



## Review of the National Air Pollution Control Programme – Ireland

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Final Report for European Commission – DG Environment  
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## Abbreviations

BaP	Benzo(a)pyrene
BAT	Best Available Technique
BC	Black Carbon
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
EEA	European Environment Agency
Eionet	The European Environment Information and Observation Network
EU	European Union
ETS	Emission trading system
GHG	Greenhouse Gas
kt	Kilo tonne
NAPCP	National Air Pollution Control Programme
NECD	National Emission reduction Commitments Directive (Directive (EU) 2016/2284)
NECP	National Energy and Climate Plans
NFR	Nomenclature for Reporting
NH <sub>3</sub>	Ammonia
NMVOG	Non-Methane Volatile Organic Compounds
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Nitrogen oxides
O <sub>3</sub>	Ozone
PaMs	Policies and Measures
PM <sub>10</sub>	Particulate matter 10 micrometres or less in diameter
PM <sub>2.5</sub>	Particulate matter 2.5 micrometres or less in diameter
RAG	Red; Amber; Green [rating]
R&I	Research & Innovation
SEAI	Sustainable Energy Authority of Ireland
SO <sub>2</sub>	Sulphur dioxide
WAM	With Additional Measures
WHO	World Health Organisation
WM	With Measures

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# 1 Introduction

## 1.1 Review of the National Air Pollution Control Programmes

### 1.1.1 This report

The following report presents the results of the review of the draft National Air Pollution Control Programme (NAPCP) submitted to the European Commission by Ireland. A draft NAPCP was submitted to the European Commission on 12 April 2019. A final NAPCP was submitted on 13 February 2020 and the review was amended to reflect this final submission.

EU Member States are required to prepare and report their NAPCP according to the minimum content and common format (Commission Implementing Decision (EU) 2018/1522)<sup>1</sup> stipulated by Article 6 of the Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants<sup>2</sup>, hereafter referred to as the Directive or the NECD<sup>3</sup>. The NAPCP should demonstrate compliance with the Member State's respective emission reduction commitments and set out how compliance will be achieved.

This review has been undertaken alongside a review of national air pollutant emission projections developed and reported by Member States under Article 10(2) of the NECD. These reviews have been commissioned by the European Commission as Service Request 2 under the Framework Contract No ENV.C.3/FRA/2017/0012 (specific contract 070201/2018/791186/SER/ENV.C.3). The review of the first NAPCPs and of the air pollution projections with regards to their fulfilment of the requirements of the NECD will both contribute to the Commission's reporting on the implementation of the NECD required under Article 11 of the NECD.

This report feeds into the horizontal review report under the contract which presents conclusions and recommendations from the review at the EU-level. Whereas Member State NAPCP review reports feed into the horizontal review report under the contract (which presents conclusions and recommendations from the review at the EU-level), the review for Ireland does not because at the time of reporting, the NAPCP was an unpublished draft.

The horizontal report also contains, for each Member State, an assessment of its risk of non-compliance with its emission reduction commitments, based on a cross-analysis of the information provided in the NAPCPs and projection submissions under Article 10(2) of the NECD. Although not incorporated in the horizontal report, a risk assessment for Ireland is presented in Appendix 2 to the present report. Details on the methodology for that risk assessment are found in the horizontal report.

### 1.1.2 Objectives of the NAPCP review

The purpose of the following report is to determine Member State compliance with the requirements of the NECD. The scope of the NAPCP review includes:

- The use of the **NAPCP** common **format**.
- NAPCP compliance with the minimum content requirements of the Directive (**mandatory content (M)**).

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<sup>1</sup> 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.

<sup>2</sup> Directive (EU) 2016/2284 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, OJ L 344, 17.12.2016, p.1.

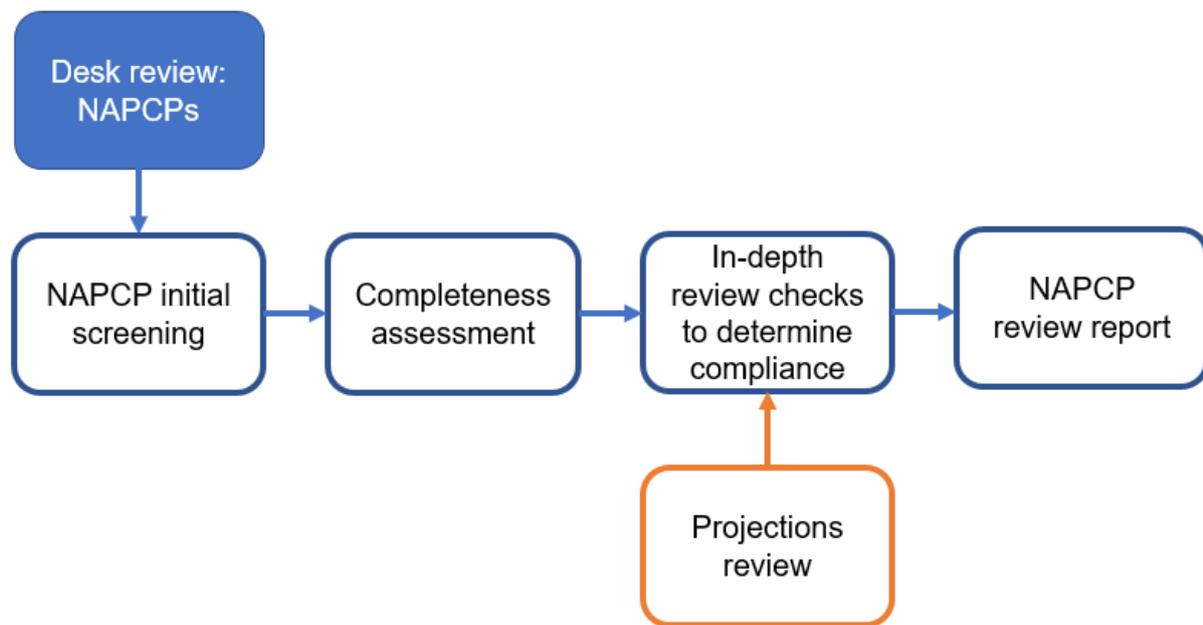
<sup>3</sup> Directive (EU) 2016/2284 repeals and replaces the previous National Emission Ceilings Directive (2001/81/EC) and is generally referred to as the new NECD or simply the NECD.

- The extent to which the **optional content requirements (O)** of the Directive are reported and what added value this brings to the quality of the NAPCP.
- **Consistency** between the NAPCP and the information in the **air pollutant emission projections** that were due to be submitted by Member States by 15 March 2019.
- The **extent** to which Member States are **reliant on additional PaMs** (as included in the 'With Additional Measures' (WAM) scenario) to achieve compliance.
- The extent to which the evidence provided on **selected PaMs is robust** and the level of **confidence** it provides that Member States will achieve their 2020 and 2030 emission reduction commitments.
- The extent to which **additional PaMs are put forward in view of wider air quality objectives** as set out in Article 1(2) of the NECD (referring to the objectives of the Ambient Air Quality Directives, the Union's long-term objective of achieving levels of air quality in line with the air quality guidelines of the World Health Organisation (WHO), **the Union's biodiversity and ecosystem objectives and coherence with climate and energy policy priorities**).
- The degree of **coherence with other plans and programmes in other policy areas**, predominantly the National Energy and Climate Plans (NECP).

## 1.2 Methodology

The key components of the review process are outlined in Figure 1-1. A comprehensive description of the process, methodology and checks followed are detailed in accompanying review guidelines which were provided to the NAPCP reviewers responsible for conducting this report.

**Figure 1-1 Overview of the NAPCP review methodology**



A central review team was used to conduct the initial screening checks. The purpose of the initial screening was to document Member State submissions in one central data log. For example, the information recorded includes the date, language and length of the NAPCP submission; accompanying annexes are similarly reviewed and logged and links to external websites are checked. The initial checks also record if the Member State uses the NAPCP common format.

The completeness assessment and in-depth review checks are structured according to the section headings of the NAPCP common format. Together, the review findings inform the extent to which the

NAPCP is compliant with the minimum content requirements, the extent to which evidence is robust and the level of confidence that the Member State will achieve its commitments.

NAPCP completeness is rated according to a RAG rating (Red, Amber, Green rating as described in Appendix 1 ) while the in-depth checks involve a series of questions with pre-defined responses to be chosen from, designed to systematically determine the robustness and reliability of the evidence submitted.

### 1.3 NAPCP submission documents

An overview of the Member State's NAPCP is presented in the table below. This information was gathered as part of the NAPCP initial screening.

**Table 1-1 Overview of the Member State NAPCP submission documents**

Initial screening check	Response	Additional comment
Was the NAPCP submitted by 1 April 2019?	No	The final NAPCP was submitted to on 13 February 2020 and uploaded to the European Environment Information and Observation Network (Eionet) <sup>4</sup> . The draft NAPCP was submitted to the European Commission on 12 April 2019.
Was the common format used?	Partially	The headings used in the NAPCP correspond to the headings in the common format. The EEA PaM-tool was used but information reported via the tool is not consistent with what is presented in the NAPCP.
What is the length of the NAPCP?	63 pages	
What language is the NAPCP reported in?	English	
What language is the supporting documentation reported in?	N/A	No supporting documentation is provided.
How many external documents are referenced or provided in the NAPCP?	8	Weblinks are provided to 8 external documents and datasets.
Is it possible to identify the required information in the external documents (i.e. is the page and chapter reference provided)?	Yes	
Can all external documents be accessed?	No	Weblinks are in working order. However, Section 5 (information on the policy options considered in the NAPCP) refers to an appendix file containing more detail which has not been uploaded with the NAPCP.

<sup>4</sup> Eionet: Reporting obligation for NECD - National air pollution control programmes. URL: <https://rod.eionet.europa.eu/obligations/753> [last accessed 20 February 2020].

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### Completeness assessment

A completeness assessment was conducted to identify gaps in reporting according to the minimum content requirements of the common format (Commission Implementing Decision (EU) 2018/1522). The completeness assessment also reviewed the extent of reporting of optional content by Member States. The results are presented in Appendix 1 to this review. To summarise, the NAPCP for Ireland includes the minimum content required for:

- Policy priorities for emission reductions and other relevant policy priorities (section 2.1 of the NAPCP) and the responsible authorities involved (table 2 in section 2.2 of the NAPCP).
- Progress made by current PaMs in reducing emissions (section 3.2 of the NAPCP).
- Progress made by current PaMs in improving air quality (section 3.3 of the NAPCP). Going beyond the reporting requirement, progress is described with reference to the WHO guideline values.
- Current transboundary impacts (section 3.4 of the NAPCP).
- NAPCP projections under the WM scenario (section 4 of the NAPCP).
- Projected impact on improving air quality under the WM scenario (section 4.1 of the NAPCP). No references are provided, however.
- Additional details concerning the mandatory measures from Annex III Part 2 to Directive (EU) 2016/2284 targeting the agricultural sector (section 5.3 of the NAPCP).
- Evidence of coherence achieved between PaMs selected for adoption with related policy priorities.

Gaps in reporting were identified as follows:

- The date of the NAPCP submission is not provided and nor is the competent authority responsible for its development.

Information on the policy options considered and selected for adoption is reported via the EEA PaM-tool and in the NAPCP (sections 5 and 6); however, information is not consistent between the two. The review presented in this report is based on information from the NAPCP, which is more complete and was issued as a final document after reporting via the EEA PaM-tool. The minimum reporting requirements for the PaMs considered and for the PaMs selected for adoption is partially provided:

- For each of the PaMs considered, the estimated emission reduction is reported together with a brief description. The type of policy instrument is only reported for PaMs targeting NH<sub>3</sub>.
- Information on the policy options considered includes a summary of air quality challenges but does not reflect how the PaMs are expected to impact on air quality and the environment (section 5.2 of the NAPCP).
- For two of the three PaMs selected, the responsible authority is reported together with a brief description. No detail is provided concerning the PaM related to the early closure of a coal power plant. The years of adoption and implementation are not consistently reported.
- Reporting on the NAPCP projections under a WAM scenario is partially complete. The inventory year for the data underpinning the projections are not reported (section 7.1 of the NAPCP). The emission projections under a WAM scenario show that compliance with the respective NECD emission reduction commitments is not projected for all the pollutants. Although flexibilities are not used, they are referred to as an option. Ireland has provided insufficient information in the NAPCP to justify their use. The projected emission reductions for NMVOC and NH<sub>3</sub> do not follow a linear trajectory and no explanation is provided to support this (section 7.2).

The following optional content is provided:

- Competent authorities responsible for source sectors (section 2.2 of the NAPCP).
- Graphics to portray current progress in improving air quality (section 3.3 of the NAPCP).
- Information on the data and methodologies used to describe transboundary impacts (section 3.4 of the NAPCP).
- An account of the uncertainties associated with the WM projections (section 4 of the NAPCP).

- Additional details concerning the optional measures from Annex III Part 2 to Directive (EU) 2016/2284 targeting the agricultural sector to comply with the emission reduction commitments (section 5.3 of the NAPCP).

## 2 Projected compliance with NECD emission reduction commitments

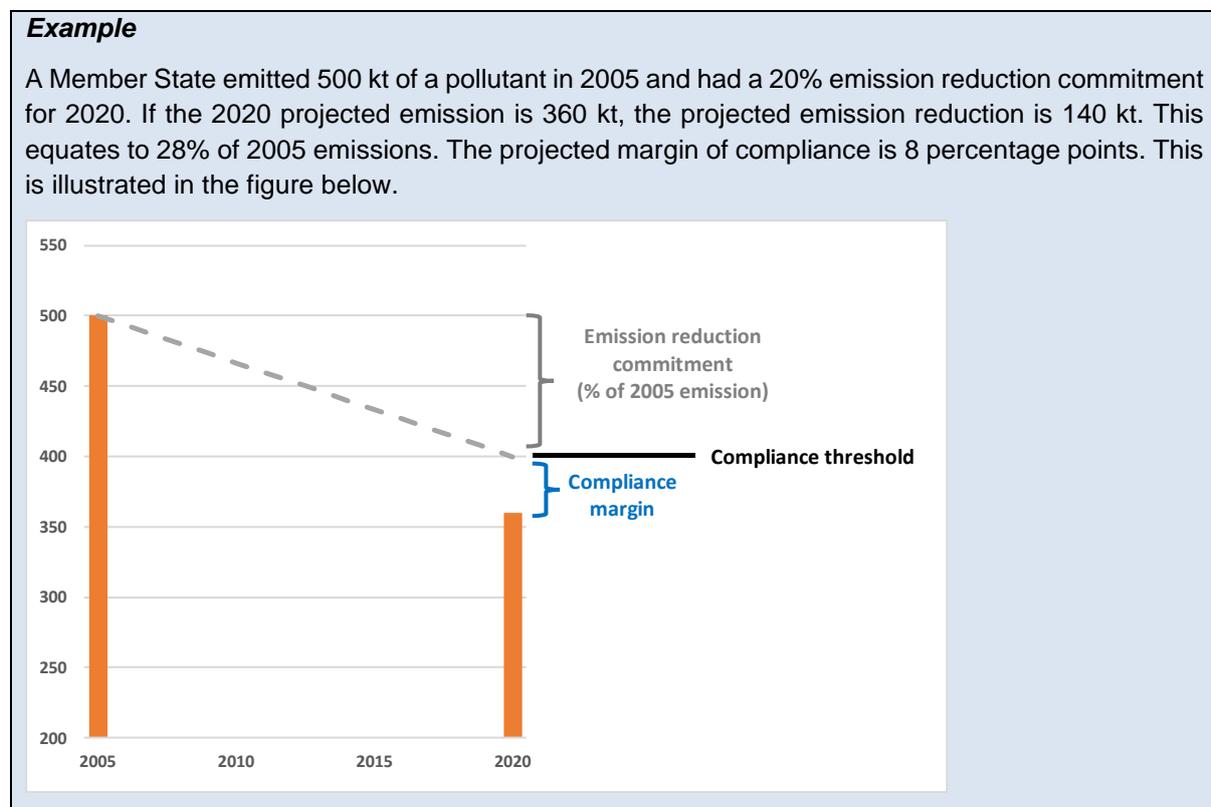
### 2.1 Margin of compliance

There are several different metrics that can be used to show the “margin of compliance” i.e. the margin by which compliance with the NECD emission reduction commitments is achieved or missed.

The following two approaches have been used in the overall assessment of NAPCPs and projections to calculate the margin of compliance:

1. **Calculating the difference between an emission reduction commitment and the projected emission reductions (difference expressed in *percentage points*)** – this approach is presented in the NAPCP review reports and follows the same approach as required in the NAPCP format. The emission reduction commitments specified in Annex II of the NECD are defined as percentage reductions on the 2005 emissions. Projected emissions of pollutants in 2020 and 2030 are compared to the 2005 emissions to calculate the projected emission reductions. These projected reductions are then divided by the 2005 emissions to obtain the projected reductions as a percentage of the 2005 emissions. These percentage reductions are then compared to the legally binding percentage reduction, with the difference between them representing the compliance margin expressed as percentage points. As such, negative percentage points indicate that the emission reduction commitment will not be met.

Figure 2-1 The margin of compliance



2. **Calculating the difference between projected emissions and the compliance threshold (expressed as a percentage of the compliance threshold)** – this approach is presented in the projections review reports and follows the same approach as used in the context of emissions inventories.

Given that each emission reduction commitment specified in Annex II of the NECD is defined as a percentage reduction on the 2005 emissions, these two values can be combined to express a “compliance threshold” i.e. the maximum emission that can be emitted by a Member State from 2020 and 2030 onwards, and still be compliant with the emission reduction commitment for a pollutant. Projected emissions (under the WM and WAM scenarios) can be compared to the compliance threshold, and the compliance margin expressed as a percentage of the compliance threshold.

#### **Example**

A Member State emitted 500 kt of a pollutant in 2005 and had a 20% emission reduction commitment for 2020. The maximum the Member State can emit in 2020 to achieve its 2020 emission reduction commitment (the “compliance threshold”) is 400 kt. If the 2020 projected emission is 360 kt, the commitment will be met by 40 kt and the projected margin of compliance is 10% of the compliance threshold.

Mathematically these two approaches are different as they use different reference points. However, they yield the same conclusions **concerning compliance or non-compliance** with the NECD reduction commitments. The largest numerical differences between the two approaches occur when there are significant differences between the 2005 emissions and the projected emissions for 2020 or 2030 (this is in particular the case for SO<sub>2</sub>).

The percentage point approach is used in the review of the NAPCP to understand the margin of compliance between the projected emission reductions presented in the NAPCP and the legally binding percentage emission reduction commitments (see Section 2.2 of this report).

The results of the projections review and of the assessment of the NAPCPs are brought together in the risk assessment for individual Member States (see Appendix 2 of this report), using the margin of compliance expressed as a percentage of the compliance threshold based on projections submitted under Article 10(2). The methodology for assessing the risk of non-compliance is explained in the accompanying horizontal review report.

## 2.2 Projected compliance and consistency with projections submitted under Article 10(2)

- Under the WM scenario, the NH<sub>3</sub> emission reduction commitments for 2020-29 and for 2030 onwards are projected to be missed. The NO<sub>x</sub> and NMVOC 2030 onwards commitments are also projected to be missed.
- Projected compliance with the respective commitments does not change under the WAM scenario despite the additional reductions anticipated.

The projections presented in this section are derived from the information reported by the Member State in their NAPCP. Ireland included 2018 projections using historical inventory data from 2016 in the NAPCP, which is different to the projections data submitted separately by the Member State under Article 10(2) of the Directive on 15 March 2019 (which use inventory data from 2017). The projected compliance with emission reduction commitments according to these projections differs to the information presented in the NAPCP. This is discussed in more detail below following the review of the 2018 projections submitted in the NAPCP.

Figure 2-2 and Figure 2-3 present the emission reductions needed for 2025 which are interpolated according to the 2020-29 and 2030 onwards commitments set out in the NECD. Additional information is included to demonstrate the extent to which the projections meet the Member State commitments (shown, for each of the pollutants, as the difference expressed in percentage points between the projected emission reduction described in the NAPCP and the legal commitment). This is shown in percentage points i.e. as a difference between the emission reduction commitment (expressed as a percentage of 2005 emission) and emission reductions which Member State projects to achieve (also expressed as a percentage of 2005 emissions). The percentage points do not represent the extent to which total emissions projected (kt) compare to the emission reduction commitment (in terms of kt of emissions).

Of note, adjustments are applied to historical inventory data for NO<sub>x</sub> and NMVOC in the NAPCP to exclude emissions from agriculture (NFR 3B and 3D) and the manufacturing of spirits (NFR 2H within the food and drink sector)<sup>5</sup>. The NECD includes a provision under Article 4(3)(d) allowing emissions from agriculture to be excluded when determining Member State compliance with the emission reduction commitments for NO<sub>x</sub> and NMVOC. The decision to exclude NMVOC emissions from the food and drink sector was granted by the Commission as part of the flexibilities permitted under Article 5(1) of the NECD. This adjustment was granted specific to Ireland in 2017 and 2018 (covering the emissions in the period 2010-2015 and 2010-2016 respectively) and it seems that Ireland expects to be granted the same flexibility in 2019 (European Commission)<sup>6</sup>.

**Under the WM scenario, progress towards the 2020-29 emission reduction commitments is as follows:**

- **SO<sub>2</sub>** – The projections of SO<sub>2</sub> emissions under the WM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with existing measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 17 percentage points.
- **NO<sub>x</sub>** – The projections of NO<sub>x</sub> emissions under the WM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with existing measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 4 percentage points.
- **NMVOC** – The projections of NMVOC emissions under the WM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with existing measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 5 percentage points.
- **NH<sub>3</sub>** – The projections of NH<sub>3</sub> emissions under the WM scenario show that Ireland cannot comply with the 2020-29 reduction commitments specified in the NECD with existing measures. In 2020, compliance with the emissions reduction commitments is projected to be missed with a margin of 10 percentage points.
- **PM<sub>2.5</sub>** – The projections of PM<sub>2.5</sub> emissions under the WM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with existing measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 21 percentage points.

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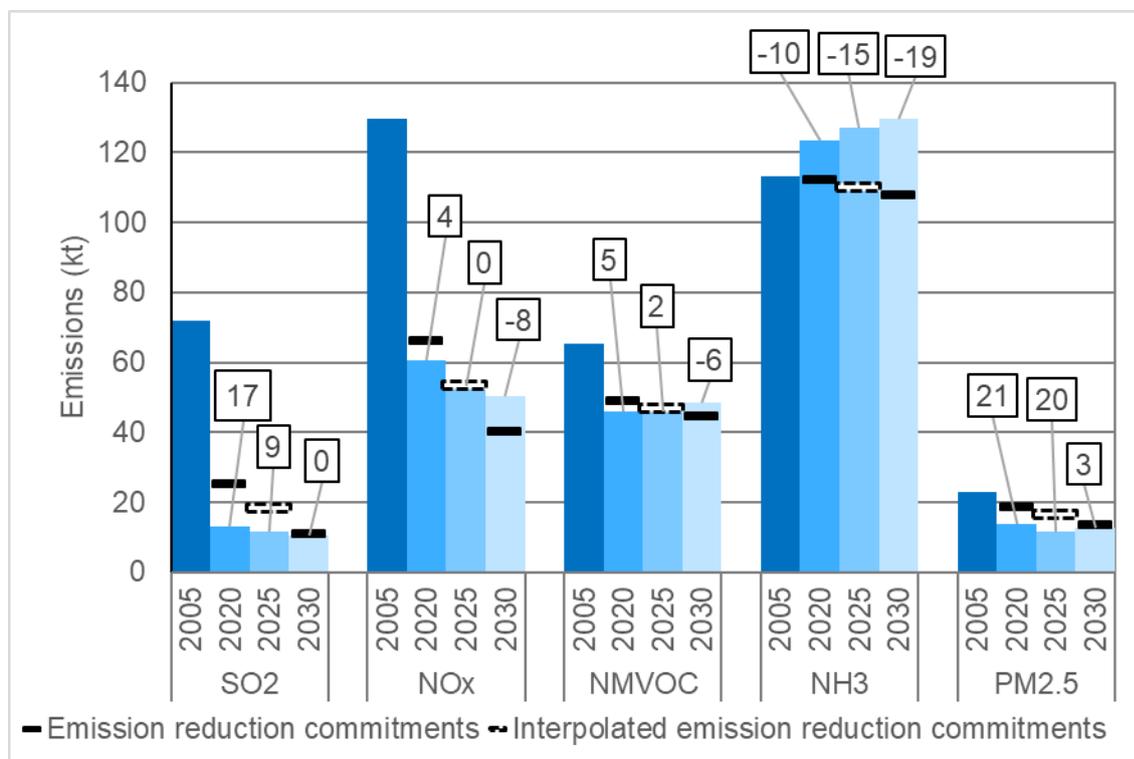
<sup>5</sup> From the 2018 historical inventory submission, NO<sub>x</sub> total emissions are reported as 161.69 kt in 2005; excluding agriculture, emissions are estimated to be 129.78 kt. NMVOC total emissions are reported in the 2018 historical inventory submission as 119.25 kt in 2005; excluding agriculture and emissions from the food and drink sector, emissions are estimated to be 65.33 kt.

<sup>6</sup> European Commission, Emission inventory adjustment applications and reviews in relation to the 2010 ceilings of Directive 2001/81/EC (in accordance with Art. 21(2) and Article 5(6) of Directive 2016/2284/EU). Years covered: 2018; and 2017. URL: <https://ec.europa.eu/environment/air/reduction/implementation.htm>

**Under the WM scenario, progress towards the 2030 onwards commitments is as follows:**

- **SO<sub>2</sub>** – The projections of SO<sub>2</sub> emissions under the WM scenario show that Ireland can comply with the 2030 onwards reduction commitments specified in the NECD with existing measures. In 2030, compliance with the emissions reduction commitments is projected to be achieved exactly.
- **NO<sub>x</sub>** – The projections of NO<sub>x</sub> emissions under the WM scenario show that Ireland cannot comply with the 2030 onwards reduction commitments specified in the NECD with existing measures. In 2030, compliance with the emissions reduction commitments is projected to be missed with a margin of 8 percentage points.
- **NM<sub>VOC</sub>** – The projections of NM<sub>VOC</sub> emissions under the WM scenario show that Ireland cannot comply with the 2030 onwards reduction commitments specified in the NECD with existing measures. In 2030, compliance with the emissions reduction commitments is projected to be missed with a margin of 6 percentage points.
- **NH<sub>3</sub>** – The projections of NH<sub>3</sub> emissions under the WM scenario show that Ireland cannot comply with the 2030 onwards reduction commitments specified in the NECD with existing measures. In 2030, compliance with the emissions reduction commitments is projected to be missed with a margin of 19 percentage points.
- **PM<sub>2.5</sub>** – The projections of PM<sub>2.5</sub> emissions under the WM scenario show that Ireland can comply with the 2030 onwards reduction commitments specified in the NECD with existing measures. In 2030, compliance with the emissions reduction commitments is projected to be achieved with a margin of 3 percentage points.

**Figure 2-2 Projected attainment of emission reduction commitments (WM scenario used in the NAPCP)**



Note: The extent to which the projections meet the Member State commitments is shown, for each of the pollutants, as the difference expressed in percentage points between the projected emission reduction described in the NAPCP and the legal commitment. A negative number indicates that the commitment is projected to be missed.

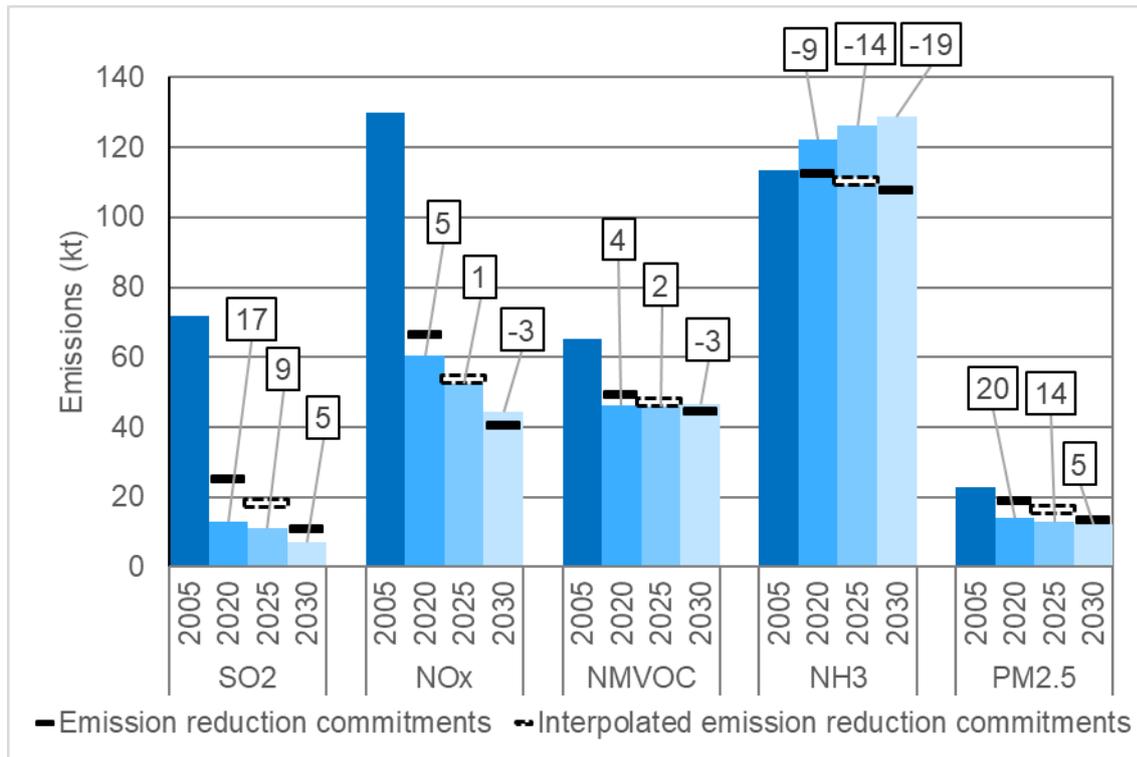
As the projections under the WM scenario demonstrate a gap in compliance with the Member State NECD emission reduction commitments for certain pollutants, the NAPCP includes projections under a 'With Additional Measures' (WAM) scenario.

**Under the WAM scenario, progress towards the 2020-29 emission reduction commitments is as follows:**

- **SO<sub>2</sub>** – The projections of SO<sub>2</sub> emissions under the WAM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with additional measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 17 percentage points.
- **NO<sub>x</sub>** – The projections of NO<sub>x</sub> emissions under the WAM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with additional measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 5 percentage points.
- **NMVOC** – The projections of NMVOC emissions under the WAM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with additional measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 4 percentage points.
- **NH<sub>3</sub>** – The projections of NH<sub>3</sub> emissions under the WAM scenario show that Ireland cannot comply with the 2020-29 reduction commitments specified in the NECD with additional measures. In 2020, compliance with the emissions reduction commitments is projected to be missed with a margin of 9 percentage points.
- **PM<sub>2.5</sub>** – The projections of PM<sub>2.5</sub> emissions under the WAM scenario show that Ireland can comply with the 2020-29 reduction commitments specified in the NECD with additional measures. In 2020, compliance with the emissions reduction commitments is projected to be achieved with a margin of 20 percentage points.

**Under the WAM scenario, progress towards the 2030 onwards commitments is as follows:**

- **SO<sub>2</sub>** – The projections of SO<sub>2</sub> emissions under the WAM scenario show that Ireland can comply with the 2030 onwards reduction commitments specified in the NECD with additional measures. In 2030, compliance with the emissions reduction commitments is projected to be achieved with a margin of 5 percentage points.
- **NO<sub>x</sub>** – The projections of NO<sub>x</sub> emissions under the WAM scenario show that Ireland cannot comply with the 2030 onwards reduction commitments specified in the NECD with additional measures. In 2030, compliance with the emissions reduction commitments is projected to be missed with a margin of 3 percentage points.
- **NMVOC** – The projections of NMVOC emissions under the WAM scenario show that Ireland cannot comply with the 2030 onwards reduction commitments specified in the NECD with additional measures. In 2030, compliance with the emissions reduction commitments is projected to be missed with a margin of 3 percentage points.
- **NH<sub>3</sub>** – The projections of NH<sub>3</sub> emissions under the WAM scenario show that Ireland cannot comply with the 2030 onwards reduction commitments specified in the NECD with additional measures. In 2030, compliance with the emissions reduction commitments is projected to be missed with a margin of 19 percentage points.
- **PM<sub>2.5</sub>** – The projections of PM<sub>2.5</sub> emissions under the WAM scenario show that Ireland can comply with the 2030 onwards reduction commitments specified in the NECD with additional measures. In 2030, compliance with the emissions reduction commitments is projected to be achieved with a margin of 5 percentage point.

**Figure 2-3 Projected attainment of emission reduction commitments (WAM scenario used in the NAPCP)**

Note: The extent to which the projections meet the Member State commitments is shown, for each of the pollutants, as the difference expressed in percentage points between the projected emission reduction described in the NAPCP and the legal commitment. A negative number indicates that the commitment is projected to be missed.

The differences between the projections submitted under Article 10(2) of the Directive (2019 projections) and those submitted as part of the NAPCP projections are noticeable and affect Ireland's expected compliance with the national emission reduction commitments in the following ways:

- According to the 2019 projections, under the WM scenario, the 2020-2029 commitment for NMVOC and the 2030 commitment for SO<sub>2</sub> are projected to be missed but both commitments are projected to be achieved under the WM scenario included in the NAPCP.
- According to the 2019 projections, under the WAM scenario, the 2020-2029 NMVOC commitment is projected to be missed but is projected to be achieved under the WAM scenario included in the NAPCP.

In response to the questions raised for Ireland during the projections review (conducted alongside the review of the NAPCP), it was stated that the 2030 NMVOC emission reduction commitment is projected to be achieved if the exclusion of NMVOC emissions from spirit manufacturing is allowed with the granting of an appropriate adjustment. No feedback was provided to explain the discrepancy affecting the projected SO<sub>2</sub> compliance under the WM scenario between the two sets of projections.

Ireland has reported that projections will be updated to reflect the impact of the actions adopted by the national Climate Action Plan (August 2019). It is planned that this update will be included in the next iteration of Ireland's NAPCP which is planned to be submitted later in 2020 (section 2.1 of the NAPCP).

Further analysis related to the risk of non-compliance, taking into account the information provided in both the NAPCP and the projections submissions, is presented in Appendix 2.

## 3 Findings of the in-depth NAPCP review

### 3.1 NAPCP overview (M)

- The NAPCP was submitted after the reporting deadline of 1 April 2019.
- Ireland does not use the common format.
- Public consultation on the NAPCP has been carried out.

The NAPCP does not adhere to the common format specified by the Commission Implementing Decision (EU) 2018/1522, pursuant to Article 6 of the NECD; however the headings used in the NAPCP correspond to the headings in the common format. The NAPCP is made up of one main report (63 pages) which was submitted on 13 February 2020. PaMs were submitted via the EEA PaM-tool on 26 September 2019. A draft NAPCP was submitted to the European Commission on 12 April 2019. Section 5 (information on the policy options considered in the NAPCP) refers to an appendix file containing more detail which has not been uploaded with the NAPCP. Weblinks are provided to eight external documents and datasets which are in working order. All references are relevant and provide further context for the NAPCP.

The NAPCP is titled 'NAPCP Report 2019' but the submission is not dated. The competent authority responsible for its development is not stated but is evident from the roles and responsibilities described later (table 2 of the NAPCP).

The period for public consultation of the NAPCP was between 15 April and 5 July 2019 (section 8 of the NAPCP). Weblinks are provided to access information on the activities undertaken. Adding to this, a summary is provided of the consultation activities undertaken for the National Energy and Climate Plan (NECP) (section 8 of the NAPCP).

The NAPCP does not refer to any form of transboundary consultation being conducted. It is perhaps considered not appropriate based on the evidence included in the NAPCP which shows that the transboundary impact on neighbouring Member States is modest (affecting France and the UK).

### 3.2 Executive summary (O)

No executive summary is provided.

### 3.3 The national air quality and pollution policy framework (M, O)

- Air quality policy priorities are defined in a cross sectoral strategy covering transport, energy, home heating and agriculture which is intended to improve air quality at the same time as reducing air pollutant emissions (the Clean Air Strategy) (section 2.1 of the NAPCP).
- Wider policy priorities are reflected in the development of the NAPCP, including those for transport, agriculture and industry, framed by the National Planning Framework.

Air quality policy priorities are defined in a cross sectoral strategy covering transport, energy, home heating and agriculture which is intended to reduce air pollutant emissions and improve air quality (the Clean Air Strategy). According to the NAPCP, Ireland is compliant with the EU air quality limit and target values which corresponds to the information in the EEA air quality country fact sheet for Ireland.<sup>7</sup>

<sup>7</sup> Air pollution country fact sheets 2018: <https://www.eea.europa.eu/themes/air/country-fact-sheets/2018-country-fact-sheets> [last accessed: 10/09/2019]

Air quality policy priorities are not described with reference to the WHO guideline values, but these are referred to in the NAPCP with respect to current progress in improving air quality (see Section 3.4.2).

Energy policy priorities are defined in relation to an existing white paper which sets out Ireland's transition to a low carbon energy future (2015-2030). This is accompanied by the National Renewable Energy Action Plan and the National Energy Efficiency Action Plan (both set targets for 2020). Climate policy priorities are established in a national mitigation plan which is intended to further support the country towards decarbonisation up to 2050 (setting a longer timeframe compared to the energy white paper). The NAPCP review finds that the delivery of the clean energy policy priorities described will likely contribute to air pollutant emission reductions. Progress on the development of the NECP is outlined in terms of the reporting schedule (section 2.1 of the NAPCP). It is stated that the final NECP, which has not been published at the time of finalising this report, would take into account the 183 actions adopted by the national Climate Action Plan to meet 2030 GHG targets and achieve net-zero carbon in 2050 (published in August 2019).

Wider policy priorities are reflected in the development of the NAPCP, including those for transport, agriculture and industry. The policy priorities described are framed by the National Planning Framework (a cross-sectoral strategy and the principles of this strategy underlie the development of the NAPCP). Transport policy priorities include the delivery of better public transport systems (particularly in Dublin). For agriculture and industry, policy priorities are described in the context of EU legislation and include priorities to reduce carbon emissions and support organic farming under the Irish Rural Development Programme as well as permitting under the Industrial Emissions Directive (IED).

All roles relevant to the development of the NAPCP are the responsibility of authorities at a national level, requiring collaboration between government ministries across sectors (table 2, section 2.2 of the NAPCP). Implementation, enforcement, reporting and monitoring at national level is supported by county and city administrations. Where relevant, the source sectors under the responsibility of the authority described are reported (covering climate and the environment, agriculture, energy, industry, transport and the built environment). The NAPCP review finds that the role of the national government overseeing air pollution matters will facilitate coordination between sectors and regions. It also finds that regional and local involvement in implementation, enforcement, reporting and monitoring can strengthen implementation through more targeted action.

## 3.4 Progress made by current PaMs in reducing emissions and the degree of compliance with national and EU obligations, compared to 2005 (M, O)

### 3.4.1 Progress made by current PaMs in reducing emissions

- Current PaMs are described in section 3.1 and 3.2 of the NAPCP. All PaMs are provided by sector, with a short description of the PaMs and the key emitting sectors.

Progress made by current PaMs is described in section 3.1 and 3.2 of the NAPCP. Ireland first describes progress achieved by pollutant (section 3.1) and then describes major PaMs delivering progress (section 3.2).

In 2016, key emitting sectors were: transport (NO<sub>x</sub>); manufacturing and construction industries (SO<sub>2</sub>, NO<sub>x</sub>); energy (SO<sub>2</sub>); commercial, institutional and residential sectors (SO<sub>2</sub>); agriculture (NMVOC and NH<sub>3</sub>); solvent use (NMVOC); industrial processes (NMVOC); combustion in the residential sector (PM<sub>2.5</sub>).

Current PaMs are described individually by sector together with implemented EU legislation, as follows:

- **Transport:** Higher emission standards and improved fuel-efficiency in vehicles (using Euro 6 standards), greater market penetration of higher Euro standard vehicles; Fuel Standards (EU legislation); electric vehicle and tax schemes; and encouraging a modal shift to public transport, cycling and walking (in Dublin).

Previously, a scheme to promote the market penetration of higher Euro standard vehicles with the early scrappage of vehicles was established, which led to an increase in the number of diesel vehicles with adverse effects for air quality and emission reductions. However, the ongoing PaM to support greater market penetration of higher Euro standard vehicles together with improved fuel efficiency is expected to have contributed to air pollutant emission reductions.

The NAPCP also refers to the increased share of biofuels placed on the market via the Biofuels Obligation Scheme.

- **Energy:** The use of cleaner fuels supported by enhanced sulphur controls in power generation, residential combustion and transport, as well as effective licensing and enforcement by the EPA; improved energy efficiency (in residential, commercial and public sectors) and product labelling to support greater energy efficiency; and the smoky coal ban.
- **Electricity generation:** Renewable energy feed in tariff for non-combustion renewables (wind and solar); and phasing out the use of peat with increasing shares of biomass for co-firing.
- **Agriculture:** efficient use of animal manure (under the nitrates action programme); low emissions spreading systems (using equipment such as a dribble-bar, trailing shoe/hose, band spreading or injection to reduce NH<sub>3</sub> emissions); and knowledge transfer of information from research and advisory services to farmers - including environmental monitoring (Teagasc National Farm Survey).<sup>8</sup>

The timeframe in which current PaMs are described varies according to the different years they were implemented (generally between 2009 and 2020/2021 with the exception of the smoky coal ban which was established in the 1990s). Progress is described for the implementation periods in terms of the outcomes (with respect to participation in the schemes described) (section 3.2 of the NAPCP) and the emission reductions achieved (section 3.1 of the NAPCP).

In addition, measures listed in Annex III, Part 2 relating to agriculture are referred to among the current PaMs for the agriculture sector. The burning of green waste is currently permitted as a time limited activity under the Waste Management Act. The regulations require that all other more environmentally friendly methods of treatment of green waste, such as reduction, reuse, and recycling by shredding, composting or wood chipping are used before disposal by burning. A code of good agricultural practice for reducing NH<sub>3</sub> emissions (voluntary guidelines) was published in November 2019.

### 3.4.2 Progress made by current PaMs in improving air quality

- No exceedances of EU air quality standards in 2017 are reported, but exceedances are reported for PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, O<sub>3</sub> and PAH with respect to the WHO guideline values.
- Current PaMs for improving air quality are delivered via the Ambient Air Quality network and funded via a five-year programme.

The air quality assessment is presented for the year 2017. There were no exceedances of the EU legislative limits reported for Ireland in 2017 (section 3.3 of the NAPCP). This section of the NAPCP describes progress compared with the WHO guideline values and indicates that four air quality

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<sup>8</sup> Other PaMs described for agriculture relate to carbon efficiencies and it is unclear how they have delivered air pollutant emission reductions. PaMs include: Origin Green (conducting carbon footprint audits); and the Beef Data and Genomics Programme to support farmers select suckler cow replacements according to their carbon efficiency. These are not included in this summary as their relevance to air pollutant emission reduction cannot be confirmed.

pollutants present a challenge (exceedances compared with the WHO guideline values are reported for the year 2017):

- PM<sub>10</sub> and PM<sub>2.5</sub> linked to residential solid fuel use and transport emissions from diesel engines, and from tyre and brake abrasion. Exceedances of the WHO guideline values for daily PM<sub>10</sub> were reported at 11 sites, and exceedances of daily PM<sub>2.5</sub> at 9 sites. There were also exceedances of annual PM<sub>2.5</sub> at one site.
- NO<sub>2</sub> levels in urban centres from transport (hourly NO<sub>2</sub> exceeded at one site).
- O<sub>3</sub> levels at a regional scale (in part due to the impacts of transboundary O<sub>3</sub>) (exceeded at one site).
- PAH levels due to the burning of fossil fuels (exceeded at one site).

Current PaMs for improving air quality are delivered via the Ambient Air Quality network. The detail for the individual PaMs is not provided. It is reported that current PaMs are under revision as part of the upgrading and expansion of the Ambient Air Quality network through a five-year programme funded by the Department of Communications, Climate Action and Environment.

Air quality concentrations are modelled at a national scale for the year 2015. The modelled data is depicted in a series of maps for accumulated O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub> and NO<sub>x</sub> (as the pollutants presenting a challenge compared with the WHO guideline values).

### 3.4.3 Current transboundary impact of national emission sources

The NAPCP refers to the source receptor (SR) relationships modelled by the EMEP to describe the estimated transfer of pollutants (section 3.4 of the NAPCP). For reduced nitrogen deposition, oxidised nitrogen and oxidised sulphur deposition, the largest impacts affect the North Sea and Atlantic. It is reported in the NAPCP that the impact on neighbouring Member States is modest and only affects France (reduced nitrogen deposition) and the UK (oxidised nitrogen and sulphur).

Thus, it is perhaps considered not appropriate by Ireland to conduct a transboundary consultation for the development of its NAPCP.

## 3.5 Projected situation assuming no change in currently adopted PaMs (M, O)

Emission reductions projected under a WM scenario are reported in section 4 of the NAPCP. The projections are based on the 2018 projections using 2016 historical inventory data.

As presented in section 2.2 of this report, the emission reductions under the WM scenario show that both the 2020-29 and 2030 NH<sub>3</sub> commitments are projected to be missed. Moreover, NH<sub>3</sub> emissions are projected to increase between 2020 and 2030 and compared to the 2005 baseline year. For the remaining pollutants, all 2020-29 commitments are projected to be achieved. For 2030 onwards, only SO<sub>2</sub> and PM<sub>2.5</sub> are projected to be achieved.

A description is provided in the NAPCP for each of the NECD pollutants to explain the trends projected. For PM<sub>2.5</sub>, it is reported that three measures planned are not included in the projections: increased penetration of heat pump technologies in the residential sector; electrification of the transport fleet; and a review of aluminium production. The results of the review on aluminium production are however included in the 2019 IIR.

Ireland is projected to meet EU standards for ambient air quality on the basis of its current compliance described (section 4.1 of the NAPCP). A qualitative description is reported to show which PaMs are expected to have a further positive impact on air quality up to 2030 onwards.

## 3.6 Policy options considered to comply with emission reduction commitments for 2020 and 2030, intermediate emission levels for 2025 and stakeholder consultation (M, O)

- Information on the additional PaMs considered is based on information presented in section 5 of the NAPCP owing to inconsistencies in the information reported via the EEA PaM-tool.
- 12 PaMs are considered for adoption, of which, 2 are packages of PaMs.
- The PaMs cover the key emitting sectors, including agriculture, energy (supply and consumption) and transport.
- The PaMs address emissions of all NECD pollutants including those that represent challenges to emission reduction commitments (NO<sub>x</sub>, NMVOC and NH<sub>3</sub>). However, to ensure compliance with the emission reduction commitments, further additional PaMs are needed for NO<sub>x</sub>, NMVOC and NH<sub>3</sub>.
- The PaMs for agriculture involve voluntary policy instruments, which reduces the certainty with which the expected emission reductions for these PaMs can be achieved.

### 3.6.1 Summary of the information reported

Ireland has reported to the EEA-PaM tool. A total of 34 PaMs have been reported together with their estimated emission reductions which have been quantified for individual PaMs. This information is not consistent with the information on the policy options considered is reported in the NAPCP (section 5). The review in this report is based on the information presented in the NAPCP because the final document was submitted after the reporting via the EEA PaM-tool (which was submitted when the NAPCP was still in draft form) and because the PaMs reported via the EEA PaM-tool clearly include those which are defined as existing in the NAPCP.

Under the WM scenario reported in the NAPCP, the projections indicate that the 2030 commitments for NO<sub>x</sub> and NMVOC, together with the NH<sub>3</sub> commitments for 2020-29 and 2030 will not be met. The additional PaMs considered target these pollutants and relate to the agriculture, energy and transport sectors.

The PaMs considered are presented in the tables below. Note that the PaMs considered for energy and transport are presented as two packages of PaMs. The detail of the packages is provided in section 6 of the NAPCP with respect to the PaMs selected for adoption.

In addition to the measures relating to agriculture as set out in Annex III, Part 2 of the NECD, an additional PaM is described which is expected to further contribute to NH<sub>3</sub> emission reductions, the Targeted Agricultural Modernisation Scheme (TAMS). The scheme provides capital investment to target areas which will promote, among other things, sustainability e.g. the purchase of low emissions slurry spreading equipment, grants towards farm nutrient storage. The PaMs in this scheme are reported in the NAPCP with an adoption target (ranging from 0 to 100%). The adoption targets are not explained but where an adoption target of 0% is reported, no emission reductions have been estimated. It is expected that the adoption targets concern the likely share of farmers expected to adopt the measure described but this cannot be confirmed according to the information provided in the NAPCP.

The descriptions of the PaMs are clear and are judged by the reviewers as reasonable. The estimated emission reductions are reported at individual PaM level and do not correspond with the projected emission reductions under the WAM scenario reported in the NAPCP. The lack of consistency between the information reported reduces the credibility of the PaMs described and their expected impact on emission reductions. Added to this, the planned period of implementation is not reported in the NAPCP.

As the start year for planned implementation is not stated, it is not possible to assess the feasibility of the estimated emission reductions for the PaMs.

### Agriculture (12 individual PaMs which are reported in different combinations for two scenarios)

Manure management: Altered Timing Management System (ATMS) (dairy/non-dairy) (adoption target 0%)

Manure management – using a trailing hose (pigs) (adoption target 0%)

Manure management – using a trailing shoe (pigs) (adoption target 100%)

Manure management – using a trailing shoe (dairy) (adoption target 100%)

Manure management – using a trailing hose (non-dairy) (adoption target 42%)

Manure management – using a trailing shoe (non-dairy) (adoption target 42%)

Fertiliser management (use of urea stabilisers – adoption target 100%)

Manure storage: aerated open manure storage under cages to dry manure (poultry)<sup>9</sup> – (adoption target 60%)

Manure storage: covering outdoor storage (dairy/non-dairy) – (adoption target 100%)

Manure storage: covering outdoor storage (pigs) (adoption target 20%)

Manure storage: amendment of poultry litter with alum (adoption target 70%)

Feeding strategy (reduce crude protein fed to pigs – adoption target 30%)

### Energy supply & consumption (two individual PaMs)

**Heat Pump Installation** (170,000 heat pumps installed by 2030):

- Assessment of Building Stock
- Financial instruments to facilitate access
- Free home assessment
- Assessments to identify opportunities for retrofitting heat pump technology
- Greater incentives for heat pump installation in new builds and renovations
- Research & Innovation (R&I) to develop heat pump technology

**Electricity Generation:** Closure of Ireland's last remaining coal power plant (two options reported for the same individual PaM, one with closure in 2025 or one with closure in 2030)

### Transport (one individual PaM)

**Further Deployment of Electric Vehicles** (0.5 million EVs by 2030):

<sup>9</sup> Ammonia emissions from battery deep-pit or channel systems can be lowered by reducing the moisture content of the manure by ventilating the manure pit.

**Transport (one individual PaM)**

- Continuation of existing grants to purchase electric vehicles for private use
- Expansion of charging infrastructure
- Bus Connects Programme to replace diesel buses with low-emission buses
- Continuation of existing grants to purchase electric vehicles for taxis or limousines
- Electric vehicle toll incentive scheme (reduced tolls for electric vehicles)

**3.6.2 Pollutants targeted and projected emission reductions**

The additional PaMs considered cover all NECD pollutants, including those that represent challenges to emission reduction commitments (NO<sub>x</sub>, NMVOC and NH<sub>3</sub>). No air pollutants beyond the scope of the NECD are targeted by the PaMs considered.

The expected emission reductions are not reported consistently between the PaMs considered.

- The expected impact on NO<sub>x</sub> and NMVOC emissions from electric vehicles is quantified as a range (in kt per annum).
- For electricity generation, the PaM concerns closure of the last remaining coal power plant in Ireland. Under the WM scenario, the year of closure is 2030, and under the WAM scenario, the year of closure is 2025. The expected impact is reported for two different scenarios (WM and WAM) (kt per annum). The NAPCP reports slightly greater emission reductions for the 2030 closure compared to the 2025 closure but no explanation is provided to justify this. The emission reductions estimated for this PaM consider emissions from the power sector as a whole (i.e. include emissions from other sources of energy generation) and so are likely to be overestimated (i.e. include reductions not directly associated with the closing of the coal power plant). The additional detail referred to in the accompanying appendix may provide an explanation for these estimates but as the appendix has not been provided, it is not possible to check this detail.
- The expected impact from heat pump installations is not estimated, and no reason is given to explain why. It is also noted that this PaM is referred to in relation to the PaMs included in the WM scenario. Based on the targets reported up to 2030, it is understood that this PaM will be an extension of an existing one. Insufficient information is reported to justify how this PaM will be additional to the existing one, although it is possible that the accompanying appendix may provide relevant detail to explain this but, as the appendix has not been provided, it is not possible to check.
- Two sets of emission reductions are also reported to show the estimated impact on NH<sub>3</sub> emissions (Scenario 1: all PaMs considered are adopted; and Scenario 2: only selected PaMs among those considered are adopted) (kt per annum).

Table 3-1 presents the total emission reductions estimated for PaMs considered for adoption.

**Table 3-1 Projected total emission reductions from the PaMs considered for adoption (kt per annum)**

Pollutant	Lower estimates			Upper estimates		
	2020	2025	2030	2020	2025	2030
SO <sub>2</sub>	Not estimated	2.94	Not estimated	Not estimated	2.94	Not estimated
NO <sub>x</sub>	Not estimated	3.80	0.642	-0.09	3.99	1.52
NMVOG	0.06	0.27	1.386	0.62	0.56	2.78
NH <sub>3</sub>	Not estimated	12.55	12.91	Not estimated	16.01	16.44
PM <sub>2.5</sub>	Not estimated	0.30	Not estimated	Not estimated	0.30	Not estimated

Although the PaMs considered cover pollutants where a gap in meeting the emission reduction commitments have been identified, the estimated impacts of all of the PaMs considered are insufficient to meet the commitments. To ensure compliance with the emission reduction commitments, further additional PaMs are needed for NO<sub>x</sub>, NMVOG and NH<sub>3</sub>.

The quantified emission reductions are reported individually for the PaMs considered. The descriptions for the PaMs targeting the energy and transport sectors are not detailed and there are several omissions in the reported information compared to the minimum reporting requirements (including: objectives, the type of policy instrument, the implementation period, the authorities responsible for implementation, details of the methodologies used for the analysis and a qualitative description of any uncertainties). For PaMs targeting agriculture, the descriptions provided are more detailed and the type of policy instrument is specified but all other minimum requirements have also not been met. In view of these omissions, the extent to which the emission reductions can be assessed as credible is limited.

When comparing the total emission reductions estimated for PaMs considered for adoption (Table 3-1) to a 2005 baseline, the emission reductions the PaMs considered are expected to deliver are:

- SO<sub>2</sub>: 4 percent in 2025, no emission reductions are estimated in 2020 and 2030.
- NO<sub>x</sub>: no emission reduction in 2020, 3 percent in 2025 and 0.5 - 1.2 percent in 2030.
- NMVOG: 0.1 - 1 percent in 2020, 0.4 - 1 percent in 2025 and 2.1 - 4 percent in 2030.
- NH<sub>3</sub>: no emission reduction in 2020, 11-14 percent in 2025 and 11-15 percent in 2030.
- PM<sub>2.5</sub>: 1.3 percent in 2025, no emission reductions are estimated in 2020 and 2030.

The estimated emission reductions are different to the emission reductions projected under the WAM scenario reported in the NAPCP. The NAPCP projections show that greater emission reductions are projected for SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>2.5</sub> compared to the estimated emission reductions reported at PaM level. For NMVOG and NH<sub>3</sub>, the estimated emission reductions reported at PaM level are greater than the emission reductions projected. The most significant difference affects NH<sub>3</sub>, for which emissions are projected to increase between 2020 and 2030 according to the NAPCP projections under both the WM and WAM scenarios.

### 3.6.3 Coherence between the PaMs considered and policy priorities

The PaMs considered compliment the policy priorities described. However, there are clear overlaps between the national Clean Air Strategy and the NAPCP which do not appear to have been taken into account in the additional PaMs considered.

The additional PaMs which will be included in the forthcoming updated Clean Air Strategy are listed. The impacts are not quantified but will likely deliver additional emission reductions for NECD air pollutants. The PaMs are set out in the following tables according to three categories: Category 1 (actionable policy measures), Category 2 (supporting measures), and Category 3 (policy exploration, development, and actions for better governance).

#### Category 1 – Actionable Measures

1. Ensure that clean air considerations are addressed in the implementation of the Alternative Fuels Infrastructure Directive, in particular that no new non-zero emission vehicles are to be sold in Ireland post 2030.
2. No National Car Test Certificate will be issued for non-zero emission cars post 2045.
3. Transition to low emission urban transport (including electric buses and no diesel buses to be purchased from 1 July 2019 onwards).

#### Category 2 – Supporting Measures

1. Determine appropriate incentives to promote low/no smoke alternatives to solid fuels.
2. Support the transition from solid fuels including through Deep Retrofit Pilot of householders and links with other relevant support schemes e.g. Ballymahon Pilot for peat users and future initiatives.
3. Support the development of legislation for minimum solid fuel quality standards specifically for biomass.
4. Sustainable Energy Authority of Ireland (SEAI) Better Energy Communities Scheme to promote reduced air pollution through grant aid EcoDesign compliant appliances only from 2019 where solid fuel appliances are supported.
5. Ensure that the Local Authority Energy Efficiency Retrofit Programme promotes clean air considerations when funding heating systems to reflect the shift from solid fuel use for heating in existing publicly funded housing.
6. Engage with Stove Manufacturing Industry to promote early uptake of Eco Design Regulation ready stoves.
7. Review the need for a national accreditation scheme for the installation of solid fuel boilers and flues.
8. Deliver effective enforcement of illegal use, marketing, sale and distribution of bituminous fuel, including by resourcing a regional approach.
9. Upgrade existing SWIFT 7 standard for verification of certain solid fuels to a national Irish Standard (IS).
10. Conduct pilot retrofit project on public buses as set out in 'Our Sustainable Future' the National Sustainable Development Strategy.

**Category 2 – Supporting Measures**

11. Transition diesel buses in the urban public bus fleet to lower emitting alternatives under the Bus Connects programme while promoting and the small public service vehicle industry to use low-emission fleet
12. Support the procurement of low emission (greenhouse gas and air pollutants) public vehicles in line with the National Green Public Procurement Programme and the Cleaner Vehicles Directive 2009/33/EC and its successor.
13. Develop a national communications and awareness campaign on Clean Air in particular on solid fuel use and health impacts.

**Category 3 – Policy Exploration, Development, and Better Governance**

1. Develop a regional approach to support enforcement of air legislation taking consideration of the lessons from the regional approaches adopted for waste, water and climate legislation.
2. Review the need to reference a product standard for emissions from (i) biomass appliances installed to meet Building Regulation renewable energy requirements and (ii) consider appropriate requirements for ground floor stove installations.
3. Commission detailed research study on solid fuel use in the residential sector to improve national (i) fuel statistics and (ii) air pollution emission inventories.
4. Conduct a roadside exhaust emissions monitoring study using remote sensing techniques for road vehicles.
5. Review and implement the provision of publicly available Real-time Air Quality Data from prioritised IED sites.
6. Implement mandatory appliance air quality specifications and wood fuel sustainability specifications as part of the Support Scheme for Renewable Heat.
7. Consider new research on emerging Air Quality issues such as agricultural burning, shipping emissions, Ultra Fine particles, non-road mobile machinery.
8. Continue to support the EPA Environmental Research Programme to fund high quality clean air and climate research.

**3.6.4 Responsible authorities and timescales for implementation of PaMs considered**

The type of policy instrument is not consistently reported for the additional PaMs considered. It is only reported for the PaMs targeting NH<sub>3</sub> emission reductions from agriculture which are made up of source-based pollution control PaMs, sometimes combined with voluntary agreements. Based on the information reported elsewhere in the NAPCP, the PaMs targeting agriculture are likely to be included in the code of good agricultural practice for manure management. As such, while not explicitly stated, all PaMs considered would be voluntary agreements.

The competent authorities responsible for the implementation of the PaMs considered are not specified in the NAPCP.

The planned period of implementation is not reported in the NAPCP. For PaMs targeting the energy and transport sectors, the PaM description sets out the planned scale of operation and the year by

when this is intended to be achieved (by 2030, or by 2025 as is the case for early closure of the coal plant). As the start year for planned implementation is not stated, it is not possible to assess the feasibility of the estimated emission reductions for the PaMs.

### 3.6.5 Details of the methodology for evaluation and selection of PaMs

No details of the methodology are described for the evaluation and selection of the PaMs provided.

### 3.6.6 Estimation of costs and benefits of the individual PaM or package of PaMs considered

The estimation of costs and benefits are not reported for the additional PaMs considered.

### 3.6.7 Impacts on air quality and the environment of individual PaMs or packages of PaMs considered

The summary provided in section 5.3 of the NAPCP reiterates the air quality challenges previously described with regards to the WHO air quality guideline values. The summary does not indicate how the additional PaMs considered will contribute to addressing these challenges.

## 3.7 The policies selected for adoption by sector including timetable for adoption, implementation and review and responsible competent authority (M, O)

- Three additional PaMs are selected for adoption (section 6 of the NAPCP).
- None of the PaMs considered have been selected for NH<sub>3</sub> and no explanation is provided as to why not.
- The expected emission reductions from PaMs targeting NO<sub>x</sub> and NMVOC are insufficient for Ireland to achieve the corresponding commitments.
- No interim targets or indicators are included in the NAPCP but expected outcomes are specified for the heat pump installation PaM.

### 3.7.1 Assessment of the credibility of the PaMs selected for adoption per sector

Of the 12 additional PaMs considered in the NAPCP, none of the nine relating to agriculture are selected for adoption (section 6 of the NAPCP)<sup>10</sup>. The PaMs targeting transport and energy have been selected (including the PaM for 2025 early closure of the coal power plant). The PaM to further deploy electric vehicles in the transport sector and the PaM to install heat pumps are both reported as packages of individual PaMs.

The projected emission reductions from PaMs selected for adoption is presented in Table 3-2.

<sup>10</sup> According to the information reported via the EEA PaM-tool (which has not been used for the review here), none of the 34 PaMs considered were selected for adoption.

**Table 3-2 Projected total emission reductions from the PaMs selected for adoption (kt per annum)**

Pollutant	Lower estimate			Upper estimate		
	2020	2025	2030	2020	2025	2030
SO <sub>2</sub>	Not estimated	Not estimated	Not estimated	Not estimated	2.94	Not estimated
NO <sub>x</sub>	Not estimated	Not estimated	0.64	0.09	3.99	1.52
NMVOC	0.06	0.25	1.386	0.62	0.56	2.78
NH <sub>3</sub>	No PaMs adopted.			No PaMs adopted.		
PM <sub>2.5</sub>	Not estimated	Not estimated	Not estimated	Not estimated	0.30	Not estimated

When comparing the total emission reductions estimated for PaMs considered for adoption (Table 3-2) to a 2005 baseline, the emission reductions the PaMs selected for adoption could deliver are:

- SO<sub>2</sub>: 4 percent in 2025. No emission reductions are reported in 2020 or 2030 because SO<sub>2</sub> emission reductions have only been estimated for the closure of the coal power plant in the year 2025.
- NO<sub>x</sub>: 3 percent in 2025 and 0.5-1 percent in 2030. No emission reductions are reported in 2020.
- NMVOC: 0.1-1 percent in 2020, 0.4-1 percent in 2025 and 2.1-4 percent in 2030.
- NH<sub>3</sub>: no PaMs selected for adoption
- PM<sub>2.5</sub>: 1.3 percent in 2025. No emission reductions are reported in 2020 or 2030.

The potential emission reductions reported for the additional PaMs considered are not fully achieved mainly because no PaMs targeting NH<sub>3</sub> were selected for adoption. Another difference is that two closure dates for the coal power plant were considered but only one was selected for adoption (2025 rather than 2030). According to the information reported, the earlier closure date is reported to deliver lower emission reductions although the reasons for this are not explained in the NAPCP (see explanation in Section 3.6.2 of this report).

The most important PaMs selected for adoption are discussed per sector below.

#### [Agriculture](#)

None of the PaMs considered have been selected (section 3.6.1 of this report).

The mandatory measures in Annex III, Part 2 of the NECD relating to agriculture are reported in table 6, section 5.3 of the NAPCP. In this context, a Code of Good Agricultural Practice for the Control of Ammonia Emissions (CoPA) has been launched to take account of the UNECE Framework Code for Good Agricultural Practice for Reducing Ammonia Emissions of 2014. The code was published in November 2019. No details on the content of the code are presented in the NAPCP.

In addition, a national advisory code of good agricultural practices for the proper management of harvest residue has been established (as reported for existing PaMs relating to agriculture).

#### [Energy consumption](#)

Ireland has adopted a PaM to install 170,000 heat pumps installed by 2030. The description shows that the PaM entails a combination of three policy instruments (as categorised by the NAPCP review); these are access to information and financial support, and support for research, development and innovation to develop heat pump technology. The PaM is expected to deliver NO<sub>x</sub> and PM<sub>2.5</sub> emission reductions

but these are not quantified in the NAPCP. The timeframe for planned implementation is also not reported but implementation is due to start with the finalisation of the NAPCP. The NAPCP review finds that it is likely that the planned scale of operation (to install 170,000 heat pumps) can be achieved by 2030.

Target outcomes are specified for the heat pump installation PaM whereby at least 350,000 homes will be provided with heat pumps along with the provision of solar panels with 175,000 installed by 2025. This is slightly greater than the indicative target outcome described when the PaM was under consideration (greater by 5,000). No explanation is provided to explain why the target is greater once it has been selected for adoption.

The installation of heat pumps will be monitored by the Sustainable Energy Authority of Ireland (SEAI) with support from DCCAE. The NAPCP review finds that monitoring implementation at national level will facilitate consistent implementation. In terms of reporting in the NAPCP, SAEI is not among the authorities listed as being involved the development and implementation of the NAPCP (table 2 of the NAPCP).

As no emission reductions have been estimated for this PaM it is not possible to assess the credibility of the PaM in relation to the emission projections under a WAM scenario.

#### [Energy supply](#)

Ireland has opted for closure of its last remaining coal power plant in 2025. The PaM is estimated to deliver emission reductions of SO<sub>2</sub>, NO<sub>x</sub>, NMVOC and PM<sub>2.5</sub>. In general terms, the estimated emission reductions are not considered unreasonable in relation to the closure of a coal power plant. However, no further information is reported in the NAPCP, for example, information on plans in place for its closure and how its capacity may be replaced. Accordingly, there is insufficient information to determine the feasibility of this PaM.

#### [Transport](#)

Ireland has adopted a PaM to support further deployment of electric vehicles. The PaM aims to facilitate having 0.5 million electric vehicles on the road by 2030. No interim targets or indicators are included in the NAPCP.

Although not categorised in the NAPCP, the description shows that the PaM involves a combination of policy instruments which are access to financial support, fiscal instruments and planning. The extent to which the estimated emission reductions can be achieved is feasible given the mix of policy instruments described and the incremental nature of the market penetration over time. However, as the PaM targets behavioural change, it is hard to predict estimated emission reductions and this may reduce its credibility in the longer timeframe up to 2030.

A taskforce has been established at national level to facilitate implementation of this PaM and support collaboration between the transport and environment ministry departments. Implementation also involves local authorities at city level. The NAPCP review finds that the engagement between ministry departments and the involvement of local authorities is positive and adds to the credibility of the PaM described.

### [3.7.2 Feedback from the consultation undertaken](#)

The NAPCP was subject to public consultation between 15 April 2019 and 5 July 2019, during which 10 submissions were received. Responses were reviewed but no amendments to the NAPCP were considered necessary. .

### [3.7.3 Sources of funding](#)

The NAPCP provides an overview of the available financial resources to support the implementation of the PaMs selected (section 7 of the NAPCP), as follows:

- To support electric vehicle uptake, grants between €2,500 and €5,000 per vehicle are available (since 2011 up to 2021) for private cars. From 2018, grants between €3,500 and €7,000 per/ vehicle are available for taxis and limousines. Grant will be available up to 2021 for taxis and no cut-off date is reported for limousines.
- To support the installation of heat pumps, grants providing up to €3,500 per pump are available. The timeframe in which these grants will be made available is not reported in the NAPCP.

### 3.7.4 Coherence with plans and programmes set up in other relevant policy areas

Ireland has reported that projections will be updated to reflect the impact of the actions adopted by the national Climate Action Plan and included in the next iteration of Ireland's NAPCP which is planned to be submitted later in 2020. This will ensure coherence between the two programmes.

Furthermore, the PaMs which will be included in the Clean Air Strategy will likely contribute to further emission reductions and support Ireland in moving closer towards its national emission reduction commitment (section 5.1 of the NAPCP).

## 3.8 Projected combined impacts of PaMs on emission reductions, air quality and the environment and associated uncertainties (where applicable) (M, O)

- Under the WAM scenario, the 2020-29 NH<sub>3</sub> commitments and the 2030 commitments for NO<sub>x</sub>, NH<sub>3</sub> and NMVOC are projected to be missed (section 7.1 of the NAPCP).
- A linear trajectory is followed for all NECD pollutants except NH<sub>3</sub> and NMVOC. No technical description is provided to explain why this is the case.

### 3.8.1 Likelihood of achievement of projected emission reductions

In terms of compliance, there is no change between the WM and WAM scenarios according to the projections reported in the NAPCP. In summary, the 2020-29 NH<sub>3</sub> commitments and the 2030 commitments for NO<sub>x</sub>, NH<sub>3</sub> and NMVOC are projected to be missed.

Although the estimated emission reductions expected under the WAM scenario are insufficient for Ireland to achieve all its national emission reduction commitments under the NECD, the extent of emission reductions is greater under the WAM scenario compared to the WM scenario.

Under the WAM scenario, the greatest compliance gap is expected for NH<sub>3</sub>. The emission projections are slightly improved compared to the WM scenario (by less than 1 percentage point) although it is unclear how this will be achieved in view of the additional PaMs selected for adoption as none have been adopted to target this pollutant.

Compliance gaps are also projected for NO<sub>x</sub> and NMVOC. The additional PaMs included under the WAM scenario are estimated to deliver greater emission reductions compared to under the WM scenario but the respective 2030 commitments are nonetheless projected to be missed.

Conclusions from the NAPCP review on whether the projected emission reductions per pollutant are likely to be realised in practice are presented in Table 3-3.

**Table 3-3 Likelihood of achieving the projected emissions reductions (WAM scenario)**

	Do the PaMs selected for adoption target the key emitting sectors?	Are the projected emission reductions for 2020 and 2030 likely to be achieved?
SO <sub>2</sub>	<p><b><u>Yes</u></b></p> <p>In 2017, the energy industries were a key emitting source and will be targeted by the closure of Ireland's last remaining coal power plant.</p>	<p><b><u>Yes</u></b></p> <p>Closure of an emission source is likely to achieve the estimated emission reductions, and these are feasible to achieve by 2025.</p>
NO <sub>x</sub>	<p><b><u>Yes</u></b></p> <p>In 2017, road transport was a key source of NO<sub>x</sub> emissions and will be targeted by the further deployment of electric vehicles.</p> <p>The closure of a coal power plant is estimated to deliver NO<sub>x</sub> emission reductions, but the energy industry was a comparatively small source of NO<sub>x</sub> emissions in 2017.</p>	<p><b><u>Yes</u></b></p> <p>The transport PaM involves a suitable combination of policy instruments and a taskforce has been established to facilitate implementation. The estimated emission reductions are in keeping with the incremental nature of the market penetration over time. The combined impact of the PaM aims to encourage behavioural change which is hard to predict so may reduce its credibility in the longer timeframe up to 2030.</p> <p>The emission reductions estimated for the closure of the coal power plant are considered feasible – as described above in relation to SO<sub>2</sub>.</p>
NMVOC	<p><b><u>No</u></b></p> <p>In 2017, industrial processes and solvent and other product use were key emitting sources. Neither sector is targeted by the PaMs adopted and NMVOC emission reductions are only estimated for the further deployment of electric vehicles.</p>	<p><b><u>Yes</u></b></p> <p>The emission reductions estimated for the further deployment of electric vehicles are feasible – as described above in relation to NO<sub>x</sub>.</p>
NH <sub>3</sub>	<p><b><u>No</u></b></p> <p>No PaMs are adopted.</p>	<p><b>N/A</b></p>
PM <sub>2.5</sub>	<p><b><u>Yes</u></b></p> <p>In 2017, combustion in other sectors was a key emitting source and will be targeted by the installation of heat pumps.</p> <p>The closure of a coal power plant is estimated to deliver PM<sub>2.5</sub> emission reductions, but the energy industry was a comparatively small source of PM<sub>2.5</sub> emissions in 2017.</p>	<p><b><u>Partly</u></b></p> <p>Estimated emission reductions are not estimated for the installation of heat pumps. While the responsible authority and timeframe for implementation are suitable, the fact that no emission reductions have been estimated for this PaM means it is not possible to assess the credibility of the PaM in relation to the emission projections under a WAM scenario.</p>

	Do the PaMs selected for adoption target the key emitting sectors?	Are the projected emission reductions for 2020 and 2030 likely to be achieved?
		The emission reductions estimated for the closure of the coal power plant are considered feasible – as described above in relation to SO <sub>2</sub> .

This analysis of the credibility of the PaMs in achieving emission reductions has also been used in the assessment of the risk of non-compliance, presented in Appendix 2.

### 3.8.2 Deviation from the linear trajectory for 2025

The emission projections under the WAM scenario indicate that the projected emission reductions for NMVOC and NH<sub>3</sub> are not expected to follow a linear reduction trajectory. For NMVOC, the emission trajectory does not decrease while for NH<sub>3</sub>, it follows an upwards trajectory. No explanation is provided to explain the trajectories.

### 3.8.3 Use of flexibilities

Ireland has been granted the flexibility to exclude NMVOC emissions from the food and drink sector by the Commission as part of the flexibilities permitted under Article 5(1) of the NECD. This adjustment was granted specific to Ireland in 2017 and 2018, and it seems that Ireland expects to be granted the same flexibility in 2019 (see Section 2).

In addition, Article 5 (3) of the NECD is referred to with respect to the provision that lays down the option for Member States to compensate for non-compliance by an equivalent emission reduction of another pollutant under the NECD if the relevant emission reduction commitment cannot be met after having implemented all cost-effective measures (section 7.3 of the NAPCP). It is reported that in this context, the projected emission reductions exceeding the commitments for SO<sub>2</sub> and PM<sub>2.5</sub> could be used in this way, and that further additional PaMs targeting these pollutants could be implemented in favour of additional PaMs targeting NO<sub>x</sub>, NMVOC or NH<sub>3</sub> emission reductions. Without information on the cost-effectiveness of the additional PaMs considered, it is not possible to determine if Ireland is eligible to apply this flexibility.

### 3.8.4 Projected impacts on air quality and the environment.

The projected improvement in air quality and the projected impacts on the environment are not reported.

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## 4 Conclusions and recommendations

### 4.1 Conclusions

Ireland did not meet the reporting deadline, submitting its NAPCP on 13 February 2020 (after the 1 April 2019). The draft NAPCP was submitted to the European Commission on 12 April 2019.

The common format established by the Commission Implementing Decision (2018/1522) has not been used but the headings used in the NAPCP correspond to the headings in the common format. The EEA PaM-tool was used but not reported information via the tool is not consistent with what is presented in the NAPCP.

The minimum content is generally provided for all aspects of the NAPCP except in relation to the additional PaMs considered and selected for adoption, as follows:

- For each of the PaMs considered, the estimated expected emission reduction is reported together with a brief description. The type of policy instrument is only reported for PaMs targeting NH<sub>3</sub>.
- Information on the policy options considered includes a summary of air quality challenges but does not reflect how the PaMs considered are expected to impact on air quality and the environment.
- For two of the three PaMs selected, the responsible authority is reported together with a brief description. No detail is provided concerning the early closure of the coal power plant. The years of adoption and implementation are not consistently reported.
- The information provided does not cover coherence achieved with policy priorities in other related areas.

The projections under the WM scenario demonstrate a gap in compliance with Ireland's NECD emission reduction commitments for certain pollutants and so it is required to adopt additional PaMs and report projections under a WAM scenario.

Reporting of the emission projections under a WAM scenario is also only partially complete with the year of inventory data not reported. The emission projections under the WAM scenario indicate that the projected emission reductions for NMVOC and NH<sub>3</sub> are not expected to follow a linear trajectory. No explanation is provided to justify the choice of non-linear trajectories.

Moreover, the differences between the projections submitted under Article 8 of the Directive (2019 projections) and those submitted as part of the NAPCP (2018 projections) are expected to affect Ireland's expected compliance with the national emission reduction commitments (as described in Section 2). As such, the extent to which the additional PaMs selected for adoption will enable Ireland to achieve its emission reduction commitments is uncertain. Compliance with the 2020-2029 commitment is dependent on the exclusion of NMVOC emissions from spirits manufacturing which is subject to the Commission's decision (previously done in 2017 and 2018).

Under a WAM scenario, according to the projections included in the NAPCP, Ireland is not compliant with the requirements of the NECD for NO<sub>x</sub> (for 2030 onwards), NMVOC (for 2030 onwards) and NH<sub>3</sub> (for both 2020-2029 and 2030 onwards commitments).

The information presented in the NAPCP on the additional PaMs considered and selected for adoption shows that even with additional PaMs, Ireland is projected to miss the 2030 commitments for NO<sub>x</sub> and NMVOC. Although the estimated emission reductions for the PaMs adopted are feasible, further additional PaMs are required to achieve greater emission reductions for these pollutants. Significant NO<sub>x</sub> emission reductions could be achieved with further additional PaMs targeting emissions from road transport, combustion in energy, industry and other sectors. Further additional PaMs could have a significant impact on NMVOC emission if targeted at industrial processes and solvent and other product use.

Among the PaMs adopted, the most significant emission reductions for SO<sub>2</sub> and NO<sub>x</sub> are dependent on the closure of a coal power plant. Additional PaMs to support the use of electric vehicles are also expected to deliver NO<sub>x</sub> emission reductions but on a smaller scale; the PaM is however expected to deliver the most significant NMVOC emission reductions. There is a degree of uncertainty that the PaMs targeting the transport sector will achieve the reported emission reductions as the PaMs are intended to support a modal shift and their uptake is thus dependent on behavioural change.

No PaMs targeting NH<sub>3</sub> have not been adopted and so Ireland is projected to miss its 2020-2029 or 2030 commitments for NH<sub>3</sub>. Additional PaMs should target emissions from the agriculture sector.

To conclude, to achieve greater NO<sub>x</sub> and NMVOC emission reductions, further additional PaMs should build on the existing and additional PaMs described, targeting the energy and transport sectors; and further NMVOC emission reductions could be achieved by targeting emissions from industrial processes and solvent use. For NH<sub>3</sub>, Ireland should select all the PaMs considered in order to achieve its emission reduction commitment. It may also want to consider the use of other policy instruments than voluntary agreements to deliver greater and more certain emission reductions.

Positive highlights from the review of the NAPCP for Ireland are:

- The detailed description of current PaMs together with implemented EU legislation provides a good basis for understanding progress achieved to date.
- Progress towards improving air quality is compared with the WHO guideline values, showing where ongoing improvement would be beneficial (irrespective of meeting EU air quality standards).
- The transboundary impact of emissions is well described and referenced, justifying the approach taken in the development of the NAPCP and the PaMs adopted.
- The use of targets is reported for one of the PaMs adopted.
- Coherence between the NAPCP and air quality policy priorities is demonstrated with the inclusion of the additional PaMs which will be included in the forthcoming updated Clean Air Strategy.
- Ireland has reported that projections will be updated to reflect the impact of the actions adopted by the national Climate Action Plan and included in the next iteration of Ireland's NAPCP which is planned to be submitted later in 2020. This provides good evidence of coherence between relevant programmes.

Regardless of the positive highlights, it is important to reiterate the findings from the risk assessment which finds that Ireland is at high risk of non-compliance for NO<sub>x</sub>, NMVOC and NH<sub>3</sub> (see Appendix 2).

## 4.2 Recommendations

Recommendations are prioritised according to the following categories:

1. **Ensuring compliance** – non-compliance with the NECD, where the minimum content is not reported and/or the Member State does not demonstrate how it may achieve its emission reduction commitments.
2. **Areas for improvement** – the NAPCP is reported to be compliant with its emission reduction commitments and provides the minimum content required by the common format but areas for improvement to strengthen compliance have been identified.
3. **Encouragements** – where optional reporting and/or the NAPCP could be closer aligned with the guidance document on preparation of initial NAPCPs to strengthen the quality of the NAPCP.

### Ensuring compliance

- Ireland has not used the common format to report the NAPCP to the European Commission and thus has not met the requirement of the Commission Implementing Decision (EU) 2018/1522 laying

down a common format for NAPCPs. The use of the common format in the future would facilitate clearer reporting.

- Where projections under a WM scenario indicate that the air pollutant commitments will not be met, Member States are required to select additional PaMs for adoption.
  - Despite establishing a compliance gap, no PaMs are selected for adoption targeting NH<sub>3</sub>. To ensure compliance, Ireland is required to either select additional PaMs or demonstrate that the additional PaMs considered are not cost effective (and show where the equivalent emission reductions could be achieved for a different NECD pollutant).
  - The information provided for the additional PaMs considered and selected for adoption shows that even with additional PaMs, Ireland is projected to miss the 2030 onwards commitments for NO<sub>x</sub> and NMVOC. Thus, further additional PaMs are required to achieve greater emission reductions for these pollutants.

#### Areas for improvement

- Ireland may opt to present the date on which the NAPCP will be issued and the competent authority responsible for its development - either on the cover page or in the introduction.
- Ireland has reported information on the PaMs considered and selected for adoption via the EEA PaM-tool. This information is not consistent with what is presented in the NAPCP. Ireland may want to consider updating the information reported via the EEA PaM-tool to ensure that it is consistent with what is presented in the NAPCP.

#### Encouragement

- The air quality policy priorities described do not refer to the WHO guideline values for air quality pollutants; however, progress described for current PaMs and the improvement in air quality do relate to them. To improve consistency between the policy framework and current progress in improving air quality, it is suggested that Ireland could include the WHO air quality guideline values among the air quality policy priorities described.
- More indicators and interim target values, in addition to the already identified ones would help with monitoring the progress of implementation and the reviewing process.
- The NAPCP would benefit from including the optional reporting requirements under section 2.8.4 of the common format on projected improvement of air quality under the WAM scenario, to illustrate changes related to the challenging pollutants like NO<sub>x</sub>, PM and O<sub>3</sub>.

## Appendix 1 Completeness assessment

A completeness assessment was conducted to identify gaps in reporting according to the minimum content requirements of the common format (Commission Implementing Decision (EU) 2018/1522). The completeness assessment also reviewed the extent of optional reporting by Member States.

For mandatory reporting requirements, the status has been assessed using the traffic light RAG rating as presented in the table below.

**Table A1 - 1 Traffic light RAG rating for completeness assessment of mandatory reporting**

Red	No information provided for mandatory reporting requirement
Amber	Evidence is incomplete or unclear to meet reporting requirement
Green	Evidence is sufficient to meet reporting requirement
N/A	Mandatory reporting requirement not relevant for the given Member State or mandatory only when available and not available in the given Member State (e.g. where mandatory reporting requirements apply only where a non-linear emission reduction trajectory is followed)

**Table A1 - 2 Assessment of the NAPCP compliance screening with the minimum content requirements**

Reference to the NAPCP common format	RAG Rating	Explanation
2.1 Title of the programme contact information and websites	Amber	The NAPCP is titled 'NAPCP Report 2019' but the submission is not dated. The competent authority responsible for its development is not stated but is evident from the roles and responsibilities described later.
2.3.1 Policy priorities and their relationship to priorities set in other relevant policy areas	Green	National emission reductions policy priorities are listed together with description of priorities in other relevant policy areas.
2.3.2 Responsibilities attributed to national, regional and local authorities	Green	The responsibilities attributed to national, regional and local authorities are described.
2.4.1 Progress made by current PaMs in reducing emissions, and the degree of compliance with national and Union emission reduction obligations	Green	Progress is described for current PaMs (active between 2009-2021) in relation to key emitting sectors (emissions are reported up to 2017). Historic compliance with 2010 ceilings is reported.
2.4.2 Progress made by current PaMs in improving air quality, and the degree of compliance with national and Union air quality obligations	Green	Compliance with EU air quality standards is described for the year 2017 for all air quality pollutants with respect to the number of air quality zones (all are compliant). Key challenges are described with reference to the WHO guideline values, reporting exceedances of the corresponding values.

Reference to the NAPCP common format	RAG Rating	Explanation
2.4.3 Where relevant, current transboundary impact of national emission sources	Green	Current transboundary impacts are described.
2.5.1 Projected emissions and emission reductions (WM scenario)	Green	Emission projections under a WM scenario are provided with respect to the national emission reduction commitments as specified in the NECD.
2.5.2 Projected impact on improving air quality (WM scenario)	Green	The description provided shows that no exceedances of EU air quality standards are expected up to 2030. No references are provided for this section but it is supported by the evidence reported in relation to section 3.3.
2.6.1 Details concerning the PaMs considered in order to comply with the emission reduction commitments (reporting at PaM level)	Amber	For each of the PaMs considered, the estimated expected emission reduction is reported together with a brief description. The type of policy instrument is only reported for PaMs targeting NH <sub>3</sub> .
2.6.2 Impacts on air quality and the environment of individual PaMs or packages of PaMs considered in order to comply with the emission reduction commitments (where available)	Red	A summary of air quality challenges is provided but it does not reflect how the PaMs considered are expected to impact on air quality and the environment.
2.6.4 Additional details concerning the measures from Annex III Part 2 to Directive (EU) 2016/2284 targeting the agricultural sector to comply with the emission reduction commitments	Green	Information on the policy options considered with regard to the measures listed in Annex III, Part 2 relating to agriculture is reported in the NAPCP.
2.7.1 Individual PaMs or package of PaMs selected for adoption and the competent authorities responsible	Amber	For the PaMs selected, the responsible authority is reported together with a brief description. The years of adoption and implementation are not consistently reported.
2.7.2 Assessment of how selected PaMs ensure coherence with plans and programmes set up in other relevant policy areas	Green	Evidence of coherence with air quality and climate change programmes is presented in the NAPCP.
2.8.1 Projected attainment of emission reduction commitments (WAM)	Green	Emission projections under a WAM scenario are reported for all pollutants. The corresponding national emission reduction commitments are reported. The date of projections is reported but the inventory year

Reference to the NAPCP common format	RAG Rating	Explanation
2.8.2 Non-linear emission reduction trajectory	Red	for the data underpinning the projections is not.  The emission projections under the WAM scenario indicate that the projected emission reductions for NMVOC and NH <sub>3</sub> are not expected to follow a linear trajectory. No explanation is provided to explain the trajectories. Text included in the NAPCP outlines the options available under the NECD.
2.8.3 Flexibilities	Green	Ireland uses the flexibility provided under Article 5 (3) of the NECD. A description is reported to explain the use.

The rating used for the completeness assessment of optional reporting by Member States refers to only two categories, whereby the Member State either reported the information (Green) or it did not (White). This rating reflects the fact that the reporting is optional and therefore where the information was not provided, or where it was incomplete or unclear, the assessment should not consider this a gap in reporting.

**Table A1 - 3 Rating for completeness assessment rating of optional reporting**

Green	Evidence is sufficient to meet reporting requirement
White	No information provided for optional reporting requirement or evidence is incomplete or unclear to meet optional reporting requirement

**Table A1 - 4 Completeness assessment of the NAPCP for the optional content requirements**

Reference to the NAPCP common format	RAG Rating	Explanation
2.2 Executive summary	White	No executive summary is provided.
2.3.1 Policy priorities and their relationship to priorities set in other relevant policy areas: Reference to WHO guideline values	White	The WHO air quality guidelines are not referred to among the national air quality priorities listed. However, progress achieved by current PaMs is described with respect to the WHO air quality guideline values.
2.3.2 Responsibilities attributed to national, regional and local authorities: Source sectors under the responsibility of the authority	Green	Where relevant, the source sector under the responsibility of the state authority is stated.
2.4.1 Progress made by current PaMs in reducing emissions, and the degree of compliance with national and Union	White	No graphics are provided.

Reference to the NAPCP common format	RAG Rating	Explanation
emission reduction obligations: Provision of graphics		
2.4.2 Progress made by current PaMs in improving air quality, and the degree of compliance with national and Union air quality obligations: Provision of graphics and progress made in a specific air quality zone	Green	Maps are included to illustrate air quality concentrations for select air quality pollutants. Progress is not described in relation to a specific air quality zone as all zones are compliant.
2.4.3 Methodologies and data used to show the current transboundary impact of national emission sources	Green	The data source is provided for the quantitative data reported. The methodology used is referred to but not described.
2.5.1 Associated uncertainties of the projected emissions and emission reductions (WM scenario)	Green	A description is provided for each pollutant and the trends depicted.
2.5.2 Quantitative data on the projected impact on improving air quality (WM scenario)	White	Quantitative data is not reported and is not relevant as no exceedances are expected up to 2030.
2.6.1 Details about additional pollutants concerning the PaMs considered in order to comply with the emission reduction commitments: Reporting of affected pollutant(s) beyond the scope of the NECD	White	No additional pollutants are targeted beyond the scope of the NECD.
2.6.3 Estimation of costs and benefits of the individual PaM or package of PaMs considered in order to comply with the emission reduction commitments	White	The estimation of costs and benefits are not reported for the PaMs considered.
2.6.4 Additional details concerning the optional measures from Annex III Part 2 to Directive (EU) 2016/2284 targeting the agricultural sector to comply with the emission reduction commitments	Green	Measures to reduce NH <sub>3</sub> emissions from livestock and a national advisory code of good agricultural practices for the proper management of harvest residue are included among the additional PaMs considered. No national nitrogen budget is in place but the Nitrates Action Programme (2018-2021) has a similar scope.
2.7.1 Individual PaMs or package of PaMs selected for adoption and the competent authorities responsible: Reporting of relevant comments arising from the consultation and provision of interim targets and indicators	White	Comments arising from the consultation are not reported. Interim targets and indicators are not reported.

Reference to the NAPCP common format	RAG Rating	Explanation
2.7.2 Explanation of the choice of selected measures	White	No explanation is provided to explain the choice of selected measures.
2.8.4 Projected improvement in air quality (WAM)	White	The projected improvement in air quality is not reported.
2.8.5 Projected impacts on the environment (WAM)	White	The projected impacts on the environment are not reported.

## Appendix 2 Assessment of the risk of non-compliance

The description of the methodology used for this assessment is presented in the Horizontal Report.

In the following tables, the information used in the decision tree process is presented in black font. Information not used in the decision tree process is presented in grey font and italics.

Where information is required but not reported, the response to the decision tree question is 'not reported' (NR). Where information is not required and not reported, the response to the decision tree question is 'not applicable' (n/a).

### Risk of non-compliance with 2020-2029 emission reduction commitments

Decision tree question	Relevant scenario	2020 – 2029				
		SO <sub>2</sub>	NO <sub>x</sub>	NMVOC	NH <sub>3</sub>	PM <sub>2.5</sub>
Can the Member State achieve the emission reduction commitments? (projections submitted under Article 10(2))	WM	Yes	Yes	No	No	Yes
	WAM	Yes	Yes	No	No	Yes
Are the projections submitted under Article 10(2) considered to be of good quality?	WM, WAM	Yes	Yes	Yes	Partially	Yes
Are the NAPCP projections consistent with the latest projections submitted under Article 10(2)?	WM	Yes	Yes	No	Yes	Yes
	WAM	Yes	Yes	No	Yes	Yes
Does the NAPCP present credible additional PaMs selected for adoption?	WAM	<i>No</i>	<i>No</i>	<i>Partially</i>	Partially	<i>No</i>
Is the margin of compliance (percent of the compliance threshold) likely to ensure compliance with the emission reduction commitments? (projections submitted under Article 10(2))	WM	Yes (46)	Yes (14)	No (-18)	No (-9)	Yes (29)
	WAM	Yes (46)	Yes (15)	No (-18)	No (-9)	Yes (28)
Risk of non-compliance		L	L	H	H	L
Additional comments on high risk scores	The review has concluded that there is a high risk of missing the emission reduction commitments for 2020-2029 for NMVOC and NH <sub>3</sub> . This is driven by the Member State projecting to miss the emission reduction commitment under WAM scenario and the large compliance gap projected.					

Risk of non-compliance with 2030 emission reduction commitments

Decision tree question	Relevant scenario	2030 onwards				
		SO <sub>2</sub>	NO <sub>x</sub>	NMVOC	NH <sub>3</sub>	PM <sub>2.5</sub>
Can the Member State achieve the emission reduction commitments? (projections submitted under Article 10(2))	WM	No	No	No	No	Yes
	WAM	Yes	No	No	No	Yes
Are the projections submitted under Article 10(2) considered to be of good quality?	WM, WAM	Yes	Yes	Yes	Partially	Yes
Are the NAPCP projections consistent with the latest projections submitted under Article 10(2)?	WM	No	Yes	Yes	Yes	Yes
	WAM	Yes	Yes	Yes	Yes	Yes
Does the NAPCP present credible additional PaMs selected for adoption (WAM)?	WAM	Partially	No	No	No	No
Is the margin of compliance (percent of the compliance threshold) likely to ensure compliance with the emission reduction commitments? (projections submitted under Article 10(2))	WM	No (-3)	No (-17)	No (-35)	No (-20)	Yes (13)
	WAM	Yes (30)	No (-4)	No (-34)	No (-19)	Yes (17)
Risk of non-compliance		M	H	H	H	L
Additional comments on high risk scores	The review has concluded there is a high risk of non-compliance with the emission reduction commitments for 2030 for NO <sub>x</sub> , NMVOC and NH <sub>3</sub> . This is driven by the Member State projecting to miss the emission reduction commitment under WAM scenario and the large compliance gap projected (whereby NH <sub>3</sub> even follows an upwards trajectory). The PaM selected to reduce SO <sub>2</sub> emissions is not well described and so it is not possible to determine its credibility.					



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