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# Report on the individual review of the annual submission of Italy submitted in 2016*

## Note by the expert review team

*Summary*

Each Party included in Annex I to the Convention must submit an annual greenhouse gas (GHG) inventory covering emissions and removals of GHG emissions for all years from the base year (or period) to two years before the inventory due date (decision 24/CP.19). Parties included in Annex I to the Convention that are Parties to the Kyoto Protocol are also required to report supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol, with the inventory submission due under the Convention. This report presents the results of the individual inventory review of the 2016 annual submission of Italy, conducted by an expert review team in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol". The review took place from 26 September to 1 October 2016 in Bonn, Germany.

* In the symbol for this document, 2016 refers to the year in which the inventory was submitted, not to the year of publication.

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# I. Introduction[1]

1. This report covers the review of the 2016 annual submission of Italy organized by the UNFCCC secretariat, in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1, as revised by decision 4/CMP.11) (hereinafter referred to as the Article 8 review guidelines). As indicated in the Article 8 review guidelines, this review process also encompasses the review under the Convention, as described in the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" (hereinafter referred to as the UNFCCC review guidelines) and particularly part III, "UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention". The review took place from 26 September to 1 October 2016 in Bonn, Germany, and was coordinated by Mr. Simon Wear and Mr. Vitor Gois Ferreira (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT) that conducted the review of Italy.

Table 1
**Composition of the expert review team that conducted the review of Italy**

| *Area of expertise* | *Name* | *Party* |
|---|---|---|
| Generalist | Ms. Lea Kai Aboujaoude | Lebanon |
| | Mr. Lindsay Pratt | Canada |
| Energy | Mr. Sangay Dorji | Bhutan |
| | Ms. Inga Konstantinaviciute | Lithuania |
| | Ms. Laetitia Nicco | France |
| | Ms. Awassada Phongphiphat | Thailand |
| IPPU | Ms. Mausami Desai | United States of America |
| | Mr. David Kuntze | Germany |
| | Ms. Emilija Poposka | The former Yugoslav Republic of Macedonia |
| Agriculture | Ms. Agita Gancone | Latvia |
| | Ms. Sumaya Ahmed Zakieldeen | Sudan |
| LULUCF | Ms. María Fernanda Alcobé | Argentina |
| | Mr. Nijavalli Ravindranath | India |
| | Ms. Yasna Rojas Ponce | Chile |
| Waste | Ms. Kaat Jespers | Belgium |

[1] At the time of publication of this report, Italy had submitted its instrument of ratification of the Doha Amendment; however, the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

| *Area of expertise* | *Name* | *Party* |
|---|---|---|
| | Ms. Hlobsile P. Sikhosana-Shongwe | Swaziland |
| Lead reviewers | Ms. Lea Kai Aboujaoude | |
| | Mr. David Kuntze | |

*Abbreviations*: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry.

2. This report contains findings based on the assessment by the ERT of the 2016 annual submission against the Article 8 review guidelines. The ERT has made recommendations to resolve those findings related to issues,[2] including issues related to problems.[3] Other findings, and if applicable, the ERT encouragements to resolve them, are also included.

3. A draft version of this report was communicated to the Government of Italy, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

4. Annex I shows annual greenhouse gas emissions for Italy, including totals excluding and including the land use, land-use change and forestry sector, indirect carbon dioxide emissions and emissions by gas and by sector. Annex I also contains background data related to emissions and removals from activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and additional activities under Article 3, paragraph 4, of the Kyoto Protocol, if elected, by gas, sector and activity for Italy.

5. Information to be included in the compilation and accounting database can be found in annex II.

6. The ERT notes that Italy's 2015 annual submission was delayed, consistent with decision 6/CMP.9, paragraph 4. As a result, the review of the 2016 annual submission is being held in conjunction with the review of the 2015 annual submission, in accordance with decision 10/CMP.11, paragraph 1. To the extent that identical information is presented in both annual submissions, the ERT has reviewed this information only once, and, as appropriate, has replicated the findings below in both the 2015 and the 2016 annual review reports.

# II. Summary and general assessment of the 2016 annual submission

7. Table 2 provides the ERT assessment of the annual submission with respect to the tasks undertaken during the review. Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.

[2] Issues are defined in decision 13/CP.20, annex, paragraph 81.

[3] Problems are defined in decision 22/CMP.1, annex, paragraphs 68 and 69, as revised by decision 4/CMP.11.

Table 2
**Summary of review results and general assessment of the inventory of Italy**

| *Assessment* | | | *Issue or problem ID #(s) in tables 3 and/or 5*[a] |
|---|---|---|---|
| Date of submission | Original submission: 15 April 2016 (NIR), 15 April 2016, v3 (CRF tables), 14 April 2016 (SEF tables)<br>Revised submission: 10 June 2016 (SEF tables)<br>The values from the latest submission are used in this report | | |
| Review format | Centralized | | |
| Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and Wetlands Supplement (if applicable) | Have any issues been identified in the following areas: | | |
| | 1. Identification of key categories | No | |
| | 2. Selection and use of methodologies and assumptions | Yes | W.1, KL.2 |
| | 3. Development and selection of emission factors | Yes | E.3, A.6 |
| | 4. Collection and selection of activity data | Yes | E.4, E.5, E.7, I.9, A.10 |
| | 5. Reporting of recalculations | Yes | E.2 |
| | 6. Reporting of a consistent time series | Yes | I.17, W.2 |
| | 7. Reporting of uncertainties, including methodologies | Yes | W.1, KL.2 |
| | 8. QA/QC | QA/QC procedures were assessed in the context of the national system (see below) | |
| | 9. Missing categories/completeness[b] | No | |
| | 10. Application of corrections to the inventory | No | |
| Significance threshold | For categories reported as insignificant, has the Party provided sufficient information showing that the likely level of emissions meets the criteria in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines? | The Party did not report "NE" for any insignificant categories | |
| Description of trends | Did the ERT conclude that the description in the NIR of the trends for the different gases and sectors is reasonable? | Yes | |
| Supplementary information under the Kyoto Protocol | Have any issues been identified in the following areas: | | |
| | 1. National system: | | |
| | (a) The overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements | No | |
| | (b) Performance of the national system functions | No | |

| *Assessment* | | | *Issue or problem ID #(s) in tables 3 and/or 5*[a] |
|---|---|---|---|
| | 2. National registry: | | |
| | (a) Overall functioning of the national registry | No | |
| | (b) Performance of the functions of the national registry and the technical standards for data exchange | No | |
| | 3. ERUs, CERs, AAUs and RMUs and on information on discrepancies reported in accordance with decision 15/CMP.1, annex, chapter I.E, taking into consideration any findings or recommendations contained in the SIAR | No | |
| | 4. Matters related to Article 3, paragraph 14, of the Kyoto Protocol, specifically problems related to the transparency, completeness or timeliness of reporting on the Party's activities related to the priority actions listed in decision 15/CMP.1, annex, paragraph 24, including any changes since the previous annual submission | No | |
| | 5. LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol: | | |
| | (a) Reporting in accordance with the requirements of decision 2/CMP.8, annex II, paragraphs 1–5 | Yes | KL.2 |
| | (b) The Party has demonstrated methodological consistency between the reference level and reporting on forest management in accordance with decision 2/CMP.7, annex, paragraph 14 | Yes | KL.4 |
| | (c) The Party has reported information in accordance with decision 6/CMP.9 | Yes | KL.3 |
| | (d) Country-specific information has been reported to support provisions for natural disturbances, in accordance with decision 2/CMP.7, annex, paragraphs 33 and 34 | No | |
| | (e) Other issues | No | |
| CPR | Was the CPR reported in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision 1/CMP.8, paragraph 18? | Yes | |
| Adjustments | Has the ERT applied an adjustment under Article 5, paragraph 2, of the Kyoto Protocol? | No | |
| | The ERT accepts that the revised estimate submitted by Italy in its 2016 submission can replace a previously applied adjustments in the compilation and accounting database | NA | |
| Response from the Party during the review | Has the Party provided the ERT with responses to the questions raised, including the data and information necessary for the assessment of conformity with the | Yes | |

| *Assessment* | | | *Issue or problem ID #(s) in tables 3 and/or 5*[a] |
|---|---|---|---|
| | UNFCCC Annex I inventory reporting guidelines and any further guidance adopted by the Conference of the Parties? | | |
| Recommendation for an exceptional in-country review | On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review? | No | |
| Question of implementation | Did the ERT list a question of implementation? | No | |

*Abbreviations*: AAU = assigned amount unit, CER = certified emission reduction unit, CPR = commitment period reserve, CRF = common reporting format, ERT = expert review team, ERU = emission reduction unit, LULUCF = land use, land-use change and forestry, NE = not estimated, NIR = national inventory report, QA/QC = quality assurance/quality control, RMU = removal unit, SEF = standard electronic format, SIAR = standard independent assessment report, UNFCCC Annex I inventory reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories" , Wetlands Supplement = *2013 Supplement to the 2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories: Wetlands*.

[a] The ERT identified additional issues in all sectors that are not specifically listed in table 2 but are included in table 3 and/or 5.

[b] Missing categories, for which methods are provided in the *2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories*, may affect completeness and are listed in annex III to this document.

# III. Status of implementation of issues and/or problems raised in the previous review report

8. Table 3 compiles all the recommendations made in the previous review report. Owing to the unique circumstances of the 2015 annual submission described in paragraph 6 above, the latest available review report was for the review of the 2014 annual submission, published on 3 March 2015. For each issue and/or problem, the ERT specified whether it believes the issue and/or problem has been resolved by the conclusion of the review of the 2016 annual submission and provided the rationale for its determination, taking into consideration the publication date of the previous review report and national circumstances.

Table 3
**Status of implementation of issues and/or problems raised in the previous review report of Italy**

| *ID#* | *Issue classification*[a, b] | *Recommendation made in previous review report*[c] | *ERT assessment and rationale* |
|---|---|---|---|
| General | | | |
| G.1 | Uncertainty analysis (table 4, 13, 2014) Adherence to the UNFCCC Annex I inventory reporting guidelines | Include more information on the assumptions and references used to estimate uncertainties in the category-specific chapters or in an annex to the NIR | Resolved |
| Energy | | | |
| E.1 | 1.B.1.b Solid fuel transformation – $CH_4$ (28, 2014) Transparency | Provide information in the NIR on the charcoal production process, including information on when in the time series the modern technology replaced conventional technology | Resolved. Information on the charcoal production process has been reported in the NIR, section 3.3.3 (1.A.1.c Manufacture of solid fuels) |

| *ID#* | *Issue classification*[a, b] | *Recommendation made in previous review report*[c] | *ERT assessment and rationale* |
|---|---|---|---|
| | | | (see E.10, table 5) |
| IPPU | | | |
| I.1 | 2. General (IPPU) – (31, 2014) Transparency | Include in the NIR information on the legal framework of the national European Pollutant Emission Register/European Pollutant Release and Transfer Register and the type and availability of data from this system to the inventory team | Resolved. Information regarding the legal framework and the types of data used to develop the emission estimates for IPPU for both the EU ETS and European Pollutant Release and Transfer Register data collections are included in the NIR in chapter 4 |
| I.2 | 2.A.2 Lime production – $CO_2$ (39, 2014) Transparency | Include in the NIR an explanation of the minor fluctuations in the $CO_2$ IEF for lime production for the years 1990–1999 | Resolved. Justification regarding the $CO_2$ IEF fluctuations are included in the NIR in , section 4.2.2 |
| I.3 | 2.A.2 Lime production – $CO_2$ (40, 2014) (39, 2013) Accuracy | Further investigate the impact of the assumptions made in relation to the data collected for 2000–2003 and provide information in the NIR showing that those assumptions have not led to an overestimation of emissions for 2000–2003 and hence also for 1990–1999 | Resolved. The value of the emission factor from 1990 to 2000 has been officially supplied to the Italian Ministry of Environment, Land and Sea by the industrial association, in order to set the national circumstances for the implementation of the EU ETS. Relevant information was provided in the NIR (section 4.2.2) |
| I.4 | 2.A.4 Other process uses of carbonates – $CO_2$ (41, 2014) Transparency | Clarify the text in the NIR regarding the use of dolomite | Resolved. Italy included a description of the use of dolomite in its NIR in section 4.2.2 |
| I.5 | 2.A.4 Other process uses of carbonates – $CO_2$ (42, 2014) Completeness | Include mineral (stone) wool production in the emission inventory | Resolved. Mineral wool production has been taken into account and the $CO_2$ emissions have been estimated. However, these emissions are included under the energy sector together with the share of emissions related to the energy aspects |
| I.6 | 2.B.3 Adipic acid production – $N_2O$ (32, 2014) Accuracy | Correct the error identified regarding the utilization factor for the abatement system in 2012 and include the additional justification for the abatement efficiency of the sole production facility in Italy in the NIR | Resolved. The description of the abatement technology is included in the NIR in section 4.3.1, page 129, and the |

| *ID#* | *Issue classification*[a, b] | *Recommendation made in previous review report*[c] | *ERT assessment and rationale* |
|---|---|---|---|
| | | | utilization factor for 2012 was corrected |
| I.7 | 2.F. Product uses as substitutes for ozone depleting substances – HFCs (33, 2014) Transparency | Include in the NIR information concerning air-conditioning devices mounted on vehicles and metered dose inhalers, clarifying that the estimation of emissions takes into account not only the information related to national manufacturing but also to imported products | Resolved. Additional information was included in the NIR in, section 4.7.2, confirming that the estimation of emissions takes into account national manufacturing and imported products |
| I.8 | 2.F. Product uses as substitutes for ozone depleting substances – HFCs (35, 2014) Accuracy* | Provide information in the NIR to prove that a significant reduction in the leakage rates for F-gases occurred between 1999 and 2000 | Not resolved. In the NIR (section 4.7.2), it is explained that the appropriate leakage rates have been suggested by a pool of experts from several relevant national refrigeration and air-conditioning associations, and these showed a decrease in the leakage rates after 2000. However, Italy did not provide a detailed explanation of the scientific reasons and assumptions behind this significant change (e.g. by providing supporting information on regulations implemented, changes in prices of F-gases or technological improvements, as identified by the previous ERT) |
| I.9 | 2.F.3 Fire protection – HFCs (36, 2014) Accuracy* | Implement the plans for collecting and updating AD for this category | Addressing. Italy reported that contacts with the relevant industrial associations are ongoing and that further investigation is still needed |
| I.10 | 2.F. Product uses as substitutes for ozone depleting substances – HFCs (37, 2014) Transparency | Estimate emissions and identify trends using methods that are in line with IPCC good practice guidance | Resolved. Italy has revised the methodology as recommended; however, these changes are not described in the NIR) |
| I.11 | 2.G.1 Electrical equipment – HFCs, PFCs and $SF_6$ (34, 2014) Transparency | Expand the description in the NIR regarding disposal of electrical equipment and change the notation key used in the CRF tables to "NA" (not applicable) | Resolved. Additional information is provided in the NIRs regarding the treatment of F-gases in electrical equipment at disposal in |

| *ID#* | *Issue classification*[a, b] | *Recommendation made in previous review report*[c] | *ERT assessment and rationale* |
|---|---|---|---|
| | | | NIR2015 (chapter 4, section. 4.8.2, page 160) and NIR2016 (chapter 4, section. 4.8.2, page 163). The Party indicated that the notation key "IE"(included elsewhere) is appropriate because the emissions from the disposal and recovery of electrical equipment are estimated and reported in the category but not appropriately segregated by when that emission occurred during the product lifetime. To improve the accuracy of allocating this emission the Party is conducting a survey to verify the recovery rates and the decommissioning operations. The rationale of the Party for using the "IE" notation key is accepted by the ERT |
| I.12 | 2.G.1 Electrical equipment – HFCs, PFCs and $SF_6$ (34, 2014) Accuracy* | Make contact with the treatment centres to verify that the recovery rate can be assumed to be 100% | Addressing. Italy is conducting a survey to verify the recovery rates and the decommissioning operations |
| Agriculture | | | |
| A.1 | 3.B Manure management – $CH_4$ (50, 2014) Transparency | Include a description of and reference to the method used to estimate $CH_4$ emissions from cattle and buffalo and explain how the country-specific parameters of 15.32 g $CH_4$/kg volatile solids (VS) for slurry and 4.80 g $CH_4$/kg VS for solid manure were derived | Resolved. Relevant information was provided in the NIR (annex 7.2, section 5.3.2) |
| A.2 | 3.B Manure management – $CH_4$ (51, 2014) (43, 2013) Transparency | Include in the NIR information on the method used to estimate $CH_4$ emissions from swine | Resolved. Relevant information was provided in the NIR (section 5.3.2) |
| A.3 | 3.G Liming – $CO_2$ (61, 2014) Consistency | Report emissions from lime application consistently over the complete time series | Resolved. Emissions were reported for the complete time series |
| LULUCF | | | |
| L.1 | 4. General (LULUCF) (table 3, 2014) Completeness | Estimate and report emissions from the mandatory categories mineral soils on grassland remaining grassland in "other wooded lands" and living biomass and soils due to the conversion of grassland to flooded | Resolved. Italy reported the correct notation key for grasslands remaining grasslands and the estimates requested for conversion from |

| *ID#* | *Issue classification*[a, b] | *Recommendation made in previous review report*[c] | *ERT assessment and rationale* |
|---|---|---|---|
| | | land | grasslands to wetlands (see also L.2 and L.9 below) |
| L.2 | 4. General (LULUCF) (54, 2014) Transparency | Include additional information in the submission to describe the derivation of AD, methodologies and models, in particular related to methods and data sources used to construct the land-use matrices | Resolved. Italy included additional information in the NIR (pages 213 and 298) with definitions and methods applied to distinguish between forest land and other wooded land |
| L.3 | 4. General (LULUCF) (55, 2014) Comparability* | Use the notation key "NA" (not applicable) when a tier 1 zero stock change method is used referring to soil organic carbon pools for forest land remaining forest land | Not resolved. Italy changed the notation keys in some categories as recommended by the ERT (see L.1) but other categories such as carbon stock change in living biomass in the grazing land subcategory under grassland remaining grassland (reported as "NO" (not occurring)) have not been changed |
| L.4 | 4.A.1 Forest land remaining forest land – $CO_2$ (55, 2014) Comparability | Use the notation key "NA" (not applicable) when a tier 1 zero stock change method is used referring to soil organic carbon pools for forest land remaining forest land | Resolved |
| L.5 | 4.A Forest land – $CO_2$ (56, 2014) Transparency* | Document the model validations in the NIR and use 2015 NFI data to initiate model estimates until such time as the new inventory data become available | Addressing. The information from the second phase of the 2015 NFI is not yet available |
| L.6 | 4.A Forest land – $CO_2$ (57, 2014) Transparency* | Provide in the NIR documentation summarizing harvest removals from short rotation crops, coppices and high forest categories so that drivers influencing trends in biomass stock changes can be made more evident | Not resolved. The required information has not been reported |
| L.7 | 4.A Forest land – $CO_2$ (58, 2014) Transparency* | Provide definitions and thresholds for carbon pools in a table in the NIR | Not resolved. Italy provided information on the dead wood definition in its NIR (page 218) but the information in tabular format on soil, litter and thresholds for carbon pools was not provided |
| L.8 | 4.E.2 Land converted to settlements – $CO_2$ (59, 2014) Completeness | Develop methods to distinguish between shrubland and other grassland conversions to settlements and report the associated emissions from biomass and dead organic matter | Resolved. Italy reported emissions from biomass and dead organic matter distinguishing between shrubland and other grassland conversions to settlements in the CRF tables and |

| *ID#* | *Issue classification*[a, b] | *Recommendation made in previous review report*[c] | *ERT assessment and rationale* |
|---|---|---|---|
| | | | information in its NIR |
| L.9 | 4.D.2 Land converted to wetlands – $CO_2$ (60, 2014) Completeness | Estimate biomass stock changes associated with flooding of grassland and cropland | Resolved. Italy reported the estimates requested |
| L.10 | 4(I) Direct $N_2O$ emissions from nitrogen inputs to managed soils (62, 2014) Comparability* | Report direct $N_2O$ emissions from nitrogen fertilization as "IE" (included elsewhere) and transparently explain that these emissions are reported under the agriculture sector (with a cross reference to the relevant section in the NIR) | Not resolved. Italy explained in the NIR that emissions from the fertilization of plantations are reported under the agriculture sector; however, the notation key "NO" (not occurring) is still used in CRF table 4(I) |
| Waste | | | |
| W.1 | 5.C.1 Waste incineration – $CO_2$ (66, 2014) Accuracy* | Apply the time-series carbon content as well as fossil carbon fraction in line with the variation of the waste compositions, and report thereon | Not resolved. Italy has not reported in the NIR the progress made with regard to this issue and some improvements that it is still working on |
| KP-LULUCF | | | |
| | | There were no recommendations related to KP-LULUCF in the previous review report | |

*Abbreviations*: AD = activity data, CRF = common reporting format, ERT = expert review team, EU ETS = European Union Emissions Trading System, F-gas = fluorinated gas, IEF = implied emission factor, IPCC good practice guidance = Intergovernmental Panel on Climate Change *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NFI = national forest inventory, NIR = national inventory report, UNFCCC Annex I inventory reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories".

[a] References in parentheses are to the paragraph(s) and the year(s) of the previous review report(s) where the issue was raised. Issues are further classified as defined in decision 13/CP.20, annex, paragraph 81. In the review of the supplementary information reported in accordance with Article 7, paragraph 1, of the Kyoto Protocol, the ERT has applied the classification in decision 22/CMP.1, annex, paragraph 69, in conjunction with decision 4/CMP.11.

[b] An asterisk is included next to each issue type for all issues that are also problems, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

[c] The review of the 2016 annual submission is being held in conjunction with the review of the 2015 annual submission, and as such, the 2015 annual review report was not available at the time of this review. Therefore, the recommendations reflected in table 3 are from the 2014 annual review report. For the same reason, the year 2015 is excluded from the list of years in which the issue has been identified.

# IV. Issues identified in three successive reviews and not addressed by the Party

9. In accordance with paragraph 83 of the UNFCCC review guidelines, and as documented in table 4 below, the ERT has assessed that there are no issues to be included in a prominent paragraph.

Table 4
**Issues identified in three successive reviews and not addressed by Italy**

| *ID#* | *Previous recommendation for the issue identified* | *Number of successive reviews issue not addressed*[a] |
|---|---|---|
| General | | |
| | No such general issues were identified | |
| Energy | | |
| | No such issues for the energy sector were identified | |
| IPPU | | |
| | No such issues for the IPPU sector were identified | |
| Agriculture | | |
| | No such issues for the agriculture sector were identified | |
| LULUCF | | |
| | No such issues for the LULUCF sector were identified | |
| Waste | | |
| | No such issues for the waste sector were identified | |
| KP-LULUCF | | |
| | No such issues for KP-LULUCF activities were identified | |

*Abbreviations*: IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry.

[a] The review of the 2016 annual submission is being held in conjunction with the review of the 2015 annual submission. As the reviews of the 2015 and 2016 annual submissions are not "successive" reviews, but are rather being held in conjunction, for the purpose of counting successive years in table 4, 2015/2016 is considered as one year. The ERT noted that this table 4 is the same as that in the 2015 annual review report for Italy, modified to reflect the combined 2015/2016 review.

# V. Additional findings made during the 2016 technical review

10. Table 5 contains findings made by the ERT during the technical review of the 2016 annual submission of Italy that are additional to those identified in table 3 above.

Table 5
**Additional findings made during the 2016 technical review of the annual submission of Italy**

| *ID#* | *Finding classification* | *Description of the finding with recommendation or encouragement* | *Is finding an issue[a] and/or a problem[b]? If yes, classify by type* |
|---|---|---|---|
| General | | | |
| G.2 | QA/QC and verification | Italy has elaborated a QA/QC plan, and has ensured its capacity for the timely performance of QA/QC procedures. However, the ERT identified several inconsistencies between the CRF tables and the NIR that indicate potential problems with the QA/QC process. For example, there are discrepancies between NIR table 2.2 and 2.3 and CRF table 10s1 for some years, including the period 2010–2014. During the review, the Party explained that some errors in the preparation of the NIR caused these inconsistencies | Yes. Adherence to UNFCCC Annex I inventory reporting guidelines |
| | | In order to improve consistency between the CRF tables and the NIR, the ERT recommends that the Party ensure consistency between NIR tables 2.2 and 2.3 and CRF table 10s1 | |
| G.3 | Key category analysis | The key category analysis was performed using the IPCC tier 1 and IPCC tier 2 approach (as described in the 2006 IPCC Guidelines), undertaking a level and trend assessment. Italy has included the LULUCF sector in its assessment of the key categories. However, the ERT identified differences in the key categories reported in the NIR that may lead to inconsistencies. During the review, the Party explained that different data reported for the key categories (NIR tables 1.3, 1.4, 1.5 and 1.6.) may refer to different approaches, rather than inconsistencies, and stated that a legend will be added in the next submission | Not an issue |
| | | The ERT encourages the Party to provide more details on the disaggregated results of both approaches used in the key category analysis and include a legend to clarify the values included in the reported tables | |
| Energy | | | |
| E.2 | 1.A.2 Manufacturing industries and construction – other fossil fuels – $CO_2$, $CH_4$, $N_2O$ | Italy has included in its NIR explanatory information and justification for recalculations in $CO_2$ emissions from other fossil fuels consumed in manufacturing industries and construction. Italy explained in the NIR that recalculations in the 1.A.2 category have occurred since 2005 because of the evaluation of emissions from industrial waste with energy recovery and the subtraction of coal used in the electric arc furnace process. It was explained in the NIR that in 2013 such a recalculation resulted in an increase of 2.7% in $CO_2$ but no information was provided on the impact of the recalculations since 2005 at the category level. During the review, Italy provided information on the impact of the recalculations on the trend in $CO_2$ emissions at the category level | Yes. Transparency* |
| | | No issues related to inconsistencies in the time series have been identified but the ERT recommends that Italy include a discussion in its NIR on the impact of any recalculations on the trend in $CO_2$, $CH_4$ and $N_2O$ emissions at the category, sector and national total levels, as appropriate | |
| E.3 | 1.A.2.d Pulp, paper and print – | The ERT noted that in the pulp, paper and print industries biomass fuel consumption includes black liquor, industrial sludge and biogas from industrial organic wastes. In response to a question raised by | Yes. Accuracy* |

| ID# | Finding classification | Description of the finding with recommendation or encouragement | Is finding an issue[a] and/or a problem[b]? If yes, classify by type |
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| | biomass – $CO_2$ | the ERT regarding a country-specific EF for biomass (112.57 t/TJ), the Party explained that the EF is derived from EU ETS data reported by pulp and paper operators for 2008, and applied to the whole time series, where the specific $CO_2$ EF results from the average mix of biomass fuel used in the 2008<br><br>The ERT recommends that Italy further analyse the EU ETS data for the time series available, taking into consideration biomass fuel mix in the relevant year, and document the relevant information in the NIR | |
| E.4 | 1.A.2.e Food processing, beverages and tobacco – biomass – $CH_4$ | The ERT noted that the Party applied the CORINAIR Guidebook (EMEP/CORINAIR, 2007) for $CH_4$ emissions, which is equal to 152.39 kg/TJ for biogas. The applied EF is significantly higher than the default value in the 2006 IPCC Guidelines (volume 2, table 2.3), which is 1.0 kg/TJ with a range of 0.3–3.0 kg/TJ. In response to a question raised by the ERT, the Party explained that $CH_4$ emissions from biogas fuel combustion take into account the technology used to produce energy and heat from biogas combustion (usually stationary engines), which are not fully efficient and result in higher emissions of VOC, CO and PM<br><br>The ERT recommends that Italy further analyse and collect information at the plant level in order to verify, and if appropriate update the $CH_4$ EF | Yes. Accuracy* |
| E.5 | 1.A.3 Transport — $CO_2$, $CH_4$, $N_2O$ | The ERT noted that there was no clear explanation regarding the allocation of emissions from lubricant used in railways. Use of lubricants, except in two-stroke engines and mixed with motor gasoline is to be reported under the IPPU sector. During the review, Italy explained that all lubricants used for engines had been included under road transportation (1.A.3.b) and estimated by the COPERT model. This is because it is not possible to separate the amount of lubricant used in railways from the total amount used in engines in transport. The ERT noted that this means that the Party included non-combustible use of lubricant in 1.A.3.b road transportation. The ERT also noted that the amount of lubricant used in railways did not affect the $CH_4$ and $N_2O$ emissions in the national inventory because these emissions were estimated by the COPERT model using a technology-specific approach. The ERT concluded that this resulted in an overestimation of $CO_2$ in 1.A.3.b and a misallocation of $CO_2$ emissions that should be reported under the IPPU sector<br><br>The ERT recommends that the Party exclude the amount of non-combustible use of lubricants in railways from 1.A.3 Transport and include it in the IPPU sector, category 2.D (lubricant use) | Yes. Comparability* |
| E.6 | 1.A.3.a Domestic aviation – liquid fuels – $CH_4$ $N_2O$ | During the review, the ERT requested an additional explanation from Italy regarding the rationale for the applied $N_2O$ and $CH_4$ EFs. The $N_2O$ IEF has been held constant at 1.98 kg/TJ for the entire time series. The $CH_4$ EF has varied across the time series (1990–2014) for 1.A.3.a domestic aviation (ranging from 5.5 kg/TJ in the early part of the time series to 15.50 kt/tTJ in 2005 to 9.30 kt/TJ since 2007). Italy replied by giving a detailed description of assumptions used as well as providing a data comparison table. For $N_2O$, there was a lack of detailed EF at the engine/aeroplane level and the 2006 IPCC Guidelines default value has been used for the whole time series. However, as part of verification/estimation activities, Italy will consider including in its 2017 submission additional information and/or EFs provided at the member State level by Eurocontrol in the framework of | Not an issue |

| *ID#* | *Finding classification* | *Description of the finding with recommendation or encouragement* | *Is finding an issue[a] and/or a problem[b]? If yes, classify by type* |
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| | | European modelling activities to estimate aviation emissions. For the other gases, including $CH_4$, EFs depend on the technologies and variances in the time series according to two surveys carried out in Italy and quoted in the NIR. The EFs were constant between the two periods (1990–1999 and 2007–2014). EFs for the years 2005, 2006 and 2007 have been provided by the second survey study. During 2000–2004, $CH_4$ EFs were assessed on the basis of linear interpolation between 1999 and 2005 data | |
| | | The ERT encourages the Party to include information in the NIR to describe the choice of $N_2O$ and $CH_4$ EFs for aviation fuels, particularly to describe the use of survey data to estimate the $CH_4$ EF and how the Party ensures times series consistency | |
| E.7 | 1.A.3.d Domestic navigation — $CO_2$, $CH_4$, $N_2O$ | The ERT requested additional information from the Party regarding the amount of lubricant used in the country, as reported in four groups – maritime bunkers, industrial use, engines in the transport sector, and in the petrochemical industry– and of how it estimated and reported GHG emissions. Italy explained that it has allocated 33,696 tonnes of lubricant to maritime bunkers. It stated that this amount was included and estimated in the energy sector under the category 1.A.3.d. The ERT noted that Italy reported all 33,696 tonnes of lubricant or 1,354.58 TJ under international bunkers in CRF table 1A(b), which could result in underestimation for the national inventory for all years. The non-combustible use of lubricant in domestic navigation, if any, should be estimated in IPPU | Yes. Comparability* |
| | | The ERT recommends that Italy estimate the amount of non-combustible use of lubricant in domestic navigation, and include its $CO_2$ emission estimation in category 2.D.3 in order to improve the completeness and comparability of its reporting | |
| E.8 | International navigation – other liquid fuels – $CO_2$, $CH_4$, $N_2O$ | In CRF table 1.D, Italy did not specify what was reported under other liquid fuels | Yes. Transparency* |
| | | The ERT recommends that Italy specify in CRF table 1.D, the specific type(s) of liquid fuel consumed to improve transparency | |
| E.9 | 1.A.4.a Commercial/Institutional – other fossil fuels – General | The ERT noted that Italy has reported emissions due to the non-renewable part of wastes used in electricity generation and the amount of fossil waste burned in incinerators with energy recovery under the category commercial/institutional. During the review, the Party explained that emissions from these plants are allocated in the commercial/institutional category because of the final use of heat and electricity production; in fact until the early 2000s electricity and heat produced by incinerators was used prevalently to satisfy the energy demand from connected activities: the heating of buildings, and the provision of domestic hot water or electricity for offices. This is still true for industrial and hospital incinerators; meanwhile, the amount of energy provided to the grid from municipal solid waste incinerators has been increasing since the early 2000s | Not an issue |
| | | Given that the share of municipal solid waste incineration connected to the grid and used for electricity production is increasing, the ERT encourages Italy revise the allocation of these emissions under category 1.A.1.a Public electricity and heat production in order to ensure comparability | |

| *ID#* | *Finding classification* | *Description of the finding with recommendation or encouragement* | *Is finding an issue[a] and/or a problem[b]? If yes, classify by type* |
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| E.10 | 1.B.1.b Solid fuel transformation – $CO_2$ and $CH_4$ | In the 2014 review, Italy was recommended to provide additional information on the charcoal production process, including information on when modern technology replaced the conventional technology in the time series. In this submission, Italy had reported the additional information in NIR section 3.3.3 (1.A.1.c Manufacture of solid fuels) (see E.1, table 3 above). The ERT commends Italy for providing this information but notes that the information should also be provided in section 3.9.1 of the NIR (1.B.1.b Solid fuel transformation) as recommended in the 2014 review report. During the review, Italy explained that it will implement the change in its next submission (2017) | Not an issue |
| | | The ERT encourages Italy to provide the information on the charcoal production process, specifically the modern technology replaced the conventional technology in the time series or insert a cross reference in 1.B.1.b Solid fuel transformation in order to improve the overall transparency of the report | |
| E.11 | 1.B.2.c Venting and flaring – Gas – $CH_4$ | The ERT noted that the inter-annual change in the $CH_4$ IEF in the category 1.B.2.C.2 flaring – gas between 2013 and 2014 has been large (5,562.0%). Consequently, this resulted in more than 53 times the amount of $CH_4$ emissions in 2014 compared with 2013. Italy explained during the review that it was owing to an error in the calculation file with the EF for flaring in production and processing, which led to an overestimation of $CH_4$ emissions | Yes. Accuracy* |
| | | The ERT recommends that the Party revise the value of $CH_4$ emissions from 1.B.2.C.2 flaring – gas for 2014 to correct the error for flaring in production and processing | |
| E.12 | 1.B.2.c Venting and flaring – Oil – $CO_2$, $CH_4$, $N_2O$ | In CRF table 1.B.2, Italy had entered 4,668.05 kt as the amount of oil produced in 1.B.2.c. flaring – oil production, while the amount of oil produced in 2014 was 5,764.93 kt as reported under category 1.B.2.a.2 (oil production) in the same CRF table. Italy clarified that the emission data of 2014 are correct but that the activity data for 1990 had been erroneously copied in the CRF tables | Yes. Accuracy* |
| | | The ERT recommends that Italy report the correct value for the AD for flaring-oil production and improve the QC by introducing a check to ensure the same AD are included for oil production in various parts of the CRF tables | |
| IPPU | | | |
| I.13 | 2.A Mineral industry – $CO_2$ | The NIR (page121) states that $CO_2$ emissions from road paving and asphalt roofing are included in mineral products. The ERT noted that emissions from these two categories are not reported in the CRF tables or in the further NIR text for this industry. Moreover, the ERT noted that in accordance with the 2006 IPCC Guidelines, emissions from these categories should be reported under non-energy products from fuels and solvent use. In response to a question raised by the ERT, Italy confirmed that there was an error in the NIR due to the differing location of these categories in the Revised 1996 IPCC guidelines and the 2006 IPCC Guidelines | Yes. Adherence to UNFCCC Annex I inventory reporting guidelines |
| | | The ERT recommends Italy to correct the error in the NIR in its next annual submission | |
| I.14 | 2.B.6 Titanium | In the NIR, Italy states that the AD and $CO_2$ emission estimates for titanium dioxide production have | Yes. |

| *ID#* | *Finding classification* | *Description of the finding with recommendation or encouragement* | *Is finding an issue[a] and/or a problem[b]? If yes, classify by type* |
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| | dioxide production – $CO_2$ | been provided by the only operator in the country for the entire time series. However, it is not clear from the NIR what methodology was used to provide these estimates. During the review, Italy explained that this facility is in the scope of the EPER/EPRTR legislation; therefore, since 2002 it has been reporting relevant information to the national EPER/EPRTR according to the reporting rules. Furthermore, the plant operator supplies the amount of titanium dioxide produced and the emissions levels, so the average EF can be calculated and used for the inventory purposes | Transparency* |
| | | The ERT recommends that Italy include a detailed description of the methodology used to estimate emissions from titanium dioxide in the annual submission. The ERT also recommends that Italy include a description of how EPER/EPRTR and EU ETS methodologies correlate with the 2006 IPCC Guidelines for GHG emission estimation | |
| I.15 | 2.D.2 Paraffin wax use – $CO_2$ | The ERT noted that there was no information in the NIR on the source of AD for paraffin wax use and no rationale for calculating the fraction of entire paraffin consumption that should be included in this category. During the review, Italy provided information on the current data sources and a rationale for extracting 65% of the total paraffin consumption under the assumption that it is used for candle production as the sole known example of paraffin wax combustion during use. The ERT agrees with the assumptions used by the Party and notes that a reference is provided in the NIR for application of the 65% parameter | Yes. Transparency* |
| | | The ERT recommends that the Party include a description of the AD source for this category in the NIR | |
| I.16 | 2.E.1 Integrated circuit or semi-conductor – HFCs, PFCs, $SF_6$ | Italy estimates the F-gas emissions from semiconductor manufacturing in accordance with the tier 2a methodology on the basis of an equation accepted by the World Semiconductor Council. During the review, the ERT noted that this equation is different from the proposed equation in the 2006 IPCC Guidelines and that it is not clear from the NIR how the different methods correlate. In response to a question raised by the ERT, Italy provided the explanation that the formula reported in the NIR combines equations 6.2, 6.3, 6.4, 6.5 and 6.6 of the 2006 IPCC Guidelines. The ERT investigated the comparability of the formulas and agreed on the appropriateness of the approach taken by Italy | Yes. Transparency* |
| | | The ERT recommends that Italy provide information in the NIR to present the correlation of the formula that is used to calculate the F-gas emissions from semiconductor manufacturing and the proposed tier 2a method in the 2006 IPCC Guidelines | |
| I.17 | 2.E.1 Integrated circuit or semiconductor – HFCs, $SF_6$ | The ERT noted that the inter-annual change between 1998 and 1999 in the HFC-23 IEF (781.8%) and $SF_6$ IEF (845.5%) has been identified as large in the time-series for the emissions from the category integrated circuit or semiconductor. In the NIR Italy explains that the first three years of the time series (1998–2000) are calculated on the basis of consumption data and the following years are calculated on the basis of plant-specific parameters in accordance with the 2006 IPCC Guidelines. The ERT noted that this approach might imply time-series consistency issues and asked the Party to provide an explanation regarding the choice of this approach for data collection and emission | Yes. Consistency* |

| ID# | Finding classification | Description of the finding with recommendation or encouragement | Is finding an issue[a] and/or a problem[b]? If yes, classify by type |
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| | | estimation for the period 1998–2000. Italy explained that for this period, owing to confidentiality problems and consequent lack of specific information, it was impossible for the inventory team to implement a different estimation approach without losing the information already available and thus the use of alternative recalculation techniques would not be representative of the actual situation, potentially affecting the estimates accuracy. Italy also outlined plans to implement different estimation approaches in the next inventory submission and provide a comparison of the resulting time series in the NIR | |
| | | The ERT recommends that Italy conduct an extrapolation of the estimates after 2001 in order to obtain the emissions for the period 1998–2000 and to include these estimates in the next inventory submission. The ERT welcomes the plans for Italy to include a paragraph in its NIR where a comparison of different estimation approaches will be outlined | |
| I.18 | 2.F.1 Refrigeration and air conditioning – HFCs | In NIR table 4.17, page 160, Italy reported emissions from 2.F.1.a commercial refrigeration twice. In response to a question raised by the ERT, Italy confirmed that there was an error in the table and that second estimates were for the category 2.F.1.b. domestic refrigeration | Yes. Adherence to UNFCCC Annex I inventory reporting guidelines |
| | | The ERT recommends that Italy correct the error in table 4.17 to distinguish clearly between commercial refrigeration and domestic refrigeration | |
| I.19 | 2.F.1 Refrigeration and air conditioning – HFCs | The ERT in the review of the 2013 annual submission of Italy,[c] advised Italy to perform a cross-check of the GHG estimations from the top-down and the bottom-up approach for the GHG emission estimation from refrigeration in order to ensure the accuracy of the estimates and improve transparency. In response to a question raised by the ERT on whether Italy had implemented this recommendation, the Party stated that in accordance with a national decree (Decree of the President of the Republic of 27 January 2012, no. 43) as a result of the transposition of European Union regulations on F-gases, every year, by 31 May, the operators of refrigeration, air-conditioning and heat pump equipment, as well as fire protection systems, which contain more than 3 kg of F-gases, must submit to the Institute for Environmental Protection and Research (ISPRA) data on emissions referred to in those applications. Furthermore, ISPRA has developed a specific website, where each operator compiles an online declaration. However, 2012 was the first year of the data collection and the data are undergoing improvements in completeness and accuracy, and consequently it is not comparable with the inventory data. As the revision of this decree is ongoing Italy is working with the Ministry of the Environment in order to collect these data in a way that would be more useful for the inventory compiling team and that will permit comparison between the bottom-up and the top-down approaches in a more consistent way | Not an issue |
| | | The ERT welcomes the efforts that Italy undertakes to improve the accuracy and the transparency of the inventory and encourages the Party report on future improvements related to the use of these two data sets in its next annual submission | |
| I.20 | 2.F.3 Fire protection – | Italy reported that HFC-227ea consumption for fire extinguishers has been provided by a private | Yes. |

| *ID#* | *Finding classification* | *Description of the finding with recommendation or encouragement* | *Is finding an issue[a] and/or a problem[b]? If yes, classify by type* |
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| | HFCs | company, Consorzio Clean Gas; consumption levels have been supplied for the years 1990–2000 together with projections of constant consumption for the years 2005 and 2010. After 2010 there are no detailed consumption data, but Italy states in the NIR that according to projections the amount of gas was expected to decrease. The ERT noted that Italy did not include a description on how these projections were made and what assumptions were taken into consideration. During the review, Italy explained that owing to a lack of additional data on HFC consumption for the years 2010–2014, it was assumed that emissions are constant at 2010 levels although a reduction in the trend was expected. The ERT noted that there is a discrepancy between the NIR description and the actual manner of emission estimation for the period 2010–2014<br><br>The ERT recommends that Italy correct the description in the expected trend of HFC emission estimates for the years 2010–2014 and explains that for these years the emissions are assumed to be constant and not decreasing | Transparency* |
| I.21 | 2.F.4 Aerosols – HFCs | In the 2014 review, the ERT recommended that Italy update its methodology for the calculation of the HFC emissions from metered dose inhalers to be in accordance with IPCC good practice guidance. The ERT noted that Italy changed the methodology and the revised estimates are included in the inventory submission. However, the Party did not provide an explanation of the emission estimation approach in the NIR<br><br>The ERT recommends that the Party include a description in the NIR of the methodology used to calculate the emission estimates for this category | Yes. Transparency* |
| Agriculture | | | |
| A.4 | 3.A.1 Cattle – $CH_4$ | Italy uses a methane conversion factor (Ym) of 4–6 % for non-dairy cattle (aged 1 year and over), which is one of the lowest compared with other European countries. During the review, Italy explained that the data are based on the Nitrogen Balance Inter-regional Project (CRPA, 2006a). The project was conducted in collaboration with the Italian regions with the highest concentration of livestock and the project data were compared with data on breeding performance, food consumption and the characteristics and composition of rations. The Ym values were calculated as a function of food digestibility, considered more digestible in the case of animals for fattening and richer in fibre in the case of animals for replacement<br><br>The ERT recommends Italy to provide more information on the Nitrogen Balance Inter-regional Project research results (including breeding performance, food consumption and composition of rations and digestibility) in the NIR to confirm country-specific Ym values for non-dairy cattle | Yes. Transparency* |
| A.5 | 3.B Manure management – $CH_4$ | Italy uses a methane conversion factor of 1.14% for animal manure digested in anaerobic digesters in the inventory. The 2006 IPCC Guidelines provide a range of 0 to 100% for the methane conversion factor (volume 4, table 10.17, page 10.46). According to the 2006 IPCC Guidelines, $CH_4$ emissions should be calculated as a fraction of the $CH_4$ produced in the digester and in emissions from digestate. | Yes. Transparency* |

| ID# | Finding classification | Description of the finding with recommendation or encouragement | Is finding an issue[a] and/or a problem[b]? If yes, classify by type |
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| | | Italy reported that losses from digesters are equal to 1% of biogas produced (NIR, page 450). Since no complete data are available for biogas flared at digesters $CH_4$ flared has been assumed to be equal to 0 (NIR, page 451). In response to a request by the ERT to provide more information on this assumption, the amount of $CH_4$ produced in digesters and the amount of $CH_4$ used for energy to verify the transparency of calculations, the Party informed it that the data and explanations are provided by the Italian electricity transmission grid operator Terna. The amount of biogas produced was estimated on the basis of the biogas used and information on the average losses of biogas from the safety relief valves of the digesters, reported to be about 1% of the total biogas produced. The Party also explained that it is still investigating the biogas flared together with CRPA, which is completing a new survey on the digesters | |
| | | The ERT commends Italy for its efforts on conducting a new survey on the digesters and recommends that the Party include the results of the survey in its next submission | |
| A.6 | 3.B Manure management – $CH_4$ | For 1990, $N_2O$ emissions from manure management from digesters have been reported as "NO" (not occurring) or "NA" (not applicable) (CRF table 3.B(b)). However, in table 3.B(a)s2 Italy has reported the percentage allocated by digesters for dairy cattle, non-dairy cattle and swine as 0 but the methane conversion factor is 1.14. During the review, Italy explained that there is an error in table 3.B(a)s2 and that it will be corrected | Yes. Adherence to UNFCCC Annex I inventory reporting guidelines |
| | | The ERT recommends that Italy correct the error in the reporting of a methane conversion factor in table 3.B(a)s2 for 1990 and fill the cells with the correct notation keys | |
| A.7 | 3.B.5 Indirect $N_2O$ emissions – $N_2O$ | In CRF table 3(b) Italy, reported indirect $N_2O$ emissions from nitrogen leaching and run-off using the notation key "IE" (included elsewhere), indicating in the cell comment that indirect $N_2O$ emissions from manure management due to leaching and run-off are included in the indirect $N_2O$ emissions reported under agricultural soils. During the review, Italy explained that it reports indirect $N_2O$ emissions from manure management under agricultural soils because it has a country-specific factor only for nitrogen losses from livestock, due to run-off and leaching, which confirms the use of the 2006 IPCC Guidelines default factor of 0.30 kg N/kg N of manure, and the country-specific factor refers to the phase of the spreading of manure. Additionally, the Party explained that $Frac_{LEACH-(H)}$ is comparable with the IPCC default, and therefore it has been decided to apply the IPCC default factor in the overall estimation process, taking into account the total nitrogen excreted, without subdividing the estimates by storage and spreading. In addition, a verification activity has been carried out to calculate the average value of the fraction used for the losses of nitrogen due to leaching and run-off from storage of manure. The verification results in an average value of $Frac_{LEACH-(H)}$, equal to 11%, which is within the range provided by the 2006 IPCC Guidelines. The Party explained that a focus on the nitrogen losses from leaching and run-off in the storage of manure is currently ongoing, involving the main national experts. Italy noted that it plans to provide separate estimates and improve the methodological description in the NIR in the next submission | Yes. Transparency* |
| | | The ERT recommends that Italy make efforts to obtain information on the nitrogen losses due to | |

| ID# | Finding classification | Description of the finding with recommendation or encouragement | Is finding an issue[a] and/or a problem[b]? If yes, classify by type |
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| | | leaching and run-off during manure storage and improve the accuracy of reporting indirect $N_2O$ emissions from manure management in accordance with the 2006 IPCC Guidelines for manure management and the methodological description in the NIR | |
| A.8 | 3.D.a.2 Organic N fertilizers – $N_2O$ | Estimates of emissions from animal manure applied to soils in Italy use a default $N_{bedding}$ from the 2006 IPCC Guidelines (NIR, page 194); however, the country-specific nitrogen amounts in straw for calculating emissions from crop residues are used (according to table A 7.7, page 454). During the review, Italy was asked whether the verification of crop residues information with the calculations of animal manure applied to soils had been completed. Italy confirmed that it has been completed. The nitrogen amount of organic bedding materials calculated on the basis of the 2006 IPCC Guidelines default values is greater than the nitrogen amount in straw made from wheat and barley, produced annually. The Party noted that it is necessary to take into account that the organic bedding materials also include other materials, such as wood chips, sawdust and manure dried and recycled, and therefore it is still conducting further research to determine whether the 2006 IPCC Guidelines defaults are appropriate for Italy | Not an issue |
| | | The ERT commends Italy for its verification of nitrogen in crop residues with the calculations of animal manure applied to soils. It encourages Italy to continue its investigation on the nitrogen amount in bedding materials | |
| A.9 | 3.D.b Indirect $N_2O$ emissions from managed soils – $N_2O$ | Italy uses the 2006 IPCC Guidelines default EF for $Frac_{LEACH-(H)}$ of 0.30. During the review, Italy confirmed that the soils meet the criteria indicated in table 11.3 of the 2006 IPCC Guidelines to use this default value as it has a country-specific factor of nitrogen losses from livestock due to run-off and leaching. Additionally, the Party noted that it is investigating the fulfilment of the criteria set out in the guidelines | Yes. Transparency* |
| | | The ERT recommends that Italy include information on the value used for $Frac_{LEACH-(H)}$ in the NIR and encourages the Party to continue to investigate the $Frac_{LEACH-(H)}$ – fulfilment of the criteria set out in the 2006 IPCC Guidelines | |
| A.10 | 3.G Liming – $CO_2$ | In CRF table 3.G-I, Italy reported $CO_2$ emissions from dolomite using the notation key "IE" (included elsewhere), indicating in the NIR that there are no national statistics to disaggregate statistics of liming material. However, the tier 1 default value from the 2006 IPCC Guidelines for limestone is 0.12 t $CO_2$-C/t and for dolomite it is 0.13 t $CO_2$-C/t. During the review, Italy explained that the largest lime producer in the country provided data on the disaggregation between limestone and dolomite used in agriculture showing a share of 55% for limestone and 45% for dolomite; these data will be used in the next submission. Although the ERT accepted the Party's reporting, it believes that this issue should be considered further in future reviews to confirm there is not an underestimate of emissions | Yes. Accuracy* |
| | | The ERT recommends that Italy estimate emissions from limestone and dolomite application separately to improve the accuracy of reporting liming emissions in accordance with the 2006 IPCC | |

| ID# | Finding classification | Description of the finding with recommendation or encouragement | Is finding an issue[a] and/or a problem[b]? If yes, classify by type |
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| | | Guidelines and confirm the amount of lime and dolomite for liming | |
| LULUCF | | | |
| L.11 | 4. General (LULUCF) | The organization of the NIR, in general, follows the structure outlined in the updated "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories". However, the suggested chapter "Indirect $CO_2$ and nitrous oxide emissions" is missing and those emissions are reported in another chapter. During the review, the Party stated that this chapter will be included in its next submission | Not an issue |
| | | The ERT encourages the Party to follow the outline and general structure in the next annual report | |
| L.12 | 4.C Grassland – $CO_2$ | The Party classified shrublands in the grassland category because they do not fulfil the national forest definition but in the NIR description of the forest inventory typologies the Party included shrublands in the definition of protective forests. During the review, the Party confirmed that shrublands are not classified as forest according to the national forest definition and that it will be corrected in its next submission | Not an issue |
| | | The ERT encourages the Party to correct the information in the NIR to clarify that shrublands are classified under grassland | |
| L.13 | 4.C.1 Grassland remaining grassland – $CO_2$ | Italy has reported carbon stock change in mineral soils in grazing land management under the Kyoto Protocol but has not reported the same pool in grassland remaining grassland under the Convention (emissions are reported as "NO" (not occurring)). During the review, Italy explained that improved grazing reported under grazing land management land is a subset of the grassland area and that the Party has a planned data collection and model implementation for the soils pool for the grassland area | Yes. Accuracy |
| | | The ERT welcomes these planned improvements and recommends that the Party include this subset in the CRF tables and the NIR under the Convention while the new information is becoming available | |
| L.14 | 4.C Grassland – $CO_2$, $CH_4$, $N_2O$ | Total removals of the category presented a very high variability in the 1990–2014 period, particularly for grassland for the years 1990 and 1991 and between the years 1994 and 1995, when the category changed from a source to a sink, which also happened between 2006 and 2007. During the review, Italy explained that this variability is influenced by the occurrence of fires and provided a graph showing the burned areas and their correlation with the emissions for the complete time series, which shows the annual impact of wildfires in the overall emissions and removals | Not an issue |
| | | The ERT encourages the Party to include in its NIR the graph presented during the review week in order to better explain the large variability in emissions | |
| L.15 | 4 (V) Biomass burning – $CO_2$, $CH_4$, $N_2O$, $NO_X$, | The biomass burning for the wetlands category was indicated as "NO" (not occurring) in CRF table 4 (V) but in CRF table 4 sectoral report for LULUCF the notation key "NE" (not estimated) is used for $NO_X$, CO and NMVOC in wetland remaining wetlands with a comment from the Party saying that no | Not an issue |

| *ID#* | *Finding classification* | *Description of the finding with recommendation or encouragement* | *Is finding an issue[a] and/or a problem[b]? If yes, classify by type* |
|---|---|---|---|
| | CO, NMVOC | information is available to date to enable the estimation of emissions from wetlands. During the review, Italy confirmed that fires do not occur in wetlands | |
| | | The ERT encourages the Party to also report "NO" in CRF table 4 as fires do not occur in wetlands in order to improve consistency in the reporting tables | |
| L.16 | 4 (IV).2 Nitrogen leaching and run-off – $N_2O$ | In the annual submission, Italy reported $N_2O$ emissions from nitrogen leaching and run-off as "NE" (not estimated), as they have been considered insignificant, being below 0.05% of the national total GHG emissions, and less than 500 kt $CO_2$ eq | Not an issue |
| | | The ERT encourages Italy to report information in the NIR on how it derives the likely level of emissions for this category | |
| Waste | | | |
| W.2 | 5.A.1 Managed waste disposal sites – $CH_4$ | The Party reported a step function variation for the methane generation constant k (0.463 for the period from 1971 to 1990, 0.362 for the period from 1991 to 2005 and 0.363 for the period from 2006 onwards), as explained in the previous review report (para. 65). This introduces an abrupt change in the time series, especially between 1990 and 1991 where the k values were quite different | Yes. Consistency* |
| | | The ERT recommends that the Party develop a continuous time-series of the methane generation constant instead of using the step function variation over the relevant periods | |
| W.3 | 5.A.1 Managed waste disposal sites – $CH_4$ | The ERT noted that the Party reported having used the default degradable organic carbon value of 0.5 on page 265 of the NIR. However, the value is different from the value reported in CRF table 5.A of 9.44%. During the review, the Party provided further information on the NIR reported degradable organic carbon value and the value provided in CRF table 5A | Yes. Transparency* |
| | | The ERT recommends that the Party make the necessary changes to the degradable organic carbon fraction in CRF table 5A to improve the consistency between the NIR and the CRF tables | |
| W.4 | 5.A.2 Unmanaged waste disposal sites – $CH_4$, $N_2O$ | The Party reported in the NIR that from the year 2000, waste deposited in unmanaged landfills fell to zero as a result of legal reforms without providing justification for the assumption. During the review, the Party provided more information, including action taken by the police to halt the disposal of waste in unmanaged sites | Yes. Transparency* |
| | | The ERT recommends that the Party provide information supporting implementation of legal reforms to reduce to zero, the amount of waste deposited in unmanaged landfills, together with an illustration of the trend in the decrease of waste deposited in unmanaged landfills | |
| KP-LULUCF | | | |
| KL.1 | Deforestation – $CO_2$ | In Italy land-use changes due to wildfires are forbidden by national legislation for 15 years after the disturbance (Law Decree of 21 November 2000, n. 353). When asked how the Party recorded the burned areas after the 15-year period in order to ensure that those areas are not deforested, Italy | Not a problem |

| ID# | Finding classification | Description of the finding with recommendation or encouragement | Is finding an issue[a] and/or a problem[b]? If yes, classify by type |
|---|---|---|---|
| | | commented that requests for land-use changes and the consequent licences are recorded at NUT2 (National Institute of Statistics) administrative level and that deforestation data are detected on the basis of the NFIs, which are also on the administrative records at the NUT2 level | |
| | | The ERT encourages the Party to report information in the NIR documenting how it records the status of burned areas after the 15-year period required by law, in order to ensure that those areas are not deforested | |
| KL.2 | Article 3.4 activities – $CO_2$ | Under the Kyoto Protocol, the Party reported "NA" (not applicable) for the litter pool and "NO" (not occurring) for dead wood pools for cropland management and also reported "NO" for above-ground biomass, below-ground biomass, litter, dead wood for grassland management. During the review, the Party explained that for cropland management a tier 1 value was applied assuming that the dead wood and litter stocks are not present in cropland or are at equilibrium, as in agroforestry systems and orchards, and that a tier 1 value was also applied for the pools in lands under grazing land management for above-ground and below-ground biomass, litter and dead wood pools, assuming that they are at equilibrium | Yes. Accuracy* |
| | | The ERT recommends that the Party include transparent and verifiable information that demonstrates that these pools are not a source, as stated in the annex to decision 2/CMP.7, and to change the notation key from "NO" to "NE" (not estimated) | |
| KL.3 | Forest management – $CO_2$ | The ERT notes that Italy has not reported its FMRL in its CRF tables; the NIR correctly references the values presented in the appendix to the annex to decision 2/CMP.7 (–21.182 Mt $CO_2$ eq assuming instantaneous oxidation and –22.166 Mt $CO_2$ eq applying a first order decay function for HWP). | Yes. Transparency* |
| | | The ERT recommends that Italy complete CRF table 4(KP-I)B.1.1 to include the FMRL as included in the appendix to the annex to decision 2/CMP.7 | |
| KL.4 | Forest management – $CO_2$ | Italy described qualitatively in the NIR (page 311) the methodological elements that trigger a methodological inconsistency between the FMRL and FM reporting. It is noted in the NIR that a recommendation was made in the technical assessment of the FMRL in 2011[d] to make a technical adjustment. However, the Party has not yet presented the technical correction. According to the NIR, qualitative information on the technical correction and methodological consistency along with a quantitative assessment will be reported in the next inventory submission | Not a problem |
| | | The ERT encourages the Party to apply a technical correction well before the end of the commitment period | |

*Abbreviations*: AD = activity data, C= carbon, COPERT = Computer Programme to Calculate Emissions from Road Transport, CORINAIR = core inventory of air emissions, CRF = common reporting format, EMEP = European Monitoring and Evaluation Programme, EPER = European Pollutant Emission Register, EPRTR = European Pollutant Release and Transfer Register, ERT = expert review team, EU ETS = European Union Emissions Trading System, Eurocontrol = European Organisation for the Safety of Air Navigation, F-gas = fluorinated gas,

FM = forest management, FMRL = forest management reference level, $Frac_{LEACH}$-(H) = fraction of nitrogen leached, GHG = greenhouse gas, HWP = harvested wood products, IEF = implied emissions factor, IPCC = Intergovernmental Panel on Climate Change, IPPU = industrial processes and product use, IPCC good practice guidance = *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, N = nitrogen, $N_{bedding}$ = nitrogen in bedding, NIR = national inventory report, NMVOC = non-methane volatile organic compounds, PM = particulate material, QA/QA = quality assurance/quality control, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, UNFCCC Annex I inventory reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories", VOC = volatile organic compounds, Ym = methane conversion factor, 2006 IPCC Guidelines = *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

[a] Recommendations are related to issues as defined in decision 13/CP.20, annex, paragraph 81, or problems as identified in decision 22/CMP.1, annex, paragraph 69, identified by the ERT during the review. Encouragements are made to the Party to address all findings not related to such issues.

[b] An asterisk is included next to each issue type that is also a problem, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

[c] FCCC/ARR/2013/ITA, para. 35. Report of the individual review of the annual submission of Italy submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/ita.pdf >.

[d] UNFCCC, 2011. Italy. Report of the technical assessment of the forest management reference level submission of Italy submitted in 2011. <http://unfccc.int/resource/docs/2011/tar/ita01.pdf>.

# VI. Application of adjustments

11. The ERT has not identified the need to apply any adjustments to the 2016 annual submission of Italy.

# VII. Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol

12. Italy has elected commitment period accounting and therefore the issuance and cancellation of units for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are not applicable for the 2016 review.

# VIII. Question of implementation

13. No question of implementation was identified by the ERT during the review.

# Annex I

## Overview of greenhouse gas emissions and removals for Italy for submission year 2016 and data and information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

1. Tables 6–9 provide an overview of total greenhouse gas emissions and removals as submitted by Italy.

Table 6
**Total greenhouse gas emissions for Italy, base year[a]–2014[b]**
(kt $CO_2$ eq)

| | *Total GHG emissions excluding indirect $CO_2$ emissions* | | *Total GHG emissions including indirect $CO_2$ emissions[c]* | | *Land-use change (Article 3.7bis as contained in the Doha Amendment[d]* | *KP-LULUCF activities (Article 3.3 of the Kyoto Protocol)[e]* | *KP-LULUCF activities (Article 3.4 of the Kyoto Protocol)* | |
|---|---|---|---|---|---|---|---|---|
| | *Total including LULUCF* | *Total excluding LULUCF* | *Total including LULUCF* | *Total excluding LULUCF* | | | *CM. GM. RV. WDR* | *FM* |
| FMRL | | | | | | | | –21 182.00 |
| Base year | 515 850.78 | 521 920.60 | 515 850.78 | 521 920.60 | NA | | –122.93 | |
| 1990 | 515 850.78 | 521 920.60 | 515 850.78 | 521 920.60 | | | | |
| 1995 | 508 720.06 | 533 449.77 | 508 720.06 | 533 449.77 | | | | |
| 2000 | 535 489.03 | 554 479.29 | 535 489.03 | 554 479.29 | | | | |
| 2010 | 474 065.45 | 508 424.10 | 474 065.45 | 508 424.10 | | | | |
| 2011 | 469 425.45 | 494 789.58 | 469 425.45 | 494 789.58 | | | | |
| 2012 | 450 870.29 | 468 717.92 | 450 870.29 | 468 717.92 | | | | |
| 2013 | 408 062.56 | 438 887.37 | 408 062.56 | 438 887.37 | | –6 049.08 | 769.31 | –29 013.78 |
| 2014 | 391 972.23 | 418 587.21 | 391 972.23 | 418 587.21 | | –5 797.80 | 670.75 | –29 144.89 |

*Abbreviations*: CM = cropland management, FM = forest management, FMRL = forest management reference level, GHG = greenhouse gas, GM = grazing land management, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, RV = revegetation, WDR = wetland drainage and rewetting.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1990 for all gases except $NF_3$, for which the base year is 1995. The base year for cropland management, grazing land management and revegetation under Article 3, paragraph 4, of the Kyoto Protocol is 1990. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Emissions/removals reported in the sector other (sector 6) are not included in total GHG emissions.

[c] The Party has not reported not indirect carbon dioxide emissions in common reporting format table 6.

[d] The value reported in this column refers to 1990.

[e] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

Table 7
**Greenhouse gas emissions by gas for Italy, excluding land use, land-use change and forestry 1990–2014**[a]
(kt $CO_2$ eq)

| | $CO_2$[b] | *$CH_4$* | *$N_2O$* | *HFCs* | *PFCs* | *Unspecified mix of HFCs and PFCs* | *$SF_6$* | *$NF_3$* |
|---|---|---|---|---|---|---|---|---|
| 1990 | 436 204.25 | 54 530.77 | 27 427.12 | 444.00 | 2 906.86 | NA, NO | 407.61 | NA, NO |
| 1995 | 447 201.17 | 54 531.96 | 28 789.09 | 813.44 | 1 450.33 | NA, NO | 663.78 | NA, NO |
| 2000 | 465 175.07 | 55 514.81 | 29 716.61 | 2 098.16 | 1 388.29 | NA, NO | 560.73 | 25.63 |
| 2010 | 428 879.68 | 47 942.26 | 19 945.78 | 9 725.27 | 1 520.39 | NA, NO | 390.55 | 20.17 |
| 2011 | 416 499.53 | 46 314.01 | 19 522.54 | 10 326.38 | 1 661.28 | NA, NO | 438.06 | 27.78 |
| 2012 | 389 340.76 | 46 521.33 | 20 045.13 | 10 844.35 | 1 499.21 | NA, NO | 442.20 | 24.93 |
| 2013 | 362 063.65 | 44 074.41 | 19 099.73 | 11 501.96 | 1 705.41 | NA, NO | 416.51 | 25.70 |
| 2014 | 342 826.68 | 43 252.03 | 18 584.73 | 11 977.71 | 1 564.34 | NA, NO | 353.55 | 28.17 |
| **Per cent change 1990–2014** | **–21.4** | **–20.7** | **–32.2** | **2 597.7** | **–46.2** | **NA** | **–13.3** | **NA** |

*Abbreviations*: NA = not applicable, NO = not occurring.
[a] Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.
[b] Italy did not report indirect carbon dioxide emissions in common reporting format table 6.

Table 8
**Greenhouse gas emissions by sector for Italy, 1990–2014**[a, b]
(kt $CO_2$ eq)

| | *Energy* | *IPPU* | *Agriculture* | *LULUCF* | *Waste* | *Other* |
|---|---|---|---|---|---|---|
| 1990 | 422 147.82 | 40 313.03 | 36 200.35 | –6 069.82 | 23 259.39 | NO |
| 1995 | 435 464.67 | 37 957.44 | 36 213.23 | –24 729.71 | 23 814.43 | NO |
| 2000 | 454 266.73 | 38 459.13 | 35 627.78 | –18 990.26 | 26 125.65 | NO |
| 2010 | 421 299.25 | 34 763.20 | 30 962.58 | –34 358.64 | 21 399.07 | NO |
| 2011 | 407 806.09 | 34 787.27 | 31 486.21 | –25 364.14 | 20 710.02 | NO |
| 2012 | 384 450.06 | 31 829.63 | 31 917.52 | –17 847.62 | 20 520.71 | NO |
| 2013 | 358 706.77 | 30 869.81 | 30 792.11 | –30 824.81 | 18 518.68 | NO |
| 2014 | 339 798.04 | 30 264.78 | 30 337.63 | –26 614.98 | 18 186.77 | NO |
| **Per cent change 1990–2014** | **–19.5** | **–24.9** | **–16.2** | **338.5** | **–21.8** | **NA** |

*Abbreviations*: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

[a] Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

[b] Italy did not report indirect carbon dioxide emissions in common reporting format table 6.

Table 9

**Greenhouse gas emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by activity, base year[a, b]–2014, for Italy**

(kt $CO_2$ eq)

| | *Article 3.7bis as contained in the Doha Amendment*[c] | *Article 3.3 of the Kyoto Protocol* | | *Forest management and elected activities under Article 3.4 of the Kyoto Protocol* | | | | |
|---|---|---|---|---|---|---|---|---|
| | *Land-use change* | *Afforestation and reforestation* | *Deforestation* | *Forest management* | *Cropland management* | *Grazing land management* | *Revegetation* | *Wetland drainage and rewetting* |
| FMRL | | | | –21 182.00 | | | | |
| Technical correction | | | | NE | | | | |
| Base year | NA | | | | –119.52 | –3.41 | NA | NA |
| 2013 | | –8 079.38 | 2 030.30 | –29 013.78 | 1 406.24 | –636.93 | NA | NA |
| 2014 | | –7 837.24 | 2 039.44 | –29 144.89 | 1 345.79 | –675.04 | NA | NA |
| **Per cent change Base year–2014** | | | | | **–1 226.0** | **19 704.5** | **NA** | **NA** |

*Abbreviations*: FMRL = forest management reference level, NA = not applicable, NE = not estimated.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1990 for all gases except $NF_3$, for which the base year is 1995. The base year for cropland management and grazing land management under Article 3, paragraph 4, of the Kyoto Protocol is 1990 for Italy. For activities under Article 3, paragraph 3, of the Kyoto Protocol, and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Values in this table include emissions on lands subject to natural disturbances, if applicable.

[c] The value reported in this column refers to 1990.

2. Table 10 provides an overview of relevant key data for Italy's reporting under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 10
**Key relevant data for Italy under Article 3, paragraphs 3 and 4, of the Kyoto Protocol**

| *Key parameters* | *Values* |
|---|---|
| Periodicity of accounting | (a) Afforestation/reforestation: commitment period accounting |
| | (b) Deforestation: commitment period accounting |
| | (c) Forest management: commitment period accounting |
| | (d) Cropland management: commitment period accounting |
| | (e) Grazing land management: commitment period accounting |
| | (f) Revegetation: not elected |
| | (g) Wetland drainage and rewetting: not elected |
| Election of activities under Article 3, paragraph 4 | Cropland management, grazing land management |
| Election of application of provisions for natural disturbances | Yes, for afforestation and reforestation and forest management |
| 3.5% of total base year GHG emissions, excluding LULUCF and including indirect $CO_2$ emissions | 18 267.221 kt $CO_2$ eq (146 137.768 kt $CO_2$ eq for the duration of the commitment period) |
| Cancellation of AAUs, ERUs, CERs and/or issuance of RMUs in the national registry for: | |
| 1. Afforestation and reforestation in 2014 | NA |
| 2. Deforestation in 2014 | NA |
| 3. Forest management in 2014 | NA |
| 4. Cropland management in 2014 | NA |
| 5. Grazing land management in 2014 | NA |
| 6. Revegetation in 2014 | NA |
| 7. Wetland drainage and rewetting in 2014 | NA |

*Abbreviations*: AAU = assigned amount unit, CER = certified emission reduction unit, ERU = emission reduction unit, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable, RMU = removal unit.

# Annex II

## Information to be included in the compilation and accounting database

1. Tables 11 and 12 include the information to be included in the compilation and accounting database for Italy. Data shown are from the original annual submission of the Party, including the latest revised estimates submitted, adjustments (if applicable), as well as the final data to be included in the compilation and accounting database.

Table 11
**Information to be included in the compilation and accounting database for 2014, including the commitment period reserve, for Italy**
(t $CO_2$ eq)

| | *Original submission* | *Revised estimates* | *Adjustment*[a] | *Final*[b] |
|---|---|---|---|---|
| **Commitment period reserve** | 2 169 262 279 | | | 2 169 262 279 |
| **Annex A emissions for 2014** | | | | |
| $CO_2$ | 342 826 677 | | | 342 826 677 |
| $CH_4$ | 43 252 028 | | | 43 252 028 |
| $N_2O$ | 18 584 729 | | | 18 584 729 |
| HFCs | 11 977 714 | | | 11 977 714 |
| PFCs | 1 564 344 | | | 1 564 344 |
| Unspecified mix of HFCs and PFCs | NA, NO | | | NA, NO |
| $SF_6$ | 353 548 | | | 353 548 |
| $NF_3$ | 28 175 | | | 28 175 |
| **Total Annex A sources** | **418 587 215** | | | **418 587 215** |
| **Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2014** | | | | |
| 3.3 Afforestation and reforestation | –7 837 239 | | | –7 837 239 |
| 3.3 Deforestation | 2 039 439 | | | 2 039 439 |
| **Forest management and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2014** | | | | |
| 3.4 Forest management for 2014 | –29 144 890 | | | –29 144 890 |
| 3.4 Cropland management for 2014 | 1 345 790 | | | 1 345 790 |
| 3.4 Cropland management for the base year | –119 523 | | | –119 523 |
| 3.4 Grazing land management for 2014 | –675 042 | | | –675 042 |
| 3.4 Grazing land management for the base year | –3 409 | | | –3 409 |

*Abbreviations*: Annex A sources = sources included in Annex A to the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

Table 12
**Information to be included in the compilation and accounting database for 2013, for Italy**
(t $CO_2$ eq)

| | *Original submission* | *Revised estimates* | *Adjustment*[a] | *Final*[b] |
|---|---|---|---|---|
| **Annex A emissions for 2013** | | | | |
| $CO_2$ | 362 063 649 | | | 362 063 649 |
| $CH_4$ | 44 074 406 | | | 44 074 406 |
| $N_2O$ | 19 099 732 | | | 19 099 732 |
| HFCs | 11 501 961 | | | 11 501 961 |
| PFCs | 1 705 414 | | | 1 705 414 |
| Unspecified mix of HFCs and PFCs | NA, NO | | | NA, NO |
| $SF_6$ | 416 511 | | | 416 511 |
| $NF_3$ | 25 696 | | | 25 696 |
| **Total Annex A sources** | **438 887 370** | | | **438 887 370** |
| **Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2013** | | | | |
| 3.3 Afforestation and reforestation | –8 079 377 | | | –8 079 377 |
| 3.3 Deforestation | 2 030 295 | | | 2 030 295 |
| **Forest management and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2013** | | | | |
| 3.4 Forest management for 2013 | –29 013 781 | | | –29 013 781 |
| 3.4 Cropland management for 2013 | 1 406 240 | | | 1 406 240 |
| 3.4 Cropland management for the base year | –119 523 | | | –119 523 |
| 3.4 Grazing land management for 2013 | –636 929 | | | –636 929 |
| 3.4 Grazing land management for the base year | –3 409 | | | –3 409 |

*Abbreviations*: Annex A sources = sources included in Annex A to the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

# Annex III

## Additional information to support findings in table 2

## Missing categories that may affect completeness

No mandatory categories of the *2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories* were identified as missing.

# Annex IV

## Documents and information used during the review

## A. Reference documents

Aggregate information on greenhouse gas emissions by sources and removals by sinks for Parties included in Annex I to the Convention. Note by the secretariat. Available at <http://unfccc.int/resource/webdocs/agi/2015.pdf>.

Annual status report for Italy for 2016. Available at <http://unfccc.int/resource/docs/2016/asr/ita.pdf>.

FCCC/ARR/2015/ITA. Report on the individual review of the annual submission of Italy submitted in 2015. Available at <http://unfccc.int/resource/docs/2016/arr/ita.pdf>.

FCCC/ARR/2014/ITA. Report on the individual review of the annual submission of Italy submitted in 2014. Available at <http://unfccc.int/resource/docs/2015/arr/ita.pdf>.

FCCC/ARR/2013/ITA Report of the individual review of the annual submission of Party submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/ita.pdf>.

"Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol". Decision 19/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories". Annex to decision 24/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=4>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf#page=6>.

"Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part I: implications related to accounting and reporting and other related issues". Decision 3/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=5>.

"Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part II: implications related to review and adjustments and other related issues". Decision 4/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=30>.

Intergovernmental Panel on Climate Change. 1996. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories.* Available at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

Intergovernmental Panel on Climate Change. 2000. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/index.html>.

Intergovernmental Panel on Climate Change. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

Intergovernmental Panel on Climate Change. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. Available at <http://www.ipcc-nggip.iges.or.jp/public/kpsg>.

Standard independent assessment report, part 1, for Italy for 2016. Available at <http://unfccc.int/files/kyoto_protocol/registry_systems/independent_assessment_reports/application/pdf/siar_2016_ita_1_2.pdf>.

Standard independent assessment report, part 2, for Italy for 2016. Available at <http://unfccc.int/files/kyoto_protocol/registry_systems/independent_assessment_reports/application/pdf/siar_2016_ita_2_2.pdf>.

## B. Additional information provided by the Party

Responses to questions during the review were received from Mr. De Lauretis (Institute for Environmental Protection and Research), including additional material on the methodology and assumptions used. The following documents[1] were also provided by Italy:

COPERT 4 (v.11.3). EMISIA SA, 2015. COPERT (COmputer Programme to Calculate Emissions from Road Transport) prepared for the European Environment Agency. Available at http://www.emisia.com/copert.

EMEP/CORINAIR Emission Inventory Guidebook – 2007. Technical report No 16/2007. Prepared by the UNECE/EMEP Task Force on Emission Inventories and Projections. European Environment Agency (EEA). Available at <http://www.eea.europa.eu/publications/EMEPCORINAIR5/#parent-fieldname-title>.

Explanation provided to ERT regarding $CH_4$ convertion factor based on Nitrogen Balance Inter-regional Project (CRPA, 2006a).

[1] Reproduced as received from the Party.

# Annex V

## Acronyms and abbreviations

| | |
|---|---|
| AAU | assigned amount unit |
| AD | activity data |
| Annex A sources | sources included in Annex A to the Kyoto Protocol |
| C | carbon |
| CER | certified emission reduction unit |
| $CH_4$ | methane |
| CM | cropland management |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2$ eq | carbon dioxide equivalent |
| COPERT | Computer Programme to Calculate Emissions from Road Transport |
| CORINAIR | core inventory of air emissions |
| CPR | commitment period reserve |
| CRF | common reporting format |
| EF | emission factor |
| EMEP | European Monitoring and Evaluation Programme |
| EPER | European Pollutant Emission Register |
| EPRTR | European Pollutant Release and Transfer Register |
| ERT | expert review team |
| ERU | emission reduction unit |
| EU ETS | European Union Emissions Trading System |
| Eurocontrol | European Organisation for the Safety of Air Navigation |
| F-gas | fluorinated gas |
| FM | forest management |
| FMRL | forest management reference level |
| $Frac_{LEACH}$-(H) | fraction of nitrogen leached |
| GHG | greenhouse gas |
| GM | grazing land management |
| HWP | harvested wood products |
| IE | included elsewhere |
| IEF | implied emissions factor |
| IPCC | Intergovernmental Panel on Climate Change |
| IPPU | industrial processes and product use |
| ISPRA | Institute for Environmental Protection and Research |
| KP-LULUCF | LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol |
| kt | kilotonne |
| LULUCF | land use, land-use change and forestry |
| N | nitrogen |
| $N_{bedding}$ | nitrogen in bedding |
| NA | not applicable |
| NE | not estimated |
| NFI | national forest inventory |
| NIR | national inventory report |
| NMVOC | non-methane volatile organic compounds |
| NO | not occurring |
| $NO_X$ | nitrous oxides |
| NUT2 | National Institute of Statistics |

| | |
|---|---|
| PM | particulate material |
| QA/QC | quality assurance/quality control |
| RMU | removal unit |
| RV | revegetation |
| SEF | standard electronic format |
| SIAR | standard independent assessment report |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VOC | volatile organic compounds |
| VS | volatile solids |
| WDR | wetland drainage and rewetting |
| Ym | methane conversion factor |