control-programmes-and-projections_en
([31]) Commission Delegated Directive (EU) 2024/299 of 27 October 2023 amending Directive (EU) 2016/2284 of the European Parliament and of the Council on the methodology for the reporting of projected emissions of certain atmospheric pollutants.
([32]) Annex IV template available here: https://www.ceip.at/reporting-instructions/annexes-to-the-2023-reporting-guidelines.

3. ANALYSIS OF THE NATIONAL AIR POLLUTION CONTROL PROGRAMMES

3.1. Fulfilment of legal requirements

Article 6(1) of the Directive requires Member States to adopt a national air pollution control programme (NAPCP) to show how they intend to limit their annual anthropogenic emissions to meet their emission reduction commitments. The NAPCP constitutes a central governance instrument that allows Member States to coordinate and agree their policies and measures (PaMs) to ensure national emission reduction commitments are met. Its preparation requires consultation and involvement of competent authorities at different levels and of several different sectors, such as environment, agriculture, energy, climate, transport, industry and finance. A particular emphasis is put on ensuring coherence with plans and programmes for all relevant policy areas. Furthermore, the NAPCP is a tool to communicate a Member State's pollution control policies and to involve the public in the policymaking process, through consultations.

In accordance with Article 6(10) of the Directive, the Commission has specified the format of the NAPCP in Commission Implementing Decision (EU) 2018/1522 ([33]) setting out mandatory and optional content, based on Article 6 and Annex III Part 1 to the Directive. The additional PaMs selected for adoption by Member States to further reduce emissions constitute an essential part of the mandatory content. These additional PaMs have to be reported via the 'EEA-PaM tool', a web tool developed by the European Environment Agency (EEA). The Commission has also prepared guidance for the development of NAPCPs ([34]), in line with Article 6(9) of the Directive. The guidance helps Member States to draw up an NAPCP in the required format and in compliance with the requirements of the Directive. The first NAPCPs were due by 1 April 2019. NAPCPs must be updated at least every 4 years and earlier if new data so requires. In 2023, updated NAPCPs were due for a number of Member States ([35]).

Due to substantial delays in providing the first NAPCPs, infringement procedures for non-submission were opened for five Member States in February ([36]) and July 2020 ([37]). All Member States concerned have subsequently submitted their NAPCP and the procedures have been closed.

Since May 2020 (the cut-off date for the NAPCP submissions considered in the first implementation report), the Commission has received and analysed first NAPCPs from Greece, Italy, Luxembourg and Romania, as well as updated NAPCPs from Belgium, Cyprus, Denmark, Estonia, Finland and France. The Commission has also recently received udpated NAPCPs from the Netherlands, Poland and Czechia, but these had not

([33]) Commission Implementing Decision (EU) 2018/1522 of 11 October 2018 laying down a common format for national air pollution control programmes under Directive (EU) 2016/2284 of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants, OJ L 256, 12.10.2018, p. 87.

([34]) Communication from the Commission on Guidance for the development of National Air Pollution Control Programmes under Directive (EU) 2016/2284 of the European Parliament and the Council on the reduction of national emissions of certain atmospheric pollutants, OJ C 77, 1.3.2019, p. 1.

([35]) As not all Member States submitted their first NAPCPs by the 1 April 2019 deadline, NAPCP updates will still be submitted throughout 2024 (and later) in line with the requirement to update every 4 years.

([36]) Greece, Malta and Romania.

([37]) Italy and Luxembourg.

yet been analysed in detail at the time this report was drafted ([38]). In addition, Ireland and Luxembourg submitted updated PaMs in line with Article 6(4), covered in the next section.

Of the 10 NAPCPs received since May 2020, the common format for the NAPCP was used by six Member States ([39]), partially used by three ([40]) and not used by one ([41]).

According to Article 6(5) of the Directive, Member States have to consult the public in line with Directive 2003/35/EC ([42]) on the draft NAPCP. Of the four Member States that submitted the first NAPCPs in the period covered by this report, three ([43]) carried out a public consultation, whereas one ([44]) did not provide evidence that a consultation had been conducted. Of the six updated NAPCPs, two ([45]) underwent a public consultation, in one case ([46]) it was unclear, and three ([47]) contained no evidence of a public consultation having been carried out.

On the reporting of mandatory content of the NAPCP, the majority of the documents analysed did so fully or did so with relatively minor gaps ([48]), but there is a general lack of detail on additional PaMs, which rendered an in-depth analysis more difficult. Most Member States provided little information on optional content.

The projections that Member States used in their NAPCP are in most cases ([49]) consistent with their latest submission of projected air pollutant emissions under Article 10(2) of the Directive. For three Member States ([50]) major, and for one Member State ([51]) minor inconsistencies were identified. Reliable and consistent projections are important to design well-targeted PaMs.

All NAPCPs received from Member States as well as their assessments are published on the Commission's website ([52]).

3.2. Analysis of reported additional policies and measures (PaMs)

Member States that have not achieved or project not to achieve their emission reduction commitments with current policies have to report in their NAPCPs the additional policies and measures – both those that they considered for adoption and those that they actually selected - to fulfil their commitments. This reporting must be done via the web-based 'EEA-PaM tool', managed by the European Environment Agency.

([38]) The analysis of NAPCPs included in this report follows the 2023 interim horizontal review report of NAPCPs, which was finalised in December 2023.
([39]) Belgium, Cyprus, Finland, France, Greece and Luxembourg.
([40]) Denmark, Romania and Italy.
([41]) Estonia.
([42]) Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment, OJ L 156, 25.6.2003, p. 17.
([43]) Luxemburg, Romania and Greece.
([44]) Italy.
([45]) Denmark and Finland.
([46]) France.
([47]) Belgium, Cyprus and Estonia.
([48]) Belgium, Cyprus, Denmark, Estonia, Finland, Greece, Italy and Romania.
([49]) Belgium, Denmark, Estonia, Finland, France and Romania.
([50]) Cyprus, Greece and Italy.
([51]) Luxembourg.
([52]) https://environment.ec.europa.eu/topics/air/reducing-emissions-air-pollutants/national-air-pollution-control-programmes-and-projections_en

Member States considered in this section are the ones that submitted a first or updated NAPCP (Belgium, Cyprus, Denmark, Estonia, Greece, Finland, France, Italy, Luxembourg and Romania) as well as the two Member States (Ireland and Luxembourg) that reported an update of PaMs only (under Article 6(4) of the Directive), as set out in Section 3.1.

The extent and level of detail of the reporting by Member States on their additional policies and measures vary depending on the country and on the measure. Based on the latest review of NAPCPs and PaMs ([53]), several shortcomings identified in previous reviews and summarised in the first implementation report clearly remain. These include:

- insufficient information to judge whether PaMs are truly additional and as such would help bring a non-compliant Member State into compliance; furthermore, for around a third of PaMs reported as additional under the 'with additional measures' scenario, implementation start dates were well before 2023, which put into question their status as being 'additional';
- a lack of quantification of emission reduction impacts from PaMs (and where they have been quantified, a lack of information to judge whether they are realistic); and
- more generally, and while noting that the quality of reporting varies across Member States, a lack of information on the design and focus of PaMs that would enable their credibility to be assessed.

These points also apply to the first NAPCPs that Member States submitted after the 2020 implementation report. Of those, Greece did not consider additional PaMs for adoption, as they project to achieve all of their emission reduction commitments under a 'with measures' scenario, while Italy and Romania selected 24 and 33 additional PaMs, respectively, targeting all pollutants. PaMs mostly target the energy consumption, agriculture and transport sectors in the case of Italy, and the energy consumption, transport, and industry sectors in the case of Romania. All of the first NAPCP submissions either select the agricultural measures referred to in Annex III, Part 2 of the Directive in their NAPCP, or provide evidence that these measures are already in place and implemented through other programmes or action plans.

Of the six Member States from which NAPCP resubmissions were received in 2023, Belgium, Denmark and Finland did not consider additional PaMs for adoption, as they project to achieve all of their emission reduction commitments under a 'with measures' scenario. For the remaining PaMs submissions ([54]), the following more detailed conclusions are drawn:

- According to the information reported via the EEA-PaM tool, of the 78 additional single PaMs considered for adoption, 48 were selected for adoption (62% of the PaMs considered). The proportion of considered PaMs that were subsequently selected for adoption varied significantly between Member States (with none to all PaMs considered actually being selected).
- The key challenge the Member States are facing is to reduce emissions of pollutants from the largest emission sources: agriculture (NH_3); combustion in commercial, institutional and household sectors and road transport ($PM_{2.5}$); and industrial solvent use (NMVOC). The analysis of PaMs showed that Member States have

([53]) https://circabc.europa.eu/ui/group/cd69a4b9-1a68-4d6c-9c48-77c0399f225d/library/52f82bad-1dae-4ead-869c-d2bf757621f2/details (NAPCP review) and https://www.eea.europa.eu/data-and-maps/dashboards/overview-of-compliant-air-pollution-policies (EEA PaMs dashboard).

([54]) The below information includes the Article 6(4) PaM submissions of Ireland and Luxembourg, as well as the first NAPCP submission of Romania, which was covered in the 2023 interim horizontal review report of NAPCPs, given its late submission.

prioritised the consideration and adoption of PaMs for those sectors that contribute to the largest share of emissions. More than two thirds of the PaMs considered for the agriculture sector have been selected for adoption, and over half the transport and energy consumption PaMs considered were selected for adoption. However, very few PaMs were considered and selected for adoption in the industrial processes and waste management sectors.

– One Member State's ([55]) submission to the EEA-PaM tool consisted of a single 'PaM', which was in fact the NAPCP as a whole with no additional detail on individual PaMs selected for adoption. This is considered insufficient.

3.3. Links between NAPCPs and other plans

There are many links between air policies and climate/energy policies, as emitting sources of greenhouse gases and of air pollutants are often the same. Therefore, one measure can often help to meet both air and climate goals (e.g. developing clean transport modes, better insulation of buildings to reduce energy consumption). However, there can sometimes also be trade-offs (e.g. the use of bioenergy for domestic heating).

Air and energy/climate legislation refer to one another and require links to be made between the NAPCPs and the national energy and climate plans (NECPs) ([56]) submitted under Regulation (EU) 2018/1999 ([57]). The Commission's guidance on developing NAPCPs specifically invites Member States, when drafting their respective NAPCPs, to consider the policies and measures planned also with a view to climate and energy obligations. In turn, Commission guidance ([58]) on drafting NECP updates encourages Member States to update their NECPs closely with their NAPCP updates, paying special attention to strengthening the assessment of the impact of planned policies and measures on air pollutant emissions.

Due to different legal deadlines and delays in submitting NAPCPs and NECPs, submission dates may not align. Ensuring consistency between the two may therefore need to be done on the basis of draft NECPs. Nevertheless, the links between air and climate/energy should be reflected in the final NECPs to be submitted by Member States by 30 June 2024. According to the Commission's 2023 assessment of draft updated NECPs ([59]), more than half of the submitted plans did not include the required information on the impact of policies on projected emissions of the main air pollutants under the Directive, or on the alignment of NAPCP with energy and climate programmes.

([55]) France.

([56]) See, Directive (EU) 2016/2284 Article 1 (synergies); Annex III, Part 1 (consistency in priorities); Annex IV, Part 2 (consistency in projections). In parallel, see Regulation (EU) 2018/1999, Annex I, Section A, Paragraph 5(1)(i) which requires reporting projected impacts of the planned policies and measures on the emissions of the air pollutants regulated under Directive (EU) 2018/2284.

([57]) Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council, OJ L 328, 21.12.2018, p. 1.

([58]) Commission Notice 2022/C 495/02 on the Guidance to Member States for the update of the 2021-2030 national energy and climate plans.

([59]) COM(2023) 796 final.

According to the latest assessment ([60]), the NAPCPs describe generally well the energy and climate change priorities in the policy framework. Most Member States have included information on the key greenhouse gas reduction targets, as well as on their renewable energy and energy efficiency objectives. Three Member States ([61]) clearly state in their PaMs submission that all PaMs have been developed in line with their NECP.

The analysis of the NAPCPs indicates, however, that links between clean air and climate and energy policies could be strengthened, and that the two planning exercises should be further integrated to increase the effectiveness of the underlying policies. This would involve a more systematic assessment of the links between the air and climate and energy policies, including of synergies and trade-offs ([62]) between them. The Commission will explore ways to improve this aspect in future evaluations under both Regulation (EU) 2018/1999 and the Directive.

In addition to links with energy and climate measures, NAPCPs should also seek synergies with agricultural measures to reduce above all ammonia emissions. Ammonia is primarily emitted through agricultural activity, both from livestock management and cultivation of crops ([63]). The Commission's current work on addressing nutrients in an integrated way is relevant in this context as it establishes clearer links between air, water, soil, biodiversity and agricultural policies. Notable examples include the Farm to Fork Strategy ([64]) and the new Common Agricultural Policy.

The Commission has, for example, monitored the integration of clean air considerations into Member States' 2023 strategic plans under the 2023-2027 Common Agricultural Policy. In this context, the Commission focuses on incentivising Member States to develop and implement interventions and result indicators that are directly relevant for reducing ammonia emissions, given the challenges in implementing the NEC Directive, notably the failure of many Member States to further reduce their ammonia emissions.

4. ANALYSIS OF THE IMPACTS OF EMISSION REDUCTIONS

4.1. Impacts on air quality and human health

Reducing pollutant emissions leads to decreased pollutant concentrations, improved air quality and less morbidity and mortality linked to air pollution ([65]).

Figure 2 shows changes between 2005 and 2020 in annual mean concentrations of $PM_{2.5}$, the air pollutant with the worst impact on human health.

([60]) https://circabc.europa.eu/ui/group/cd69a4b9-1a68-4d6c-9c48-77c0399f225d/library/52f82bad-1dae-4ead-869c-d2bf757621f2/details

([61]) Cyprus, Luxembourg and Romania.

([62]) As an example of trade-offs, two Member States (Cyprus and Ireland) selected PaMs for adoption that prioritised objectives set out in the NECP that conflicted with achieving emission reductions for NH_3. These PaMs were selected with the aim of reducing greenhouse gas emissions, but are likely to increase NH_3 emissions if not accompanied by measures aimed at decreasing NH_3 emissions.

([63]) Agriculture accounts for over 90% of ammonia emissions in the EU (https://www.eea.europa.eu/data-and-maps/dashboards/necd-directive-data-viewer-7)

([64]) COM(2020) 381 final.

([65]) https://www.eea.europa.eu/en/analysis/indicators/health-impacts-of-exposure-to

These maps show that, although the situation has improved over time ([66]), many regions still have concentrations far over the annual level of 5 µg/m^3 recommended in the 2021 WHO Guidelines ([67]).

The Third Clean Air Outlook report ([68]) projects further improvements in the future, but this will still not be enough to achieve the WHO guideline level everywhere under the baseline situation.

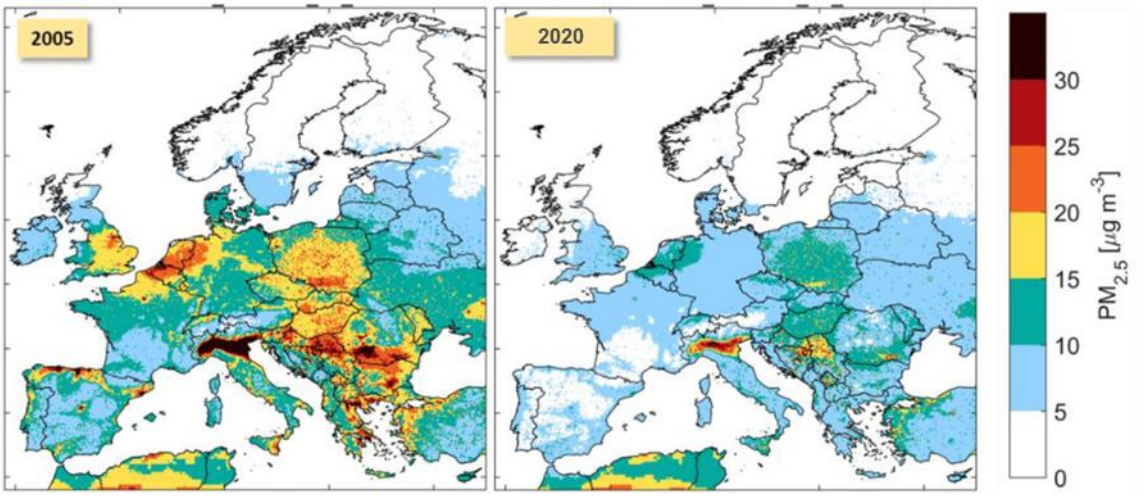


Figure 2: Annual mean concentrations of $PM_{2.5}$ in 2005 and 2020 (source: adapted from Third Clean Air Outlook support study ([69]))

These changes in concentrations translated into changes in the number of people exposed to harmful levels of pollutant concentrations.

Figure 2 shows a marked reduction in the number of people exposed to levels of $PM_{2.5}$ above 20 µg/m^3 (from 140 to 14 million). It also shows that only a minority of people in the EU (31 million in 2020) enjoy air quality in line with the recommendations of the latest WHO guidelines.

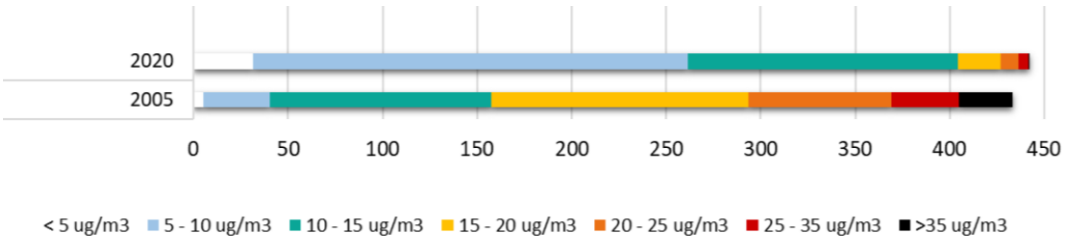


Figure 3: EU-27 population (in million people) exposed to different concentrations of $PM_{2.5}$ (source: adapted from Third Clean Air Outlook)

([66]) The observed improvement in annual mean concentrations of $PM_{2.5}$ is largely independent of COVID-19 lockdown measures. According to the EEA, their impact on the annual mean level of $PM_{2.5}$ was no greater than a median reduction of 5% across all monitoring stations. Larger impacts were observed for NO_2 (https://www.eea.europa.eu/publications/status-of-air-quality-in-Europe-2022)

([67]) https://iris.who.int/handle/10665/345329

([68]) COM/2022/673.

([69]) Klimont et al., 'Support to the development of the third Clean Air Outlook', IIASA, 2022.

Even though trends over time show an improvement in the situation, in 2021, 97% of the EU urban population was still exposed to concentrations of fine particulate matter above the latest WHO guidelines.

The highest concentrations of particulate matter were seen in Central-eastern Europe and Northern Italy (as also shown in Figure 2), primarily due to the burning of solid fuels for domestic heating and in industry ([70]).

Poorer regions in Europe (20% lowest GDP per capita) are often particularly impacted by air pollution, with $PM_{2.5}$ levels being higher by around a third than in richer regions ([71]) ([72]). Vulnerable groups such as older people, people with preexisting health conditions, children, and pregnant women are more likely to be affected by health risks due to air pollution while socio-economic factors can contribute to the degree of exposure.

The overall reduction in the negative health impacts of air pollution over time (a near halving of premature deaths attributable to exposure to total $PM_{2.5}$ concentration between 2005 and 2020) puts the EU well on track to reaching its 'zero pollution' target of reducing by more than 55% the health impacts of air pollution by 2030 compared to 2005 ([73]). To continue this trend, the Commission aims to ensure the proper implementation of the Ambient Air Quality Directives. As of February 2024, 25 infringement cases were still ongoing on poor application of the Ambient Air Quality Directives by 16 Member States ([74]). The Court of Justice has passed a ruling for 15 cases ([75]).

4.2. Impacts on ecosystems

Air pollution not only harms human health, but also leads to acidification, eutrophication and formation of ground-level ozone, all of which are detrimental to ecosystems (freshwater and terrestrial, semi-natural and agricultural ones) and to biodiversity.

The Third Clean Air Outlook showed that the EU ecosystem area where the critical loads for acidification are exceeded fell from 9.0 to 5.5% of the total ecosystem area between 2015 and 2020. Compared to the area affected by acidification, the area of ecosystems where nitrogen deposition exceeds critical loads for eutrophication is much larger. There has also been less relative improvement, with the share of ecosystem area with nitrogen deposition exceeding critical loads falling from 80.2 to 74.9% between 2015 and 2020.

At Member State level, the highest exceedances of nitrogen critical loads in 2021 were found in the Po Valley in Italy, on the border areas between the Netherlands and Germany, along the border between Denmark and Germany and in north-eastern Spain, with some additional hotspots in the Netherlands and its border areas with Belgium ([76]).

([70]) EEA 'Europe's air quality status 2023'. https://www.eea.europa.eu/publications/europes-air-quality-status-2023

([71]) https://www.eea.europa.eu/en/analysis/indicators/income-related-environmental-inequalities-associated

([72]) https://discomap.eea.europa.eu/atlas/?page=Combined-risks-and-inequalities&views=PM%E2%82%82.%E2%82%85--vs-GDP

([73]) COM(2022) 673 final.

([74]) Concerning Belgium, Bulgaria, Czechia, Germany, France, Greece, Spain, Italy, Croatia, Hungary, Poland, Portugal, Romania, Sweden, Slovenia and Slovakia.

([75]) Concerning Bulgaria, Greece, France, Italy, Hungary, Poland, Slovakia, Romania for PM_{10}; Germany, Greece, Spain, France, Italy, Portugal for NO_2 and Bulgaria for SO_2.

([76]) EEA (2023) Eutrophication caused by atmospheric nitrogen deposition in Europe.

This means that Member States will have to introduce further measures ([77]) to reduce the eutrophication impacts of air pollution to achieve, by 2030, the EU zero pollution target of reducing by 25% the EU ecosystems where air pollution threatens biodiversity.

Articles 9 and 10(4) of the Directive require Member States to report these ecosystem impacts every 4 years starting from 1 July 2019, based on a representative network of sites which had to be reported by 1 July 2018. The European Commission published a Commission Notice ([78]) and an optional reporting template, together with its accompanying guide ([79]), in order to facilitate Member States' reporting of ecosystem impacts and subsequent analysis. In both reporting cycles (2018-2019 and 2022-2023), all Member States complied with their reporting obligations.

The Commission's assessment of Member States' first reporting cycle showed that the network of sites and reported data were not sufficiently representative and adequate to monitor the effects of air pollution on ecosystems. Building on the lessons learnt from this first reporting cycle, a guidance note on site selection ([80]) was prepared by the Commission, supported by the EEA and Member State experts. It aims to help each Member State set up a representative monitoring network. The optional reporting template ([81]) has been adapted following feedback from Member States and the EEA. The analysis of the second reporting cycle shows an increase in the total number of sites and parameters reported compared to the first submission (+14%). Although the distribution of sites is more aligned with the distribution of ecosystem types across the EU, the ecosystem types 'rivers and lakes' and 'woodland and forest' remain overrepresented, while cropland, wetland and heathland/shrubland sites remain underrepresented. The considerable differences between the datasets reported by Member States during these two cycles (both spatially and temporally, and in terms of monitoring site types, measurement protocols and parameters monitored) makes an EU-wide assessment difficult. It also prevents a reference point being put in place for the future assessment of the Directive's longer term effectiveness.

Member States do not necessarily need to set up new monitoring stations to fulfil their monitoring obligations on air pollution impacts on ecosystems. The Directive explicitly requires Member States to take a cost-effective approach, by coordinating with other monitoring programmes. This approach seems to be widely used by Member States, since most of the data provided follow international protocols, such as those from the International Cooperative Programmes (ICP) or from other EU directives. This limits the administrative costs of the Directive's requirements to monitor ecosystem impacts.

Although the NAPCP template specifies that Member States should report (as optional content) the impacts on the environment of the 'with additional measures' projection scenario, none of the NAPCPs or the additional PaMs submitted to date have reported these impacts.

([77]) COM(2022) 673 final.
([78]) Commission Notice on ecosystem monitoring under Article 9 and Annex V of Directive (EU) 2016/2284 of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants (NEC-Directive), OJ C 92, 11.3.2019.
([79]) https://ec.europa.eu/environment/air/reduction/ecosysmonitoring.htm
([80]) https://circabc.europa.eu/ui/group/cd69a4b9-1a68-4d6c-9c48-77c0399f225d/library/85f4b9c0-e232-42b7-9940-9262f75ac625/details
([81]) https://circabc.europa.eu/ui/group/cd69a4b9-1a68-4d6c-9c48-77c0399f225d/library/2922dd49-80d6-4fd1-b510-812dab4da6be/details

4.3. Costs and benefits of reduced air pollutant emissions

Information on the costs and benefits of policies and measures selected by Member States is sometimes provided in the NAPCPs, but this is not compulsory. Of the 10 NAPCPs analysed for this report, only two ([82]) reported such information. While it is appreciated that these two Member States made effort to provide estimates, there were some inconsistencies and information gaps. For example, in the information provided by Romania on packages targeting multiple pollutants, it is unclear how the costs, benefits and cost per tonne of abated pollutant is split across multiple pollutants. In addition, although Cyprus provided cost estimates for two individual PaMs, the cost per tonne of NH_3 abated is considered to be unrealistic. This very limited reporting on the costs of Member States' proposed measures can give rise to doubts on whether the full funding for their implementation is secured. While cost estimates largely depend on national circumstances, reporting these estimates would enable an analysis of the relative efficiency of various measures. This would in turn help inform future policy choices in the Member States concerned or in others (through peer learning).

The Commission continues to encourage Member States to provide more information on the costs and benefits of their air pollutant emission reduction measures in upcoming reports, as this information is key for developing future measures. In the meantime, this aspect will be analysed in the next Clean Air Outlook, through a modelling methodology.

The Commission has carried out a cost-benefit analysis for future years under the Third Clean Air Outlook. For this, it considered the benefits of reduced pollution (less harm to health and the ecosystem, and less damage to materials) versus the costs of pollution abatement measures. As part of the cost-benefit analysis, the health and non-health impacts of air pollution were estimated and assigned a monetary value ([83]). This revealed that health impacts clearly exceed non-health impacts. In the *baseline* scenario, for example, the total health damage due to air pollution in 2025 is conservatively estimated at around EUR 173 billion per year ([84]), whereas non-health damage (materials, crops, forests, ecosystems) is estimated at between EUR 33 and 41 billion per year (all in 2015 prices), depending on the valuation method used to calculate ecosystem damage. On the other hand, the costs of air pollution reduction measures in EU-27 in 2025 are estimated at EUR 77 billion per year (in 2015 prices) – far lower than the costs of the impacts of air pollution. The modelling results show that scenarios with more ambitious clean air policies systematically provide net direct benefits (i.e. benefits minus costs) compared to the baseline. More ambitious clean air policies also positively affect EU GDP in 2030, which would increase by 0.26 to 0.28% compared to the baseline.

5. OTHER ASPECTS OF THE DIRECTIVE'S IMPLEMENTATION

5.1. EU actions supporting the Directive's implementation

According to Article 12 of the Directive, the Commission has to regularly set up a European Clean Air Forum to help implement EU air quality legislation and policies in a coordinated way. Since the first report in 2020, the Commission has organised, in

([82]) Romania (first submission) and Cyprus (updated submission).

([83]) As explained in Klimont et al. 'Support to the development of the third Clean Air Outlook', IIASA, 2022, and its annex, Chapter 5.

([84]) Counting impacts only from exposure to pollutant concentrations above WHO guideline levels, applying a conservative method to value premature deaths ('VOLY') and fully excluding impacts due to NO_2 exposure to avoid any possible double counting.

cooperation with the respective Member States, two further European Clean Air Fora, in Madrid on 18-19 November 2021 and in Rotterdam on 23-24 November 2023 ([85]). Both events were met with strong interest from government and industry stakeholders, NGOs and members of the public.

The 2021 Clean Air Forum took place after the publication of the latest WHO air quality guidelines and amidst the preparation of the revision of EU air quality legislation. It focused on the themes of zero pollution and health, engagement with cities and citizens, access to justice, and linking clean air to climate and biodiversity policies.

The 2023 Clean Air Forum followed up on the ongoing revision of EU air quality rules, and also focused on the themes of social inequality linked to air quality, spatial planning and multimodal transport, air pollutant emissions from maritime shipping, healthy lifestyles, skills and jobs for clean air, and knowledge sharing.

The Commission, in cooperation with the Committee of the Regions, has also set up a Zero Pollution Stakeholder Platform ([86]) to help deliver on the flagship initiatives and actions set out in the Zero Pollution Action Plan.

The platform brings together stakeholders and experts in different policy areas, such as health, agriculture, research and innovation, transport, digitalisation and the environment. Its objectives include setting out a common vision on how to achieve zero pollution, tackling interlinked challenges, such as strengthening a joint environment and health agenda, and developing and sharing good practices on cross-cutting topics.

The Commission also supports Member States in implementing the Directive through capacity building and the Ambient Air Quality expert group. In 2022, the Commission hosted a capacity building workshop ([87]) to disseminate good practices on several aspects of the preparation of air pollutant emission projections and NAPCPs.

The Commission also supports Member States through the TAIEX-EIR peer-to-peer tool ([88]). A recent example was a TAIEX expert mission to help a Member State improve its air pollutant emissions inventory. A TAIEX multi-country workshop on agricultural measures to reduce ammonia emissions is planned for autumn 2024. The Technical Support Instrument ([89]) can also help Member States reform or improve the effectiveness of clean air policies.

The Commission's Joint Research Centre developed the Agricultural Emission Estimation (AgrEE) tool ([90]) to help Member States improve their emission inventories for the agricultural sector.

([85]) https://environment.ec.europa.eu/topics/air/clean-air-forum_en
([86]) https://environment.ec.europa.eu/strategy/zero-pollution-stakeholder-platform_en
([87]) https://circabc.europa.eu/ui/group/cd69a4b9-1a68-4d6c-9c48-77c0399f225d/library/b879b074-ef81-4221-b463-d334595e03d8/details?download=true
([88]) https://environment.ec.europa.eu/law-and-governance/environmental-implementation-review/peer-2-peer_en. This tool supports multicountry workshops, study visits by or expert missions to a requesting Member State.
([89]) The Technical Support Instrument (TSI) is the EU programme that provides tailor-made technical expertise to EU Member States to design and implement reforms (https://reform-support.ec.europa.eu/index_en).
([90]) https://edgar.jrc.ec.europa.eu/agree_tool/public/ (EU Login required to access).

Since 2014 Copernicus ([91]) supplies, through its Core Atmosphere Monitoring Service (CAMS), continuous data and information describing air quality levels and trends at national and European level. Cooperation with Copernicus Climate Change Services has led to the development of a web-based tool ([92]) to identify if any EU Member State experienced an exceptionally cold winter or an exceptionally dry summer in a specific year, as this information is essential for making use of the flexibility provided by Article 5(2) of the Directive. This web tool ensures that the Commission's assessment of those flexibility applications will be consistent and transparent.

In 2021, the Commission together with the EEA launched the European Air Quality Index webpage ([93]) and application for mobile devices that allow users to understand more about the quality of the air close to their home or workplaces.

5.2. Uptake of EU funds to support the Directive's objectives

Article 7 of the Directive requires the Commission 'to endeavour to facilitate [Member States'] access to existing Union funds' to support the achievement of the Directive's objectives. Article 11(1)(c) of the Directive requires the Commission to report on this uptake.

EU funding has been made available under various financing programmes, and successfully used by Member States over the years to improve air quality. This funding either directly supports clean air projects or effectively includes clean air objectives in other investments (e.g. infrastructure, rural and regional development). Several LIFE, Horizon 2020 and Horizon Europe projects supported the reduction of pollutant emissions as well as monitoring and citizen awareness of air pollution issues.

To monitor progress in the Member States' uptake of these EU funds, the Commission has developed a methodology ([94]) that assesses the extent to which each funding stream contributes to clean air objectives. The Commission reports annually on clean air financing as part of its draft budget, for each relevant funding programme. Numbers published in 2023 show that, for 2021-2027, the EU budget - including NextGenerationEU - is dedicating an estimated EUR 147 billion, or 8.3% of the multiannual financial framework, to the clean air objective. Figure 4 illustrates the share of projected clean air spending across programmes ([95]). The biggest contribution in the current programming period is projected to come from the Recovery and Resilience Facility, as well as European Regional and Development and Cohesion Funds.

([91]) Copernicus is the Earth Observation component of the EU Space Programme.
([92]) https://cds.climate.copernicus.eu/cdsapp#!/software/app-necd?tab=overview
([93]) https://www.eea.europa.eu/themes/air/air-quality-index
([94]) Presented in Annex 4 of the first implementation report COM(2020) 266 final, and complemented by information available at: https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/horizontal-priorities/green-budgeting/clean-air-tracking_en#clean-air-methodology
([95]) https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/horizontal-priorities/green-budgeting/clean-air-tracking_en. As explained in the methodology, the estimate for CAP funding is based on 2021 and 2022 only and the existing methodology for clean air tracking developed for the 2014-2020 MFF. For the years following this, specifically 2023-2027, the clean air tracking methodology will be adapted to the changed conditions of the CAP implementation for these years.

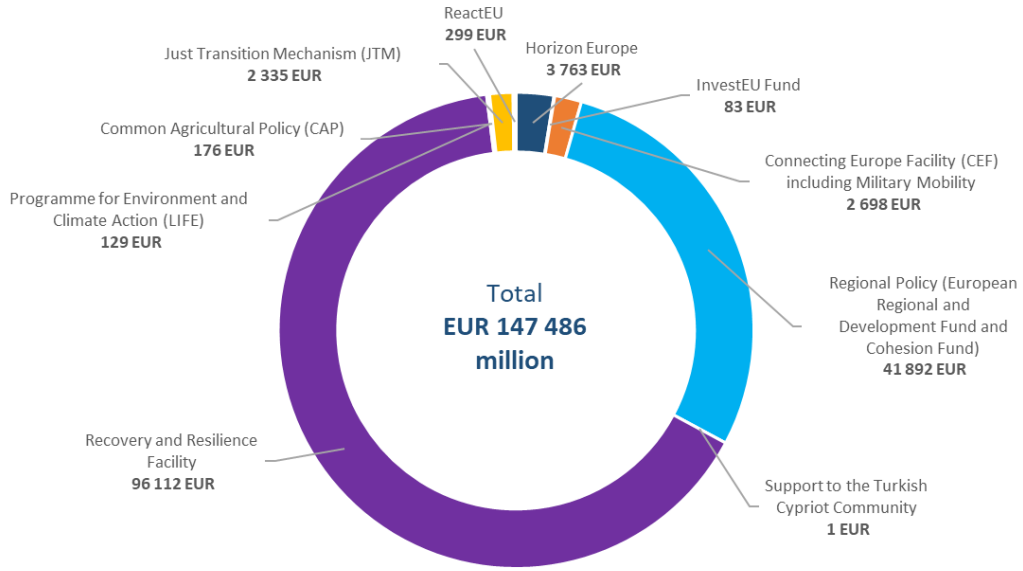


Figure 4: Projected clean air contribution from 2021 to 2027 (million EUR). Note: The estimate for CAP funding only covers 2021 and 2022 (source: European Commission ([96]))

5.3. Links with international agreements

The Directive links closely with the UNECE Convention on Long-range Transboundary Air Pollution (the Air Convention) and its protocols ([97]), and the two legal regimes cooperate with each other as far as possible, notably on the reporting of emission inventories and projections. A joint inventory guidebook for common methodology has been developed and is continuously being improved with the support of the EEA ([98]). Guidance documents ([99], [100]) are also published regularly under the Air Convention.

The amended Gothenburg Protocol to the Air Convention, which entered into force on 7 October 2019, and the Directive are broadly aligned in terms of emission reduction commitments for 2020-2029. The Gothenburg Protocol was recently reviewed within the Air Convention framework, providing an opportunity to consider a further alignment of these two legal regimes, including by developing a common approach to e.g. methane and black carbon emissions. The review resulted in the Air Convention Parties taking the decision, in December 2023, to start the process to revise the Gothenburg Protocol. The revision process will start in 2024, with the aim to complete negotiations by end of 2026.

6. CONCLUSION

Putting the implementation of the Directive on the right track from the outset has been crucial to ensure timely reductions in air pollutants emissions, contribute effectively to improved human and ecosystem health and deliver on the zero pollution ambition under the European Green Deal and its Zero Pollution Action Plan.

([96]) https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/horizontal-priorities/green-budgeting/clean-air-tracking_en
([97]) https://ec.europa.eu/environment/air/policy/index.htm
([98]) https://unece.org/emissions-reporting
([99]) https://unece.org/publications/environment-policy/air-convention
([100]) https://unece.org/gothenburg-protocol

This is why the Commission has followed up from the very beginning on cases where Member States' air pollutant emission inventories showed non-compliance. The Commission also closely monitors Member States' follow-up on cases and calls on them to take tangible steps in the form of updated policies and measures (and timely submissions of updated NAPCPs, where due) in line with the legal deadlines.

All pollutants for which the Directive sets emission reduction commitments require continued attention. This is particularly important as the more stringent reduction commitments for 2030 onwards draw closer and given the aim to align EU air quality standards more closely with the 2021 WHO air quality guidelines ([101]). The one pollutant that stands out as particularly problematic remains ammonia, for which prospects of meeting the Directive's emission reduction commitments remain bleak. In order to help Member States to meet this specific objective, the Directive included an annex setting out (mandatory and non-mandatory) measures and listing well-established practices that are proven to reduce ammonia emissions. Member States need to step up their efforts to ensure these measures and practices are actually implemented, including by engaging with relevant stakeholders and ensuring a coherent approach to other national processes, for example on implementing the Common Agricultural Policy strategic plans.

Other regulated pollutants have directly benefited from the more ambitious energy and climate policies through the Fit for 55 legislative package, the REPowerEU plan and, most recently, the 2040 climate target plan ([102]). These initiatives provide a major boost also for clean air objectives, where a stronger climate ambition translates into increased energy efficiency and a faster roll-out of non-combustible renewable energy sources. This holds true in particular for emissions of fine particulate matter, nitrogen oxides and sulphur dioxide. To maximise these co-benefits, it is important that Member States coordinate national planning processes accordingly. This means that NECPs and NAPCPs should be consistent with one another, something that Member States are encouraged to take into account when finalising their NECPs by June 2024, and when updating their NAPCPs.

The Commission continues to provide Member States with various types of support to help them implement the Directive. For example, capacity building support, which mainly takes the form of a rigorous review of Member States' inventories, projections, NAPCPs and ecosystem data submissions. This exercise involves exchanges with Member State experts and results in practical recommendations for improving future submissions. This is important because high-quality data are necessary to address sources of emissions in an informed and well-targeted way. Other forms of support available to Member States upon request include theTechnical Support Instrument, the TAIEX-EIR peer-to-peer tool and stakeholder exchanges. Last but not least, EU funding continues to be available to support initiatives related to clean air.

Complementing this report, the fourth Clean Air Outlook, due for the end of 2024, will provide an updated analysis of costs and benefits in achieving the Directive's objectives, and highlight any additional actions that are needed at national and EU level. Both documents will inform the upcoming review of the Directive, due to be finalised by 2025, which will analyse in more detail the Directive and its implementation.

([101]) The Commission proposed to revise the Ambient Air quality Directives and as part of this EU air quality standards on 26 October 2022 (COM(2022) 542 final/2). Council and Parliament reached a political agreement on a revised Directive in early 2024 (https://www.consilium.europa.eu/en/press/press-releases/2024/02/20/air-quality-council-and-parliament-strike-deal-to-strengthen-standards-in-the-eu/)

([102]) COM(2024) 63 final