

Quality assurance and quality control procedure for national and Union GHG projections

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1 Introduction

1.1 Background

In July 2013 the Monitoring Mechanism Decision (MMD) was replaced by the Monitoring Mechanism Regulation (MMR) . Article 14 of the MMR and Article 23 and Annex XII of its Implementing Regulation set out the details for Member States (MS) to provide information on national greenhouse gas (GHG) projections. The experience gained in implementing the MMD demonstrated the need to improve transparency, consistency, completeness, comparability and accuracy of information reported on policies and measures (PaMs) and on projections (MMR (17)).

The quality assurance and quality control (QA/QC) procedure at hand is an element of the QA/QC programme of the Union system for policies and measures and projections to be established in 2015 according to Article 12 of the MMR. The European Commission (DG CLIMA) is responsible for coordinating QA/QC activities on GHG projections at EU level and ensures that the objectives of the QA/QC programme are fulfilled. The European Environment Agency (EEA) is responsible for the annual implementation of the QA/QC procedures and is assisted by the European Topic Centre for air pollution and climate change mitigation (ETC/ACM).

QA/QC procedures should be performed at several different stages during the preparation of the national and Union GHG projections in order to aim to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the reported information.

Firstly, quality control (QC) checks of national GHG projections should be performed as technical routine activities by the MS's personnel compiling the projections. These QC checks aim at maintaining the quality of national projections as they are being compiled.

Secondly, quality assurance (QA) checks of national GHG projections should be carried out by the EEA and its ETC/ACM to review the quality of MS reported projections against quality criteria. Thirdly, QC checks of the compiled Union GHG projections are performed by the EEA and its ETC/ACM to ensure that the data are compiled correctly at EU level.

The QA/QC procedure document describes QA/QC checks carried out at EU level on the national reported projections from Member States and on the compiled Union GHG projections.

1.2 Objective

The objective of the QA checks is to provide evidence of the quality of MS reported projections. Where appropriate and in consultation with MS, corrective actions or gap-filling according to the MMR may be applied in order to enable a consistent compilation of Union GHG projections. The objective of the QC checks is to ensure that the data are compiled correctly at EU level.

This QA/QC procedure document describes

- the quality criteria against which the projections are assessed
- the consultation process with MS
- the QA/QC checks that are performed at EU level
- the corrective actions that may be applied to MS reported information

2 General procedure

2.1 Quality criteria

The data quality objectives pursued by this QA/QC procedure are based on the core principles of data quality: transparency, completeness, consistency, comparability and accuracy. These quality principles have been initially defined by the Intergovernmental Panel on Climate Change (IPCC) to characterise the quality of historic emission inventories. They have a slightly different scope in the context of emission projections.

Transparency means to ensure that transparent information is provided on underlying assumptions, methodologies used and sensitivity analysis performed in MS' national projections to enable further assessment by users of the reported information and for the purpose of the compilation of Union GHG projections.

Completeness means to ensure that projections are reported by MS for all years, sources and sinks, gases and sectors as required under the MMR so that projections are available for the entire EU area to enable further assessment by users of the reported information and for the purpose of the Union GHG projections compilation.

Consistency means to ensure internal time series consistency in all elements of national and Union GHG projections over a period of historic and future years as well as to ensure that key input parameters and assumptions are aligned across different sectors for national GHG projections and across different MS for Union GHG projections.

Comparability means to ensure that national estimates of projected emissions and removals reported by MS are comparable across MS. The allocation of different sources and sink categories by gas follows the split in accordance with the MMR and recommendations by the Commission with regard to projections horizon, reference year (starting year), ETS/ESD split, EU policies and measures to be taken into account and harmonised key assumptions are followed as appropriate.

Accuracy means that projected estimates are accurate in the sense that they are plausible and neither systematically over- nor underestimated as far as can be judged and that uncertainties inherent to the methodology and input data are reduced as far as practicable. In addition it should be ensured that an accurate aggregation of sectors for national GHG projections and an accurate aggregation of MS for the Union GHG projections is provided.

An additional quality principle used in this context is **timeliness** and it means that national GHG projections are submitted by 15 March of a reporting year in accordance with the MMR.

2.2 QA/QC process and MS consultation (MMR Article 14 (3))

Quality assurance and control (QA/QC) procedures are performed at several different stages during the preparation of the Union GHG projections in order to aim to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the reported information.

The EEA and its ETC/ACM carry out QA/QC procedures at EU level. Quality assurance (QA) checks of national GHG projections are performed to assess the quality of MS reported projections against the TCCCA quality criteria. Quality control (QC) checks of the compiled Union GHG projections are performed to ensure that the data are compiled correctly at EU level.

The QA/QC procedure under the MMD underwent a deep review and reorganisation as a result of the revised requirements of the MMR and also due to experience gained during the reporting period under the MMD. The QA/QC checks are now organised in three phases:

Phase I: QA of national projections and MS consultation

Phase I is focussing on quality assurance of reported data submitted by MS. The aim of phase I is to identify errors in the data submitted, and issues related to TCCCA.

Any potential issues identified by the reviewer, so-called findings, are communicated to MS via the communication log file. Findings deemed as significant will lead to questions. MS will be asked to provide additional or corrected data or explanations and will be informed about corrective actions that may be applied by the reviewers in case:

- a) MS do not provide additional or corrected data or explanations or
- b) MS do provide additional or corrected data or explanations, but it is not deemed satisfactory to solve the identified issues.

The *communication log file* also includes recommendations for the continuous improvement of national projections.

Phase II: Corrective actions

The corrective actions are part of phase II and consist of filling identified data gaps, error corrections and the reference year calibration.

As soon as the ETC/ACM has finished the final country dataset, the MS will receive individual QA feedback documents which include an overview of the results of the QA procedure (*completeness status document*) and corrective actions applied to their national projections (*gap-filling & calibration status document*). For the sake of transparency the difference to the reported data is indicated in this file as well.

Please note: It is the responsibility of MS to disseminate the information received about corrective actions in the course of the QA procedure to other concerned entities in a country (e.g. the respective Ministry). The MS contact person for the projections QA procedure should be a person directly involved with the compilation process of GHG projections and should be appointed by the MS (through the WG2 of the Climate Change Committee).

Phase III: QC of Union GHG projections

In phase III the ETC/ACM performs *internal quality control checks* and compiles the Union projections.

Figure 2-1 Overview of QA/QC procedure

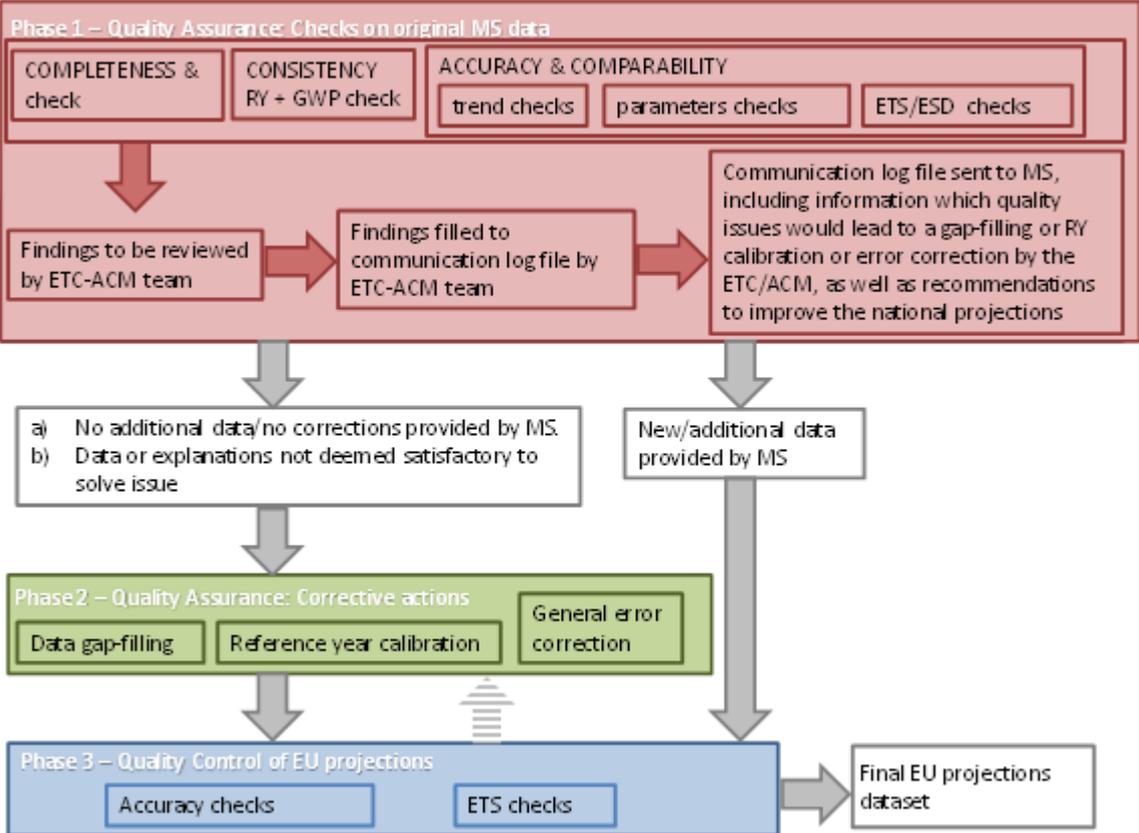
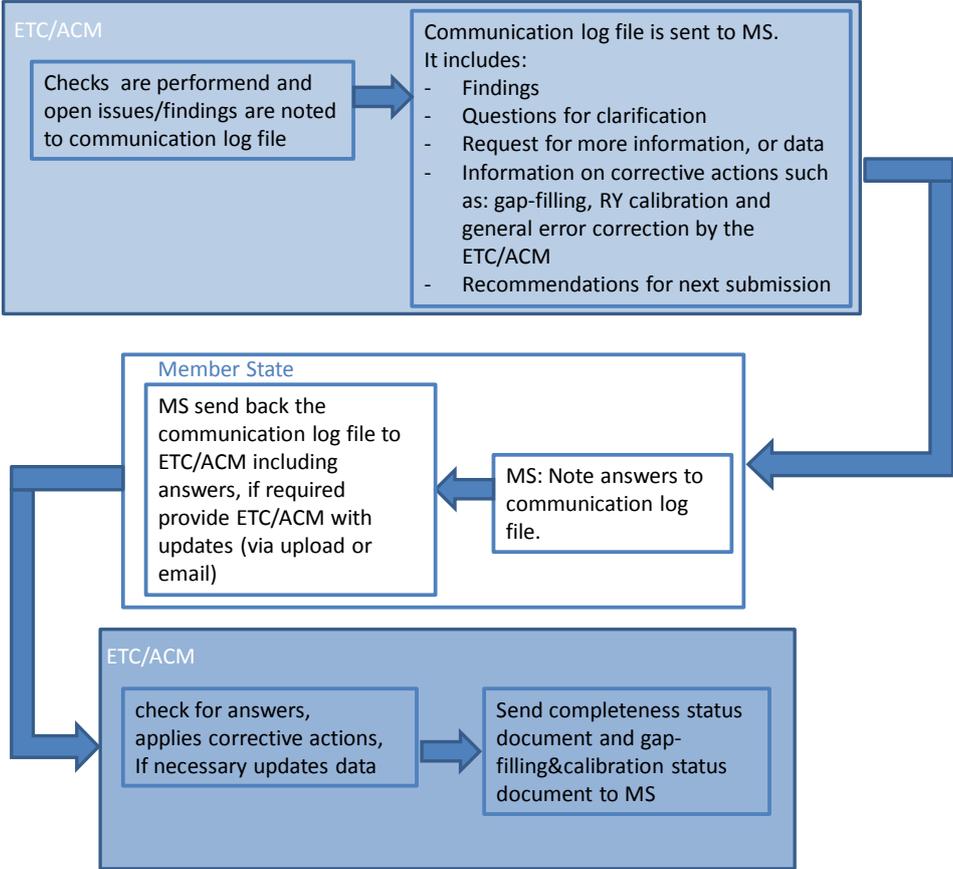


Figure 2-2 Communication process between Member States and ETC/ACM



2.3 Overview of quality checks

Error! Reference source not found. and Table 2-2 present the overview of the QA/QC checks and corrective actions for GHG projections, they are further described in section **Error! Reference source not found.**.

Table 2-1 Overview of QA/QC checks for GHG projections

	Name of check	Objective	Method	Potential corrective action
C1	Completeness checks	Assess completeness and transparency of MS' submissions (MMR Art. 12(2))	Reviewing MS' reporting template and the accompanying report with regard to mandatory (MMR Art.14) and recommended reporting requirements. Filling in the <i>Status & completeness report</i> for each MS.	A1a, A1b,A1c, A1d, A1f, A1g
C2	GWP/GHG unit check	Assess consistency and comparability of MS' submissions (MMR Art. 12(2))	Checking whether internationally agreed GWP according to 2006 IPCC Guidelines were used in MS' submissions and whether GHG were reported in the correct unit.	A3
C3a	Reference year check 1	Assess consistency of MS' submissions. (MMR Art. 12(2))	Checking whether the reference year of projections is consistent with the historic emissions of the inventory.	No
C3b	Reference year check 2	Assess consistency of MS' submissions. (MMR Art. 12(2))	Checking whether an identified inconsistency between historic inventory and projected reference year is deemed significant.	A2
C4a	Sum check	Assess accuracy of MS' submission (MMR Art. 12(2))	Checking that disaggregated emission projections by gas, sector and ETS/ESD split equal the total sum reported by MS.	A3
C4b	Recalculation check	Assess accuracy of MS' submission (MMR Art. 12(2))	Comparing the total emission projection for each scenario with the total emission projection reported by MS in the last reporting period.	No

C4c	Outlier check	Assess accuracy of MS' submission (MMR Art. 12(2))	Checking whether the reported emissions in a certain year are above or below the trend line of the projected emissions.	No
C4d	Projected trend check	Assess accuracy of MS' submission (MMR Art. 12(2))	Checking if projected trend line seems plausible.	No
C4e	Overall trend checks	Assess accuracy of MS' submission (MMR Art. 12(2))	Checking whether the projected trend line gradient is significantly different from the historical trend line of MS' submission.	No
C5a	Parameter unit check	Assess consistency and comparability of MS' submission (MMR Art. 12(2))	Ensuring that all MS use the same units.	A3
C5b	Historic parameter check	Assess consistency and accuracy of MS' submission (MMR Art. 12(2))	This check will be performed by determining the percent difference between data reported by MS and Eurostat data for each historic time step for which data is available by both sources.	No
C5c	Net electricity import check	Assess consistency and accuracy of MS' submission (MMR Art. 12(2))	An EU-28 aggregate will be calculated and a map will be designed to visualize numbers of electricity imports/exports.	No
C5d	Check against EC parameter recommendations	Assess consistency and comparability of MS' submission (MMR Art. 12(2))	Data for projected years (2015, 2020, 2025, 2030, 2025) will be checked against recommended values.	
C6	ETS/ESD split check	Assess consistency and comparability of MS' submission (MMR Art. 12(2))	The ETS/ESD split from emission inventories will be compared to the ETS split reported in projections files for main source categories and the latter will be checked for inconsistencies.	A1e

Table 2-2: Overview of corrective actions

	Name of corrective action	Objective	Method
A1a	Linear interpolation of intermediate	Seek to ensure completeness and comparability of Union projections (MMR Art. 12(2)) by implementing procedures to	It is good practice to provide data for intermediate years (e.g. 2016-2019). In case MS cannot provide intermediate reporting years, the dataset will be gap-filled by linear interpolation as required to compile Union projections.

	years	estimate any missing data from national projections in consultation with MS (MMR Art.14(3)).	
A1b	Gap-filling of mandatory reporting years		In case MS cannot provide data for the mandatory reporting years 2015, 2020, 2025, 2030 or 2035 (MMR Art.14(1)), the dataset will be gap-filled using a surrogate dataset (if available) or extrapolation, as required to compile complete Union projections.
A1c	Sectoral gap-filling		In case MS cannot provide data organised by sector and gas (MMR Art.14(1)), the dataset will be gap-filled by using the relative shares of sectors of a surrogate dataset (if available), as required to compile sectoral Union projections. No gap-filling is foreseen for a missing gas split.
A1d	Gap-filling Memo items		In case MS cannot provide data for mandatory memo items (international bunkers, international aviation), the dataset will be gap-filled by using the value of the latest historic inventory year for the entire time-series, as required to compile complete Union projections.
A1e	Gap-filling ETS/ESD split		In case MS cannot provide data split by ETS/ESD (MMR Art.14(1)(b)) but the total emissions are available or the ETS split is constant over the projected time series, the dataset will be adjusted/gap-filled by using a relative ETS/ESD share of the total emissions of a surrogate dataset. If total emissions are not available the growth rate of the ESD sector of a surrogate dataset will be used to extrapolate the MS' trend. The ETS/ESD split is required to compile Union ESD projections. No detailed gap-filling is foreseen for a missing sectoral ETS/ESD split.
A1f	Gap-filling WAM		Where available , a WAM and a WOM scenario shall be reported (MMR Art. 14(1)(a)). In case MS cannot provide a WAM scenario, the dataset will be gap-filled by using the WEM scenario as WAM scenario, in order to compile a Union projections WAM scenario. No gap-filling is foreseen for a missing WOM.
A2	Reference year (RY) calibration	Seek to ensure time-series consistency and accuracy of Union projections (MMR Art.12(2)) by implementing procedures to recalibrate the starting year (reference year) of MS national projections to the historic inventory year in consultation with MS.	It is good practice that the reference year of emission projections (RY) is consistent with the respective historic year of the emission inventory. In case MS show significant inconsistencies between RY and inventory year, the projections trend will be recalibrated and aligned to the historic year, as required to compile consistent Union projections.
A3	Error correction		If a potential error cannot be clarified or corrected by MS, general error correction will be applied (e.g. unit correction, sum correction), as required to compile accurate Union projections.

2.4 Timeline

In order to increase the efficiency of the process, the checks have been improved and the time line has been adjusted compared to the QA/QC process under the MMD.

Table 2-3 Timeline of QA/QC process in mandatory reporting years

When	What	Who
Pre 15 th March	Preparation of the submission Completion of the reporting template Internal quality control	Member State
Pre 15 th March	Preparation for QA procedure (preparation of check files, compilation of additional data used in the checks)	ETC/ACM
By 15 th March every two years (and voluntary submission in intervening years)	Submission to the European Commission (upload of report and reporting template as xls and xml to CDR platform)	Member State
15 th March – 1 st April	Performance of QA checks and feedback to MS on data gaps and other findings. If necessary, ETC/ACM request data or additional information.	ETC/ACM
1 st April – 7 th April	MS to respond to ETC/ACM 's answers, to comment on findings and/or provide additional data	Member State
8 th April – 20 th April	Processing of corrections, changes as discussed with MS in the communication cycle.	ETC/ACM
23 rd April – 14 th May	If necessary, solve open issues by further communication with MS	ETC/ACM and MS
14 th May – 31 st May	Finalisation of data	EEA, ETC/ACM
31 st May – 30 th September	Assessment, analysis, compilation of EU datasets and reporting in progress report and trends and projections report.	EEA, ETC/ACM, EC
By 15 th June	ETC/ACM reports main results of the QA/QC process to MS (Completeness status file and Gap-filling & calibration status file)	ETC/ACM

3 Quality checks

In section 3 the checks that are performed by the ETC/ACM reviewers are presented. The first part of the chapter 3 deals with phase I, which includes the quality assurance checks that assess the general quality of the submission with regard to TCCCA. The next section describes Phase II which is conducted after the communication with MS and includes all corrective actions. Finally, Phase III explains which internal consistency checks, in terms of quality control, are performed to ensure the quality of the final data.

In case any incomplete information or errors are detected in Phase I, the ETC/ACM will consult MS via the communication log file. MS will be asked to provide the missing information or any other clarification as necessary. If MS do not provide the requested information, the ETC/ACM may proceed with the corrective actions for quantitative information. Missing qualitative data is considered as not reported.

3.1 Phase I - QA of national projections and MS consultation

Phase I consists of the following checks:

- Completeness checks (C1)
- GWP/GHG check (C2)
- Reference year checks 1 and 2 (C3)
- Accuracy checks (C4)
- Parameter checks (C5)
- ETS/ESD checks (C6)

3.1.1 Completeness checks (C1)

Name of check	Completeness checks
Objective	Assess completeness and transparency of MS' submissions (MMR Art. 12(2))
Method	Reviewing MS' reporting template and the accompanying report with regard to mandatory (MMR Art.14) and recommended reporting requirements. Filling in the <i>Status & completeness report</i> for each MS.
Potential corrective actions	Data gap-filling (A1a, b, c, d, f, g)
Threshold for significance	No

The completeness check comprises the following detailed checks:

- projections are reported on time and in the correct format via the CDR (mandatory)
- organised by sectors (incl. LULUCF) and memo items (mandatory)
- organised by gases: CO₂, CH₄, N₂O, HFC, PFC, NF₃, SF₆, (or group of F-gases) (mandatory)
- for all years: RY, 2015, 2020, 2025, 2030, 2035 (mandatory) and intermediate years (good practice)
- for all scenarios: WEM (mandatory), WAM (where available), WOM (where available)
- EU ETS/ESD split for sectors, years and scenarios (mandatory).
- notation keys in case of missing emissions data (good practice)
- projection parameters for mandatory years and scenarios (mandatory)
- Report including:

- description of methodologies and models used (model factsheet) (mandatory)
- underlying assumptions (mandatory)
- results of sensitivity analysis (mandatory)

With regard to the parameters reported, it is examined if the key supra-nationally determined parameters have been used and the completeness of projection parameters data is assessed by ensuring that a value has been provided for all years for all parameters reported.

The reports submitted by MS will be analysed regarding sensitivity analysis, transparent descriptions of methodologies, assumptions and models and whether sectoral, geographical and temporal coverage are explained in the report. With regard to models, the ETC/ACM verifies that MS have filled the model factsheet.

3.1.2 Global warming potential and GHG unit check (C2)

Name of check	GWP/GHG unit check
Objective	Assess consistency and comparability of MS' submissions (MMR Art. 12(2))
Method	Checking whether internationally agreed GWP according to 2006 IPCC Guidelines were used in MS' submissions and whether GHG were reported in the correct unit.
Potential corrective action	Error correction (A3)
Threshold for significance	No

The internationally agreed change from 1996 Inventory Guidelines to 2006 Inventory Guidelines introduced new global warming potentials (GWP) to calculate national GHG inventories. Since the purpose of compiling national projections is to evaluate the progress of the EU and its MS towards fulfilling their GHG mitigation commitments and to meet reporting commitments under the UNFCCC, GHG projections need to be calculated on the basis of new GWP too. However, there could be other reasons why a value is not reported in the correct unit. MS may report in t CO_{2eq} instead of kt CO_{2eq} or a copy-paste error may have occurred. For this reason, the GWP/GHG unit check assesses that all MS consistently use the new GWPs and correct units.

The check consists of two steps:

- 1) General unit check: Here the projected values are compared to the inventory values and it is checked if they do not exceed or fall below a range of -/+5% to highlight extreme outliers. This check applies to all gases and on a sectoral level.
- 2) The GWP check calculates the sum (in CO_{2eq}) of the Total (excluding LULUCF) for each gas by multiplying with the new GWP. This sum is compared to the reported Total (excluding LULUCF) in CO_{2eq}:

- a) Calculate the Total

$$\begin{aligned}
 Total_{calc}(kt\ CO_{2eq}) &= Total_{rep}(kt\ CO_2) + Total_{rep}(kt\ CH_4) * 25 + Total_{rep}(kt\ N_2O) * 298 \\
 &+ Total_{rep}(kt\ CO_{2eq}\ HFC) + Total_{rep}(kt\ CO_{2eq}\ PFC) \\
 &+ Total_{rep}(kt\ CO_{2eq}\ SF_6) + Total_{rep}(kt\ CO_{2eq}\ NF_3)
 \end{aligned}$$

- b) Calculate the difference between Total_{calc} und Total_{rep} and check if smaller/larger than zero:

$$Total_{calc}(kt\ CO_{2eq}) - Total_{rep}(kt\ CO_{2eq}) \neq 0$$

At the same time this is calculated with the old GWP in the background to quickly see which GWP has been used or if the deviation is caused by known reasons.

In case the range is exceeded (step 1) and/or the calculated Total is different from the reported Total (step 2), the MS will be consulted to seek for clarifications.

3.1.3 Reference year check 1 (C3a)

Name of check	RY check 1
Objective	Assess consistency of MS' submissions. (MMR Art. 12(2))
Method	Checking whether the reference year of projections is consistent with the historic emissions of the inventory.
Potential corrective action	Reference year (RY) calibration (A2)
Threshold for significance	Yes

This check compares the starting year of projections (defined as reference year) on a sectoral level to the respective year reported in the latest available emission inventory. It is assessed if there is an inconsistency between the historic and the projected value of this year and whether the difference is below a defined threshold of significance. The threshold was defined as the sector specific level uncertainty given in the latest available NIR of MS. If the uncertainty is not available for a MS, the EU average of the latest available Union NIR will be used.

Table 3-1 Example of a reference year check 1 (C3a)

Sector	Reference Year	RY projected (kt CO ₂ eq)	Inventory emissions of reference year (kt CO ₂ eq)	Absolute difference (kt CO ₂ eq)	Relative difference to inventory (%)	Sector specific uncertainty (%)	Check passed
3	2012	100	120	20	16.7%	5	no
2	2012	85	90	5	5.6%	10	yes

If the difference is larger than the sector specific uncertainty *Reference Year check 2* will be applied. In case the difference is below the threshold, the MS passes the check and no further action is required.

3.1.4 Reference year check 2 (C3b)

Name of check	RY check 2
Objective	Assess consistency of MS' submissions. (MMR Art. 12(2))
Method	Checking whether an identified inconsistency between historic inventory and projected reference year is deemed significant.
Potential corrective action	Reference year (RY) calibration (A2)
Threshold for significance	Yes

MS' projections that did not pass Reference Year check 1 will be further assessed if the sum of the absolute difference between the RY of the projections and the inventory has significant influence on the reported total emissions of the national projections. The difference will be compared against a threshold of 1% of the reported total emissions. The threshold was defined on the basis of the experience gained during the QA/QC process under the MMD.

If the difference exceeds the threshold of significance for the total emissions the MS will be consulted by the ETC/ACM that a reference year calibration across the whole time series may be applied to harmonise the MS submissions with the latest inventory data.

If the difference is below the threshold of significance for the ETS or ESD emissions, the MS will be consulted by the ETC/ACM, but no calibration will be applied by the ETC/ACM. A recommendation may be given to encourage MS to update the dataset for the next submission.

Table 3-2: Example of a reference year check 1 (C3b)

Ry 1 check passed	Sector	Reference Year	Ry projected (kt CO ₂ eq)	Inventory emissions of reference year (kt CO ₂ eq)	Absolute difference (kt CO ₂ eq)	Relative difference to inventory (sum)	Thres hold	Ry 2 Check passed	Sector calibration
	Total	2012		1500					
No	3	2012	100	120	20				yes
Yes	2	2012	85	90	5				no
yes	4	2012	20	21	1				no
no	5	2012	35	50	35				yes
				sum	55	4%	1%	no	

For detailed information on the methodology of the RY calibration see chapter 3.2.2.

3.1.5 Accuracy checks (C4)

3.1.5.1. Sum check (C4a)

Name of check	Sum check
Objective	Assess accuracy of MS' submission (MMR Art. 12(2))
Method	Checking that disaggregated emission projections by gas, sector and ETS/ESD split equal the total sum reported by MS.
Potential corrective action	Error correction (A3)
Threshold for significance	Yes

Disaggregated values for each year are summed up and compared with the total, the difference should be less than 0.25% of the total emissions (excl. LULUCF). 0.25% was chosen as threshold for significance since a smaller difference could be attributed to rounding.

3.1.5.2. Recalculation check (C4b)

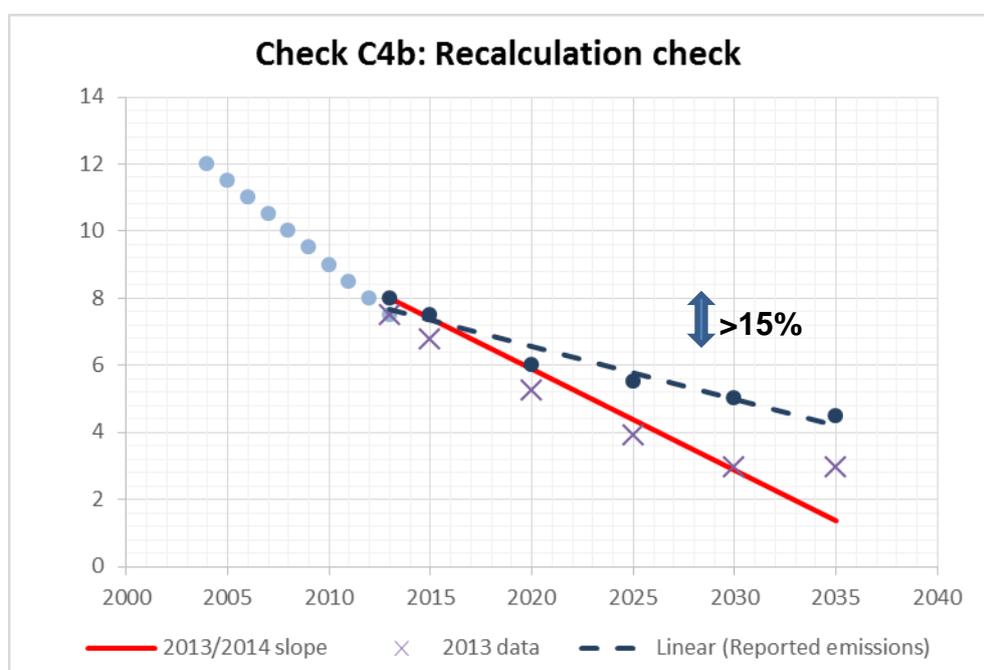
Name of check	Recalculation check
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Objective	Assess accuracy of MS' submission (MMR Art. 12(2))
Method	Compare the total emission projection for each scenario with the total emission projection reported by MS in the last reporting period.
Potential corrective action	No
Threshold for significance	Yes

The total emission projection for each scenario reported by MS and the total emission projection reported in the last reporting period will be compared for each year.

The threshold of significance is 15%. If the threshold is exceeded and no explanation is provided in the report (e.g. change of projection model, new assumptions), the MS will be consulted by the ETC/ACM, but no corrective action will be applied by the ETC/ACM. A recommendation may be given to encourage MS to provide an explanation in the next submission.

3-1 Example of a recalculation check (C4b)



3.1.5.3. Outlier check (C4c)

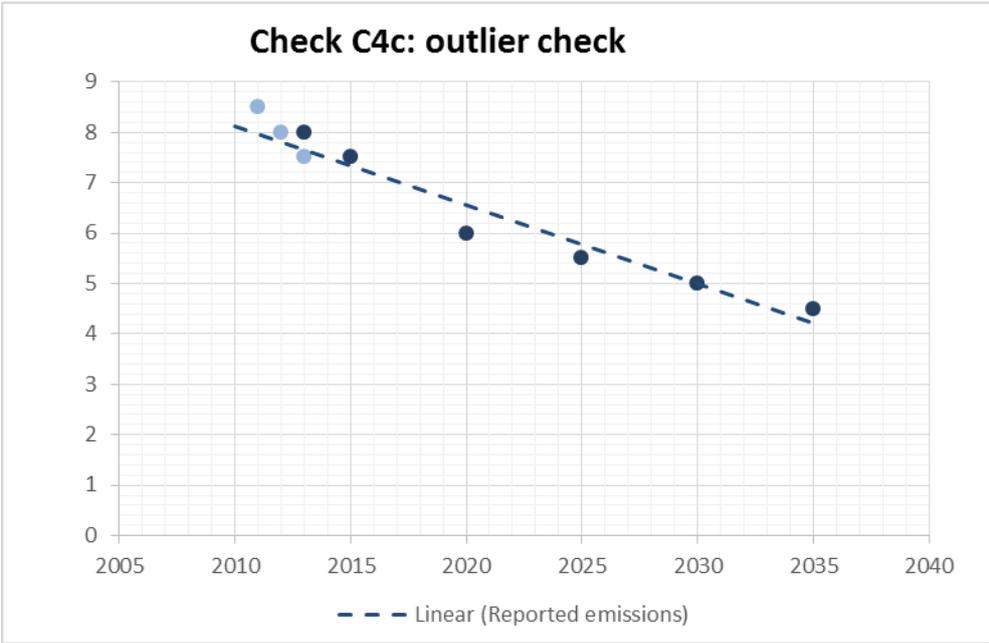
Name of check	Outlier check
Objective	Assess accuracy of MS' submission (MMR Art. 12(2))
Method	Checking whether the reported emissions in a certain year are above or below the trend line of the historic emissions.
Potential corrective action	No
Threshold for significance	Yes

It is checked whether there are outliers within the time-series of recent historic (last three years) and projected emissions by scenario and sector. An outlier is identified when the

absolute difference between the reported emissions and the emissions based on the trend line of projected emissions is more than 5%.

If the threshold is exceeded and no explanation is apparent or is provided in the report, the MS will be consulted by the ETC/ACM, but no corrective action will be applied by the ETC/ACM. One possible apparent explanation for a deviation is when projected emissions follow a non-linear rather than a linear pathway. A recommendation may be given to encourage MS to provide an explanation in the next submission.

3-2 Example of a recalculation check



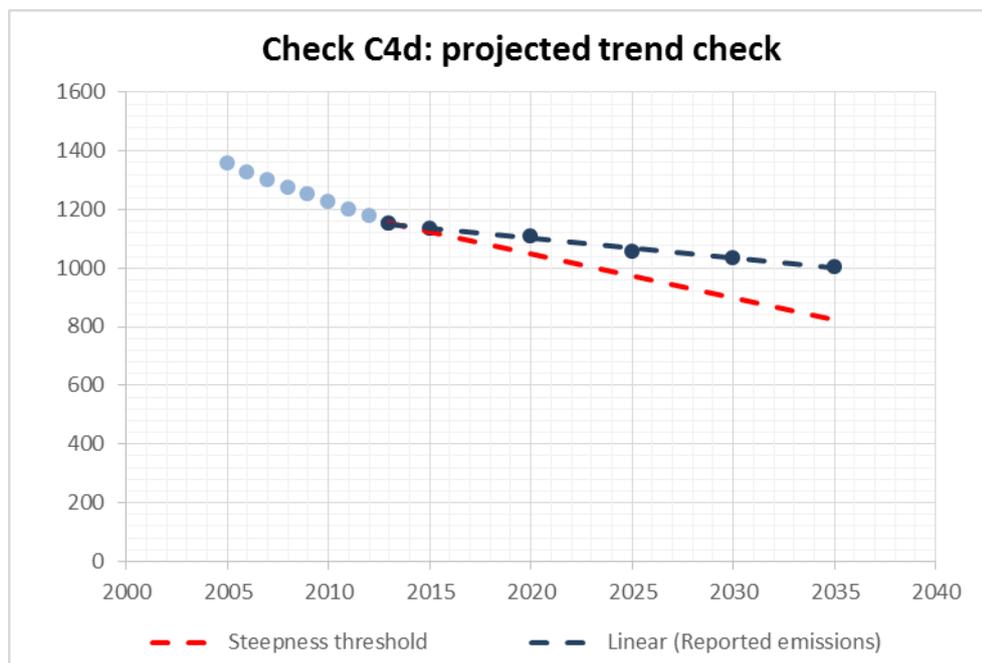
3.1.5.4. Projected trend check

Name of check	Projected trend check
Objective	Assess accuracy of MS' submission (MMR Art. 12(2))
Method	Checking if projected trend line seems plausible.
Potential corrective action	No
Threshold for significance	Yes

The slope of the trend line of projected emissions is calculated and compared with the slope of the trend line of historic emissions to check whether the trend line seems too steep. This check is done on a sectoral level.

If the slope of the sectoral projections is higher or lower than 5%, the ETC/ACM will attempt to determine the reasons for the steep gradient in the projections report. If no explanation can be found, the ETC/ACM will consult the MS to identify the reason. No corrective action will be applied by the ETC/ACM. A recommendation may be given to encourage MS to provide an explanation in the next submission.

3-3 Example of a projected trend check (C4d)

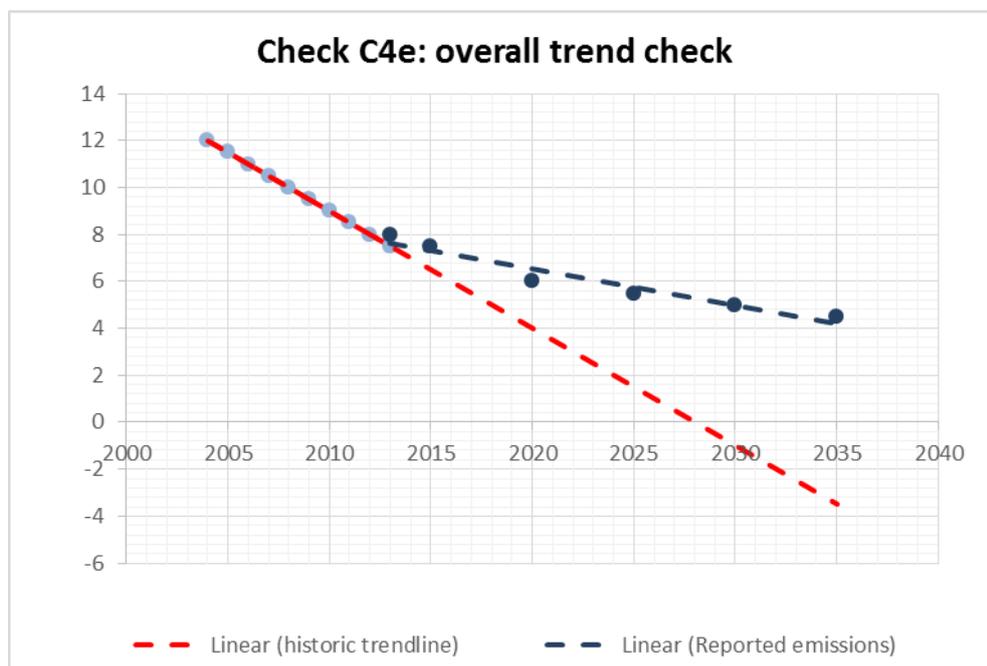


3.1.5.5. Overall trend check (C4e)

Name of check	Overall trend checks
Objective	Assess accuracy of MS' submission (MMR Art. 12(2))
Method	Checking whether the projected trend line gradient is significantly different from the historical trend line of MS' submission.
Potential corrective action	No
Threshold for significance	Yes

It will be assessed whether the projected trend line gradient is significantly different from the historical trend line by MS and scenario for totals and for matching sets of category and gas. If the projected trend is inconsistent with the trend of the GHG inventory (standard deviation higher than 1), the ETC/ACM will attempt to determine the reasons behind the difference in the trend from the projections reports. If no explanations are found, the ETC/ACM will consult the MS to identify the reason. No corrective action will be applied by the ETC/ACM. A recommendation may be given to encourage MS to provide an explanation in the next submission.

3-4 Example of an overall trend check (C4e)



3.1.6 Parameters checks (C5)

3.1.6.1. Unit check (C5a)

Name of check	Unit check
Objective	Assess consistency and comparability of MS' submission (MMR Art. 12(2))
Method	Ensuring that all MS use the same units.
Potential corrective action	Error correction (A3)
Threshold for significance	No

In the first step historical numbers from Eurostat will be compared with reported projection numbers for the given reference year. If these are similar it is assumed that the unit is correct. If difference can be explained because of different units, numbers may be converted accordingly.

If differences between historical numbers and projections numbers can easily be explained because of incorrect units, MS will be informed. If no explanations are found, the ETC/ACM will consult the MS to identify the reason.

3.1.6.2. Historic parameter check (C5b)

Name of check	Historic parameter check
Objective	Assess consistency and accuracy of MS' submission (MMR Art. 12(2))
Method	This check will be performed by determining the percent difference between data reported by MS and Eurostat data for each historic time step for which data is available by both sources.
Potential corrective action	No

Threshold for significance	No
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Projected numbers for GDP, population and gross inland consumption should start from historical values to ensure time series consistency. This check will be performed by determining the percent difference between data reported by MS and surrogate data for each historic time step for which data is available by both sources. Surrogate data for GDP, population and gross inland consumption is taken from Eurostat.

Historic values should be very close to the data reported in the datasets indicated above. Small differences may occur if data in the surrogate data set was updated after the preparation of each individual projection. It can be assumed that historic values should only differ insignificantly after updates of surrogate data sets, but a certain discrepancy should be taken into account and not be considered as an implausibility indication. The deviation is calculated as the difference between data surrogate data source and MS' parameter data divided by the data of the surrogate data source. If no explanations are found, the ETC/ACM will consult the MS to identify the reason.

3.1.6.3. Net electricity import check (C5c)

Name of check	Net electricity import check
Objective	Assess consistency and accuracy of MS' submission (MMR Art. 12(2))
Method	An EU-28 aggregate will be calculated and a map will be designed to visualize numbers of electricity imports/exports.
Potential corrective action	No
Threshold for significance	No

Projections for net electricity import are mostly done by each MS without taking into account projections of other MS on this issue. With this check, numbers will be compared across MS and for the first time it will be checked if these projected numbers match for future years.

Net electricity imports reported by MS are summed up to an EU-28 aggregate. Additionally, on a map we visualize, for each MS, whether they import or export electricity by a specific colour (with different colour intensities) to gain insights into the spatial distribution of electricity imports/exports. MS will be informed about the results of this comparison. No corrective action will be applied by the ETC/ACM.

3.1.6.4. Check against EC recommended parameters (C5d)

This check is undertaken in order to explore whether the recommended parameters by the EC have been considered by Member States in their projections.¹

Name of check	Check against EC parameter recommendations
Objective	Assess consistency and comparability of MS' submission (MMR Art. 12(2))
Method	Data for projected years (2015, 2020, 2025, 2030, 2035) will be checked against recommended values.

¹ EC (2015): Recommended parameters for reporting on GHG projections in 2015. Final after consultation, 17 June 2014. In subsequent reporting years the respective recommendations provided will be used for checking.

Potential corrective action	No
Threshold for significance	No

This check is implemented for population, GDP, carbon price, gas, coal and oil import prices. This check is for informational purposes only. No corrective action will be applied.

3.1.7 ETS/ESD check (C6)

Name of check	ETS/ESD check
Objective	Assess consistency and comparability of MS' submission (MMR Art. 12(2))
Method	The ETS/ESD split from emission inventories will be compared to the ETS split reported in projections files for main source categories and the latter will be checked for inconsistencies.
Potential corrective action	Data gap-filling (A1e)
Threshold for significance	Yes

Projected emissions shall be reported separately for ETS and ESD emissions for each source category. ETS splits, calculated as ETS emissions divided by total emissions per category, should be consistent and plausible between inventory data and projections for historic years and should change along the timeline only in small steps. These splits allow a fast analysis of underlying shares of emissions under the ETS and ESD sector.

Firstly, it will be checked if total projected emissions have been reported separately for emissions in ETS and ESD sector. If this is not the case on the level of total GHG, gap-filling will take place as explained in XXXXXXXX

If ETS and ESD emissions are reported separately, the ETS split calculated from emission inventories and ETS data will be compared to the ETS split reported in projections files for the reference year for total GHG emissions as well as the main source categories. Differences will occur because of different years considered but also possibly also because of different ETS scopes or GWP used. If the difference between ETS split from inventories and reference year of projections is higher than 5 %, the ETC/ACM reviewer will ask the MS for clarification. No correction will take place.

Secondly, projected ETS splits will be calculated along the timeline and checked for time series consistency. If no change of ETS split can be seen on the level of total GHG, MS will be asked for clarification because it can be assumed that ETS emissions have not been projected in sufficient detail. If MS do not correct this assumption, a corrective action will take place as explained in XXXXXXXXXXXXXXXX

If the annual change of ETS splits is higher or lower than a defined threshold, MS will be asked for underlying reasons of this. This threshold will be quantified in the moment where an overview of MS projections is available.

3.2 Phase II - Corrective actions

Phase II consists of the following corrective actions:

- Data gap-filling (A1)
- Reference year (RY) calibration (A2)
- Error correction (A3)

3.2.1 Data gap-filling (A1)

In the following section different gap-filling methods are described. Examples are provided to demonstrate transparently how the ETC/ACM may fill data gaps.

Objective of data gap-filling: Seek to ensure **completeness and comparability** of Union projections according to **MMR Art.12(2)** by implementing procedures to estimate any missing data from national projections in consultation with MS according to **MMR Art.14(3)**.

3.2.1.1. Linear interpolation of intermediate years (A1a)

Name of corrective action	Linear interpolation of intermediate years
Method	It is good practice to provide data for intermediate years (e.g. 2016-2019). In case MS cannot provide intermediate reporting years, the dataset may be gap-filled by linear interpolation as required to compile Union projections.

In order to fill the data gaps between mandatory reporting years (e.g. 2016-2019) the ETC/ACM reviewer applies linear interpolation between the reported years. The interpolation is applied for CO_{2eq} on sectoral and total level.

Table 3-3 Reported by Member State

		Total GHG (kt CO _{2eq})					
Years		2015	2016	2017	2018	2019	2020
Sector							
1A	1000						800
2B	150						50

Table 3-4: Gap-filled by ETC/ACM (A1a)

		Total GHG (kt CO _{2eq})					
Years		2015	2016	2017	2018	2019	2020
Sector							
1A	1000		960	920	880	840	800
2B	150		130	110	90	70	50

3.2.1.2. Gap-filling of mandatory reporting years (A1b)

Name of corrective action	Gap-filling of mandatory reporting years
Method	In case MS cannot provide data for the mandatory reporting years 2015, 2020, 2025, 2030 or 2035 (MMR Art.14(1)), the dataset will be gap-filled using a surrogate dataset (if available) or extrapolation, as required to compile complete Union projections.

In order to fill the data gaps of mandatory reporting years (e.g. 2015) the ETC/ACM reviewer applies linear interpolation between reported years. The interpolation is applied for CO_{2eq} on sectoral and total level. When a MS only reports data from 2012 – 2020, but no data for 2025, 2030 and 2035, the ETC/ACM reviewer will extend too short time series to the mandatory projection horizon. This will be done by using the relative change for these years of the latest available Commission projection.

If no appropriate Commission projection is available, the pre-2020 trend of the national projections may be extrapolated.

Table 3-5 Reported by MS

		Total GHG (kt CO _{2eq})		
Years		2020	2025	2030
Sector				
1A		1000		
2B		150		

Gap-filled by ETC/ACM:

Latest available Commission projection²:

Sector 1A: Change 2020-2025: +4% Sector 2B: Change 2020-2025: 0.5%

Change 2025-2030: -2%

Change 2025-2030: -1%

Table 3-6: Gap-filled by ETC/ACM (A1b)

		Total GHG (kt CO _{2eq})		
Years		2020	2025	2030
Sector				
1A		1000	1040	1019.2
2B		150	150.8	149.2

3.2.1.3. Sectoral gap-filling (A1c)

Name of corrective action	Sectoral gap-filling
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² **Status March 2015:** The latest available Commission projection is the EU-28 2013 climate policy “baseline with adopted measures” (BAM) projection prepared and consulted with Member State experts in the framework of the EUCLIMIT project. Full project title: Development and application of EU economy-wide climate mitigation modelling capacity. Website: <http://www.euclimit.eu>. An update is expected by the end of 2015.

Method	In case MS cannot provide data organised by sector and gas (MMR Art.14(1)), the dataset will be gap-filled by using the relative shares of sectors of a surrogate dataset (if available), as required to compile sectoral Union projections. No gap-filling is foreseen for a missing gas split.
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In order to gap-fill a missing sectoral split, the ETC/ACM reviewer applies relative shares of sectors of the latest available Commission projection.

If no appropriate Commission projection is available, the relative share of sectors of previously reported national projections may be used.

Example 1:

Reported by MS: Sector 1A2 is not reported nor included in the Total emissions

Table 3-7 Reported by MS

Sector	Total GHG (kt CO2eq)					
	2015	2016	2017	2018	2019	2020
Total (excl. LULUCF)	1574	1580	1578	1548	1547	1533
Energy total (1)	800	810	790	760	750	740
Energy supply (1A1 + 1B+1C)	60	55	55	54	54	51
Energy use industry (1A2)						
Transport (1A3)	650	655	670	671	680	680
Energy use in households, services and other (1A4 + 1A5)	40	41	42	41	40	40
Industrial Process (2)	5	2	2	2	2	2
Agriculture (3)	11	10	12	13	14	13
Waste (5)	8	7	7	7	7	7

Gap-filling by ETC/ACM:

Latest available Commission projection³:

Table 3-8: Relative share of total emissions for sector: energy use industry (1A2)

	2015	2016	2017	2018	2019	2020
Energy use industry (1A2)	5%	4%	4%	3.5%	3%	3%

³ **Status March 2015:** The latest available Commission projection is the EU-28 2013 climate policy “baseline with adopted measures” (BAM) projection prepared and consulted with Member State experts in the framework of the EUCLIMIT project. Full project title: Development and application of EU economy-wide climate mitigation modelling capacity. Website: <http://www.euclimit.eu>. An update is expected by the end of 2015.

Table 3-9: Corrected table (A1c)

Sector	Total GHG (kt CO ₂ eq)					
	2015	2016	2017	2018	2019	2020
Total (excl. LULUCF) *	1653	1643	1641	1602	1593	1579
Energy total (1)	800	810	790	760	750	740
Energy supply (1A1 + 1B+1C)	60	55	55	54	54	51
Energy use industry (1A2)	79	63	63	54	46	46
Transport (1A3)	650	655	670	671	680	680
Energy use in households, services and other (1A4 + 1A5)	40	41	42	41	40	40
Industrial Process (2)	5	2	2	2	2	2
Agriculture (3)	11	10	12	13	14	13
Waste (5)	8	7	7	7	7	7

*Note: This changes the national total.

Example 2:

The MS only reports emission for sector 1, but no disaggregation on sub-sectoral level.

Table 3-10: Reported by MS

Sector	Total GHG (kt CO ₂ eq)					
	2015	2016	2017	2018	2019	2020
Total (excl. LULUCF)	1574	1580	1578	1548	1547	1533
Energy total (1)	800	810	790	760	750	740
Energy supply (1A1 + 1B+1C)						
Energy use industry (1A2)						
Transport (1A3)						
Energy use in households, services and other (1A4 + 1A5)						
Industrial Process (2)	5	2	2	2	2	2
Agriculture (3)	11	10	12	13	14	13
Waste (5)	8	7	7	7	7	7

Gap-filling by ETC/ACM:

Latest available Commission projection⁴:

Table 3-11: Relative share of sub-sectors in sector 1

	2015	2016	2017	2018	2019	2020
Energy supply (1A1 + 1B+1C)	31%	32%	34%	33%	33%	32%
Energy use industry (1A2)	15%	14%	14%	13.5%	13%	13%
Transport (1A3)	25%	29%	28%	30%	27%	26%
Energy use in households, services and other (1A4 + 1A5)	29%	25%	24%	27%	27%	29%

Table 3-12: Gap-filled dataset (A1c)

Sector	Total GHG (kt CO ₂ eq)					
	2015	2016	2017	2018	2019	2020
Total (excl. LULUCF) ^(a)	1574	1580	1578	1548	1547	1533
Energy total (1)	800	810	790	760	750	740
Energy supply (1A1 + 1B+1C)	248	259	269	251	248	237
Energy use industry (1A2)	120	113	111	103	98	96
Transport (1A3)	200	235	221	228	203	192
Energy use in households, services and other (1A4 + 1A5)	232	203	190	205	203	215
Industrial Process (2)	5	2	2	2	2	2
Agriculture (3)	11	10	12	13	14	13
Waste (5)	8	7	7	7	7	7

^(a) Note: In this example the Total is not changed.

3.2.1.4. Gap-filling of Memo items (A1d)

Name of corrective action	Gap-filling of Memo items
Method	In case MS cannot provide data for mandatory memo items (international bunkers, international aviation), the dataset will be gap-filled by using the value of the latest historic inventory year for the entire time-series, as required to compile complete Union projections.

⁴ **Status March 2015:** The latest available Commission projection is the EU-28 2013 climate policy “baseline with adopted measures” (BAM) projection prepared and consulted with Member State experts in the framework of the EUCLIMIT project. Full project title: Development and application of EU economy-wide climate mitigation modelling capacity. Website: <http://www.euclimit.eu>. An update is expected by the end of 2015.

If the time series of memo items (international bunkers, international aviation) is missing, the latest historic value of the latest available national inventory is applied to the future time series.

3.2.1.5. Gap-filling of ETS/ESD split (A1e)

Name of corrective action	Gap-filling of ETS/ESD split
Method	In case MS cannot provide data split by ETS/ESD (MMR Art.14(1)(b)) but the total emissions are available or the ETS split is constant over the projected time series, the dataset will be adjusted /gap-filled by using a relative ETS/ESD share of the total emissions of a surrogate dataset. If total emissions are not available or the growth rate of the ESD sector of a surrogate dataset will be used to extrapolate the MS' trend. The ETS/ESD split is required to compile Union ESD projections. No detailed gap-filling is foreseen for a missing sectoral ETS/ESD split.

If MS do not provide GHG emissions for ETS and ESD sectors or the projected ETS split is constant over the projected time series, the ETC/ACM reviewer applies option a) in case total emissions are provided and option b) in case total emissions are not reported by MS.

- a) The relative ETS/ESD share for 2020 of the latest available Commission projection will be applied to the total that has been reported by MS.
- b) The 2005-2020 growth rate of ETS and non ETS emissions of the latest available Commission projection will be applied to the non-ETS emissions.

No detailed gap-filling is foreseen for a missing sectoral ETS/ESD split.

Example:

In the case that:

- no ETS/ESD projection is reported but projection of total GHG is available
- or projected ETS split is constant

an adjustment will take place:

$$\text{ESD (year } n) = \text{Total GHG (n)} * \text{ESD share (n) of EC projection}$$

In the case that no projection of total emission is reported, ESD data will be gap-filled:

$$\text{ESD (year } n) = \text{Total emissions of latest inventory year} * \text{ESD Growth rate of EC projection (n-2010)}$$

3.2.1.6. Gap-filling of WAM (A1f)

Name of corrective action	Gap-filling of WAM
Method	Where available , a WAM and a WOM scenario shall be reported (MMR Art. 14(1)(a)). In case MS cannot provide a WAM scenario, the dataset will be gap-filled by using the WEM scenario as WAM scenario, in order to compile a Union projections WAM scenario. No gap-filling is foreseen for a missing WOM.

The ETC/ACM will use the national WEM scenario reported by MS as WAM scenario.

3.2.2 Reference year calibration (A2)

Objective of reference year calibration: Seek to ensure time-series **consistency and accuracy** of Union projections (**MMR Art.12(2)**) by implementing procedures to recalibrate the starting year (reference year) of MS national projections to the historic inventory year in consultation with MS.

Name of corrective action	RY calibration
Method	It is good practice that the reference year of emission projections (RY) is consistent with the respective historic year of the emission inventory. In case MS show significant inconsistencies between RY and inventory year, the projections trend will be recalibrated and aligned to the historic year, as required to compile consistent Union projections.

The starting year of national projections is defined as reference year. If the reference year shows significant inconsistencies with the respective historic year from the latest available national inventory, the projected trend will be recalibrated. To calibrate MS' projections with historic inventory data, a calibration factor will be calculated and multiplied with the MS' time-series (sectoral and total emissions).

$$\text{calibration factor} = \frac{\text{inventory year}}{\text{reference year}}$$

Example:

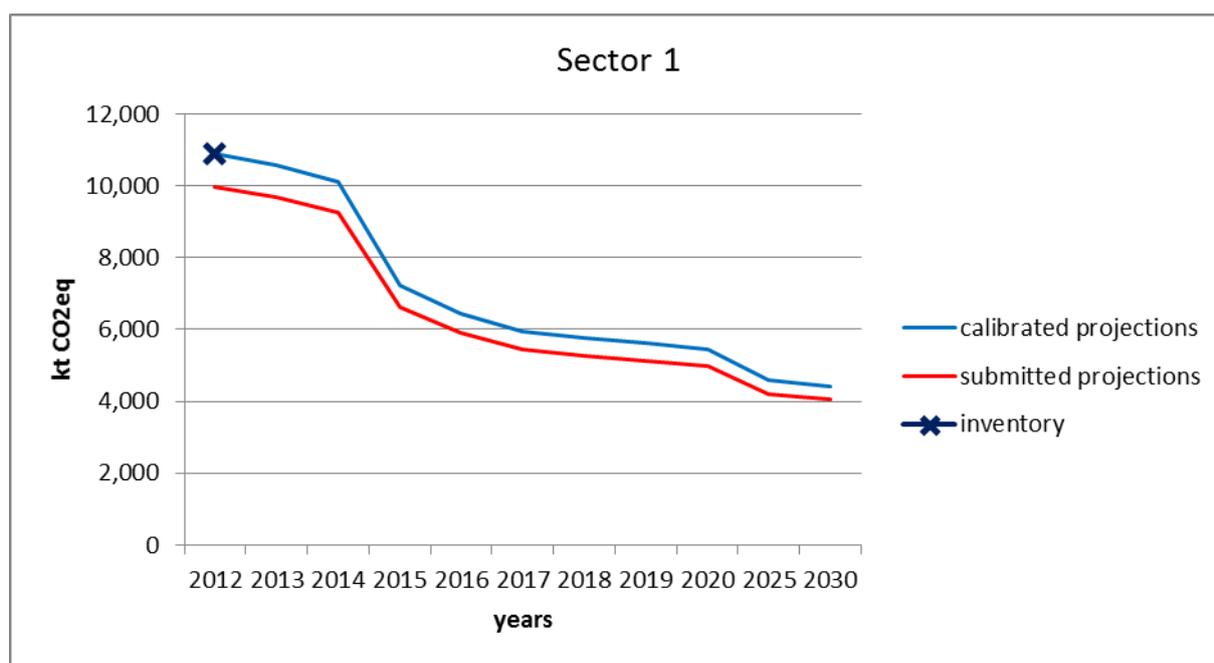
Sector 1 emissions of a MS:

RY 2012: 9 953 kt CO_{2eq}

Inventory year 2012: 10 879 kt CO_{2eq}

- Calibration factor: 1.093
- Time series will of sector 1 be multiplied with this factor

3-5 Example of a reference year calibration (A2)



3.2.3 General error correction (A3)

Name of corrective action	Error correction
Method	If a potential error cannot be clarified or corrected by MS, general error correction will be applied (e.g. unit correction, sum correction), as required to compile accurate Union projections.

Here the correction of general errors such as units and copy paste errors are included. As there is no general method for this type of corrective action, a suitable method will be applied for each specific case.

3.3 Phase III - QC of Union GHG projections

In phase III the ETC/ACM repeats a selected set of checks to the final corrected dataset in order to make sure that no errors have been introduced during Phase II. The following checks will be performed in this phase (see description in previous chapters):

- Sum check (C4a)
- Outlier check (C4c)
- ETS/ESD check (C6)

The sum check will be extended and performed not only on a sectoral, but also on a MS level to ensure that no errors have been introduced during the aggregation of MS' projections to Union GHG projections

Abbreviations

BAM	Baseline with Adopted Measures
CDR	Central Data Repository
DG CLIMA	Directorate-General for Climate Action
EC	European Commission
EEA	European Environment Agency
ESD	Effort Sharing Decision
ETC/ACM	European Topic Centre for Air Pollution and Climate Change Mitigation
ETS	European Trading System
EU	European Union
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land Use, Land-Use Change and Forestry
MMD	Monitoring Mechanism Decision
MMR	Monitoring Mechanism Regulation
MS	Member State
NIR	National Inventory Report
PaMS	Policies and Measures
QA	Quality Assurance
QC	Quality Control
RY	Reference Year
SWD	Commission Staff Working Document
TCCCA	Transparency, Consistency, Completeness, Comparability, Accuracy
UNFCCC	United Nations Framework Convention on Climate Change
WAM	With Additional Measures
WEM	With Existing Measures
WOM	Without Measures

Table 3-14 Example of status files (completeness and gap-filling) (1/3)

Status & completeness report for								
MEMBER STATE								
General information		Date of receipt			Date of resubmission		Comments	
	Projections report	not available						
	Excel template						The MS has not used the template for reporting	
	Reference year							
	Projections provided for years							
	Gases covered	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Reporting obligation	Article 14 of Regulation (EU) No. 525/2013						
	Language	English						
	Correct geographical coverage	<input type="checkbox"/>						
		Sheets included			Comments			
	Emission projections	<input type="checkbox"/>						
	Projections parameters	<input type="checkbox"/>						
	Projection indicators	<input type="checkbox"/>						
	EU ETS split	<input type="checkbox"/>						
	Description included in the report			Comments				
Methodologies	<input type="checkbox"/>			No report submitted				
Models	<input type="checkbox"/>			No report submitted				
Underlying Assumptions	<input type="checkbox"/>			No report submitted				
Sensitivity analysis	<input type="checkbox"/>			No report submitted				

Table 3-15 Example of status files (completeness and gap-filling) (2/3)

PART I: Sectors included in the projections								
Sectoral split	Sector	Energy	Energy	Industrial Processes	Solvent and other Product Use	Agriculture	LULUCF	Waste
		1 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
	Sub-sectors	1.A <input type="checkbox"/>	1.A.4 <input type="checkbox"/>	2.A <input type="checkbox"/>	3.A <input type="checkbox"/>	4.A <input type="checkbox"/>	5.A <input type="checkbox"/>	6.A <input type="checkbox"/>
		1.A.1 <input type="checkbox"/>	1.A.4.a <input type="checkbox"/>	2.B <input type="checkbox"/>	3.B <input type="checkbox"/>	4.B <input type="checkbox"/>	5.B <input type="checkbox"/>	6.B <input type="checkbox"/>
		1.A.1.a <input type="checkbox"/>	1.A.4.b <input type="checkbox"/>	2.C <input type="checkbox"/>	3.C <input type="checkbox"/>	4.C <input type="checkbox"/>	5.C <input type="checkbox"/>	6.C <input type="checkbox"/>
		1.A.1.b <input type="checkbox"/>	1.A.4.c <input type="checkbox"/>	2.D <input type="checkbox"/>	3.D <input type="checkbox"/>	4.D <input type="checkbox"/>	5.D <input type="checkbox"/>	6.D <input type="checkbox"/>
		1.A.1.c <input type="checkbox"/>	1.A.5 <input type="checkbox"/>	2.E <input type="checkbox"/>		4.E <input type="checkbox"/>	5.E <input type="checkbox"/>	
		1.A.2 <input type="checkbox"/>	1.A.5.a <input type="checkbox"/>	2.F <input type="checkbox"/>		4.F <input type="checkbox"/>	5.F <input type="checkbox"/>	
		1.A.3 <input type="checkbox"/>	1.A.5.b <input type="checkbox"/>	2.G <input type="checkbox"/>		4.G <input type="checkbox"/>	5.G <input type="checkbox"/>	
		1.A.3.a <input type="checkbox"/>	1.B <input type="checkbox"/>					
1.A.3.b <input type="checkbox"/>		1B1 <input type="checkbox"/>						
1.A.3.c <input type="checkbox"/>		1B2 <input type="checkbox"/>						
1.A.3.d <input type="checkbox"/>								
1.A.3.e <input type="checkbox"/>								
Total	including LULUCF <input type="checkbox"/>	excluding LULUCF <input type="checkbox"/>						
Memo Items	International Bunkers <input type="checkbox"/>	Aviation <input type="checkbox"/>	Marine <input type="checkbox"/>					
GHG split		CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
	Provided for years	2010, 2015, 2020 <input type="checkbox"/>	2010, 2015, 2020 <input type="checkbox"/>	2010, 2015, 2020 <input type="checkbox"/>	2010, 2015, 2020 <input type="checkbox"/>	2010, 2015, 2020 <input type="checkbox"/>	2010, 2015, 2020 <input type="checkbox"/>	
		correct unit (Gg CO ₂ eq) <input type="checkbox"/>	correct unit (Gg CH ₄) <input type="checkbox"/>	correct unit (Gg N ₂ O) <input type="checkbox"/>	correct unit (Gg CO ₂ eq) <input type="checkbox"/>	correct unit (Gg CO ₂ eq) <input type="checkbox"/>	correct unit (Gg CO ₂ eq) <input type="checkbox"/>	
		intermediate years <input type="checkbox"/>	intermediate years <input type="checkbox"/>	intermediate years <input type="checkbox"/>	intermediate years <input type="checkbox"/>	intermediate years <input type="checkbox"/>	intermediate years <input type="checkbox"/>	
	2025, 2030 <input type="checkbox"/>	2025, 2030 <input type="checkbox"/>	2025, 2030 <input type="checkbox"/>	2025, 2030 <input type="checkbox"/>	2025, 2030 <input type="checkbox"/>	2025, 2030 <input type="checkbox"/>		
Scenario	Scenarios provided	WEM <input type="checkbox"/>	WAM <input type="checkbox"/>	WOM <input type="checkbox"/>				
EU ETS split		EU ETS	all sectors	EU non-ETS	all sectors	Scope III		
	provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	provided for years	2010, 2015, 2020 <input type="checkbox"/>	<input type="checkbox"/>	2010, 2015, 2020 <input type="checkbox"/>	<input type="checkbox"/>			
	intermediate years <input type="checkbox"/>	<input type="checkbox"/>	intermediate years <input type="checkbox"/>	<input type="checkbox"/>				
Notation keys and blanks	Used for mandatory years	<input type="checkbox"/>						
	Use of	NA <input type="checkbox"/>	NE <input type="checkbox"/>	NO <input type="checkbox"/>	IE <input type="checkbox"/>	blanks <input type="checkbox"/>		
	Comments							

Table 3-16 Example of status files (completeness and gap-filling) (3/3)

PART II: Provision of projection parameters							
	Parameter	Units provided	2010	2015	2020	intermediate years	Scenario (WEM&WAM)
	Projection parameters	Carbon Price (€/t CO ₂ e)	<input type="checkbox"/>				
GDP (€ at constant prices)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Population (thousand people)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
International energy import price for coal (€/boe)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross inland consumption - liquid fuels (fossil)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross inland consumption - solid fuels (fossil)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross inland consumption - gaseous fuels (fossil)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross inland consumption - biomass		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross inland consumption - nuclear		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
International energy import price for oil (€/boe)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
International energy import price for gas (€/boe)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
International energy import price for coal (€/boe)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Net electricity import (-/+)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heating degree days		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooling degree days		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Average floor space per dwelling (m ² /dwelling)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total cattle (1000 heads)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sheep (1000 heads)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swine (1000 heads)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poultry (1000 heads)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fertilizer used (synthetic & manure) (kt nitrogen)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy demand transport		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gasoline (incl. of which biofuels)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diesel (incl. of which biofuels)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jet Kerosene		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other liquid fuels		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gas (fossil)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electricity		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Renewables		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reporting of priority indicators		Indicator	indicator	numerator	denominator	mandatory years	
	1 Macro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2 Transport CO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3 Transport D0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4 Industry A1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5 Households A1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6 Service A0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7 Transformation B0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	8 Agriculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9 Agriculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Table 3-17 Example of a status file or the gap-filling and calibration

Calibration and gapfilling																										
MEMBER STATE: select MS																										
Total GHG emissions																										
WEM	GHG	Sector calibrated for whole time series due to reference year calibration	projection base year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Corrective action applied	
Energy total (1)	Total GHG CO2eq	<input type="checkbox"/>																								
Energy supply (1A1 + 1B + 1C)	Total GHG CO2eq	<input checked="" type="checkbox"/>																								
Energy – industry, construction (1A2)	Total GHG CO2eq	<input checked="" type="checkbox"/>																								
Energy – Other sectors (commercial, residential,...) (1A4+1A5)	Total GHG CO2eq	<input checked="" type="checkbox"/>																								
Transport - energy (1A3)	Total GHG CO2eq	<input checked="" type="checkbox"/>																								
Industrial processes (2)	Total GHG CO2eq	<input checked="" type="checkbox"/>																								
Agriculture (3)	Total GHG CO2eq	<input checked="" type="checkbox"/>																								
LULUCF (4)	Total GHG CO2eq	<input type="checkbox"/>																								
Waste (5)	Total GHG CO2eq	<input type="checkbox"/>																								
Total (excl. LULUCF)	Total GHG CO2eq	<input type="checkbox"/>																								
Internat. Bunkers: Aviation	Total GHG CO2eq	<input type="checkbox"/>																								
Internat. Bunkers: Marine	Total GHG CO2eq	<input checked="" type="checkbox"/>																								
International aviation in the EU ETS	Total GHG CO2eq	<input type="checkbox"/>																								