National Air Pollution Projection Review Report – Italy

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Final Report for European Commission – DG Environment
Contract 070201/2018/791186/SER/ENV.C.3

Aether

Customer:

European Commission - DG Environment

Customer reference:

070201/2018/791186/SER/ENV.C.3

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Contact:

Natalia Anderson
Ricardo Energy & Environment
Gemini Building, Harwell, Didcot, OX11 0QR,
United Kingdom

t: +44 (0) 1235 75 3055

e: natalia.anderson@ricardo.com

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Author:

Chris Dore, Justin Goodwin (Aether)
Julien Vincent (CITEPA),
Ole-Kenneth Nielsen (DCE)
Natalia Anderson, Anne Misra (Ricardo)

Approved By:

Chris Dore

Date:

29 November 2019

Ricardo Energy & Environment reference:

Ref: ED11495 - FINAL

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Abbreviations

BC	Black Carbon
CLRTAP	Convention on Long Range Transboundary Air Pollution
EC	European Commission
EEA	European Environment Agency
EU	European Union
GHG	Greenhouse Gas
IIR	Informative Inventory Report
MS	Member State
NECD	National Emissions Ceilings Directive. In this context, this refers to Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants which replaced Directive 2001/81/EC on national emission ceilings.
NECP	National Energy and Climate Plans
NH_3	Ammonia
NMVOC	Non-methane volatile organic compounds
NO_X	Oxides of nitrogen
SO_2	Sulphur dioxide
PaMs	Policies and Measures
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of 2.5 micrometres or less
TRT	Technical Review Team
WAM	With additional measures
WM	With measures

1 Introduction

1.1 Review of the national air pollutant emissions projections

EU Member States are required to prepare and report national air pollutant emission projections under Article 8 of the Directive on the Reduction of National Emissions of Certain Atmospheric Pollutants (Directive (EU) 2016/2284), hereafter referred to as the NECD. Projections shall be prepared in accordance with Article 8(1) and (5) and the requirements set out in Table C of Annex I and Part 2 of Annex IV to the NECD using the methodologies adopted under the Convention on Long Range Transboundary Air Pollution (CLTRAP), and in particular the best practice guidance presented in the 2016 EMEP/EEA Air Pollutant Emissions Inventory Guidebook (EMEP/EEA Guidebook, 2016). Projections should also demonstrate the extent to which the Member State predicts compliance, or not, with its respective emission reduction commitments.

A review of Member State air pollutant emission projections and assessment of National Air Pollution Control Programmes (NAPCPs) was contracted 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).

This report presents the results of the 2019 review of the national air pollutant emission projections submitted to the European Commission. It is structured as follows:

- **Chapter 1** explains the background for the review and methodology, and is the same in each Member State report;
- **Chapter 2** presents a Member State specific assessment of compliance with the NECD emission reduction commitments;
- **Chapter 3** shows the results of a quality assessment of the Member State air pollutant emission projections;
- **Chapter 4** lists Member State specific improvement recommendations and encouragements.

The review of Member State air pollutant emission projections has been undertaken alongside an assessment of the NAPCPs prepared by the Member States in line with Article 6 of the Directive. This covered Member States' NAPCP submission and the information on the policies and measures considered and selected for adoption provided via the EEA-PaM tool. The results are captured in individual Member State reports.

The results of both reviews, highlighting cross-cutting issues and trends across the EU, are brought together in a separate, horizontal review report. The two reviews have been organised to be complementary and contribute to the Commission's analysis of and reporting on the implementation of the NECD required under Article 11.

1.1.1 Objectives of the national air pollutant emissions projections review

The project team planned and undertook a comprehensive technical review of air pollutant emission projections reported by Member States in fulfilment of the 15 March 2019 deadline under Article 10(2) of the NECD. This involved reviewing the projections data reported by each Member State in the projections reporting template (Annex IV, 2014), and supporting information provided in Informative Inventory Reports in accordance with Article 8(3) of the NECD. In some cases it was also necessary to refer to material included in the NAPCP, or a stand-alone projections methodology report provided by the Member States.

The objectives of the review were to:

- Assess the predicted compliance and non-compliance with the emission reduction commitments set in the NECD.

- Assess the quality of the projections based on a set of defined criteria (see section 1.1.2 below).

- Formulate recommendations on how the quality of the projections can be improved for future submissions, supported by consultations with the Member States.

1.1.2 Focus and scope of the national air pollutant emissions projections review

The quality of air pollutant emissions projections was reviewed against the quality criteria referred to in Part 2 of Annex IV of the NECD (transparency, consistency, comparability, completeness and accuracy). Details of the review process are presented in the Projections Review Guidelines (2019).

The NECD specifies several minimum criteria for projections which were reviewed as follows:

- **Clear identification of the adopted and planned policies and measures included in the projections.** This was assessed by reviewing supporting documentation provided alongside the projections. The findings were presented within the context of the relevant quality criteria. For example, a lack of information on the adopted policies and measures was captured as a transparency issue, whereas information that suggests some policies and measures were incorrectly omitted were captured as a completeness or accuracy issues.

- **Where appropriate, the results of sensitivity analysis performed for the projections.** Where a sensitivity analysis was reported by a Member State, the methodology and data were reviewed. Any issues found were discussed with the Member State, and recommendations and encouragements were made accordingly.

- **A description of methodologies, models, underlying assumptions and key input and output parameters.** This was assessed by reviewing supporting documentation, with the findings presented within the context of the relevant quality criteria.

Table 1-1 below provides details of the general scope of the review performed by the Technical Review Team (TRT). During the review, sector experts performed checks on the emission projections and supporting documentation provided by Member States. The following is a simplified overview of the checks carried out by the TRT:

- Checked the transparency of the Informative Inventory Report (IIR) and any other accompanying documentation that described the methods, data and assumptions used to calculate the emission projections.

- Checked the completeness of the emission projections by assessing missing sources - to the extent possible with the information submitted by the Member States.

- Checked the consistency of the projections with historical inventories.

- Checked the consistency of the projections calculations between different pollutants, years and sources.

- To the extent possible, assessed the consistency between the parameters and assumptions used for calculating air pollutant emission projections and those used for GHG projections submitted alongside the EU Member State draft National Energy and Climate Plans (NECPs).

- Checked the comparability of the submissions, by reviewing the use of common definitions and the correct reporting formats. Time trends and supporting assumptions were also checked across the different Member States submissions to check for outliers.

- Checked the accuracy of the projections, to the extent possible, by assessing the methodologies, the quality of the input data, and the assumptions that were used.

Table 1-1 Summary of the scope of the review

Scope element	Coverage and Description
Emission projection submission	2019 NECD projection submission. • Submissions were based on many different versions of the historical inventory (see chapter 1.2.1).
Member States	28 Member States • It was not possible to undertake full reviews of the submissions from two Member States due to late submissions.
Pollutants	SO_2, NO_X, NMVOC, NH_3, $PM_{2.5}$ (BC, where available)
Sectors	The source resolution is defined as that of the NFR codes in the projections reporting template (Annex IV, 2014). • The focus was on (but not limited to) source categories identified as key categories in the base year.
Years	2020, 2025, 2030 (2040 and 2050, where available) • 2020 and 2030 were included as they relate to demonstrating compliance with emission reduction commitments. • 2025 was included due to the requirement relating to a linear trajectory as stipulated by Article 4(2) of the NECD; • 2040 and 2050 were included because reporting of these years is optional.

1.2 Methodology

The key components of the review process are outlined below. A comprehensive description of the process, methodology and checks followed are detailed in the Projections Review Guidelines (2019) which were provided to the TRT and Member States.

The review was undertaken in a series of steps:

- **Initial checks** were undertaken, and information was passed to the TRT via upload to the EMRT-NECD[1] to support them in their review work.

- **The Desk Review** was conducted by the TRT. During this period, they established question and answer chains with Member States through the EMRT-NECD on-line platform in order to answer or resolve issues raised. Issues were then closed with an accompanying conclusion and recommendation where relevant.

- **The Centralised Review** was undertaken after completion of the desk review and provided an opportunity for selected members of the review team to meet to: undertake a quality

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[1] The EMRT-NECD is an on-line platform maintained by the European Environment Agency that allows review teams to log findings, communicate with Member State representatives, and formulate conclusions and recommendations. The platform was expanded and tailored to specifically support the projections review.

assessment for each Member State, close out any outstanding issues, discuss any cross-cutting issues, agree solutions to unusual or challenging issues, and also to ensure the consistency of work across the review teams.

- **Review reports** were compiled for each Member State and sent to them for comment before finalisation.

The reviews were undertaken by the teams presented in Table 1-2 below:

Table 1-2 Technical Review Teams

TRT1			TRT3	
BG, CY, FR, EL, LU, LV, SE			**DE, FI, HU, BE, LT, NL, PT**	
Lead Reviewer	**Anne Misra (UK)**		**Lead Reviewer**	**Ole-Kenneth Nielsen (DK)**
Energy (stationary)	Robert Stewart (UK)		Energy (stationary)	Marlene S. Plejdrup (DK)
Energy (mobile)	Yvonne Pang (UK)	Counterparts	Energy (mobile)	Morten Winther (DK)
IPPU	Neil Passant (UK)		IPPU	Marianne Thomsen (DK)
Agriculture	Jeremy Wiltshire (UK)		Agriculture	Steen Gyldenkærne (DK)
Waste	Mark Broomfield (UK)		Waste	Marianne Thomsen (DK)

TRT2			TRT4	
ES, AT, RO, EE, CZ, IT, PL			**DK, SK, IE, SI, UK, HR, MT**	
Lead Reviewer	**Justin Goodwin (UK)**		**Lead Reviewer**	**Julien Vincent (FR)**
Energy (stationary)	Katrina Young (UK)		Energy (stationary)	Laetitia Nicco (FR)
Energy (mobile)	Melanie Hobson (UK)	Counterparts	Energy (mobile)	Jean-Marc André (FR)
IPPU	Richard Claxton (UK)		IPPU	Coralie Jeannot (FR)
Agriculture	Beatriz Sanchez (ES)		Agriculture	Anais Durand (FR)
Waste	Richard Claxton (UK)		Waste	Celine Gueguen (FR)

The allocation of experts to each of the teams was arranged to support collaborative working. The allocation of Member States to each team was arranged to avoid any conflicts of interest. More details can be found in the Projections Review Guidelines (2019).

1.2.1   Working with different versions of datasets

Different projections datasets

The emissions projections that were assessed in the review were all submitted in 2019. The data used in the review was taken from the submitted Annex IV projections files, even if these data were found to be inconsistent with data reported in the 2019 IIRs or the NAPCPs.

Projections based on different versions of the historical emission estimates

In its Annex IV, part 2, paragraph 3, the NECD requires Member States to submit projections that shall be consistent with the inventory for the year x-3. Hence emission projections submitted in 2019 shall

be based on 2016 emission estimates, which are reported in the 2018 inventory submission. However, many Member States provided emission projections that were based on 2017 emission estimates from the 2019 inventory submission, i.e. the year x-2. Some Member States based their projections on historical inventories that were "intermediate" versions i.e. emission estimates compiled between the 2018 and 2019 submissions.

For its assessment, the TRT used the Member States' historical emissions data that was consistent with the projections dataset. This is important, because if a different historical dataset is used, then the emissions in 2005 may be different to the version used by the Member States. This can result in different values of the maximum allowed emissions in 2020 and 2030 to comply with the emission reduction commitments, and different conclusions regarding projected compliance.

Recognising that in some circumstances the emission projections are based on a historical dataset that has already been superseded (for example the year x-3), additional checks were made to assess the extent of the recalculations between the most recent version of the historical inventory (submitted in 2019), and that used by the Member State as basis for the projections. Particular focus was given to recalculations of the 2005 emissions, the most recent year of the timeseries, and changes in trends.

By taking this approach it was possible for the TRT to both assess the quality of the projections submission, and also note where inventory recalculations have the potential to significantly impact on emission projections that will be made in subsequent years – and in particular the likelihood of any changes to the projected compliance with the emission reduction commitments.

Resubmission of projections during the review

Where a Member State made a resubmission of their projections after 15 March 2019, the most up to date version of the projections data was used in the review. This ensured that Member States received constructive feedback on the most recent version of their projections.

1.2.2   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 to calculate the margin of compliance:

1. **Calculating a difference between an emission reduction commitment and projected emission reductions (expressed in percentage points)** – these results are presented in the NAPCP review reports. The emission reduction commitments specified in Annex II of the NECD are defined as percentage reductions on the 2005 emission. Projected emissions of pollutants in 2020 and 2030 are compared to 2005 emissions to calculate projected emission reductions. These projected reductions are then divided by 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.

Example

A Member State emitted 500 ktonnes of a pollutant in 2005 and had a 20% emission reduction commitment for 2020. If the 2020 projected emission is 360 ktonnes, the projected emission reduction is 140 ktonnes. This equates to 28% of 2005 emissions. The projected margin of compliance is 8% points. This is illustrated in the figure below.

Figure 1-1The margin of compliance
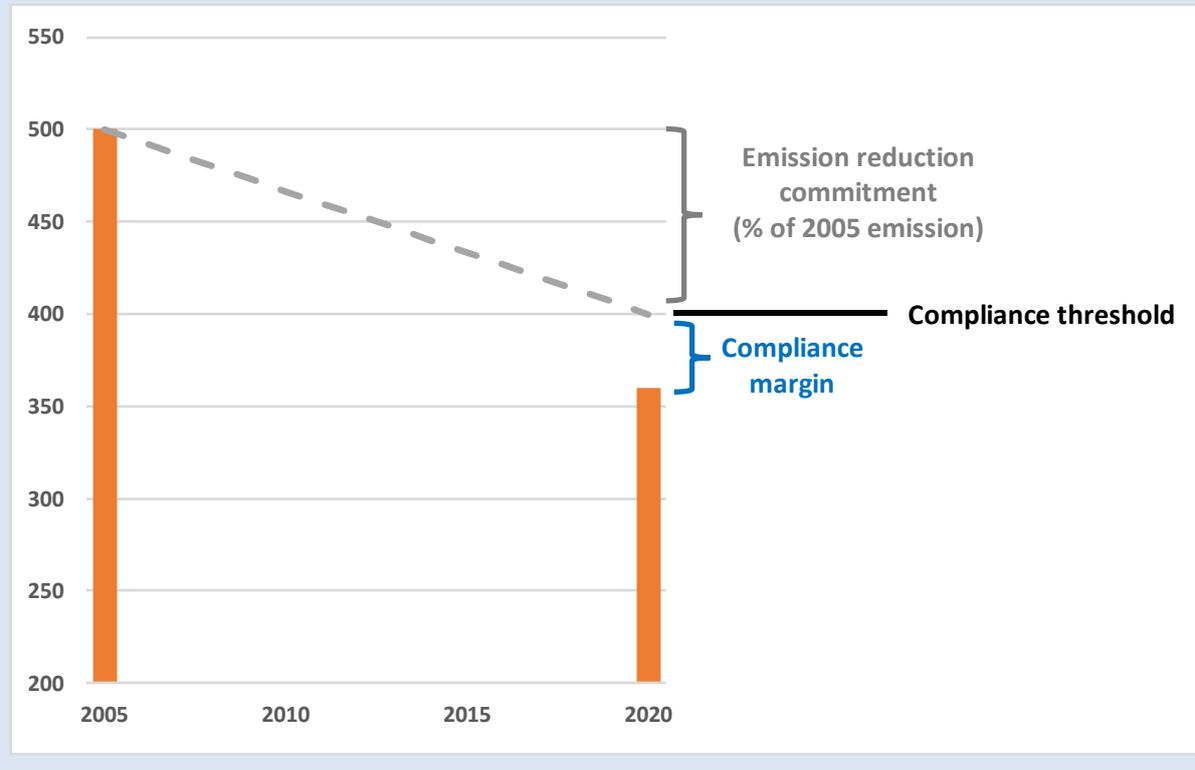
2. **Calculating a difference between projected emissions and the compliance threshold (expressed as a percentage of the compliance threshold) –** this approach is presented in the projections review reports.

Given the emission reduction commitments specified in Annex II of the NECD are defined as percentage reductions on the 2005 emission, the two values can be combined to express a "compliance threshold" i.e. the maximum emission that can be emitted by a Member States from 2020 and 2030 onwards, and still be compliant with the emission reduction commitment. 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 ktonnes of a pollutant in 2005 and had a 20% emission reduction commitment for 2020. The maximum the Member State can emit in 2020 and meet its 2020 emission reduction commitment (the "compliance threshold") is 400 ktonnes. If the 2020 projected emission is 360 ktonnes, the commitment will be met by 40kt and the projected margin of compliance is 10%.

Mathematically these two approaches are different, yet yield the same conclusion **concerning compliance or no 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.

In the horizontal review report, the results of the projections review and assessment of the NAPCPs are brought together and the margin of compliance using both metrics is presented.

1.2.3 Assessing the quality of projections submissions

Introduction

The projections review followed the processes presented in the Projections Review Guidelines (2019). The desk review resulted in specific recommendations and encouragements aimed at supporting Member States in improving their projections for their next submission. Following this, at the centralised review, the lead reviewers undertook a quality assessment of the projections.

The lead reviewers assessed the quality of the projections against each quality criterion for each pollutant and year. This drew on the detailed information obtained from the desk reviews.

The lead reviewers worked in a collaborative way to ensure that the approach was used consistently across all Member States. They also discussed their findings to agree common approaches to specific issues that arose during the review.

Methodology

Assessment of some of the quality criteria with any certainty was often challenging due to a lack of detailed information reported by the Member States on the methodologies used. Where reporting was limited or non-existent, the lead reviewers made their assessments to the extent possible on the basis of the information available.

The quality assessment was made against the following quality criteria (details of the rating scheme are included in Table 1-3 below):

Transparency of reporting

This assessed the transparency of the data submission and information provided on the methodologies and calculations used to determine the emission projections (whether provided in the IIR or other documents).

Comparability of projections

This assessed whether the data submission was made in the correct format, i.e. using the emission projections template (Annex IV, 2014). To the extent possible, definitions used in calculating emission projections were assessed against best practice definitions. This provides information on the extent to which it is possible to compare the emission projections with submissions from other Member States.

Completeness of reporting

This assessed the completeness of the data that has been reported. This was checked by reviewing whether the projections data submitted in the Annex IV template indicated missing source sectors. In addition, the supporting documentation was checked, and Member States were asked whether specific sources (within the source sectors reported in the Annex IV data file) had been omitted.

Consistency of projections

This assesses the internal consistency of the emission projections (across the pollutants, years and sectors). It is challenging to assess this if little or no supporting documentation is provided on calculation methodologies, input data and assumptions.

Consistency between the emission projections submission and data underpinning GHG projections submitted with the draft NECPs was also assessed. However, there are significant challenges in making this comparison because data formats are not easily comparable, and it was only possible to compare key underlying datasets for future years such as population and GDP.

Accuracy of projections

In determining emission projections there are many different sources of uncertainty, and it is particularly challenging to quantify uncertainties. In addition, shortcomings flagged in some other quality criteria impact on the level of accuracy. For example, issues associated with completeness will impact on the level of accuracy. However, accuracy can be assessed by considering whether Tier 2 or higher methodologies have been used for key sources.

It is also informative to assess the differences between the year x-3 and x-2 emissions inventories if the projections are based on the year x-3 inventory, as this indicates the extent to which current projections can be expected to be revised in the future.

For each pollutant, and the years 2020-2029 and 2030, these quality criteria were given a rating of either: good, minor improvements required, or major improvements required. The criteria for selecting the different ratings are provided in Table 1-3 below.

Recommendations and encouragements

The detailed technical review of the projections involves sector experts assessing the reported data and the supporting documentation on methodologies etc. Where quality issues are identified by the review team, consultation is undertaken with the Member State to ensure a sufficiently detailed understanding of the issue. The inventory team may then make recommendations or encouragements where they consider action is required to improve the quality of the Member States' data or supporting documentation to meet best practice standards. These recommendations and encouragements are often highly detailed or technical in nature. The recommendations and encouragements are also collectively used to inform the quality assessment detailed above.

The processes and decision making that underpin this part of the review are explained in detail in the Projections Review Guidelines (2019), as shared with the Member States at the beginning of the review.

Table 1-3 Quality assessment –rating scheme guidance

Scope element	Good	Minor Improvements Required	Major Improvements Required
Transparency	Used where the reporting of methodologies is comprehensive	Used to indicate that the reporting of methodologies is of a reasonable standard, but that there are areas where more information is needed to attain a level that equates to good practice	Used to indicate that the reporting of methodologies is poor or non-existent
Comparability	Used to indicate the use of Annex IV reporting template, comprehensive use of definitions that meet best practice, and projections based on year x-3 or year x-2	Used to indicate use of Annex IV reporting template, definitions that broadly meet best practice, and projections based on year x-3 or year x-2	Used to indicate use of reporting that is not in the Annex IV template, and/or projections that are not based on year x-2 or year x-3
Completeness	Used to indicate that the TRT found no missing sources	Used to indicate that the TRT found missing sources or were not able to confirm the presence of all sources, but that the impact on the national total was considered to be relatively small	Used to indicate that the TRT found a missing key source, and/or several missing sources
Consistency	Used to indicate that the TRT found no inconsistencies across the time series and pollutants, or between historic estimates and projections	Used to indicate that the TRT found inconsistencies that had a minor impact on the projected national totals	Used to indicate that the TRT found inconsistencies that had a substantial impact on projected national totals
Accuracy	Used to indicate that the TRT believed that projections for all key categories were calculated by using a Tier 2 or higher approach, and/or that emissions are quantified to a level of accuracy that represents best practice	Used to indicate that the TRT believed that projections for most key categories were calculated by using a Tier 2 or higher approach, and/or that all major sources are quantified to a level of accuracy that represents best practice	Used to indicate that the TRT believed that projections for few or no key categories were calculated by using a Tier 2 higher approach, and/or that some major sources are not quantified to a level of accuracy that represents best practice

Results of the quality assessment are presented in chapter 3.

2 Projected compliance assessment for Italy

2.1 Projected compliance with NECD emission reduction commitments

The projections presented in this section are taken from the information reported by Italy in 2019. The projections submission included projections for 2020, 2025, 2030. Following the review, Italy explained that they are using a 2010 reference year from their 2017 submission and are conducting a process of harmonisation to allow their projections model to use the most recently available historical emission estimates as the reference year.

As explained in section 1.2.2 there are different ways in which the margin of compliance can be expressed. Throughout this report, the margin of compliance or non-compliance is expressed as a percentage of the "compliance threshold"" (the maximum compliant emission). **This is a different formulation to that used in assessing the NAPCPs**, where the margin of compliance is expressed as the compliance margin in percentage points.

The two approaches are identical in identifying compliance and non-compliance, but the percentage figures will differ.

The calculations below use the projections data submitted by Italy and the most recent version of emissions for 2005 (submitted in 2019). Emissions of NOx and NMVOC from 3B Manure Management and 3D Agricultural Soils have been excluded.

2.1.1 "With Measures" scenario

Under the WM scenario, the 2020-29 emission reduction commitments are expected to be met in 2020 for SO$_2$, NO$_X$, NH$_3$ and PM$_{2.5}$. The projected margins of compliance (expressed as a percentage of the compliance threshold, defined as the maximum allowed emissions in a given year) are as follows:

- SO$_2$: the emission reduction commitment is **fulfilled** with a compliance margin of 43 % of the compliance threshold.

- NO$_X$: the emission reduction commitment is **fulfilled** with a compliance margin of 5 % of the compliance threshold.

- NMVOC: the emission reduction commitment is **missed** by a margin of 4 % of the compliance threshold.

- NH$_3$: the emission reduction commitment is **fulfilled** with a compliance margin of 2 % of the compliance threshold.

- PM$_{2.5}$: the emission reduction commitment is **fulfilled** with a compliance margin of 8 % of the compliance threshold.

Under the WM scenario, the emission reduction commitments for 2030 onwards are expected to be met in 2030 for SO$_2$ The projected margins of compliance (expressed as a percentage of the compliance threshold, defined as the maximum allowed emissions in a given year) are as follows:

- SO$_2$: the emission reduction commitment is **fulfilled** with a compliance margin of 9 % of the compliance threshold.
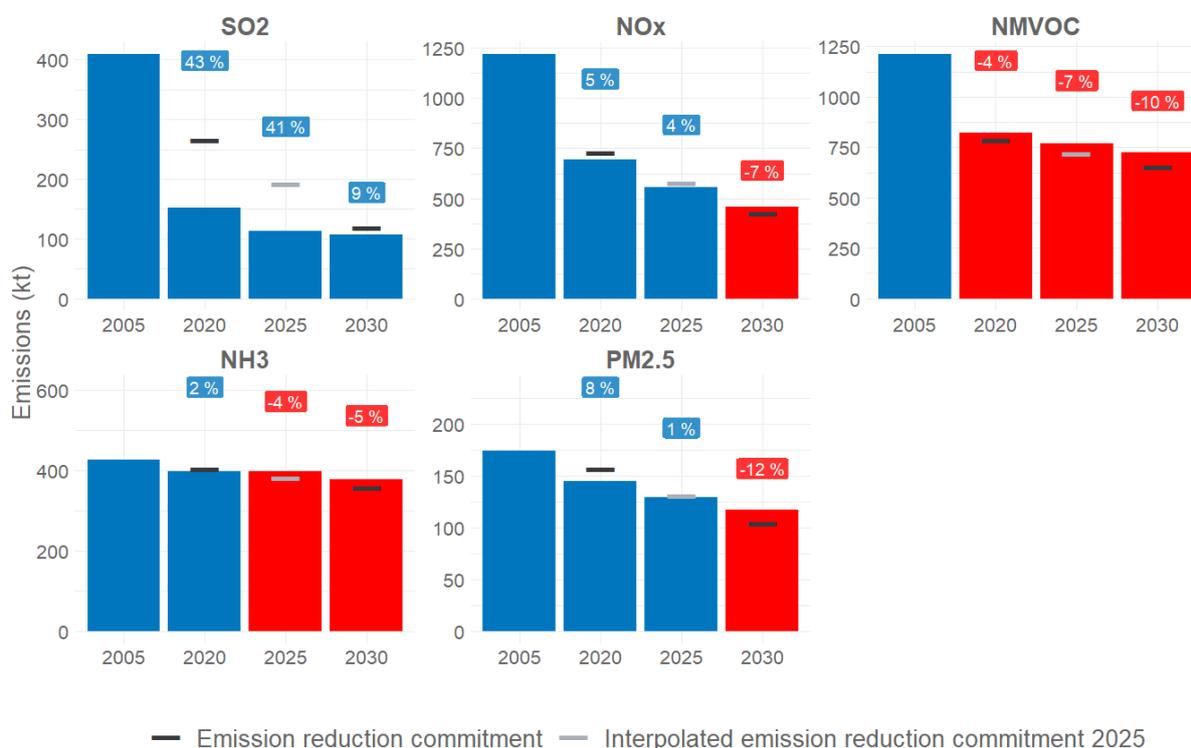
- NO$_X$: the emission reduction commitment is **missed** by a margin of 7 % of the compliance threshold.

- NMVOC: the emission reduction commitment is **missed** by a margin of 10 % of the compliance threshold.

- NH$_3$: the emission reduction commitment is **missed** by a margin of 5 % of the compliance threshold.

- PM$_{2.5}$: the emission reduction commitment is **missed** by a margin of 12 % of the compliance threshold.

Compliance with the NO$_X$ and NH$_3$ emission reduction commitment in 2020 are noted to have margins of less than 5 %. Consequently, relatively small revisions to historical emissions or projections methodologies have the potential to affect the current compliance forecasts.

In addition to the 2020 and 2030 emission reduction commitments, Article 4 of the NECD includes the need for additional explanation relating to trends if a linear reduction trajectory is not met in 2025. Under the WM scenario, the two pollutants identified as exceeding the linear reduction trajectory for 2025 are NMVOC and NH$_3$. For NMVOC, the linear reduction trajectory is not met in 2025 because, rather than being caused by a non-linear reduction, emissions in 2020 and 2030 are projected to be non-compliant with the corresponding emission reduction commitments. The situation is the same for NH$_3$, except that the projections forecast compliance with the emission reduction commitment in 2020.

These results are presented in Figure 2-1 below.

Figure 2-1 Projected compliance margin with the emission reduction commitments, WM scenario

2.1.2 "With Additional Measures" scenario

Under the WM scenario, Italy is projecting non-compliance with several emission reduction commitments. A WAM scenario is therefore required that demonstrates how compliance with all of the emission reduction commitments will be achieved. However, Italy did not submit projections for a WAM scenario.

2.2 Emissions trends and assessing the potential impacts of recalculations

The following figures are presented to show the time trends of the projections in the context of the historical emission estimates. The national emission totals shown are those as reported in the projections' submission. They therefore should include emissions of NO_X and NMVOC from 3B Manure Management and 3D Agricultural Soils in contrast to the totals shown in chapter 2.1 above (Article 4(3) of the NECD defines the national emission totals for compliance purposes as excluding these emissions). However, Italy did not include the emissions of NO_X and NMVOC from 3B Manure Management and 3D Agricultural Soils in their projections submission. The need to include these emissions in future submissions is included in chapter 4 as a recommendation. Following the review, Italy explained that these sources have only recently been include in the historical inventory, and that they will be added to emission projections.

Italy are using the GAINS-Italy model for their projections, which operates with five yearly intervals. Currently the projections use a 2010 reference year from the 2017 submission. Italy are conducting a process of harmonisation to allow their projections to use the most recently available historical emission estimates as the reference year. But the use of a reference year from the 2017 version of the inventory (year x-4) gives rise to inconsistences between the projected emissions and the most recent version of the historical emission estimates, as explained below.

Italy did not complete the 'Most recent historic year' column in the Annex IV reporting template, and as a result, in the figures below, there is no reference year and the projections data start in 2020.

Some apparent inconsistencies in the trends of the historical emissions and the projections are noticeable. It is expected that these are caused by the use of a reference year from the 2017 submission.

- For SO_2, inconsistencies between the historical and projected trends are evident. The historical data shows a decreasing emission trend, but the 2020 projection is significantly high than the 2017 emission estimate. A comparison of the historical inventory and the projections indicate that this sharp increase is caused by higher emissions from energy industries and non-road transport – both of which make large contributions to the trend in the projections. Following the review, Italy explained that updated projections are expected to still show compliance with emission reduction commitments.

- For NMVOC, the historical emissions show a trend that is broadly consistent with the projections, however an increase in emissions between 2016 and 2017 represent a different trend which would not be accounted for in the projections estimates. The increase in historical emissions primarily comes from the use of paints etc. and residential combustion.

- For $PM_{2.5}$ it is difficult to determine the extent of inconsistency caused by using a projections reference year from the 2017 inventory submission, because the year-to-year variation in $PM_{2.5}$ emissions is large. This is because historical $PM_{2.5}$ emissions are dominated by the use of biomass in residential combustion, rather than many different variables.

Figure 2-2 Historic and projected emissions of SO$_2$ for WM scenario
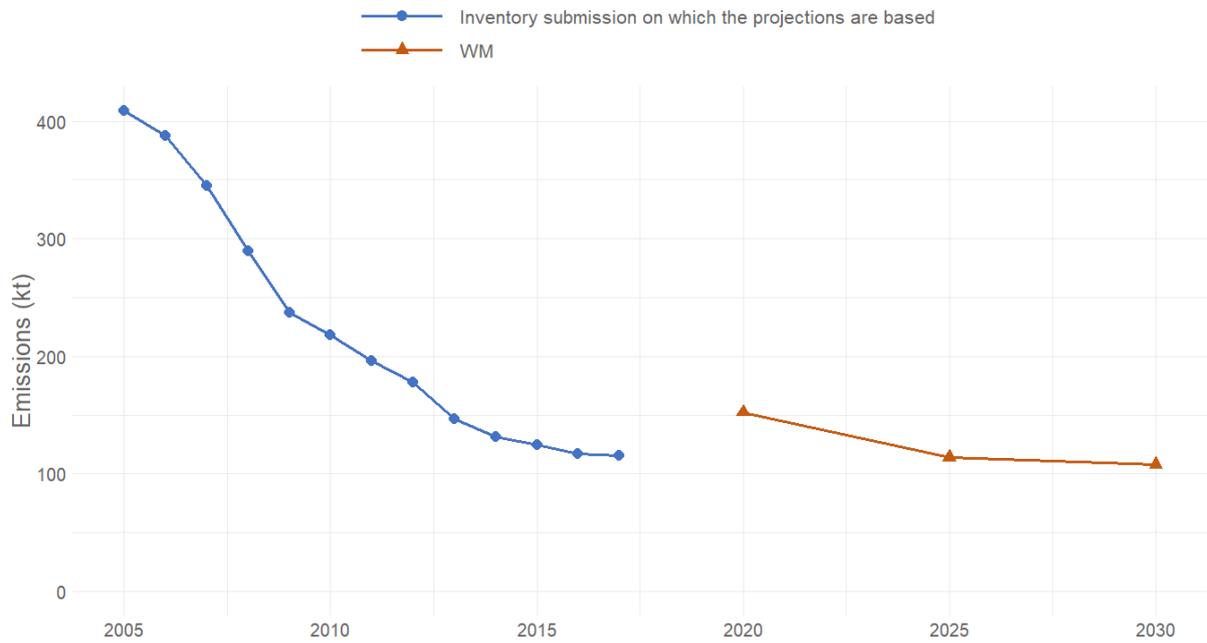
Figure 2-3 Historic and projected emissions of NO$_X$ for WM scenario
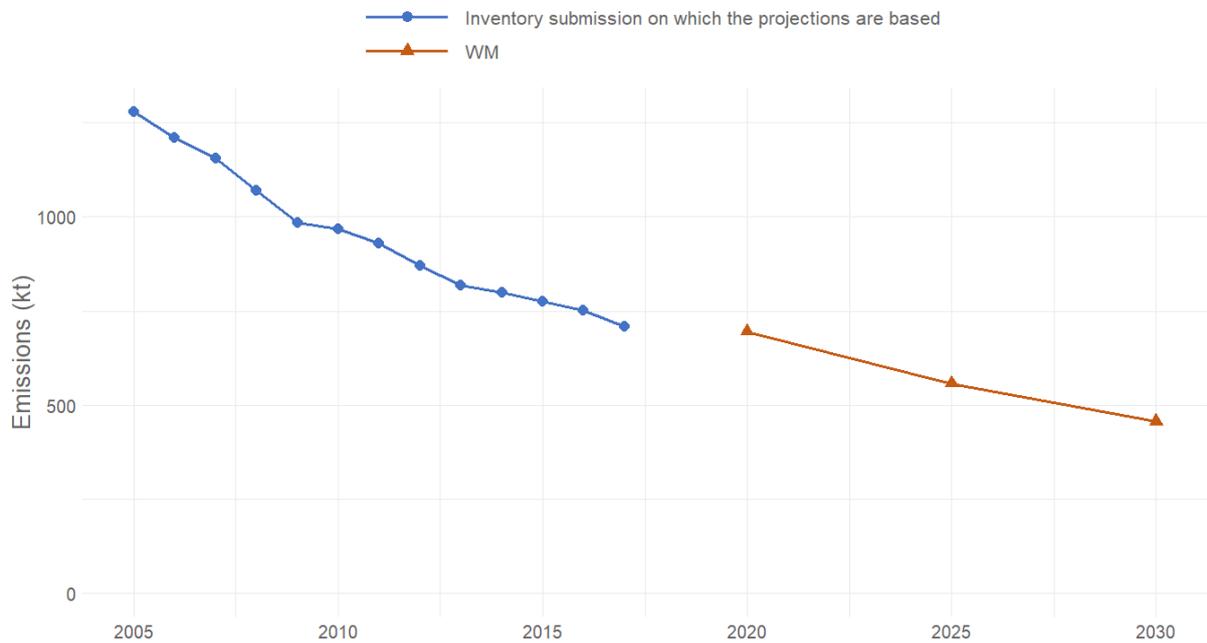
Figure 2-4 Historic and projected emissions of NMVOC for WM scenario
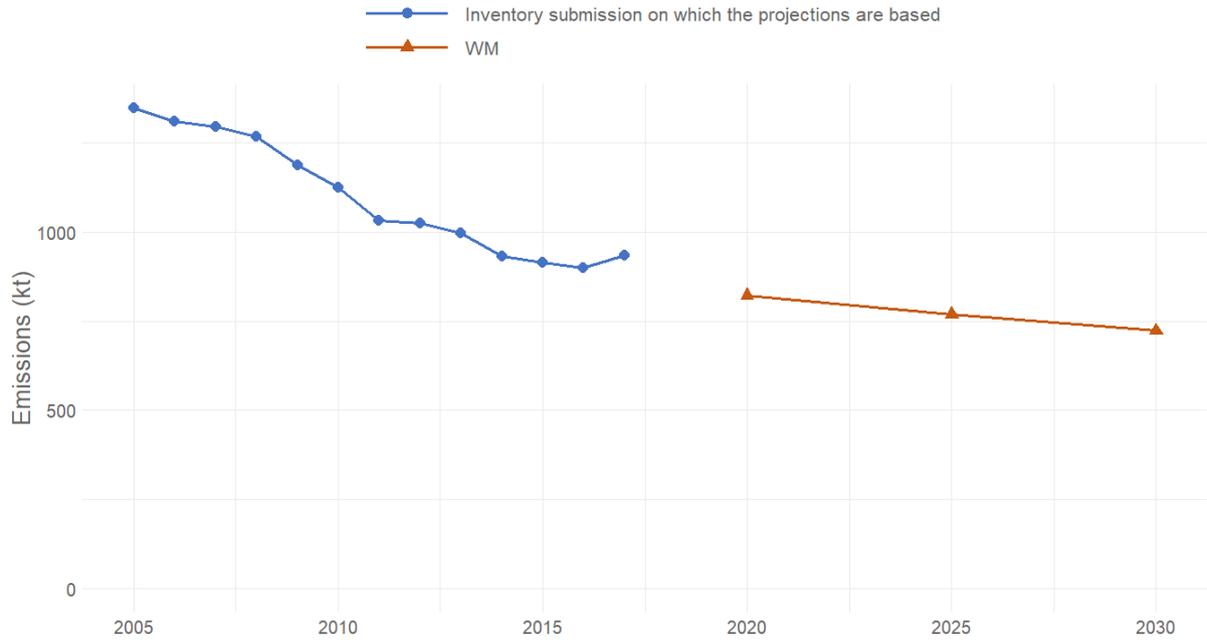
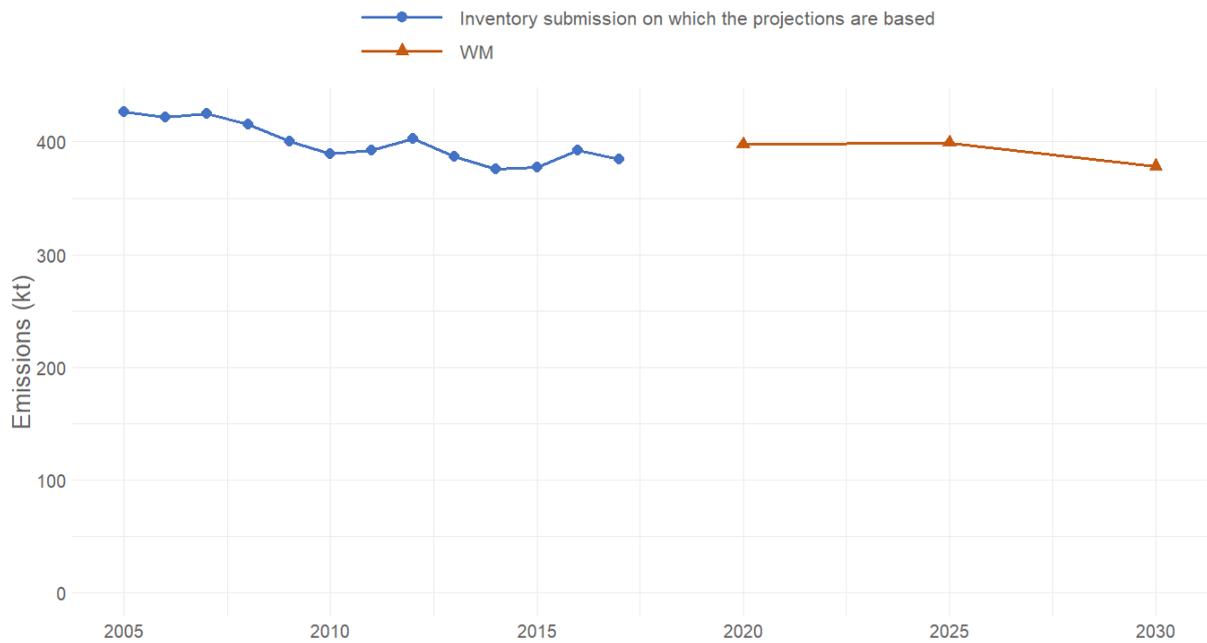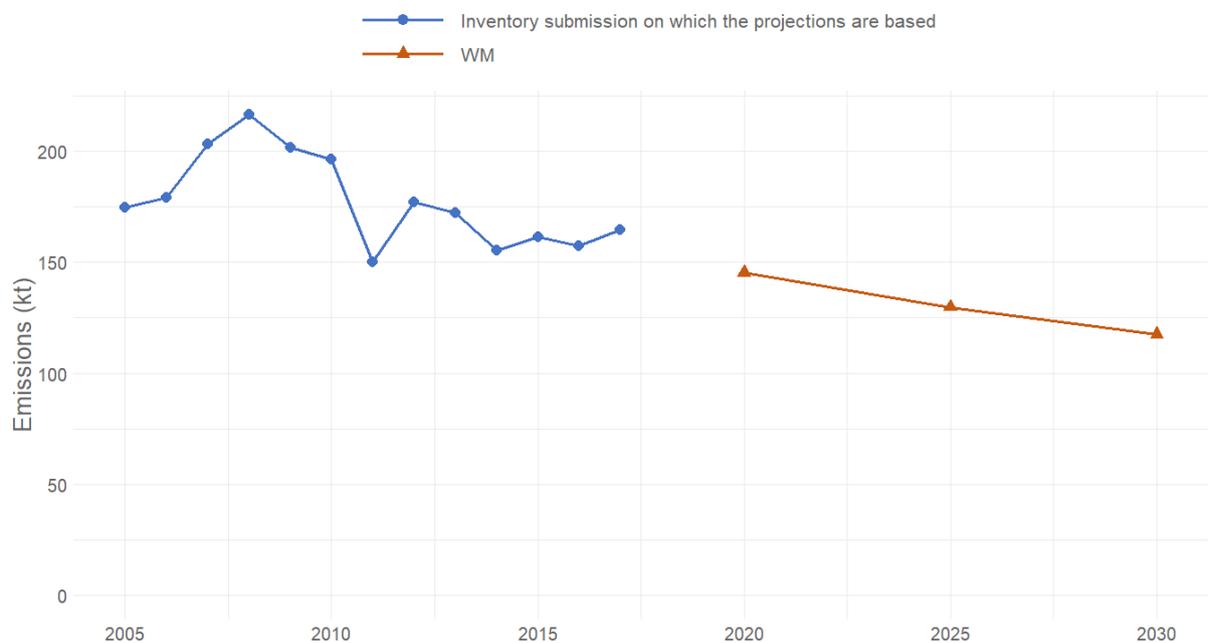**Figure 2-5 Historic and projected emissions of NH$_3$ for WM scenario**

Figure 2-6 Historic and projected emissions of PM$_{2.5}$ for WM scenario

3 Projections quality assessment for Italy

3.1 Introduction

This chapter presents the results of a quality assessment of the projections submitted by Italy.

The quality assessments were undertaken during the centralised review by lead reviewers. Completing the quality assessment during the centralised review, alongside other lead reviewers, ensured consistency in approach across the Member States. Furthermore, as the centralised review was held after the desk review was completed, it was possible for the lead reviewers to draw on the detailed findings of the desk review i.e. the individual recommendations and encouragements that are presented in chapter 4.

The aim of the quality assessment was twofold:

- To provide information on the quality of the projections and in particular the accuracy, by drawing on the detailed findings of the desk review.

- To provide input into the horizontal review report, which presents findings from both the projections and the NAPCP assessment. In particular, the horizontal review report includes information on projected compliance with emission reduction commitments, and whether there are risks that projected compliance might change in the future.

3.2 Quality assessment

The TRT assessed the quality of the projections against the quality criteria referred to in part 2 of Annex IV of the NECD, using the approach described in chapter 1.2.3.

3.2.1 Quality assessment findings

- The projections submission was made on 14 March 2019, and therefore was before the submission deadline of 15 March.

- Emission projections data were reported in the Annex IV file, and individual sources summed to the corresponding emission totals. As a result, the TRT considers that the emission projections data were provided in a format that complied with the specified requirements. However, data was omitted in the column entitled 'Most recent historic year' which meant that no reference year for the projections was reported.

- Under the WM scenario, Italy is projecting non-compliance with several emission reduction commitments, and hence there is a need for a WAM scenario to show how the emission reduction commitments will be met. However, Italy did not submit projections for a WAM scenario.

- The TRT found that Italy's projections were not transparent for the Transport, Agriculture, Waste and Solvent sectors, with poor descriptions of methods, data sources and assumptions.

- Based on the limited information available to the TRT, projections of all pollutants across all sources are assessed as needing major improvements in accuracy.

- The TRT noted that there are inconsistencies in the historical trends and the projections, particularly for SO_2, where emissions show a decreasing trend, but emissions in 2020 are significantly higher than the 2017 emissions. The projections for NMVOC and $PM_{2.5}$ could be viewed as indicating inconsistencies between the historical emissions and the projections, but

this is more open to interpretation. Based on the limited information available to the TRT, the consistency of the projections are considered to need major improvements.

- The TRT identified the need for major improvements in completeness for NH_3 and $PM_{2.5}$ emission projections as several sources are missing from the projections for these pollutants. Furthermore, emissions of NO_X and NMVOC are missing for 3B Manure Management and 3D Agricultural Soils.

- Italy informed the review team that they were unhappy with the timing of some of the questions during the desk review, which was why they had not been able to reply to some questions about emissions from road transport. The TRT contacted Italy directly and offered them the option of discussing the issues by telephone or extending the deadline for responses. The TRT did not receive a reply from Italy regarding this. Following the review, it became evident that Italy were not aware that, in May, there had been an update to the projections review timeline. As a result, national experts were not available towards the end of the desk review.

- The TRT identified **recommendations and encouragements** to improve the national projections (see Table 4-1 and Table 4-2). There are a relatively high number of recommendations, caused by the transparency issues noted above and the lack of completeness (particularly for NH_3 and $PM_{2.5}$). Many of the issues identified refer to non-key categories. However, when all of the issues are combined, particularly those relating to missing sources and inconsistencies, the overall impact is considered to be large enough to justify scoring accuracy as requiring major improvements (see Table 3-2).

Assessment of the quality criteria is presented in Table 3-1 below:

Table 3-1 Quality assessment of the WM scenario

Quality Criteria	Quality Assessment
Transparency	The TRT did not find the submitted projections to be sufficiently detailed and documented for the Transport, Agriculture, Waste and Solvent sectors. Italy provided some explanatory information on request, but the explanatory information was not sufficient for any of these sectors, meaning that they could not be reviewed in sufficient detail. TRT also noted that Italy did not include explanations for discrepancies and trends that are impacted by policies and measures in its documentation of its projections. No responses were received during the review for questions sent on transport, and Italy informed the European Commission that they were unhappy about the limited time available to answer the questions. The TRT contacted Italy asking whether they would like more time to answer the questions through the review processes or whether they would find it easier to discuss issues by telephone. The TRT received no reply to their offer. Following the review it has become apparent that Italy were not aware of the revised projections review timeline. **Transparency is therefore assessed a requiring major improvements.**
Comparability	The projections were submitted in the correct reporting format, as an Annex IV Excel file. Definitions used in calculating emission projections are consistent with best practice definitions. **Comparability is therefore assessed as being of a good standard.**

Quality Criteria	Quality Assessment
Completeness	Several sources were found to be missing from the projections estimates. No estimates are reported for NH_3 from 1B Fugitive Emissions and for 3B Manure Management (3B2 Sheep, 3B4a Buffalo, 3B4d Goats, 3B4e Horses, 3B4f Mules and asses). Similarly, projected emissions of $PM_{2.5}$ are omitted for several sources within 3B Manure Management and 3D Agricultural soils. Projected emissions of both NO_X and NMVOC are missing from 3B Manure Management and 3D Agricultural Soils. Following the review, Italy have explained that they are undertaking work which will allow the inclusion of these sources in future versions of the projections. **Completeness is therefore assessed as requiring minor and major improvements, depending on the pollutant.**
Consistency	TRT noted that there are inconsistencies in the historical trends and the projections (which only start from 2020) for SO_2 (for which 2017 is below the 2020 projections value), $PM_{2.5}$ (which is increasing between 2014 and 2017 but has decreasing projections), NO_X (which is showing a downward trend faster than the projections.), NMVOC (which is increasing 2016 - 2017 while projections are decreasing)and NH_3 where emissions in 2017 are below projected 2020 levels. Italy explained that the inconsistencies were due to the timing of the historical and projected scenarios being compiled. The TRT is sympathetic to this challenge, but nevertheless concludes that **consistency for most pollutants requires major improvements.**
Accuracy	A lack of sufficient transparency and the lack of responses from Italy meant that the accuracy of some sources and pollutants could not be determined with any certainty. However, omitted sources mean that $PM_{2.5}$ has been assigned to requiring major improvements, and inconsistencies between the projections and historic inventory mean that the remaining pollutants are also **assessed as requiring major improvements.**

3.2.2 Quality summary

The quality assessment is summarised in Table 3-2 below. This is to aid quick interpretation.

Table 3-2 Quality of the WM scenario projections submission

Pollutant	Year	Transparency of reporting	Comparability of reporting	Completeness of reporting	Consistency of projections	Accuracy of Projections
SO_2	2020	Major improv.	Good	Minor improv.	Major improv.	Major improv.
NO_X	2020	Major improv.	Good	Minor improv.	Major improv.	Major improv.
NMVOC	2020	Major improv.	Good	Minor improv.	Major improv.	Major improv.
NH_3	2020	Major improv.	Good	Major improv.	Minor improv.	Major improv.
$PM_{2.5}$	2020	Major improv.	Good	Major improv.	Major improv.	Major improv.
SO_2	2030	Major improv.	Good	Minor improv.	Major improv.	Major improv.
NO_X	2030	Major improv.	Good	Minor improv.	Major improv.	Major improv.
NMVOC	2030	Major improv.	Good	Minor improv.	Major improv.	Major improv.
NH_3	2030	Major improv.	Good	Major improv.	Minor improv.	Major improv.
$PM_{2.5}$	2030	Major improv.	Good	Major improv.	Major improv.	Major improv.

4 Improvement, recommendations and encouragements for Italy

4.1 Introduction

During the desk review, the review teams undertook a detailed technical review of the projections submissions. This process results in recommendations and encouragements, as described in the Projections Review Guidelines (2019). The majority of the recommendations and encouragements are sector specific and are allocated by the NFR source sector. However, some issues can refer to broader cross-cutting issues and are therefore allocated to the national totals.

Member States have been directly involved in the dialogue concerning issues raised during the desk review, and the recommendations and encouragements are intended to support the Member States in improving their projections for future submissions.

Table 4-1 below presents the recommendations and Table 4-2 the encouragements arising from the desk review. Encouragements relate to issues that do not require immediate attention to ensure compliance with best practice in quantifying emissions projections. Nevertheless, these are actions which Member States should consider, to improve the quality of future emissions projections reporting.

4.2 Recommendations

Table 4-1 Recommendations from the 2019 projections review [2]

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Recommendation
IT-1B-2019-0001	1B Fugitive emissions (Fugitive emissions from fuels)	NH_3	2020, 2025, 2030	With Measures (WM)	No	For category 1B (Fugitive Emissions from Fuels) and pollutant NH_3 for projection years 2020, 2025, 2030, the TRT noted that emissions are reported as '0'. In response to a question raised during the review, Italy explained that the GAINS-Italy model used for the projections doesn't take into account this type of emission, and a constant value may be assumed in future years, since no significant changes are expected in the activity levels and in the technology used. Italy stated that the emissions will be included in the next submission. The TRT notes that this issue relates to an underestimate and recommends that Italy include the missing NH_3 emissions from 1B in its next projections submission.
IT-2D, 2G-2019-0001	2D, 2G Solvent and other product use	NMVOC	2020, 2025, 2030	With Measures (WM)	No	The TRT noted with reference to NMVOC estimates from the Solvent and other product use (2D, 2G) sector that there is a lack of transparency regarding how the projections have been calculated in Italy, and that this reporting category contributes significantly to Italy's national total. Italy did not respond to the question raised on this issue during the review. The TRT is unable to determine whether there is an overestimate or underestimate in projected emissions, and recommends that Italy provide transparent information on methodology used, and any references or assumptions that support the projections trend that has been provided for NMVOC in the Solvent and other product use sector as part of its next projections submission.

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[2] Where multiple pollutants are included, the issue is flagged as referring to a key category if relevant for one or more of the pollutants.

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Recommendation
IT-3B-2019-0001	3B Animal husbandry and manure management	NMVOC, NO$_X$	2020, 2025, 2030	With Measures (WM)	Yes	For 3B (Animal husbandry and manure management) and 3D (Agricultural soils) NMVOC and NO$_X$ emissions, the TRT noted that there may be an underestimate of emissions because emissions are reported for historical years but are zero in projected years. In response to a question raised during the review, Italy explained that these emissions have been introduced in the national emission inventory for the first time in the 2018 submission. The in-depth comparison and harmonisation between the emission inventory and GAINS-Italy emission estimates have been carried out considering the year 2010 of the submission 2017 where those emissions were missing. Italy also indicated that those emissions will be taken into account in future emission projections in the 'other' sector because GAINS-Italy, like GAINS-Europe, does not consider them. The TRT notes that this issue relates to an underestimate and recommends that Italy reports NO$_X$ and NMVOC projected emissions under 3B and 3D in its next projections submission.
IT-3B-2019-0002	3B Animal husbandry and manure management	PM$_{2.5}$	2020, 2025, 2030	With Measures (WM)	No	For 3B2 (Sheep), 3B4a (Buffalo), 3B4d (Goats), 3B4e (Horses), 3B4f (Mules and asses) and PM$_{2.5}$ emissions the TRT noted that there is an underestimate of emissions because these emissions are reported for historical years but are zero in projected years. In response to a question raised during the review, Italy explained that total PM$_{2.5}$ emissions from all these sectors accounted for 0.32 kt in 2017 and have been almost stable in the last years; and that these emissions are not considered in GAINS-Italy because there is not a specific sector but that these emissions will be added in the 'other' sector in the next submission. The TRT notes that this issue related to a slight underestimate and recommends that Italy reports these emissions under the appropriate livestock category in its next projections submission.

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Recommendation
IT-3B-2019-0003	3B Animal husbandry and manure management	NH_3	2020, 2025, 2030	With Measures (WM)	No	For 3B (Animal husbandry and manure management) and 3D (Plant production and agricultural soils) and NH_3 emissions the TRT noted that there is an important increase between the last inventory year (2017) and projected years for 3B and for all the 3B subcategories, while there is an important decrease in emissions between 2017 and projected years for 3D. In response to a question raised during the review, Italy explained that GAINS-Italy allows to elaborate NH_3 emissions from livestock farming by control option and emission stage, so in the next submission this issue will be solved reporting correctly NH_3 emission projections in 3B and 3D. The TRT notes that this issue does not relate to an over or underestimate and recommends that Italy correctly reports emissions split in 3B Animal husbandry and manure management and 3D Plant production and agricultural soils.
IT-3D-2019-0001	3D Plant production and agricultural soils	$PM_{2.5}$	2020, 2025, 2030	With Measures (WM)	No	For 3D (Plant production and agricultural soils) and $PM_{2.5}$ emissions, the TRT noted that there may be an underestimate of emissions since they are zero in the projected years, but values are reported in the last historical inventory (1990-2017). In response to a question raised during the review, Italy explained that $PM_{2.5}$ emissions from 3B and 3D sectors have been introduced in the national emission inventory for the first time in the 2018 submission and that in-depth comparison and harmonisation between the emission inventory and GAINS-Italy emission estimates have been carried out considering the year 2010 of the submission 2017 where those emissions were missing. Italy also indicates that the GAINS-Italy model elaborates emissions from this sector and have been put in the 3B4h sector as 'other' emissions. The TRT notes that this issue is likely to result in a small underestimate and recommends that Italy correctly reports $PM_{2.5}$ emissions under 3D category in the next submission and explains the re-allocation of emissions. The TRT also noted that in 2017 $PM_{2.5}$ emissions are 0.39 kt and in 2020, 2025 and 2030 emissions are 1.6 kt, therefore the TRT recommends that Italy further explore the consistency between historical and projected emissions.

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Recommendation
IT-5-2019-0001	5 Waste	$PM_{2.5}$, NMVOC, NH_3, NO_X	2020, 2025, 2030	With Measures (WM)	No	The TRT noted with reference to the waste sector (5) that there is a lack of transparency regarding how the projections have been calculated in Italy. In particular, it is noted that for the majority of pollutants included under the waste sector (NO_X, NMVOC, NH_3, $PM_{2.5}$), the projected emissions timeseries starting at 2020 gives values that are much reduced when compared to the 2017 values in Italy's most recent historical emissions inventory submission. Italy did not respond to the question raised on this issue during the review. The TRT is unable to determine whether there is an underestimate in projected emissions, and recommends that Italy provide transparent information on methodology used, and any references or assumptions that support the projections trend that has been provided across all pollutants in the waste sector as part of its next projections submission.
IT-NATIONAL TOTAL-2019-0003	NATIONAL TOTAL National Total for the entire territory	BC, SO_2, $PM_{2.5}$, NMVOC, NH_3, NO_X	2020, 2025, 2030		NA	The TRT notes that the reference year is not given in the submission of emission projections. During the review Italy indicated that emission scenarios are elaborated with the GAINS-Italy model that provides emission scenarios for air pollutants and greenhouse gases on 5-year time intervals, starting from 1990 to 2050. In-depth comparison and harmonisation have been carried out considering the year 2010 of the 2017 submission as reference year. The harmonisation process for the year 2015 is ongoing and will be available in the next submission. The TRT recommends that Italy clearly documents this information on the reference years used for estimating the projections for future projections submissions.

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Recommendation
IT-NATIONAL TOTAL-2019-0004	NATIONAL TOTAL National Total for the entire territory	SO_2, $PM_{2.5}$, NMVOC, NH_3, NO_X	2020, 2025, 2030	With Measures (WM), With additional Measures (WAM)	NA	The TRT notes that Italy only provides a few overview pages on its projections and extremely limited information on methods, data sources and assumptions used to estimate projected emissions scenarios. This lack of transparency makes it difficult to review the projection estimates provided. During the review Italy provided some additional detailed explanation of the methods, data sources and assumptions used to estimate its projections scenarios. These explanations were however still deemed too limited and not transparent for Agriculture, Transport, Industrial processes and solvent use, Waste, where additional questions were asked by the sector experts (see T-3F,I-2019-0001, IT-3B-2019-0003, IT-3D-2019-0001,IT-2D, 2G-2019-0001, IT-5-2019-0001, IT-1A3biii-2019-0001). The TRT recommends that Italy provides further information in its IIR (or referenced associated projections methodology document) on its methods, data sources and assumptions for projections for future projections submissions.

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Recommendation
IT-NATIONAL TOTAL-2019-0005	NATIONAL TOTAL National Total for the entire territory	$PM_{2.5}$, NMVOC, NH_3, NO_X	2020, 2025, 2030	With Measures (WM), With additional Measures (WAM)	NA	During the review, the TRT noted that Italy is missing its WAM scenario with WM projections indicating that it will not meet 2020 compliance for NMVOC and 2030 compliance emission reduction commitments for NO_X, NH_3, NMVOC and $PM_{2.5}$. In addition, the TRT noted that there are inconsistencies in the historical trends and the projections (which only start from 2020) for SO_2 (for which 2017 is below the 2020 projections value), $PM_{2.5}$ (which is increasing between 2014 and 2017 but has decreasing projections), NO_X (which is showing a downward trend faster than the projections.), NMVOC (which is increasing 2016 - 2017 while projections are decreasing)and NH_3 where emissions in 2017 are below projected 2020 levels. During the review, Italy indicated that the WAM scenario was provided in the draft NAPCP submitted to the Commission. According to the WAM scenario in the draft NAPCP, all emission reduction commitments should be met in 2020 as well as in 2030. Italy explained that discrepancies between the historical trends and the projections are due to the calculation of emission scenarios and latest emission inventory being done at different times. They also noted that 2018 and 2019 policies and measures in the energy sector will be changed. They will be revised to comply with the Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action. Italy informed the TRT that they are currently working on updating the scenarios in order to provide a new fully consistent set of GHG and pollutant emission projections. The TRT recommends that Italy includes explanations for discrepancies and trends that are impacted by policies and measures in future projections submissions.

4.3 Encouragements

Table 4-2 Encouragements from the 2019 projections review

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Encouragement
IT-3B4f-2019-0001	3B4f Mules and asses	NH_3	2020, 2025, 2030	With Measures (WM)	No	For 3B4f (Mules and asses), NH_3 and projected years the TRT noted that there might be an underestimate because projected emissions are zero, while emission are reported for historical years. In response to a question raised during the review, Italy explained that the emissions for 3B4f have been added to the sector 3B4e Horses, since GAINS-Italy model has just one sector for all equine livestock. Italy also indicated that horses and mules and asses emissions will be reported separately in its next submission, based on a suitable weighting factor. The TRT notes that this issue does not relate to an over or underestimate and encourages Italy to report 3B4f Mules and asses and 3B4e Horses separately in future projections submissions.

Observation	NFR	Pollutant	Projection's year(s)	Scenario	Key Category	Encouragement
IT-3F,I-2019-0001	3F,I Field burning and other agriculture	BC, SO_2, $PM_{2.5}$, NMVOC, NH_3, NO_X	2020, 2025, 2030	With Measures (WM)	No	The TRT noted that for 3F,I (Field burning and other agriculture) in projected years, NH_3 and $PM_{2.5}$ emissions decrease compared to 2017, while NO_X, NMVOC and SO_2 emissions increase compared to 2017. In response to a question raised during the review, Italy said that they considered the emission trends for the 3F,I sectors to be coherent for all the pollutants, and that the differences with the historical year could depend on the different inventory submission considered and this issue will be solved in the next submission with an update harmonisation process. But the TRT did not consider that this explained the observed differences between the pollutant trends. The TRT also noted that Black Carbon projected emissions are not reported. In response to a question raised during the review, Italy explained that an update is underway so to be able to provide also Black Carbon future estimates in future submissions. The TRT notes that it is not clear whether this issue relates to an over or underestimate and encourages Italy to solve any harmonisation aspect and include further information about the trends for different pollutants compared to reference year, activity data, emission factors and assumptions made. The TRT notes that the Black Carbon emission projections should be "reported, if available", and the TRT therefore encourages Italy to report Black Carbon emissions
IT-NATIONAL TOTAL-2019-0001	NATIONAL TOTAL National Total for the entire territory	BC, SO_2, $PM_{2.5}$, NMVOC, NH_3, NO_X	2040, 2050		NA	The TRT notes that Italy does not include estimates of projections for 2040 or 2050, or estimates of projections for Black Carbon. The TRT also notes that no information on projection sensitivities is provided in the IIR. The TRT notes that these are not mandatory, but encourages Italy to include them in future projections submissions.

5 Statement from the Member State on the review findings and conclusions

Review process needs to be improved from the planning point of view.

Member States are submitted to different types of reviews both on projections and inventories at EU and international level. To give accurate and comprehensive answers to questions by TRT it is important that both MS experts and TRT respect the deadlines set for questions and answer.

TRT questions need to be addressed with accuracy and often need a considerable amount of time to be answered. Italy was able to reply to questions received till 25/7 even if the deadline set for TRT questions was 17/7.

Last questions were submitted by TRT between the 23rd of August and the 2nd of September. On the 27th of August Italy was invited to provide answer before the 30/8 deadline, which was impossible.

According to the review procedure made available on EEA website more than one month was set between questions and answers deadlines, it is not clear how it is possible that TRT continued submitting questions more than one month further its deadline asking at the same time to Italy to provide answers according to the original time schedule.

On 5/9 Italy replied to EEA that it was not possible to continue the review process and asked not to consider question submitted after 17/7.

The offer for telephone discussion or extended deadline only came on 17/9. Which is more than two weeks after the 30/8 deadline for answers and two months later the 17/7 deadline for questions. No other information has been provided to Italy in the meantime.

By that time Italian experts were already involved in other activities. If more information had been shared in advance by TRT regarding their timing problems, Italy could have tried to accommodate its activities and, with reasonable amount of time, provide all the answers.

Moreover, a delay in sending the draft review reports to MS is observed. The draft was supposed to be made available by the 18th of October, while it only came the 25th of October, a week later, leaving the deadline for MS comments to the 8th of November as initially scheduled.

References on how the margin of compliance have been calculated are missing and the guidelines to support the projections review are not publicly available while it could be useful if the document could be downloaded from https://emrt-necd.eionet.europa.eu/

For all the above mentioned reasons Italy believes that quality assessment must rely only on question and answer provided according to the cut-off dates set in the review procedure. If for any reason this is not feasible we suggest to reword the report in order to add explanations and state that TRT was not able to carry a detailed review.

Problems related to inappropriate planning of review activities and communication between the contractor and MS cannot result in negative judgments.

Response from the TRT

From the comments received, it seems that Italy did not have access to the review guidelines which were sent to Member States on 6 June and included detailed information on the updated projections review timeline. Further clarifications about the timeline were then sent to Member States on the 16 and 17 July.

The revision of the review timeline was because numerous Member States reported their NAPCPs substantially after the reporting deadline, which impaired the possibility to make cross-references

between the NAPCP and projections submissions, hence delaying the undertaking of the projections reviews. Further communications were circulated towards the end of the desk review to check that Member States were able to work with the TRT to complete the review.

Whilst Italy were not able to answer a number of questions (particularly for the transport sector), this did not impact on the overall conclusion that some significant improvements are needed.

Ahead of future reviews, the TRT will ensure that consideration is given to strengthening communications with Member States – particularly on review timelines. This will then ensure that deadlines are fully transparent, and Member States can plan the availability of their national experts accordingly.

6 References

Italy's 2018 and 2019 Historical emissions inventory submission (2018, 2019)

Italy's 2019 Annex IV Projections submission (2019)

Italy's 2019 Informative Inventory Report (2019)

Italy's Draft National Air Pollution Control Programme (2019)

2016 EMEP/EEA Guidebook (2016): 2016 EMEP/EEA Air Pollutant Emissions Inventory Guidebook. Available at: https://www.eea.europa.eu//publications/emep-eea-guidebook-2016

Annex IV (2014): Projections reporting template of the 2014 Reporting Guidelines (2014). Available at: https://www.ceip.at/fileadmin/inhalte/emep/2014_Guidelines/Annex_IV_Projections_reporting_template.xls

Projections Review Guidelines (2019): Guidelines to support the projections review, available at: https://eea1.sharepoint.com/teams/NECDNAPCPReview/default.aspx

The Gemini Building
Fermi Avenue
Harwell
Didcot
Oxfordshire
OX11 0QR
United Kingdom

t: +44 (0)1235 753000
e: enquiry@ricardo.com

ee.ricardo.com