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##### **Action Plan for the Implementation of the Long-term Strategy for the Convention**

### **Guidelines for Reporting Emissions and Projections Data under the Convention on Long-range Transboundary Air Pollution\***

**Prepared by the Task Force on Emission Inventories and Projections**

#### *Summary*

Guidelines for Reporting Emission data under the Convention on Long-range Transboundary Air Pollution (ECE/EB.AIR/97) were approved by the Executive Body for the Convention in 2008 (ECE/EB.AIR/96, para. 93 (b)). This document presents proposed revised Guidelines for Reporting Emissions and Projections Data prepared by the Task Force on Emission Inventories and Projections. It includes technical changes approved at the thirty-seventh session of the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) (Geneva, 9–11 September 2013).

Following discussion with the secretariat on options to simplify reporting processes, it is proposed that, the Executive Body strengthen the legal standing of the Guidelines to constitute the formal reporting requirements of Parties. This means that previous supplementary decisions of the Executive Body will no longer be needed to specify reporting requirements, and that a number of now-outdated decisions addressing reporting requirements may be rescinded once these guidelines are adopted (i.e., decisions 2002/10, 2005/1 and 2008/16).

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\* This document was submitted late due to technical reasons.

The rationale for revising the 2009 Guidelines is:

- (a) To ensure improved information on emissions is available for the work of EMEP and the Convention by strengthening reporting practices, quality and best practice requirements;
- (b) To incorporate required changes in the future reporting of emissions information arising as a result of recent amendments made to protocols under the Convention and recent decisions of the Executive Body, including changes to the EMEP grid projection and resolution (Executive Body decision 2012/13);
- (c) To ensure continued consistency between the Convention's Nomenclature for Reporting and the United Nations Framework Convention on Climate Change Common Reporting Format, following changes to the latter for reporting from 2015 onward;
- (d) To correct minor errors in the 2009 Guidelines;
- (e) To improve the clarity of the Guidelines through an improved document structure.

It is anticipated that translated versions of the final agreed Guidelines will be posted on the Convention website in early 2014 for application in 2015 and subsequent years.

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**Annexes I to VII to these Guidelines are available online from <http://www.ceip.at/reporting-instructions/annexes-to-the-reporting-guidelines/>.**

## I. Objectives

1. The objectives of these Guidelines are:
  - (a) To assist Parties, through a common approach, in meeting their reporting obligations under the 1979 Geneva Convention on Long-range Transboundary Air Pollution and its protocols;
  - (b) To support the evaluation of emission-reduction strategies;
  - (c) To facilitate the technical review of air pollutant emission inventories, in accordance with the methods and procedures for the technical review of air pollutant emission inventories reported under the Convention and its protocols (EB.AIR/GE.1/2007/16) approved by the Executive Body for the Convention at its twenty-fifth session (ECE/EB.AIR/91, para. 27 (m));
  - (d) To allow for the effective assessment of compliance with emission obligations under the Convention's protocols by the Convention's Implementation Committee;
  - (e) To facilitate the harmonization of emission reporting with reporting under other relevant multilateral environmental agreements and relevant European Union (EU) legislation.

## II. Definitions

2. The Guidelines should not be understood to imply that a specific protocol applies to a Party to the Convention that is not a Party to that protocol.
3. The term "Parties" in the Guidelines refers to Parties to the Convention, unless otherwise specified.
4. In the context of the present Guidelines (and applicable to both emission inventories and projections):
  - (a) "Transparency" means that the data sources, assumptions and methodologies used for an inventory should be clearly explained, in order to facilitate the replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of the information. The use of the Nomenclature For Reporting (NFR) tables and the preparation of a structured Informative Inventory Report (IIR) contribute to the transparency of the information and facilitate national and international reviews;
  - (b) "Consistency" means that an annual inventory should be internally consistent for all the reported years for all elements across sectors, categories and pollutants. An inventory is consistent if the same methodologies are used for all of the years of the inventory and if consistent data sets are used to estimate emissions. For projections, consistency also means that a year of the submitted inventory is used as a base year;
  - (c) "Comparability" means that estimates of emissions reported by Parties in their inventories should be comparable. For that purpose, Parties should use the accepted methodologies as elaborated in section IV below and the NFR formats for making estimations and reporting their inventories;

(d) “Completeness” means that an annual inventory covers at least all sources, as well as all pollutants, for which methodologies are provided in the latest EMEP/EEA<sup>1</sup> air pollutant emission inventory guidebook<sup>2</sup> (EMEP/EEA Guidebook) or for which supplementary methodologies have been agreed to by the Executive Body. Completeness also means the full geographical coverage of the sources of a Party. Where numerical information on emissions under any source category is not provided, the appropriate notation key defined in paragraph 11 to these Guidelines should be used when filling in the reporting template and their absence should be documented;

(e) “Accuracy” means that emission estimates should be accurate in the sense that they are systematically neither over nor under true emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies should be used, in accordance with section IV below, to promote accuracy in inventories.

5. “Key categories” for a given substance means a source category of emissions that has a significant influence on a Party’s total emissions in terms of the absolute level of emissions of that substance, the trend in emissions over a given time period and/or, for a Tier 2<sup>3</sup> key category analysis, the uncertainty in the estimates for that Party. The concept of key categories is an important aspect in inventory development in that it helps to identify priorities for resource allocation in data collection and compilation, quality assurance/quality control and reporting.

6. In the context of the present Guidelines, substances for which reporting is required include:<sup>4</sup>

(a) “Sulphur dioxide” (SO<sub>2</sub>), which means all sulphur compounds expressed as SO<sub>2</sub> (including sulphur trioxide (SO<sub>3</sub>), sulphuric acid (H<sub>2</sub> SO<sub>4</sub>), and reduced sulphur compounds, such as hydrogen sulphide (H<sub>2</sub>S), mercaptans and dimethyl sulphides, etc.);

(b) “Nitrogen oxides”, which means nitric oxide and nitrogen dioxide, expressed as nitrogen dioxide (NO<sub>2</sub>);

(c) Ammonia (NH<sub>3</sub>);

(d) “Non-methane volatile organic compounds” (NMVOCs), which means, unless otherwise specified, all organic compounds of an anthropogenic nature, other than methane, that are capable of producing photochemical oxidants by reaction with nitrogen oxides in the presence of sunlight. This means any organic compound as well as the fraction of creosote, having at 293.15 °K a vapour pressure of 0.01 kiloPascals (kPa) or more, or having a corresponding volatility under the particular conditions of use;

(e) Carbon monoxide (CO);

(f) “Particulate matter” (PM), which is an air pollutant consisting of a mixture of particles suspended in the air. These particles differ in their physical properties (such as size and shape) and chemical composition. Particulate matter refers to:

(i) “PM<sub>2.5</sub>”, or particles with an aerodynamic diameter equal to or less than 2.5 micrometres (µm);

(ii) “PM<sub>10</sub>”, or particles with an aerodynamic diameter equal to or less than 10 (µm);

<sup>1</sup> EMEP stands for the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe; EEA is the European Environment Agency.

<sup>2</sup> See <http://www.eea.europa.eu/publications/emep-eea-guidebook-2013>.

<sup>3</sup> For definitions of Tier 1, Tier 2 and Tier 3 methodology, see the EMEP/EEA Guidebook.

<sup>4</sup> Any departure from the definitions provided in this paragraph should be clarified in the IIR.

- (g) Cadmium (Cd) and its compounds;
- (h) Lead (Pb) and its compounds;
- (i) Mercury (Hg) and its compounds;
- (j) Polycyclic aromatic hydrocarbons (PAHs). For the purposes of emission inventories, the following four indicator compounds shall be used: benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3\_cd)pyrene;
- (k) “Dioxins and furans” (PCDD/F), which are polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF), tricyclic, aromatic compounds formed by two benzene rings, connected by two oxygen atoms in PCDD and by one oxygen atom in PCDF, and the hydrogen atoms of which may be replaced by up to eight chlorine atoms;
- (l) “Polychlorinated biphenyls” (PCBs), which means aromatic compounds formed in such a manner that the hydrogen atoms on the biphenyl molecule (two benzene rings bonded together by a single carbon-carbon bond) may be replaced by up to 10 chlorine atoms;
- (m) Hexachlorobenzene (HCB), Chemical Abstracts Service (CAS) Registry Number 118-74-1.

7. In the context of the present Guidelines, substances for which emission inventory reporting is voluntary include:

- (a) “Black carbon” (BC), which means carbonaceous particulate matter that absorbs light;
- (b) Total suspended particulate matter (TSP);
- (c) Arsenic (As), chromium (Cr), copper (Cu), nickel (Ni), selenium (Se) and zinc (Zn) and their compounds.

8. “Large point sources” (LPS) are defined as facilities<sup>5</sup> whose combined emissions, within the limited identifiable area of the site premises, exceed the pollutant emission thresholds identified in table 1 below. These thresholds have been extracted from the full list of pollutants in Regulation (EC) No. 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC (E-PRTR Regulation) and its annex II.<sup>6</sup> Stack height class categories required for LPS reporting are provided in table 2. Parties that do not report combustion process emissions under any other international agreement may limit their criteria for Combustion Process LPS selection to greater than 300 megawatt (MW) thermal capacity.

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<sup>5</sup> As defined in article 2, paragraphs 4 and 5, of the E-PRTR Regulation cited later in paragraph 8 above, “facility” means one or more installations on the same site that are operated by the same natural or legal person and “site” means the geographical location of the facility.

<sup>6</sup> As PM<sub>2.5</sub> is not specified in the E-PRTR Regulation, this has been added to table 1 of these Guidelines with the same threshold as for PM<sub>10</sub>.

Table 1  
**List of pollutants to be reported for an LPS if the applicable threshold value is exceeded, based on thresholds specified in annex II to the E-PRTR Regulation**

<i>Pollutants/substances</i>	<i>Thresholds in kilograms per year (kg/year)</i>
SO <sub>2</sub>	150 000
NO <sub>x</sub>	100 000
CO	500 000
NMVOCs	100 000
NH <sub>3</sub>	10 000
PM <sub>2.5</sub>	50 000
PM <sub>10</sub>	50 000
Pb	200
Cd	10
Hg	10
PAHs (Sum of the four indicator PAHs)	50
PCDD/F	0.0001
HCB	10
PCBs	0.1

Table 2  
**Stack height classes (physical height of stack) for categorization of LPS emissions reporting**

<i>Height class</i>	<i>Stack height</i>
1	< 45 metres
2	≥ 45 metres < 100 metres
3	≥ 100 metres < 150 metres
4	≥ 150 metres < 200 metres
5	≥ 200 metres

9. Emissions from “International navigation” means emissions from fuels used by vessels of all flags that are engaged in international water-borne navigation. The international navigation may take place at sea, on inland lakes and waterways and in coastal waters. The definition includes emissions from journeys that depart from the territory of one Party and arrive in that of a different Party and excludes consumption by fishing vessels. To ensure consistency of international emission inventory reporting, Parties should make every effort to both apply and report according to the same definitions contained in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories<sup>7</sup> (2006 IPCC Guidelines) for separating domestic and international emissions.

<sup>7</sup> See <http://www.ipcc-nggip.iges.or.jp/public/2006gl/>.

10. Emissions from “International aviation” means emissions from flights that depart from the territory of one Party and arrive in that of a different Party. Emissions from international military aviation can be included provided that the same definitional distinction is applied. To ensure consistency of international emission inventory reporting, Parties should make every effort to both apply and report according to the same definitions contained in the 2006 IPCC Guidelines for separating domestic and international emissions.

11. In the context of the present Guidelines, the following notation keys may be used for reporting purposes:

(a) “NE” (not estimated), for activity data and/or emissions by sources of pollutants which have not been estimated but for which a corresponding activity may occur within a Party. Where NE is used in an inventory to report emissions of pollutants, the Party shall indicate in the IIR why such emissions have not been estimated. Furthermore, a Party may consider that a disproportionate amount of effort would be required to collect data for a pollutant from a specific category that would be insignificant in terms of the overall level and trend in national emissions and in such cases use the notation key NE. The Party shall in the IIR provide justifications for their use of NE notation keys, e.g., lack of robust data, lack of methodology, etc. Once emissions from a specific category have been reported in a previous submission, emissions from this specific category shall be reported in subsequent inventory submissions;

(b) “IE” (included elsewhere), for emissions by sources of pollutants estimated but included elsewhere in the inventory instead of under the expected source category. Where IE is used in an inventory, the Party should indicate, in the IIR, where in the inventory the emissions for the displaced source category have been included, and the Party should explain such a deviation from the inclusion under the expected category, especially if it is due to confidentiality;

(c) “C” (confidential information), for emissions by sources of pollutants of which the reporting could lead to the disclosure of confidential information. The source category where these emissions are included should be indicated;

(d) “NA” (not applicable), for activities under a given source category that do occur within the Party but do not result in emissions of a specific pollutant. If the cells for categories in the NFR tables for which NA is applicable are shaded, they do not need to be filled in;

(e) “NO” (not occurring), for categories or processes within a particular source category that do not occur within a Party;

(f) “NR” (not relevant). According to paragraph 37 in the Guidelines, emission inventory reporting for the main pollutants should cover all years from 1990 onwards if data are available. However, NR is introduced to ease the reporting where emissions are not strictly required by the different protocols, e.g., emissions for some Parties prior to agreed base years.

12. For the purposes of reporting projected emissions, “projections with measures” means projections of anthropogenic emissions that encompass the effects, in terms of air pollutant emission reductions, of policies and measures that have been adopted at the time the projection is calculated. “Projections with additional measures” means projections of anthropogenic emissions that encompass the effects in terms of air pollutant emission reductions of policies and measures which have been adopted, as well as policies and measures which are planned at the time the projection is calculated.

13. The “EMEP grid” refers to a 0.1°×0.1° latitude-longitude projection in the geographic coordinate World Geodetic System (WGS) latest revision, WGS 84. The Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of



Air Pollutants in Europe (EMEP) domain covers the geographic domain between 30°N–82°N latitude and 30°W–90°E longitude.<sup>8</sup>

### III. Scope

14. The Guidelines provide guidance for reporting primary emissions and projections data related to the substances specified in paragraph 6 of these Guidelines, and define the scope of reporting of emission-related information by Parties. The Guidelines include a number of accompanying annexes. Information to be reported annually is grouped in annexes I–III; information to be reported less frequently is grouped in annexes IV–VII.<sup>9</sup>

15. Parties are formally required to report on the substances and for the years set forth in protocols that they have ratified and that have entered into force.

16. The Guidelines apply only to Parties within the geographical scope of EMEP, as defined in the 1984 Protocol on Long-term Financing of EMEP,<sup>10</sup> including those Parties whose respective national territories have a part that overlaps with the EMEP emissions reporting grid and another part lying outside the EMEP domain.<sup>11</sup> Parties outside the geographical scope of EMEP are invited to take the Guidelines into account when preparing and reporting their annual submissions, and to exchange information similar to that listed in paragraph 17 below.

17. Emission reporting required under the Convention and its protocols is set out in subparagraphs (a) to (h) below:

(a) Each Party shall, in accordance with article 8, paragraph (a), of the Convention, exchange available information on emissions of agreed air pollutants at periods to be agreed upon;

(b) Each Party to the 1985 Helsinki Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent shall, in accordance with its article 4, provide annually levels of national annual sulphur emissions, and the basis upon which they have been calculated;

(c) Each Party to the 1988 Sofia Protocol concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes shall, in accordance with its article 8 (a), annually report on the levels of national emissions of nitrogen oxides and the basis upon which they have been calculated;

(d) Each Party to the 1991 Geneva Protocol on the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes shall:

(i) In accordance with the Protocol's article 8, report annually on the level of emissions of volatile organic compounds (VOCs) in its territory and in any tropospheric ozone management area in its territory, by total and, to the extent

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<sup>8</sup> The EMEP Centre for Emission Inventories and Projections has geographical information system files consistent with this grid definition available for each Party to the Convention on their website (<http://www.ceip.at>).

<sup>9</sup> Annexes I to VII to these Guidelines are available online from <http://www.ceip.at/reporting-instructions/annexes-to-the-reporting-guidelines/>.

<sup>10</sup> See [http://www.unece.org/env/lrtap/emep\\_h1.html](http://www.unece.org/env/lrtap/emep_h1.html).

<sup>11</sup> For these Parties, reporting requirements in the Guidelines and the annexes thereof referring to spatial coverage explicitly indicate if they refer to: (a) the entire national territory (referred to as the “national total”) or (b) that part of the territory overlapping with the EMEP emission reporting grid (referred to as the “total within the EMEP emission reporting grid”) or both (a) and (b).

feasible, by sector of origin and by individual VOC for the previous calendar year, and any revision to the reports already made for previous years, and on the basis upon which these levels have been calculated;

(ii) Report annually<sup>12</sup> information on VOCs emissions by sector of origin;

(iii) If they are within the geographical scope of EMEP, report information on VOCs emissions with a spatial resolution, as set out in paragraph 13 to these Guidelines;

(e) Each Party to the 1994 Oslo Protocol on Further Reduction of Sulphur Emissions shall:

(i) In accordance with its article 5, paragraph 1 (b), report annually information on the levels of national sulphur emissions, containing emission data for all relevant source categories;

(ii) If within the geographical scope of EMEP, annually report information on the levels of sulphur emissions with spatial resolution as specified by the Steering Body to EMEP and as set out in paragraph 13 of these Guidelines;

(f) Each Party to the 1998 Aarhus Protocol on Heavy Metals and as amended shall:

(i) As appropriate and in accordance with article 3, paragraph 5, and article 7, collect and report information on the levels of emissions of the substances listed in annex I for the reference year specified in that annex;

(ii) If within the geographical scope of EMEP, annually report information on the levels of emissions of heavy metals listed in annex I to the Protocol, using the methodologies given in these Guidelines;

(iii) If outside the geographical scope of EMEP, report available information on levels of emissions of the heavy metals listed in annex I to the Protocol;

(g) Each Party to the 1998 Aarhus Protocol on Persistent Organic Pollutants and as amended shall, in accordance with article 3, paragraph 8, and article 9:

(i) Collect and report information on its level of emissions of the substances listed in annex III to the Protocol for the reference year specified in that annex;

(ii) If within the geographical scope of EMEP, annually report information on the levels of emissions of persistent organic pollutants using, as a minimum, the methodologies and the temporal and spatial resolution specified by the Steering Body to EMEP and defined in these Guidelines;

(iii) If outside the geographic scope of EMEP, make similar information available if requested to do so by the Executive Body;

(h) Each Party to the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) and as amended:

(i) If within the geographical scope of EMEP shall, in accordance with article 7, paragraph 1 (b), annually report information on:

a. Levels of emissions of sulphur dioxide, nitrogen oxides, ammonia, volatile organic compounds and particulate matter using, as a minimum, the

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<sup>12</sup> Reporting interval specified in paragraph 2(b) of Decision 2002/10.

methodologies and the temporal and spatial resolution specified by the Steering Body to EMEP and set out in these Guidelines;

b. Levels of emissions of each substance in the reference year specified in annex II to the Protocol, using the same methodologies and temporal and spatial resolution;

c. Data on projected emissions;

d. Details of reported emission inventories and emission projections, included in an Informative Inventory Report;

(ii) If outside the geographical scope of EMEP, shall report available information on levels of emissions, including for the reference year as specified in annex II and appropriate to the geographic area covered by its emission reduction commitments;

(iii) Each Party should also report, where available, its emissions inventories and projections for emissions of black carbon, using the guidance as set out in these Guidelines.

## IV. Methods

### A. Emission estimation methods and principles

18. National emission inventories and projected emissions should be transparent, consistent, comparable, complete and accurate as defined in paragraph 4 of these Guidelines.

19. Parties shall as a minimum use the methodologies in the latest version of the EMEP/EEA Guidebook, as approved by the Executive Body to estimate emissions and projections for each source category. Parties can use, as an alternative to the EMEP/EEA Guidebook, national or international methodologies that they consider better able to reflect their national situation, provided that the methodologies produce more accurate estimates than the default methods, are scientifically based, are compatible with the EMEP/EEA Guidebook and are documented in their IIRs, as described in annex II to these Guidelines.

20. Parties should make every effort to develop and/or select emission factors, and collect and select activity data in accordance with the EMEP/EEA Guidebook.

21. For sources that are determined to be key categories in accordance with the EMEP/EEA Guidebook methodologies, Parties should make every effort to use a Tier 2 or higher (detailed) methodology, including country-specific information.

22. For emissions from transport, all Parties shall calculate emissions consistent with national energy balances reported to Eurostat or the International Energy Agency. Emissions from road vehicle transport shall therefore be calculated on the basis of the fuel sold in the Party concerned. In addition, Parties may voluntarily calculate emissions from road vehicles based on fuel used or kilometres driven in the geographic area of the Party. The method for the estimate(s) should be clearly specified in the IIR.

23. For Parties for which emission ceilings are derived from national energy projections based on the amount of fuels sold, compliance checking will be based on fuels sold in the geographic area of the Party. Other Parties within the EMEP region<sup>13</sup> may choose to use the

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<sup>13</sup> I.e., Austria, Belgium, Ireland, Lithuania, Luxembourg, the Netherlands, Switzerland and the United Kingdom of Great Britain and Northern Ireland.

national emission total calculated on the basis of fuels used in the geographic area of the Party as a basis for compliance with their respective emission ceilings [for 2010] of the Gothenburg Protocol.

24. Emissions from aviation (national and international) during the landing and take-off cycle shall be included in the national totals. Cruise emissions from domestic and international aviation shall not be included in national totals but calculated in a way that allows them to be reported separately as memorandum items in the annex I reporting template.

25. Emissions from fuels used for international maritime shipping shall not be included in the national totals, but shall be calculated in a way that allows them to be reported separately as a memorandum item. Emissions from international inland shipping shall be included in the national totals for the part that is emitted on national territory.

26. Natural emissions from forest fires, volcanoes, etc., shall not be included in national totals, but calculated in a way that allows them to be reported separately as memorandum items in the annex I reporting template.

27. Projections of emissions shall be estimated and aggregated to the relevant source sector set out in annex IV to these Guidelines. Parties shall provide a “with measures” and, where relevant, a “with additional measures” projection for each pollutant in line with the guidance given in the EMEP/EEA Guidebook. Calculated projections should be consistent with the latest inventory. Methodologies and assumptions for projections should be transparent and should allow for an independent review of data. For Parties within the EU, reported projections should, as far as appropriate, be consistent with those compiled under Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants and Regulation No. 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change.

28. Emission data calculated by Parties within the geographic scope of EMEP shall be spatially allocated in the EMEP grid as defined in paragraph 13 of these Guidelines. Spatially allocated emissions (gridded data) may be calculated using national datasets appropriate to each Gridding NFR (GNFR) source category (as defined in annex V) in accordance with the EMEP/EEA Guidebook.

29. As far as possible, reported LPS data (as defined in paragraph 7 of these Guidelines) should be consistent with emissions available under the United Nations Economic Commission for Europe Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters and relevant EU legislation (e.g. the European Pollutant Release and Transfer Register (E-PRTR)).

## **B. Key categories and uncertainties**

30. Parties shall identify in their IIR national key categories in accordance with the EMEP/EEA Guidebook for the latest inventory year.

31. Parties shall quantify uncertainties in their emission estimates using the most appropriate methodologies available, taking into account guidance provided in the EMEP/EEA Guidebook. Uncertainties should be described in the IIR.

### **C. Quality assurance/quality control**

32. Procedures for quality assurance and quality control (QA/QC) shall be implemented during the planning, preparation and management of the national inventories and shall be documented in the IIR. Examples of adequate QA/QC procedures are those set out in the EMEP/EEA Guidebook and those accepted by the IPCC for greenhouse gas inventories (i.e., currently the 2006 IPCC Guidelines).

### **D. Recalculations and time-series consistency**

33. The aim of recalculations is to ensure consistency of the time series and thus improve the accuracy and completeness of the emission inventory. A complete time series, including the base or reference year and all other years for which emissions and projections are to be reported, should be calculated using the same methodologies throughout the time series to ensure that the inventory reflects real changes in emissions rather than changes in methodologies. Recalculations should be made if there are changes in methodologies or changes in the manner in which emission factors and activity data are obtained or used, or if estimates are provided for sources which have existed since the reference year but which were not previously accounted for in previous submissions. Parties should apply any recalculations to every relevant year in the full time series to ensure consistency across years.

34. In cases where activity data or other data cannot be obtained for certain years, including the reference year, emissions should be estimated using alternative methodologies or appropriate techniques for estimating activity levels or emissions for these years, taking into account guidance provided in the EMEP/EEA Guidebook. In these instances, Parties should ensure that the time series is consistent and significant fluctuations between years are explained in the IIR.

### **E. Reporting of adjusted national inventories**

35. Inventories shall be calculated without corrections or normalization relating, for example, to climate variations or trade patterns of electricity.

36. Parties may apply to adjust their emission reduction commitments or inventory data in extraordinary circumstances, as defined in Executive Body decisions 2012/3 and 2012/4 (see ECE/EB.AIR/111/Add.1). Guidance on the application process to adjust either an emission reduction commitment or an emission inventory is available separately in Executive Body decision 2012/12 (see ECE/EB.AIR/113/Add.1). A Party applying an adjustment to its inventory for the purpose of comparing total national emissions with emission reduction commitments shall include supporting documentation in its IIR or in an alternative report. The IIR template, annex II to these Guidelines, lists the required supporting information required. Further, Parties shall report details of their adjusted aggregated emissions using the appropriate row contained in the main emissions reporting template (annex I), as well as report detailed information by pollutant and sector for each adjustment using the template provided in annex VII to these Guidelines. Reporting of information on adjusted emissions in no way removes the mandatory requirement for Parties to report unadjusted emissions as laid down in section IV.A of these Guidelines.

## V. Reporting

### A. General

37. Emission inventory reporting shall cover all years from 1990 onwards, as well as the relevant reference year for those Parties that have ratified protocols for which reporting of reference-year emissions is required. Particulate matter emissions, including black carbon emissions where available, shall be reported from 2000 onward. Emission and activity data should be reported up until the latest inventory year, which shall be calculated as X-2, where X is the year in which reporting occurs. For example, for reporting in 2015, emission activity data for the years 1990–2013 shall be reported. Parties may voluntarily report data for years prior to 1990, and for PM for years prior to 2000.

38. Recalculated data for all previous years should be included in any reported emission time-series 1990–X-2. Criteria for recalculations are outlined in paragraph 33 above. Parties are encouraged to submit recalculated data both on a sectoral basis and a gridded basis. Parties should provide justification for any recalculation and describe in the IIR the methods used to ensure time-series consistency, changes in the data and calculation methods, and the inclusion of any new sources not previously accounted for, indicating any relevant changes in the source category.

39. Where Parties do not have sufficiently detailed data to allow estimation of individual source categories in their inventory, they may report aggregated emissions. Aggregated emissions may be reported under “other” or under the most significant single sector within the aggregation. Where aggregated emissions are reported, the available notes columns shall be annotated to explain which detailed sectors are included and the notation key IE shall be used for sectors that have emissions reported elsewhere. A rationale for reporting aggregated emissions should be included in the IIR.

40. Reporting guidance covers deadlines for submission of data, preparation of templates and electronic submissions of data, as follows:

(a) *Reporting deadlines*: The deadline for submitting annual emission inventory and two-yearly projections reports is 15 February. The deadline for submitting the IIR is 15 March. Parties are, however, encouraged to submit their IIRs at the same time they submit their emission reports. The deadline for submitting gridded data and LPS data is 1 May. The EU may deliver its emission and projections reports by 30 April, its IIR by 30 May and its gridded data and LPS data by 15 June;

(b) *Reporting templates*: Parties shall use the reporting templates in annexes I–VII to these Guidelines, or other harmonized reporting options as specified below. Submissions reported in formats other than the agreed templates may not be considered for use in EMEP activities;

(c) *Submission of data by electronic means*: Data submissions shall be transmitted electronically to the EMEP Centre for Emission Inventories and Projections (CEIP), and may be made to a central data repository<sup>14</sup> provided that the Party informs CEIP that this has been done and that the submission is consistent with these Guidelines. In addition, the completed notification template, annex III to these Guidelines, shall be sent by e-mail to the Convention secretariat with a copy to CEIP.

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<sup>14</sup> E.g., the Central Data Repository of the European Environment Agency’s European Environment Information and Observation Network (EIONET) (<http://cdr.eionet.europa.eu/>).

41. Resubmissions due to errors shall be accepted within four weeks from the original due date for submission, and must include a clear explanation of the changes made. Resubmissions received later than four weeks from the due date for submission may not be considered for use in EMEP activities.

## **B. Annual reporting**

42. Each Party shall annually report emission inventories of substances listed in paragraph 6 of these Guidelines and, where available, emissions of black carbon, in accordance with the deadlines set forth in paragraph 40 (a) above. In addition, Parties are encouraged to voluntarily report emissions of substances listed in paragraph 7. Annual reporting shall include national emissions and should include activity data for the sectors identified in annex I to these Guidelines for the years indicated. Parties shall complete the tables at the requested level of aggregation. Where values for individual NFR categories or aggregated NFR categories are not available, the notation keys described in paragraph 11 of these Guidelines shall be used.

43. The IIR shall be submitted annually. However, certain elements of the report (as indicated in annex II to these Guidelines) need only be updated every five years, or more frequently, as appropriate.

## **C. Two-yearly reporting**

44. Parties to the Gothenburg Protocol shall regularly update and annually report their latest available projections annually, for the years 2020, 2025 and 2030 and, where available, also for 2040 and 2050.<sup>15</sup>

45. Projected emissions for SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>, PM<sub>2.5</sub>, NMVOCs and, where available, black carbon, should be reported using the template within annex IV to these Guidelines. Parties should complete the tables at the requested level of aggregation. Where values for individual categories or aggregated NFR categories are not available, the notation keys defined in paragraph 11 of these Guidelines should be used.

46. Quantitative information on parameters underlying emission projections should be reported using the templates set out in annex IV to these Guidelines. These parameters should be reported for the projection target year and the historic year chosen as the starting year for the projections.

47. Every two years from 2016 onward, Parties shall report for the year X-2 updated aggregated sectoral (GNFR) gridded emissions and LPS emissions as defined in paragraphs 6, 8 and 13 and table 1 of these Guidelines. Gridded emissions shall be reported for all substances referred to in paragraph 6 of these Guidelines including, where available, black carbon. LPS emissions shall be reported for all substances referred to in table 1 of these Guidelines, taking into account the defined release thresholds. Parties are encouraged to update their gridded and LPS data and report annually where changes in spatial patterns have occurred, so that the EMEP models can represent the most up-to-date information.

48. Gridded emissions for each GNFR aggregated sector (as defined in annex V to these Guidelines) shall be provided for the EMEP latitude-longitude coordinate resolution (as defined in paragraph 13 to these Guidelines) that overlie the Party's territory.

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<sup>15</sup> Parties are not required to report projections for those years in which emissions data are reported as part of the annual inventory reporting.

49. LPS emissions shall be reported using the template provided in annex VI to these Guidelines. For the purposes of reporting under the Convention and its Protocols, Parties may aggregate the emissions from individual locations/processes within the facility as long as they are consistent with the GNFR sector aggregations (see annex V to these Guidelines) and may separate emissions according to the appropriate stack height classes identified in table 2 to these Guidelines.

50. Parties may report LPS data through the provision of electronic copies of Point Sources Reports provided under any other international or EU legislation as long as the following provisions are met:

- (a) It includes the coordinates (latitude and longitude);
- (b) It includes the stack height class;
- (c) It includes emissions of the specified substances;
- (d) It includes, where available, the E-PRTR facility identification codes (FacilityID) or the EU Emissions Trading System<sup>16</sup> identifier;
- (e) Emissions must be consistent with the annual inventory submitted under the Convention, in accordance with these Guidelines;
- (f) A clear explanation of the process and source sector must be given, including their relationship to the aggregated GNFR sector presented in annex V, to avoid double counting.

## **VI. Record-keeping**

51. Parties shall archive all relevant emission information for each year, including, as far as practicable, all disaggregated emission factors, activity data and documentation about how these factors and data have been generated and aggregated for reporting. This information should allow the reconstruction of the inventory and projections, inter alia, for the purpose of inventory review and its evaluation for use by the Implementation Committee, as well as transparency for users. Inventory information, including the corresponding data on any recalculations, should be archived for all years from the reference year. Parties are encouraged to collect and archive the information in a single location, or at least to keep the number of locations to a minimum.

## **VII. Languages**

52. The IIR shall be submitted in one of the working languages of the United Nations Economic Commission for Europe (i.e., French, English or Russian). Where possible, Parties submitting IIRs in French and Russian are encouraged to also provide an English translation to facilitate its use by the emission inventory expert review teams.

## **VIII. Updating of the Guidelines**

53. The present Guidelines are subject to review and revision, as decided by the Executive Body. The Task Force on Emission Inventories and Projections may, if necessary, propose amendments to the Steering Body to EMEP to achieve harmonization

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<sup>16</sup> See [http://ec.europa.eu/clima/policies/ets/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/index_en.htm).



with other reporting obligations, as well as to meet needs for increased transparency or other needs for further revision. The Task Force should transmit to the Steering Body any problems or discrepancies encountered by emissions experts in the application of the Guidelines.

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