



## ANNEX I

**Minimum content of the monitoring plan (Article 12(1))****1. Minimum content of the monitoring plan for installations**

The monitoring plan for an installation shall contain at least the following information:

- (1) general information on the installation:
  - (a) a description of the installation and activities carried out by the installation to be monitored, containing a list of emissions sources and source streams to be monitored for each activity carried out within the installation and meeting the following criteria:
    - (i) the description must be sufficient for demonstrating that neither data gaps nor double counting of emissions occur;
    - (ii) a simple diagram of the emission sources, source streams, sampling points and metering equipment must be added where requested by the competent authority or where such diagram simplifies describing the installation or referencing emission sources, source streams, measuring instruments and any other parts of the installation relevant for the monitoring methodology including data flow activities and control activities;
  - (b) a description of the procedure for managing the assignment of responsibilities for monitoring and reporting within the installation, and for managing the competences of responsible personnel;
  - (c) a description of the procedure for regular evaluation of the monitoring plan's appropriateness, covering at least the following:
    - (i) checking the list of emissions sources and source streams, ensuring completeness of the emission sources and source streams and that all relevant changes in the nature and functioning of the installation will be included in the monitoring plan;
    - (ii) assessing compliance with the uncertainty thresholds for activity data and other parameters, where applicable, for the applied tiers for each source stream and emission source;
    - (iii) assessing potential measures for improvement of the monitoring methodology applied;
  - (d) a description of the written procedures of the data flow activities pursuant to Article 57, including a diagram where appropriate for clarification;
  - (e) a description of the written procedures for the control activities established pursuant to Article 58;

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- (f) where applicable, information on relevant links with activities undertaken in the framework of the Community eco-management and audit scheme (EMAS) established pursuant to Regulation (EC) No 1221/2009 of the European Parliament and of the Council <sup>(1)</sup>, systems covered by harmonised standard ISO 14001:2004 and other environmental management systems including information on procedures and controls with relevance to greenhouse gas emissions monitoring and reporting;
  - (g) the version number of the monitoring plan;
- (2) a detailed description of the calculation-based methodologies where applied, consisting of the following:
- (a) a detailed description of the calculation-based methodology applied, including a list of input data and calculation formulae used, a list of the tiers applied for activity data and all relevant calculation factors for each of the source streams to be monitored;
  - (b) where applicable and where the operator intends to make use of simplification for minor and *de-minimis* source streams, a categorisation of the source streams into major, minor and *de-minimis* source streams;
  - (c) a description of the measurement systems used, and their measurement range, specified uncertainty and exact location of the measuring instruments to be used for each of the source streams to be monitored;
  - (d) where applicable, the default values used for calculation factors indicating the source of the factor, or the relevant source, from which the default factor will be retrieved periodically, for each of the source streams;
  - (e) where applicable, a list of the analysis methods to be used for the determination of all relevant calculation factors for each of the source streams, and a description of the written procedures for those analyses;
  - (f) where applicable, a description of the procedure underpinning the sampling plan for the sampling of fuel and materials to be analysed, and the procedure used to revise the appropriateness of the sampling plan;
  - (g) where applicable, a list of laboratories engaged in carrying out relevant analytical procedures and, where the laboratory is not accredited as referred to in Article 34(1) a description of the procedure used for demonstrating the compliance with equivalent requirements in accordance with Article 34(2) and (3);
- (3) where a fall-back monitoring methodology is applied in accordance with Article 22, a detailed description of the monitoring methodology applied for all source streams or emission sources, for which no tier methodology is used, and a description of the written procedure used for the associated uncertainty analysis to be carried out;

<sup>(1)</sup> OJ L 342, 22.12.2009, p. 1.

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- (4) a detailed description of the measurement-based methodologies, where applied, including the following:
  - (a) a description of the measurement method including descriptions of all written procedures relevant for the measurement and the following:
    - (i) any calculation formulae used for data aggregation and used to determine the annual emissions of each emission source;
    - (ii) the method for determining whether valid hours or shorter reference periods for each parameter can be calculated, and for substitution of missing data in accordance with Article 45;
  - (b) a list of all relevant emission points during typical operation, and during restrictive and transition phases, including breakdown periods or commissioning phases, supplemented by a process diagram where requested by the competent authority;
  - (c) where flue gas flow is derived by calculation, a description of the written procedure for that calculation for each emission source monitored using a measurement-based methodology;
  - (d) a list of all relevant equipment, indicating its measurement frequency, operating range and uncertainty;
  - (e) a list of applied standards and of any deviations from those standards;
  - (f) a description of the written procedure for carrying out the corroborating calculations in accordance with Article 46, where applicable;
  - (g) a description of the method, how CO<sub>2</sub> stemming from biomass is to be determined and subtracted from the measured CO<sub>2</sub> emissions, and of the written procedure used for that purpose, where applicable;
- (5) in addition to elements listed in point 4, a detailed description of the monitoring methodology where N<sub>2</sub>O emissions are monitored, where appropriate in the form of description of the written procedures applied, including a description of the following:
  - (a) the method and parameters used to determine the quantity of materials used in the production process and the maximum quantity of material used at full capacity;
  - (b) the method and parameters used to determine the quantity of product produced as an hourly output, expressed as nitric acid (100 %), adipic acid (100 %), caprolactam, glyoxal and glyoxylic acid per hour respectively;
  - (c) the method and parameters used to determine the N<sub>2</sub>O concentration in the flue gas from each emission source, its operating range, and its uncertainty, and details of any alternative methods to be applied where concentrations fall outside the operating range and the situations when this may occur;
  - (d) the calculation method used to determine N<sub>2</sub>O emissions from periodic, unabated sources in nitric acid, adipic acid, caprolactam, glyoxal and glyoxylic acid production;

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- (e) the way in which or the extent to which the installation operates with variable loads, and the manner in which the operational management is carried out;
  - (f) the method and any calculation formulae used to determine the annual N<sub>2</sub>O emissions and the corresponding CO<sub>2(e)</sub> values of each emission source;
  - (g) information on process conditions that deviate from normal operations, an indication of the potential frequency and the duration of such conditions, as well as an indication of the volume of the N<sub>2</sub>O emissions during the deviating process conditions such as abatement equipment malfunction;
- (6) a detailed description of the monitoring methodology as far as perfluorocarbons from primary aluminium production are monitored, where appropriate in the form of a description of the written procedures applied, including the following:
- (a) where applicable, the dates of measurement for the determination of the installation-specific emission factors SEF<sub>CF<sub>4</sub></sub> or OVC, and F<sub>C<sub>2</sub>F<sub>6</sub></sub>, and a schedule for future repetitions of that determination;
  - (b) where applicable, the protocol describing the procedure used to determine the installation-specific emission factors for CF<sub>4</sub> and C<sub>2</sub>F<sub>6</sub>, showing also that the measurements have been and will be carried out for a sufficiently long time for measured values to converge, but at least for 72 hours;
  - (c) where applicable, the methodology for determining the collection efficiency for fugitive emissions at installations for primary aluminium production;
  - (d) a description of cell type and type of anode;
- (7) a detailed description of the monitoring methodology where transfer of inherent CO<sub>2</sub> as part of a fuel in accordance with Article 48 or transfer of CO<sub>2</sub> in accordance with Article 49 are carried out, where appropriate in the form of a description of the written procedures applied, including the following:
- (a) where applicable, the location of equipment for temperature and pressure measurement in a transport network;
  - (b) where applicable, procedures for preventing, detecting and quantification of leakage events from transport networks;
  - (c) in the case of transport networks, procedures effectively ensuring that CO<sub>2</sub> is transferred only to installations which have a valid greenhouse gas emission permit, or where any emitted CO<sub>2</sub> is effectively monitored and accounted for in accordance with Article 49;
  - (d) identification of the receiving and transferring installations according to the installation identification code recognised in accordance with Regulation (EU) No 1193/2011;
  - (e) where applicable, a description of continuous measurement systems used at the points of transfer of CO<sub>2</sub> between installations transferring CO<sub>2</sub> in accordance with Articles 48 or 49;

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- (f) where applicable, a description of the conservative estimation method used for determining the biomass fraction of transferred CO<sub>2</sub> in accordance with Article 48 or 49;
- (g) where applicable, quantification methodologies for emissions or CO<sub>2</sub> released to the water column from potential leakages as well as the applied and possibly adapted quantification methodologies for actual emissions or CO<sub>2</sub> released to the water column from leakages, as specified in section 23 of Annex IV.

**2. Minimum content of monitoring plans for aviation emissions**

1. The monitoring plan shall contain the following information for all aircraft operators:
  - (a) the identification of the aircraft operator, call sign or other unique designator used for air traffic control purposes, contact details of the aircraft operator and of a responsible person at the aircraft operator, contact address, the administering Member State, the administering competent authority;
  - (b) an initial list of aircraft types in its fleet operated at the time of the submission of the monitoring plan and the number of aircraft per type, and an indicative list of additional aircraft types expected to be used including, where available, an estimated number of aircraft per type as well as the source streams (fuel types) associated with each aircraft type;
  - (c) a description of procedures, systems and responsibilities used to update the completeness of the list of emission sources over the monitoring year for the purpose of ensuring the completeness of monitoring and reporting of the emissions of owned aircraft as well as leased-in aircraft;
  - (d) a description of the procedures used to monitor the completeness of the list of flights operated under the unique designator by aerodrome pair, and the procedures used for determining whether flights are covered by Annex I to Directive 2003/87/EC for the purpose of ensuring completeness of flights and avoiding double-counting;
  - (e) a description of the procedure for managing and assigning responsibilities for monitoring and reporting, and for managing the competences of responsible personnel;
  - (f) a description of the procedure for regular evaluation of the monitoring plan's appropriateness, including any potential measures for the improvement of the monitoring methodology and related procedures applied;
  - (g) a description of the written procedures of the data flow activities as required by Article 57, including a diagram, where appropriate, for clarification;
  - (h) a description of the written procedures for the control activities established under Article 58;
  - (i) where applicable, information on relevant links with activities undertaken in the framework of EMAS, systems covered by harmonised standard ISO 14001:2004 and other environmental management systems, including information on procedures and controls with relevance to greenhouse gas emissions monitoring and reporting;

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(j) the version number of the monitoring plan.

2. The monitoring plan shall contain the following information for aircraft operators which are not small emitters in accordance with Article 54(1) or which do not intend to use a small emitter tool in accordance with Article 54(2):

(a) a description of the written procedure to be used for defining the monitoring methodology for additional aircraft types which an aircraft operator expects to use;

(b) a description of the written procedures for monitoring fuel consumption in every aircraft, including:

(i) the chosen methodology (Method A or Method B) for calculating the fuel consumption; and where the same method is not applied for all aircraft types, a justification for that methodology, as well as a list specifying which method is used under which conditions;

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(ii) procedures for the measurement of fuel uplifts and fuel in tanks, a description of the measuring instruments involved and the procedures for recording, retrieving, transmitting and storing information regarding measurements, as applicable;

(iii) the method for the determination of density, where applicable;

(iv) justification of the chosen monitoring methodology, in order to ensure lowest levels of uncertainty, according to Article 55 (1);

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(c) a list of deviations for specific aerodromes from the general monitoring methodology as described in point (b) where it is not possible for the aircraft operator due to special circumstances to provide all the required data for the required monitoring methodology;

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(e) emission factors used for each fuel type, or in the case of alternative fuels, the methodologies for determining the emission factors, including the methodology for sampling, methods of analysis, a description of the laboratories used and of their accreditation and/or of their quality assurance procedures;

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(f) a description of the procedures and systems for identifying, assessing and handling data gaps pursuant to Article 65(2).

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3. **Minimum content of monitoring plans for tonne-kilometre data**

The monitoring plan for tonne-kilometre data shall contain the following information:

(a) the elements listed in point 1 of section 2 of this Annex;

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- (b) a description of the written procedures used for determining tonne-kilometre data per flight, including:
  - (i) the procedures, responsibilities, data sources and calculation formulae for determining and recording the distance per aerodrome pair;
  - (ii) the tier used for determining the mass of passengers including the checked in baggage; in the case of tier 2, a description of the procedure for obtaining the mass of passengers and baggage is to be provided;
  - (iii) a description of the procedures used to determine the mass of freight and mail, where applicable;
  - (iv) a description of the measurement devices used for measuring the mass of passengers, freight and mail as applicable.