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COVER NOTE

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COMMISSION STAFF WORKING DOCUMENT

EXECUTIVE SUMMARY OF THE EVALUATION

of the

National Emission Reduction Commitments Directive

{SWD(2025) 394 final}

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1. Context and objectives

This evaluation assesses the performance of the National Emission reduction Commitments Directive (NECD)[1] against five criteria: effectiveness, efficiency, relevance, coherence and EU added value.

Air pollutants impact human health and the environment. They are emitted from different sources, and each pollutant's effects may be felt locally or hundreds of kilometres away, due to the pollutant being transformed and transported in the atmosphere. Air pollution policy addresses this complex reality. It comprises legislation covering environmental quality standards[2], abatement of specific emissions sources (nationally and at EU level), and the NECD, which tackles pollution at national level. The NECD is closely related to the Convention on Long-range Transboundary Pollution ('the Air Convention') and its protocols under the auspices of the United Nations Economic Commission for Europe (UNECE). Similar economic activities often affect both air pollution and climate change as well as other issues such as water pollution. This makes evaluating the specific role of the NECD particularly challenging.

The NECD sets out mandatory commitments per Member State to reduce the emissions of five key air pollutants contributing to transboundary pollution:

1. sulphur dioxide (SO_2)
2. nitrogen oxides (NOx)
3. non-methane volatile organic compounds (NMVOC)
4. ammonia (NH_3)
5. fine particulate matter ($PM_{2.5}$).

There are emission reduction commitments (ERCs) to be achieved by 2020 and maintained until 2029, and another set of stricter commitments to be achieved by 2030 and beyond.

This evaluation takes stock of the progress made so far and assesses whether additional efforts or policies may be needed to deliver the key emission reduction objectives in 2030. The evaluation also addresses opportunities for cost reduction and simplification, in line with the Commission's simplification agenda and commitment to improve the EU's sustainable competitiveness[3]. To this end, the evaluation informs the Commission's agenda on clean, competitive and socially fair prosperity by providing relevant insights for the implementation of key political initiatives, such as the Clean Industrial Deal, the Vision for Agriculture and Food, the Water Resilience Strategy and the European Ocean Pact, as well as the upcoming Bioeconomy Strategy.

An external study and several public consultation activities supported the evaluation. Member State reporting was an important data source and included emission inventories (yearly accounts of the emission of air pollutants per source in a Member State), projections (expected trend of emissions considering policies and measures taken or planned, based on modelled data), national air pollution control programmes (NAPCPs, which provide a description of the Member States' approaches to reducing pollution) and related policies and measures (PaMs). Member States generate these data on the basis of well-established methods developed under the Air Convention.

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1 Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC.

2 The Ambient Air Quality Directive(s) (AAQD) sets air quality standards as regards concentration levels of 12 pollutants in ambient air.

3 Political Guidelines for the next European Commission 2024-2029

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A limitation of this evaluation and underlying modelling is the difficulty of separating the effects of the NECD from other related policies affecting air pollutants. Furthermore, certain obligations have been in place only since 2020. Necessary lags in data reporting mean that the evaluation had a limited time span to work with (inventory data being available up to 2023). The GAINS model was used to cover data gaps (2024-25) and to understand the effects and costs in future years of emission abatement measures already taken by Member States.

2. Main findings

Effectiveness

The NECD, alongside other EU policies affecting air quality, has been largely successful in reducing emissions of the five main air pollutants: emissions of all pollutants have followed a downward trend in the EU since the 2005 reference year while GDP increased over the same period[4]. Out of the 135 ERCs (5 per Member State) that applied from 2020, Member States had attained 116 in 2020 and 126 in 2023 (the last year for which emission inventories are available)**.**

The results show variations between Member States. Based on 2023 data, 19 Member States met their 2020-29 ERCs for all 5 air pollutants, 7 Member States did so for 4 pollutants and 1 Member State complied with 3 of its ERCs. Most non-compliances related to NH_3, with 5 Member States failing to comply with their commitments for the 2020-29 period.

Lessons learnt on complying with NH_3 ERCs

Over 90% of NH_3 emissions stem from the agricultural sector (mainly from livestock farming and use of fertilisers). Based on reviews of Member State action and stakeholder input, obstacles to reducing emissions include a more limited use by Member States of eco-schemes and agri-environment-climate commitments to address livestock related issues under the common agricultural policy (CAP); the voluntary nature of CAP interventions that rely on farmers' willingness to adopt the practices; and that interventions addressing NH_3 can be difficult and expensive to implement, particularly for small farms. According to Eurostat, small farms account for 64% of all farms in the EU. This means that the sector is characterised by many small emission sources, which may slow down progress in reducing NH_3 emissions. This calls for improving the availability and take-up of funding, encouraging Member State action in this area, and maintaining and – where possible – increasing consistency between the NECD and related instruments (in particular the CAP, the Nitrates Directive and the revised Industrial Emissions Directive (IED).

Most Member States have not yet taken sufficient action to be on a linear path towards meeting the 2030 reduction commitments: **only 8 Member States project to reach indicative 2025 levels for all pollutants**, **with NH_3, NO_x and $PM_{2.5}$ representing the biggest challenges.**

The current reporting, review and enforcement system drove improvements in compliance over the evaluation period: 14 Member States were found to be non-compliant for at least one pollutant in 2020 based on the 2022 inventories. This figure dropped to 8 in 2023 based on the 2025 inventories, and this downward trend is expected to continue.

Coherence

The evaluation found that the **NECD and related acts** (the Commission Implementing Decision on a common format for NAPCPs and the guidance on their development) **are in most cases internally coherent.** There is some lack of clarity on the timing of adoption and submission of NAPCPs, in particular on their update, leading to some variation in Member State submissions.

[4] EEA NECD briefing 2024

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Coherence between the NECD and other relevant policies is generally good and has been strengthened over time, with policies covering a wider range of emission sources (e.g. the IED) or through strengthened rules (e.g. energy efficiency targets, Euro emission standards for vehicles). The evaluation found the points of incoherence indicated below.

- The NECD ERCs only cover a subset of ozone precursors (namely NO_x and NMVOC but not methane), meaning that the NECD cannot meet its full potential to help achieve the EU air quality standards for ozone set under the AAQD.
- Further integration between planning tools under the NECD and climate and energy policies (namely national energy and climate plans – NECPs) could improve synergies and effectiveness.
- Under the Renewable Energy Directive (RED), biomass is seen as a contribution to the renewable energy target (subject to the sustainability criteria, which, however, do not cover pollutant emissions), even if the use of biomass in small, inefficient heating appliances in households contributes to $PM_{2.5}$ and NMVOC emissions. NECD policies and measures in some Member States (e.g. information about correct wood burning, promoting the replacement of heating systems) and other EU policies (e.g. ecodesign for solid fuel local space heaters) are helping to address this issue.
- Given the challenge of meeting NH_3 ERCs, and as livestock farming constitutes a significant source of pollutant emissions, the revised IED provides that the Commission will assess the need for Union action to comprehensively address the emissions from rearing livestock, in particular cattle.

Lessons learnt on further improving coherence

Coherence issues lead to opportunities for simplification. Changing the frequency of reporting (e.g. to better synchronise NAPCP and NECP timelines and to build synergies with relevant upcoming plans under the Nature Restoration Regulation) would require amending the NECD, and the consequences of some simplification opportunities improving consistency (e.g. aligning NECD ecosystem monitoring with the Air Convention's international cooperative programmes) need further assessment.

Ecodesign and energy labelling rules for solid fuel stoves and boilers, and energy and climate policies accelerating the transition to renewable and low pollution heating solutions, can help address air pollutant emissions from inefficient solid biomass combustion for residential heating.

Efficiency

The evaluation could not isolate the effects of the NECD in terms of abatement costs[5] and benefits linked to emission reductions. Consequently, findings on efficiency encompass the effects of all relevant policies, at both EU and national levels. This is due to the well-established consistency and synergy across EU policies.

The benefits of policies affecting air quality significantly outweigh their costs, with a benefit-cost ratio of 4:1 or 13:1 (the difference between ratios is driven by the approach to valuing mortality effects)[6]. The ratio comprises information modelled in a comparable manner, including quantified benefits and the abatement cost.

Emission reductions associated with additional air pollution control measures taken over the evaluation period have an estimated **benefit** of **EUR 372 billion** (value of life year) **or EUR 1 180 billion** (value of statistical life). These benefits stem from improvements in human

[5] Investments and expenses related to adjusting activities to the requirements (e.g. businesses investing in technologies with lower emissions).

[6] Lower values were calculated using a value of life year (VOLY) approach. Higher values use the value of statistical life (VSL) approach. While VOLY expresses the value of a single additional life year, VSL considers the monetary value of a reduction in the risk of premature death. Standard best practice in clean air-policy assessments is to present both.

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and environmental health, which have an impact on the economy, for example in the form of less working time lost to sickness and higher agricultural yields.

The evaluation estimated that the total **abatement cost** associated with additional air pollution control measures linked to all policies (including the NECD) post 2015 is **EUR 92 billion**. A significant proportion of the cost was likely offset through EU and national funding. EU funding contributing directly or indirectly to improving air quality amounted to EUR 171.4 billion over the 2021-2025 period[7].

A representative **annual administrative cost** across all NECD reporting obligations amounts to EUR 1 071 000 per Member State. The total average annual cost for EU bodies (the Commission and the European Environmental Agency - EEA) is EUR 1 960 000 (reported data). Yearly emission **inventories** represent the largest cost item for both Member States and the Commission – in the latter case, this concerns the review of inventories. Inventories are necessary to assess compliance with ERCs and with Gothenburg Protocol obligations and are the basis for Member State decisions on additional policies and measures. Good-quality inventories are therefore key for the effectiveness of the NECD. Some of the reporting obligations for Member States **indirectly affect businesses** albeit **to a very limited extent,** as the NECD is only rarely the primary or sole driver for collecting information. The average administrative cost for businesses is low, at around EUR 100 000 per year per Member State. The analysis did not find that the administrative burden was passed on to SMEs.

Lessons learnt on efficiency – opportunities for simplification and burden reduction

Some of the simplification opportunities do not require amending the NECD. These include:

- simplifying and clarifying the NAPCP format, especially if Member States comply with their ERCs (indicative potential annual saving per Member State: EUR 7 000);
- improving the user friendliness of the PaM tool (significant time saving, no quantification available);
- modifying guidance on ecosystems monitoring to focus on the quality and comparability of information and to consider potential alignment with the Air Convention's international cooperative programmes on ecosystems (indicative potential annual saving per Member State: EUR 115 000);
- using Earth Observation and the Copernicus Atmosphere Monitoring Service to simplify the compilation and verification of inventories, by further developing them through research (no quantification of potential savings available).

Other simplification opportunities require an amendment to the NECD, e.g. better aligning the timing of NAPCP and NECP development (indicative potential annual saving per Member State: EUR 3 400).

Since some simplification opportunities (i.e. modifying the contents of inventories) would lead to inconsistency with the Air Convention, this evaluation does not recommend taking this route, unless related requirements are modified under the Air Convention during the ongoing review of its Gothenburg Protocol.

There is a possibility of linking PaMs with NECD or other EU policies via the PaM tool which could help estimate the effects of the NECD-in the future. This step would not lead to an additional administrative burden for Member States.

Relevance

The needs addressed by the NECD have developed further over the evaluation period. The zero pollution action plan introduced two air pollution-related targets to be met by 2030 and the 2024 revision of the AAQD introduced more stringent air quality standards. The AAQD revision was informed by scientific evidence, as summarised in the 2021 World Health Organisation air quality guidelines, which confirm that for several air pollutants adverse health impacts occur at concentration levels below those stated in previous versions of the guidelines. **Therefore there is still a very strong case for having a NECD that helps to keep national emissions in check**

[7] See clean air funding tracking

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to achieve cleaner air in all EU Member States and that addresses transboundary pollution, bringing a system-level view that considers the combined effect of emission sources.

The evaluation showed that, to date, the current ambition level of the ERCs is insufficient to meet the 2030 zero-pollution target for ecosystems or to meet the EU's revised and more stringent air quality limit values for $PM_{2.5}$.

The coverage of pollutants and sources of pollutants remains relevant. Agricultural measures set out in Part 2 of Annex III to the Directive are still deemed to be effective for abating ammonia emissions and are in line with current UNECE guidance on ammonia.

Lessons learnt on the relevance of the NECD's scope

Further considerations on methane (a precursor to ozone) might be warranted, considering the ongoing revision of the Air Convention's Gothenburg Protocol. The evaluation also suggests that excluding certain aviation and shipping emissions from the ERC compliance checks should be kept under review. This holds true for shipping in particular, given its growing relative contribution to ambient concentrations of air pollutants in port cities and near coasts in light of the source-to-sea nexus. Excluding certain agricultural sources of NO_x and NMVOC emissions from compliance checks appears to have lost its relevance, given our improved understanding of these emission sources and the mitigating measures in place to address them.

EU added value

The transboundary nature of air pollution requires action and cooperation at global, European, regional, national and local levels. Neither national legislation nor national jurisdiction alone can be effective against pollution originating in another country. The Air Convention, although triggering action beyond the EU, is less effective than the NECD, as it lacks the strong enforcement mechanisms available under EU law.

National ERCs are set for each Member State following a staged approach while leaving the Member States a substantial margin to decide how to best achieve ERCs, in line with the principles of subsidiarity and proportionality.

Lessons learnt on EU added value

The NECD has brought significant benefits to the EU population by contributing to cleaner air in Europe and by reducing the negative impacts of air pollution on human health and ecosystems. Fully and efficiently exploiting the potential of the NECD would further reinforce its added value.

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