



EUROPEAN COMMISSION

DIRECTORATE-GENERAL

CLIMATE ACTION

Directorate B – Carbon Markets & Clean Mobility

CLIMA.B.2 – ETS (II): Implementation, Policy Support & ETS Registry

EU ETS Compliance Forum Training event

Training Event on Introduction to EU ETS Monitoring & Reporting

Compliance Forum Training Event of 10 October 2023

This document comprises training material for competent authorities, national accreditation bodies and verifiers related to Monitoring and Reporting of greenhouse gas emissions under the EU Emission Trading System (EU ETS)

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1. LEGAL BACKGROUND

The legal basis for the Monitoring, Reporting and Verification (MRV) system is set in Directive 2003/87/EC (the EU ETS Directive). The rules related to the compliance cycle are set down in two regulations: Implementing Regulation (EU) 2018/2066 (Monitoring and Reporting Regulation, MRR) and the Implementing Regulation (EU) 2018/2067 (Accreditation and Verification Regulation, AVR).

The basis for this Trainings event was the current version of these legal acts, including the two 2023 updates of the EU ETS Directive (Directive (EU) 2023/958 on aviation, Directive (EU) 2023/959 for installations, maritime transport and the “ETS2” for buildings, road transport and additional sectors). Also changes resulting from the amendment of the MRR by Commission Implementing Regulation (EU) 2023/2122, which shall apply from 1 January 2024, were pointed out.

2. OBJECTIVE

The M&R training event of 10 October 2023 aimed at:

- Providing a one day basic MRV training on stationary installations;
- Providing an overview and gaining knowledge about existing MRV guidance documents, templates and tools;
- Giving a short introduction to differences between MRV for installations, aircraft operators and shipping companies.

Target audience: New or medium-experienced staff members of competent authorities, national accreditation bodies and verifiers.

3. SET-UP OF THE TRAINING EVENT

#	Time	Agenda point and details
1.	10:00 – 10:15	Opening, welcome and introduction (DG CLIMA)
2.	10:15 – 10:40	General aspects <ul style="list-style-type: none"> • Brief overview of the Compliance Cycle, EU ETS scope and installation boundaries and where to find the templates, tools and their guidances
3.	10:40 – 12:00	Operator preparing an Monitoring Plan 1 <ul style="list-style-type: none"> • Purpose of MP, monitoring approaches, tier system, categorization of installation, emission sources, source streams and their categorisation, reasons for derogation • Interactive examples/quiz (Beekast)
4.	12:00 – 12:05	<i>Micro break</i>
5.	12:05 – 12:40	Operator preparing an Monitoring Plan 2 <ul style="list-style-type: none"> • Biomass issues, simplifications for installations with low emissions, transferred and inherent CO₂, summaries of procedures to be attached to the monitoring plan, MP template
6.	12:40 – 13:00	Tools supporting MP <ul style="list-style-type: none"> • Unreasonable costs, uncertainty assessment, risk assessment, frequency of analyses
7.	13:00 – 14:00	<i>Lunch break</i>
8.	14:00 – 14:30	Q&A regarding the morning session
9.	14:30 – 15:00	Operator preparing an Annual Emission Report <ul style="list-style-type: none"> • AER template, data gaps
10.	15:00 – 15:20	Other templates and tools <ul style="list-style-type: none"> • IR template, checklist for assessing MPs, AER tool, checklist for assessing AER and VR, risk-profiling tool
11.	15:20 – 15:25	<i>Micro break</i>
12.	15:25 – 16:10	The verifier's and NAB's perspective <ul style="list-style-type: none"> • General principles and requirements, the verification process, cooperation & information exchange
13.	16:10 – 16:35	Main MRVA similarities & differences with other EU ETS sectors <ul style="list-style-type: none"> • Aviation, Maritime, ETS2
14.	16:35 – 16:50	Q&A regarding the afternoon session
15.	16:50 – 17:00	Wrap-up and close of the meeting (DG CLIMA)

Annex: Presentations



EU ETS MRVA– CF Training event

Training Event on EU ETS Monitoring & Reporting

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10 October 2023

Set-up of the training

- EU ETS Monitoring & reporting aspects
 - General aspects EU ETS and Compliance cycle
 - Monitoring plan (MP), Annual Emission Report (AER) and other templates and tools
 - Verifier's and NAB's perspective
 - Main MRVA similarities and differences with other EU ETS participants (Aviation, Maritime, ETS 2)
- **Target audience:**
 - New or medium-experienced staff members
- **Objectives**
 - One day **basic MRR training on stationary installation**
 - Gaining knowledge about **MRV tools and templates**

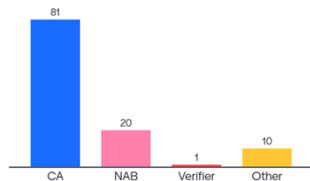
*Questions in the chat will be tackled in the
Q&A sessions*

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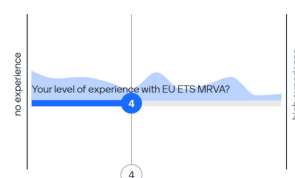


Mentimeter

What is your role in the EU ETS MRVA?



Your level of experience with EU ETS MRVA?



3



General aspects

The compliance cycle, EU ETS scope and installation boundaries, overview of templates, tools and guidance

4



General aspects

The compliance cycle

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Compliance cycle: legal basis

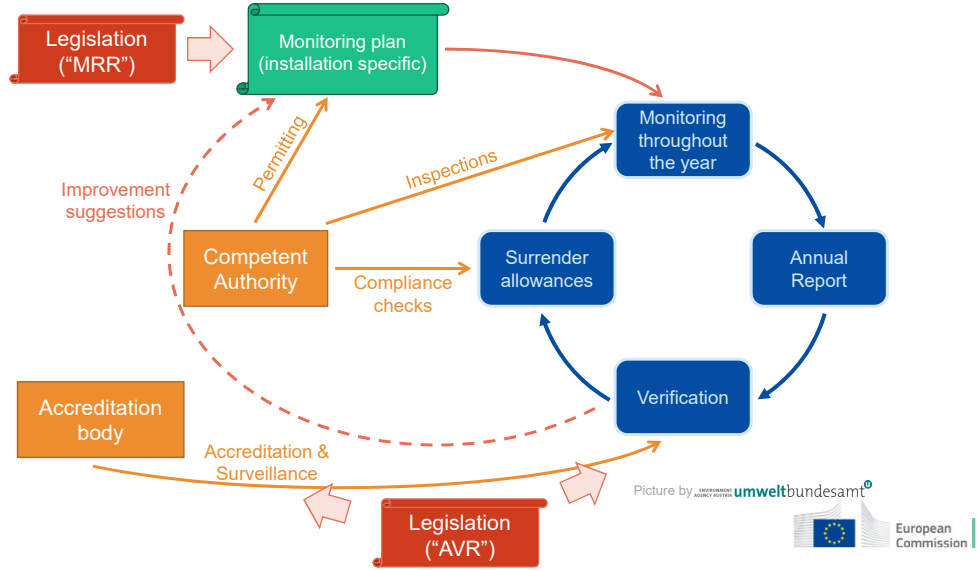
- EU ETS Directive: basis for monitoring, reporting and verification system; [ETS Directive](#)
- Monitoring and Reporting Regulation: [MRR](#)
- Accreditation and Verification Regulation: [AVR](#)
- Harmonised implementation throughout all Member States

"A tonne must be a tonne!"

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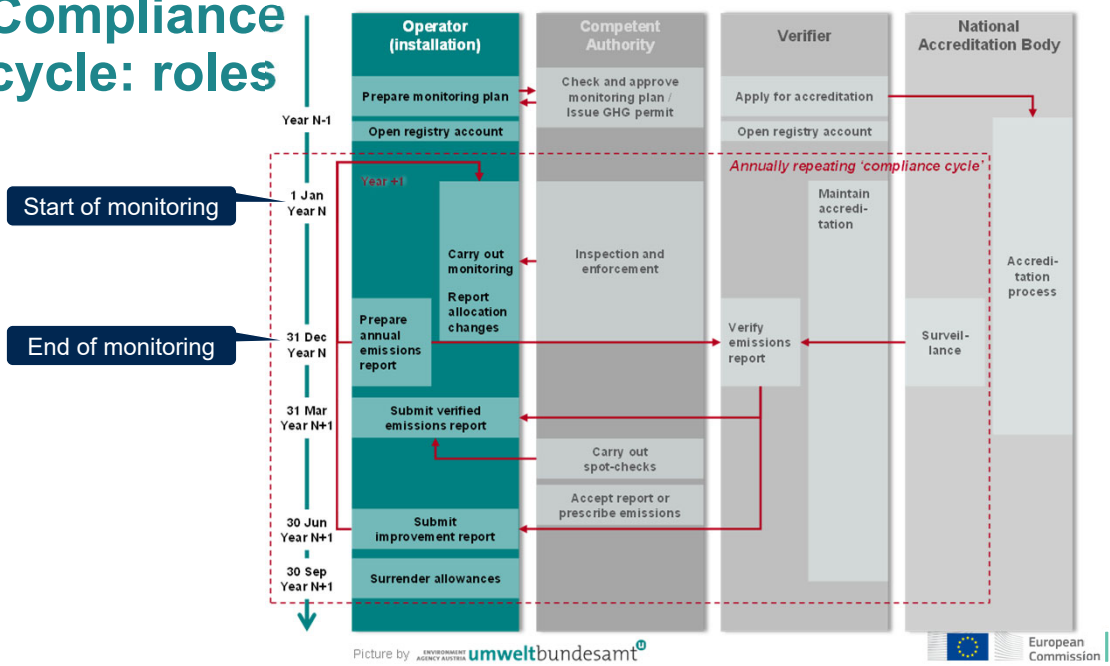


Compliance Cycle: principle



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Compliance cycle: roles



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Compliance cycle: timeline I

When?	Who?	What?
1 January N	By 30 June N	Start of monitoring period
by 28 February N	CA	Allocation of allowances for free (if applicable) on the operator's account in the Registry
31 December N		End of monitoring period
by 31 March N+1	Verifier	Finish verification and issue verification report to operator
by 31 March N+1	Operator	Submit verified annual emissions report to CA
by 31 March N+1	Operator/Verifier	Enter verified emissions figure in the verified emissions table of the Registry

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Compliance cycle: timeline II

When?	Who?	What?
March - April N+1	CA	Subject to national legislation, possible spot checks of submitted annual emissions reports. Re-quire corrections by operator, if applicable. N.B. Subject to national legislation, there is no obligation for CAs to provide assistance or acceptance of operator reports either before or after 30 April).
by 30 April N+1	Operator	Surrender allowances (amount corresponding to verified annual emissions) in Registry system
by 30 June N+1	Operator	Submit report on possible improvements of the MP to the CA, if applicable
No specified deadline	CA	Carry out further checks on submitted annual emissions reports, where considered necessary or as may be required by national legislation; require changes of the emissions data and surrender of additional allowances, if applicable (in accordance with Member State legislation).

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General aspects

EU ETS scope and installation boundaries

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EU ETS scope II

- **Direct emissions** only → No double counting
- **Annex I** of the **EU ETS Directive** contains a list of **industrial activities** covered
 - Combustion of fuels > 20MW
 - Refining of oil (combustion units > 20MW)
 - Manufacture of glass (melting capacity > 20t/d)
 - Prod. of cement clinker (production capacity > 500 (50) t/d)
 -
- **Annex II** of the **EU ETS Directive** contains list of **GHG covered**

Installation is covered by the EU ETS if it carries out at least one Annex I activity of the EU ETS Directive!

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System boundaries: step-by-step

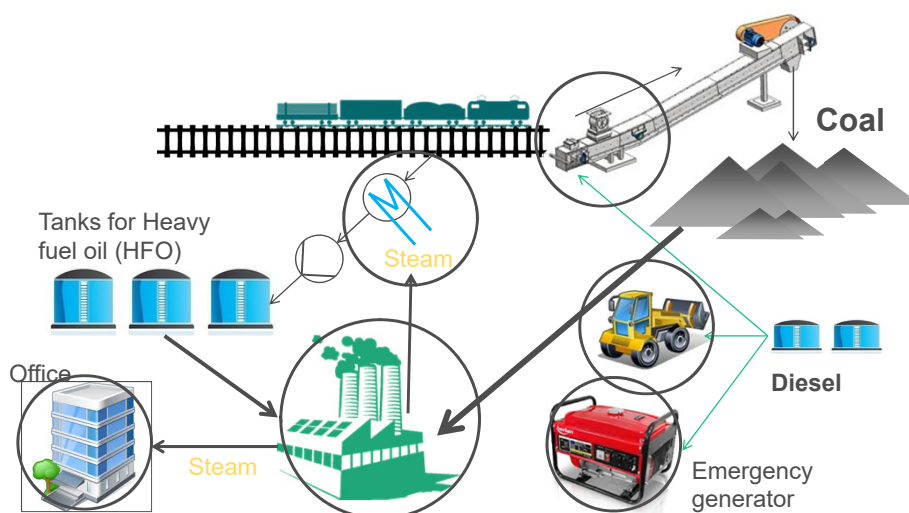
1. Define (broadest) installation boundaries
2. Are any activities of Annex I carried out and above threshold?
 - a) Yes → List the activities and associated units in the permit
 - b) Proceed with the units not yet covered with point 3
3. List **all combustion units** (boilers, burners, turbines, furnaces, flares, etc.) **except mobile machinery** for transportation and units for **incineration of hazardous and municipal waste**
4. Temporarily exclude units **<3MW** thermal input and units using exclusively **biomass**
5. Are the remaining units in total >20MW thermal input?
 1. **If yes:** Activity „combustion of fuels“ is relevant in this installation. Include this activity in the permit, and also include units <3MW → **whole installation is in the ETS**
 2. **If no:** If also point 2 is „no“ → **installation is not in the ETS**

Municipal waste incinerators will start having a monitoring obligation as of 2024

Provisions will change as of 2026

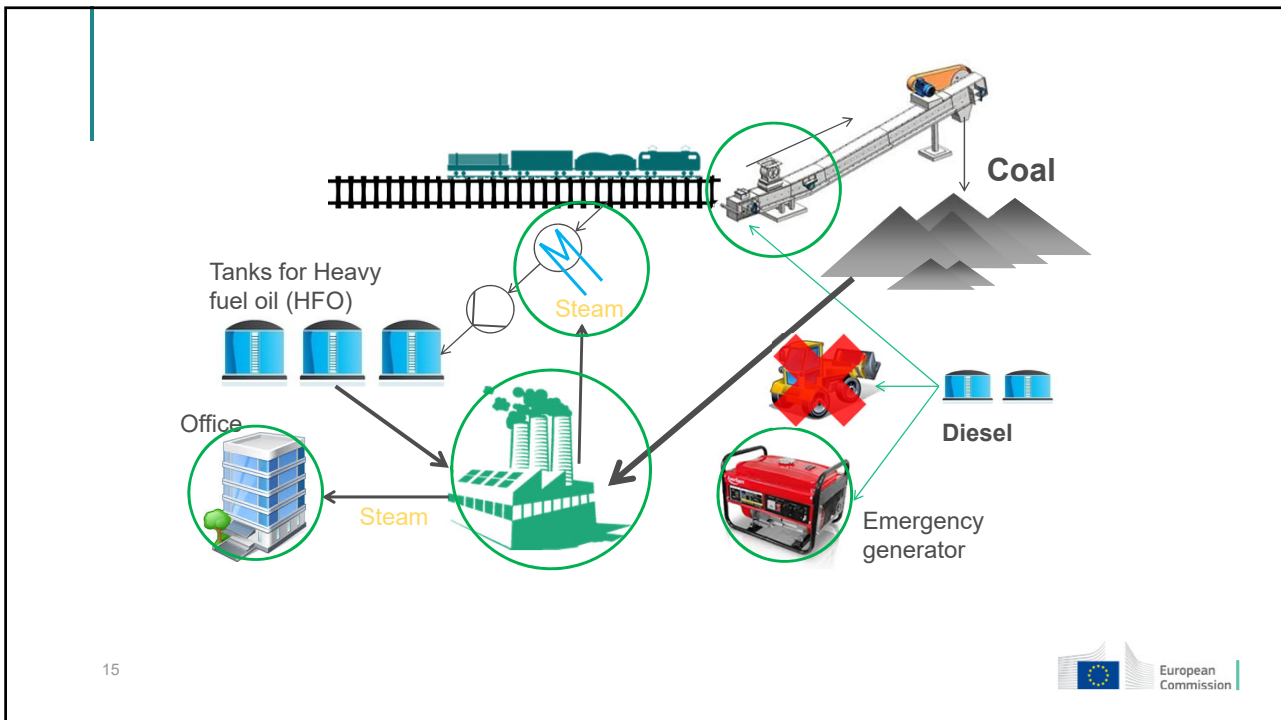
→ Forthcoming update of Guidance on Annex I will describe changes in detail
 current (outdated) version: https://climate.ec.europa.eu/system/files/2016-11/guidance_interpretation_en.pdf

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General aspects

Overview of templates, tools and guidances

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Where to start reading?

Quick Guides

- Operators
- Aircraft operators
- CAs
- Verifiers
- NABs

with hyperlinks to...

Guidance Document 1 – General guidance (stationary installations)

- GD3 Biomass
- GD4 Uncertainty
- GD5 Sampling & Analysis
- GD6 Data Flow Control
- GD7 GEMS

Templates for submission

- T1 MP Template
- Exemplar MP
- Exemplar MP Update
- Checklist MP
- T4 AER Template
- AER user manual
- Checklist AER
- Paper on data gaps
- T7 IR Template
- IR user manual
- Exemplar IR

Supporting tools and exemplars

- GD4a Exemplar UA
- Tool Uncertainty ass.
- GD5a Exemplar SP
- Frequency Tool
- GD6a Exemplar RA
- RA Tool

Training material

- Training material
- Training material
- Training material
- Training material
- Training material

FAQs

- General issues
- GD-specific issues
- Template issues

Training

- "Round Robin" Test

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Where to start reading?

DG CLIMA's MRVA website:
https://ec.europa.eu/clima/policies/ets/monitoring_en#tab-0-1

Quick guides

- 01/03/2022 - [Quick guide for operators of stationary installations](#) EN | ...
- 01/03/2022 - [Quick guide for aircraft operators](#) EN | ...
- 01/03/2022 - [Quick guide for competent authorities](#) EN | ...
- 21/03/2022 - [Quick guide for verifiers](#) EN | ...
- 21/03/2022 - [Quick guide for national accreditation bodies](#) EN | ...

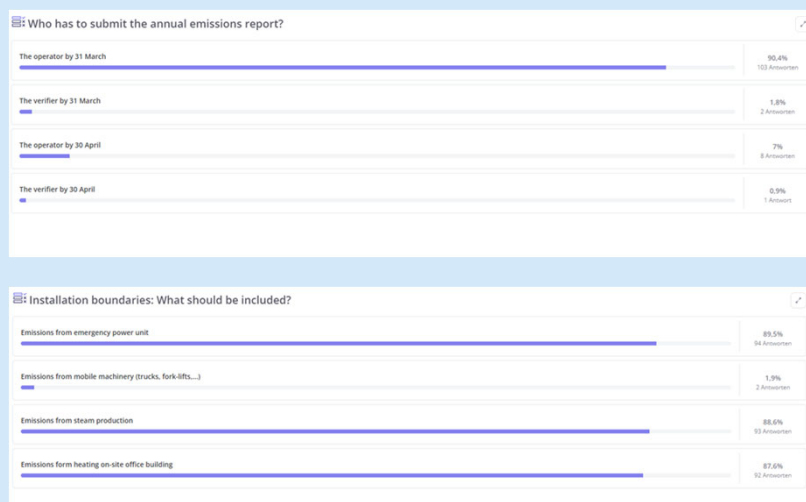
Guidances, templates, tools,...

Monitoring and Reporting Regulation (MRR): Guidance and templates

- 20/02/2023 - [Guidance document No. 1 - The Monitoring and Reporting Regulation – General guidance for installations](#) EN | ...
 - [Template No. 1: Monitoring plan for the emissions of stationary installations](#) EN | ...
 - [User Manual for the AER template](#) EN | ...
 - [Template No. 4: Annual emissions report of stationary source installations](#) EN | ...

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Beekast: general aspects



Operator preparing an MP

Purpose of the MP, monitoring approach, tier system, categorisation of installation, emissions sources, source streams and their categorisation, reasons for derogation

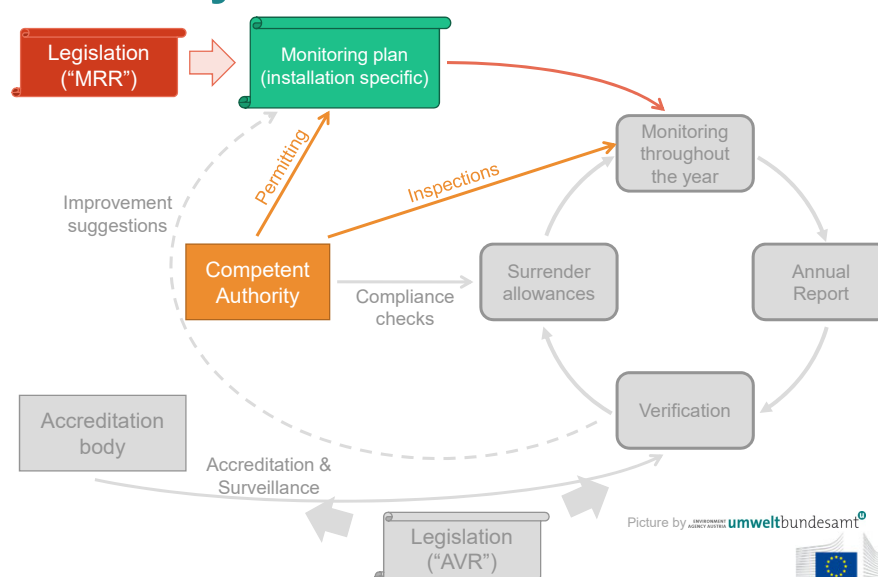
Operator preparing an MP

Purpose of the Monitoring Plan (MP)

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Compliance Cycle



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Operator preparing an MP

Monitoring approach

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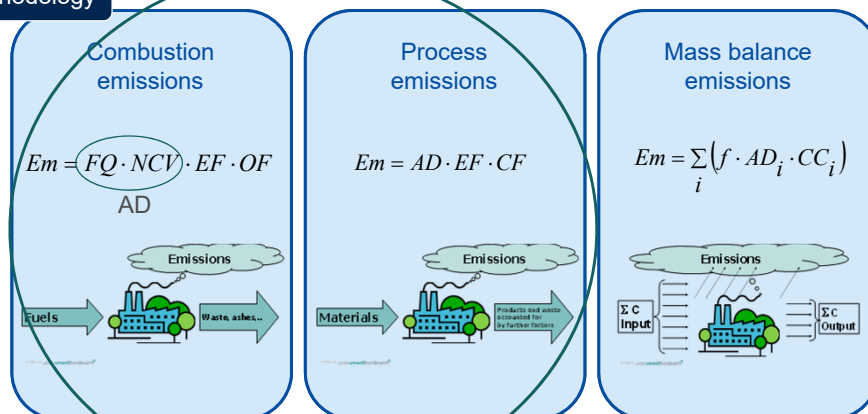
How should operators monitor emissions?

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Monitoring approaches: calculation based

Standard methodology



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Em Emissions [t CO₂]FQ Fuel quantity [t or Nm³]NCV Net Calorific Value [TJ/t or TJ/Nm³]EF Emission factor [t CO₂/TJ, t CO₂/t or t CO₂/Nm³]

OF Oxidation factor [dimensionless]

CF Conversion factor [dimensionless]

AD Activity data [TJ, t or Nm³]f factor for converting the molar mass of carbon to CO₂. The value of f is 3.664 t CO₂/t C (Article 25(1)).

i index for the material or fuel under consideration.

AD_i Activity data (i.e. the mass in tonnes) of the material or fuel under consideration.

Incoming materials or fuels are taken into account as positive, outgoing materials or fuels have negative activity data.

Mass streams to and from stock piles must be taken into account appropriately in order to give correct results for the calendar year.

CC_i The carbon content of the component under consideration. Always dimensionless and positive.

Calculation: standard methodology

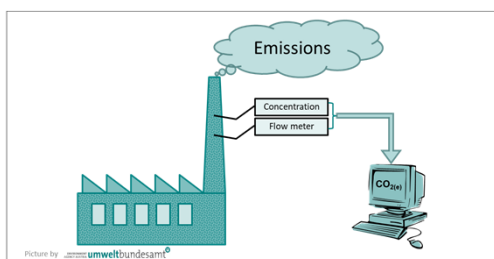
□ **Combustion emissions:** $Em = FQ \cdot NCV \cdot EF_{pre} \cdot (1 - BF) \cdot OF$

- Em Emissions [t CO₂]
- FQ Fuel quantity [t or Nm³]
- NCV Net Calorific Value [TJ/t or TJ/Nm³]
- EF_{pre} Preliminary emission factor (i.e. total CO₂ incl. biomass) [t CO₂/TJ, t CO₂/t, t CO₂/Nm³]
- BF biomass fraction [–]
- OF Oxidation factor [–]

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Monitoring approaches: measurement based



Continuous emission measurement systems (CEMS)

- Requires two elements:
 - Measurement of the GHG concentration
 - Volumetric flow of the gas stream
- Extensive QA/QC measures required
- Corroborating calculations

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Monitoring approaches: fall-back

- No-tier methodology applicable if:
 - a calculation-based approach using at least tier 1 for at least one major or minor source stream, is not possible without incurring unreasonable costs AND
 - a measurement-based approach for the correlated emission source using tier 1 is also not possible without incurring unreasonable costs
- In such case “any” estimation method is allowed, provided overall emissions uncertainty is
 - Less than 7.5% for category A installation
 - Less than 5.0% for category B installation
 - Less than 2.5% for category C installation
- Justification for the approach and a full uncertainty analysis are required with every annual emission report

*Fall-back approach avoids having a “non-compliance” situation.
It is however very rarely used!*

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Operator preparing an MP

Tier system

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What data sources can be used for each parameter?

Fuel quantity	Net calorific value	(prelim.) Emission factor	Biomass fraction	Oxidation factor
Tier 4	Tier 3	Tier 3	Tier 2	Tier 3
Tier 3	Tier 2a / 2b	Tier 2a / 2b	Tier 2	Tier 2
Tier 2	Tier 1	Tier 1	Tier 1	Tier 1
Tier 1				

Picture by [umweltbundesamt](#)

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Tier system I

- Tiers = **data quality levels**
- Tiers with higher numbers → higher accuracy, but more demanding
- Tiers with same number → considered equivalent
- Tiers with lower numbers → lower accuracy, but less demanding
- Select tiers for determining emissions from fuels under calculation-based methodologies ($Em = AD * EF * OF / CF$)

Fuel quantity	Net calorific value	(prelim.) Emission factor	Biomass fraction	Oxidation factor
Tier 4	Tier 3	Tier 3	Tier 2	Tier 3
Tier 3	Tier 2a / 2b	Tier 2a / 2b	Tier 1	Tier 2
Tier 2	Tier 1	Tier 1	Tier 1	Tier 1

Picture by www.umweltbundesamt.de

Tier system adds more cost-efficiency to the monitoring & reporting obligations

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Tier system II

- Combustion emissions: $Em = FQ \cdot NCV \cdot EF_{pre} \cdot (1 - BF) \cdot OF$
- Process emissions: $Em = AD \cdot EF \cdot CF$
- Mass balance emissions: $Em_{MB} = \sum_i (f \cdot AD_i \cdot CC_i)$
- There are two ways how to determine activity data (fuel/material quantity):
 - a) based on **continual metering** at the process which causes the emissions
 - b) based on aggregation of metering of quantities separately delivered (**batch metering**) taking into account relevant stock changes
- Tiers for activity data refer to measurement uncertainties (e.g. Tier 4 $\pm 1.5\%$)
 - Requires to carry out an uncertainty assessment (Art. 12(1), 28, 29)

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Further information: GD4, GD4a and [uncertainty tool](#)



Tier system III

- Combustion emissions: $Em = FQ \cdot NCV \cdot EF_{pre} \cdot (1 - BF) \cdot OF$
 - Process emissions: $Em = AD \cdot EF \cdot CF$
 - Mass balance emissions: $Em_{MB} = \sum_i (f \cdot AD_i \cdot CC_i)$
- Those “calculation” factors are to be determined by either:
- Default values, OR
 - Sampling & Analysis

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Tier system IV

- Combustion emissions: $Em = FQ \cdot NCV \cdot EF_{pre} \cdot (1 - BF) \cdot OF$
 - Light fuel oil: $10.000 \text{ t} \cdot 41,7 \frac{\text{GJ}}{\text{t}} \cdot 78 \frac{\text{tCO}_2}{\text{TJ}} \cdot (1 - 0) \cdot 1 \approx 32.526 \text{ tCO}_2$
 - e.g. Tier 2a Default value
 - e.g. Tier 2a Default value
 - e.g. Tier 1 Default value
 - Biomass fraction (e.g. Tier 3 analysis)
 - (Fossil and bio) mixed waste: $12.000 \text{ t} \cdot 27,5 \frac{\text{GJ}}{\text{t}} \cdot 80,5 \frac{\text{tCO}_2}{\text{t}} \cdot (1 - 0,15) \cdot 1 \approx 22.580,25 \text{ tCO}_2$
 - e.g. Tier 3 Analysis
 - e.g. Tier 3 Analysis
 - e.g. Tier 1 Default value
- Process emissions: $Em = AD \cdot EF \cdot CF$
 - Dolomite: $11.000 \text{ t} \cdot 0,46 \frac{\text{tCO}_2}{\text{t}} \cdot 1 = 5.060 \text{ tCO}_2$
 - e.g. Tier 3 Analysis
 - e.g. Tier 1 Default value
- Mass balance emissions: $Em_{MB} = \sum_i (f \cdot AD_i \cdot CC_i)$
 - Input: iron ores $3,664 \frac{\text{tCO}_2}{\text{tC}} \cdot 1.000.000 \text{ t} \cdot 0,11 \frac{\text{tC}}{\text{t}} = 403.040 \text{ tCO}_2$
 - e.g. Tier 3 Analysis
 - e.g. Tier 3 Analysis
 - Output: steel $3,664 \frac{\text{tCO}_2}{\text{tC}} \cdot (-4.000.000 \text{ t}) \cdot 0,0008 \frac{\text{tC}}{\text{t}} = -11.725 \text{ tCO}_2$
 - e.g. Tier 3 Analysis

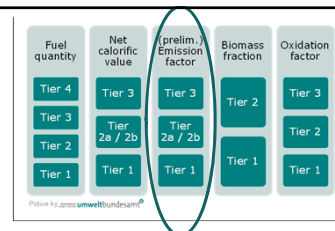
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Tier system V

- Example for emission factor (EF):

- **Tier 1:**
 - IPCC standard factors (table in Annex VI), or
 - if not listed in Annex VI, values based on historical analysis, if still representative
- **Tier 2a:**
 - Standard factors from national inventories, or other literature values compatible with those
 - Values guaranteed by the supplier (if demonstrated carbon content within 1% at 95% CI)
- **Tier 2b:** based on established proxies / correlations, e.g. between NCV and EF
- **Tier 3:** Based on sampling & chemical analysis (see next slide)
 - Special case: for pure chemical substances, CA may accept stoichiometric carbon content



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Sampling & Analysis

- Relevant where Annex II or IV (sector-specific Annexes) of the MRR refer to “analyses in accordance with Articles 32 to 35 (MRR)”
- **Art 32 MRR:** General provision to use appropriate standards
- **Art 33 MRR:** Provisions for a sampling plan to be written by the operator
 - Example sampling plan (GD5a): https://climate.ec.europa.eu/system/files/2021-09/ex_5a_sampling_plan_en.pdf
- **Art 34 MRR:** Requirements for the accredited laboratory (EN 17025) or a non-accredited laboratory demonstrating equivalence
- **Art 35 MRR:** Frequency of analyses
 - Guidance Document 5: https://climate.ec.europa.eu/system/files/2021-10/policy_ets_monitoring_gd5_sampling_analysis_en.pdf

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Tier system IV

Activity/source stream type	Parameter to which the uncertainty is applied	Tier 1	Tier 2	Tier 3	Tier 4
Combustion of fuels and fuels used as process input					
Commercial standard fuels	Amount of fuel [t] or [Nm ³]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Other gaseous and liquid fuels	Amount of fuel [t] or [Nm ³]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Solid fuels	Amount of fuel [t]	± 7,5 %	± 5 %	± 2,5 %	± 1,5 %
Flaring	Amount of flare gas [Nm ³]	± 17,5 %	± 12,5 %	± 7,5 %	
Scrubbing: carbonate (Method A)	Amount carbonate consumed [t]	± 7,5 %			
Scrubbing: gypsum (Method B)	Amount gypsum produced [t]	± 7,5 %			
Scrubbing: urea	Amount urea consumed	± 7,5 %			

Annex II: tiers for fuel quantity
(calculation based approach)

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Annex IV: activity specific
monitoring methodologies

11. MANUFACTURE OF GLASS, GLASS FIBRE OR MINERAL WOOL INSULATION MATERIAL AS LISTED IN ANNEX I TO DIRECTIVE 2003/87/EC

A. Scope

The operator shall apply the provisions in this section also to installations for the production of water glass and stone/rock wool.

The operator shall include at least the following potential sources of CO₂ emissions: decomposition of alkali- and alkali earth carbonates as the result of melting the raw material, conventional fossil fuels, alternative fossil-based fuels and raw materials, biomass fuels (biomass wastes), other fuels, carbon containing additives including coke, coal dust and graphite, post-combustion of flue gases and flue gas scrubbing.

B. Specific monitoring rules

Emissions from combustion, including flue gas scrubbing, shall be monitored in accordance with section 1 of this Annex. Process emissions from raw materials shall be monitored in accordance with section 4 of Annex II. Carbonates to be taken into account include at least CaCO₃, MgCO₃, Na₂CO₃, NaHCO₃, BaCO₃, Li₂CO₃, K₂CO₃, and SrCO₃. Only Method A shall be used. Emissions from other process materials including coke, graphite and coal dust shall be monitored in accordance with section 5 of Annex II.

By way of derogation from section 4 of Annex II, the following tier definitions for the emission factor shall apply:

Tier 1: Stoichiometric ratios as listed in section 2 of Annex VI shall be used. The purity of relevant input materials shall be determined by means of industry best practice.

Tier 2: The determination of the amount of relevant carbonates in each relevant input material shall be carried out in accordance with Articles 32 to 35.

For the conversion factor, only tier 1 shall be applicable.

Operator preparing an MP

Categorisation of installation

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What data quality is required?

Monitoring effort / accuracy should be proportionate to emission levels

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Categorisation of installation I

- Installations shall be classified by operators:
 - **Category A** ≤ 50.000 t CO₂(e) /year
 - **Category B** > 50.000 t CO₂(e) /year ≤ 500.000 t CO₂(e) /year
 - **Category C** > 500.000 t CO₂(e) /year
- Exclusion of emissions from sustainable biomass (zero-rated)
- Inclusion of transferred CO₂ (CO₂ transferred out of installation counts as emitted)
- **Installation with low emissions** < 25.000 t CO₂(e) /year
 - Simplification of the MRV system (e.g. simplified MP, minimum tier 1 for activity data and calculation factors, exempted from reporting on improvements reacting on recommendations by the verifier,...)

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Operator preparing an MP

Emission sources, source streams and their categorisation

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Emission sources

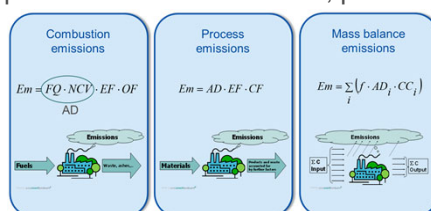
- 'emission source' means a separately identifiable part of an installation or a process within an installation, from which relevant greenhouse gases are emitted
- Examples:
 - Furnace
 - Kiln
 - Emergency generator
 - Steam boiler
 - Sintering plant
 -

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Source streams

- 'fuel or material entering or leaving the installation, with a direct impact on emissions'
- Examples:
 - Fuels: natural gas, light fuel oil, heavy fuel oil, diesel, ...
 - Raw materials: limestone, dolomite, clay, ores, coal ...
 - Mass streams going into and coming from the system boundaries of mass balances (production of coke, production of iron and steel, production of soda ash, ...)



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Source streams and their categorisation

- Classification of all source streams (calculation-based approach)
 - **Compare the emissions of the source stream** with the 'total of all monitored items'
 - Before subtraction of transferred CO₂
 - Exceeds threshold only once in 6 years
 - no need to change the category
 - no need to update MP

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Source streams and their categorisation

- **De-minimis source streams**
 - jointly correspond to less than 1.000 t fossil CO₂(e) / year or
 - less than 2% (up to 20.000 tonnes) of fossil CO₂(e) / year
- **Minor source streams**
 - jointly correspond to less than 5.000 t fossil CO₂(e) / year or
 - less than 10% (up to 100.000 tonnes) of fossil CO₂(e) / year
- **Major source streams**
 - not classified as minor or de-minimis

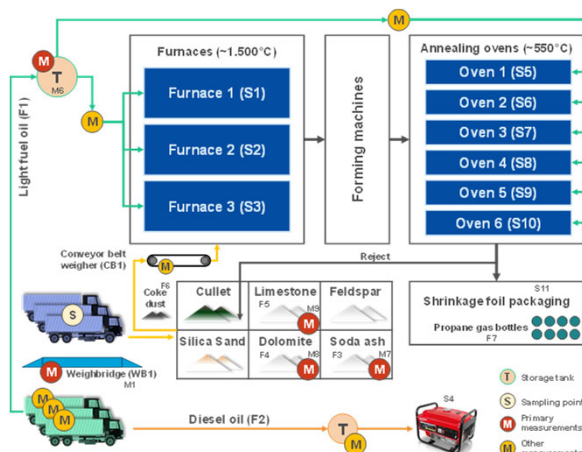
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Example: category of installation and source streams

Installation producing container glass

Name	t CO2e
Light fuel oil	75.000
Diesel oil	1
Soda ash	5.500
Dolomite	4.000
Limestone	1.450
Coke dust	50



Category A, B or C installation?

De-minimis, minor or major source stream?

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Which tiers have to be applied?

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Example: category of installation and source streams

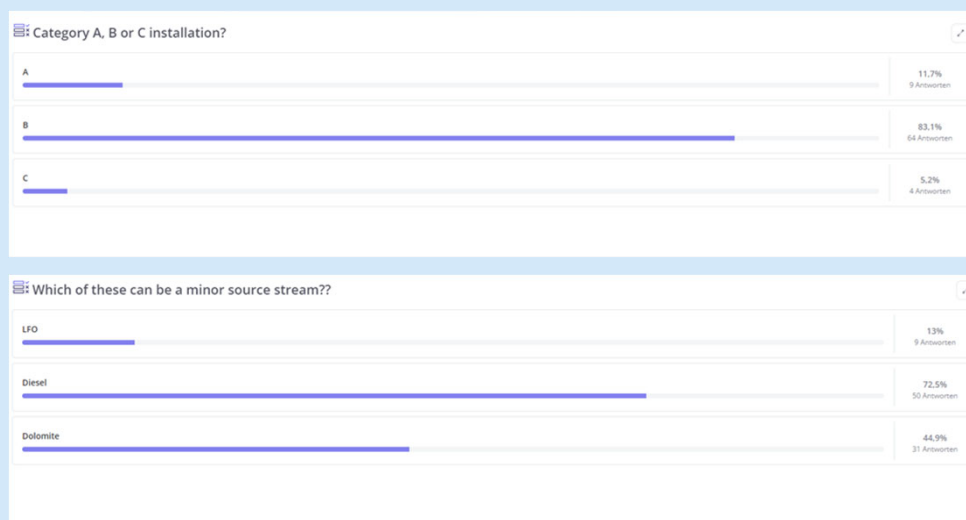
MP Template automatically displays applicable categories and tiers

Installation category	Source stream category	Tier required**	Minimum tier (tier required technically not feasible or unreasonable costs)	Absolute minimum tier (technically not feasible or unreasonable costs for transitional period to be agreed with the CA)	If not at least tier 1 is possible
Cat. C* (> 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 1 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Cat. B* (50 < x ≤ 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 2 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Cat. A (≤ 50kt)	Major	tier in Annex V	tier in Annex V minus 2 (normally tier 1)	tier 1	Fall-back approach
	Minor	tier in Annex V	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Inst. with low emissions (< 25kt)	Major	tier 1 unless higher tier is achievable without additional effort			Fall-back approach
	Minor	tier 1 unless higher tier is achievable without additional effort			
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.

⁵⁴ * for calculation factors (emission factor, net calorific value,...) of source streams that are commercial standard fuels the same tier requirements as for category A installations apply

** for oxidation and conversion factor the minimum requirement is to apply the lowest tier in Annexes II & IV (normally tier 1 = 100%)

Beekast



Example: category of installation and source streams

86.001 tCO₂ →
cat. B installation

Installation category	Source stream category	Tier required**	Minimum tier (tier required technically not feasible or unreasonable costs)	Absolute minimum tier (technically not feasible or unreasonable costs for transitional period to be agreed with the CA)	If not at least tier 1 is possible
Cat. C* (> 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 1 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Cat. B* (50 < x ≤ 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 2 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Cat. A (≤ 50kt)	Major	tier in Annex V	tier in Annex V minus 2 (normally tier 1)	tier 1	Fall-back approach
	Minor	tier in Annex V	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Inst. with low emissions (< 25kt)	Major	tier 1 unless higher tier is achievable without additional effort		Fall-back approach	
	Minor	tier 1 unless higher tier is achievable without additional effort			
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.

* for calculation factors (emission factor, net calorific value...) of source streams that are commercial standard fuels the same tier requirements as for category A installations apply

** for oxidation and conversion factor the minimum requirement is to apply the lowest tier in Annexes II & IV (normally tier 1 = 100%)

Example: category of installation and source streams

Soda ash and Dolomite: possible cat: minor source stream → threshold accumulated exceeded → one has to be major source stream → MP template helps

Source stream	Emissions	% of installation's emissions	<1000t (De-minimis)	< 2% (De-minimis)	< 5000t (Minor source stream)	< 10% (Minor source stream)	Possible category
LFO	75000	87,2%	no	no	no	no	Major source stream
Diesel	1	0,0%	yes	yes	yes	yes	De-minimis
Dolomite	4000	4,7%	no	no	yes	yes	Minor source stream
Soda ash	5500	6,4%	no	no	no	yes	Minor source stream
Limestone	1450	1,7%	no	yes	yes	yes	De-minimis
Coke dust	50	0,1%	yes	yes	yes	yes	De-minimis
Sum	86001	100,0%					

Important note! Operators shall always provide the actual applied tiers, not the ones they are allowed to.

For example, if for a de-minimis source stream the operator carries out analysis in accordance with Art. 32 to 35 already for other purposes, they comply with the requirements for major source streams

Example: category of installation and source streams

Installation category	Source stream category	Tier required**	Minimum tier (tier required technically not feasible or unreasonable costs)	Absolute minimum tier (technically not feasible or unreasonable costs for transitional period to be agreed with the CA)	If not at least tier 1 is possible
Cat C (> 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 1 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	Fall-back approach
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Cat B (50 < x ≤ 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 2 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	Fall-back approach
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
De-minimis: Cat. A (≤ 50kt)	Major	tier in Annex V	tier in Annex V minus 2 (normally tier 1)	tier 1	Fall-back approach
	Minor	tier in Annex V	tier 1	n.a.	Fall-back approach
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Inst. with low emissions (< 25kt)	Major	tier 1 unless higher tier is achievable without additional effort			Fall-back approach
	Minor	tier 1 unless higher tier is achievable without additional effort			Fall-back approach
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.

** for calculation factors (emission factor, net calorific value...) of source streams that are commercial standard fuels the same tier requirements as for category A installations apply

** for oxidation and conversion factor the minimum requirement is to apply the lowest tier in Annexes II & IV (normally tier 1 = 100%)

Operator preparing an MP

Reasons for derogation

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Reasons for derogation

- **Cost effectiveness** is an important concept in the MRR
- Possible for the operator to get permission from the competent authority to derogate from a specific requirement of the MRR if:
 - fully applying the requirement would lead to **unreasonable costs** (Article 18) or
 - measure is **technically not feasible** (Article 17)

Operator needs to demonstrate to the satisfaction of the CA whether something technically not feasible or would incur unreasonable costs

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Unreasonable costs I

- Costs are considered unreasonable, where the “**costs exceed the benefit**”!
- Costs to be taken into account:
 - Investment costs: Annual costs will be calculated by linear depreciation
 - O&M costs: including own labour costs
 - Other costs: e.g. costs for analyses
 - **IMPORTANT!** Only costs which are **additional** and can be **clearly attributed** to the improvement measures can be taken into account → **no double counting**

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Unreasonable costs II

- Cost exceeds benefit?

$$Benefit = P \cdot AEm \cdot IF$$

Reference price and costs may change soon: 80€/t

P.....specified allowance price = 20 € / t CO₂(e)

AEm.....Average emissions from related source stream(s) [t CO₂(e)/year]

IF.....Improvement factor

Improvement factor

- for AD: “Uncertainty achieved – Uncertainty required”
- for improvements not related to AD: 1%

Further information:
[Unreasonable costs tool](#)

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Operator preparing an MP

Biomass issues, simplifications for installations with low emissions, transferred and inherent CO₂, summaries of procedures to be attached to the monitoring plan, MP template

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Operator preparing an MP

Biomass issues

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Biomass I

- In order for biomass used for combustion to be zero-rated, the biomass must satisfy the **sustainability and GHG savings criteria** defined by the Renewable Energy Directive (Article 38(5) of the MRR).
- RED II (*Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources*): <http://data.europa.eu/eli/dir/2018/2001/2022-06-07>

Further information: GD 3

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Biomass II

Further information: GD 3 and MRVA training material on biomass

- Biomass emissions from combustion can be zero rated if:
 - **Sustainability criteria** are fulfilled → Article 29 (2) to (7) of Directive (EU) 2018/2001 (RED II),
AND
 - **GHG saving criteria** are fulfilled → Article 29 (10) of Directive (EU) 2018/2001 (RED II)
- Municipal waste can always be zero-rated
- Biofuels, bioliquids and biomass fuels produced from waste and residues are required to fulfil only GHG saving criteria, not the sustainability criteria
 - However, residues from agricultural, aquaculture, fisheries and forestry have to fulfil both, sustainability and GHG saving criteria

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Operator preparing an MP

Simplifications for installations with low emissions

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Simplifications for installations with low emissions I

- 'installations with average annual emissions, excluding CO₂ stemming from biomass and before subtraction of transferred CO₂, of **less than 25.000 tonnes of CO₂(e) per year**'
- CA may allow installations with low emissions to **submit a simplified monitoring plan** (not for installations carrying out N₂O related activities)

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Simplifications for installations with low emissions II

- May apply **tier 1 for AD and calculation factors** unless a higher tier is possible without additional effort (applies to all source streams, emission sources)
- **Exempt from submitting supporting documents** (uncertainty assessment and risk assessment)
 - Note: Not exempt from carrying out those assessments! → make available to verifier
- **Exempt from reporting on improvements** in response to **verifier's recommendations**
- May use **any laboratory** that is technically competent and able to generate valid results
- ...

Further information: GD 1 Chapter 7

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Operator preparing an MP

Transferred and inherent CO₂

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Transferred CO₂

- CO₂ not being emitted, but transferred out of an installation may be subtracted from that installation's emissions **only if the receiving installation is one of the following:**
 - a **capture** installation for the purpose of transport and long-term geological storage in a storage site permitted under Directive 2009/31/EC;
 - a **transport** network with the purpose of long-term geological storage in a storage site permitted under Directive 2009/31/EC;
 - a **storage** site permitted under Directive 2009/31/EC for the purpose of long-term geological storage;
 - an installation where the CO₂ is used to produce **precipitated calcium carbonate (PCC)**, in which the used CO₂ is chemically bound. → **rule may change soon**
- In **all other cases**, the CO₂ transferred out of the installation counts as **emission of the originating installation**

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Transferred CO₂

- Amounts transferred have to be determined using **continuous monitoring systems (CEMS)**
- For the **PCC case**, the MRR requires explicitly that a calculation-based approach is to be used → **rule may change soon**
- **Monitoring of CCS:** receiving installation has to add that CO₂ to its emissions, before it may again subtract the amount transferred to the next installation or to the storage site

Further information: GD 1

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Transferred N₂O

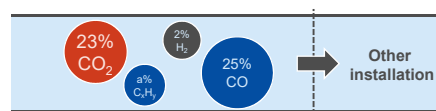
- The pre-condition for **subtracting the N₂O** from the transferring installation's reported emissions is that the N₂O is **received by an installation that monitors and reports emissions under the MRR**.
- The latter installation has to treat the N₂O as if it were generated within the receiving installation itself (i.e. **monitor it by CEMS and report it**).
- If the **N₂O is not used within the receiving installation**, or where there is no evidence that the N₂O is destroyed by relevant abatement equipment, i.e. where the N₂O is sold and emitted later outside the installation, it shall be accounted for as **emission of the installation where it originates**.

Further information: GD 1

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Inherent CO₂



- 'inherent CO₂': CO₂ which is contained in a gas which is considered a fuel, such as waste gases from a blast furnace or from some processes of mineral oil refineries (**CO₂ which results from an Annex I activity**; e.g.: synthesis gas, blast furnace gas,..)
- In order to ensure a consistent reporting, the following approaches are applicable:
 - Where an EU ETS installation uses a fuel which contains inherent CO₂, the **EF takes into account the inherent CO₂** (the CO₂ forms part of the source stream, and the inherent CO₂ counts as emitted by the installation which indeed emits the CO₂)
 - The EU ETS installation which transfers the CO₂ to the other installation, subtracts the CO₂ from its emissions. Usually this is done by use of a **mass balance**.
 - Exception: inherent CO₂ is transferred to a non-ETS installation. The inherent CO₂ has to be counted as emission from the ETS installation which transfers the CO₂.

Further information: GD 1

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Operator preparing an MP

Summaries of procedures to be attached in the MP

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Summaries of procedures to be attached to the MP I

- MP should ensure **complete** and **consistent high quality monitoring** by the operator **over the years**
- **Changes need approval** by the competent authority
- Some elements are **less crucial or may change frequently**
 - →such elements shall be put into **written procedures**
- Have to be **described briefly** within the MP but they are **not part of the MP**
- Written procedures established, documented, implemented and maintained by the operator for activities under the monitoring plan, as appropriate
- Sent to CA upon request

Written procedures give operators the possibility to implement changes as long as the description in the MP is still valid and the legal requirements are met

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Summaries of procedures to be attached to the MP II

- Examples for written procedures:
 - Managing responsibilities and competency of personnel;
 - Data flow and control procedures
 - Quality assurance measures;
 - Estimation method for substitution data where data gaps have been found;
 - Regular review of the MP for its appropriateness (including uncertainty assessment where relevant);
 - A sampling plan, if applicable and a procedure for revising the sampling plan, if applicable
 - Procedures for methods of analyses, if applicable;
 -

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Further information: GD 1



Operator preparing an MP

MP template

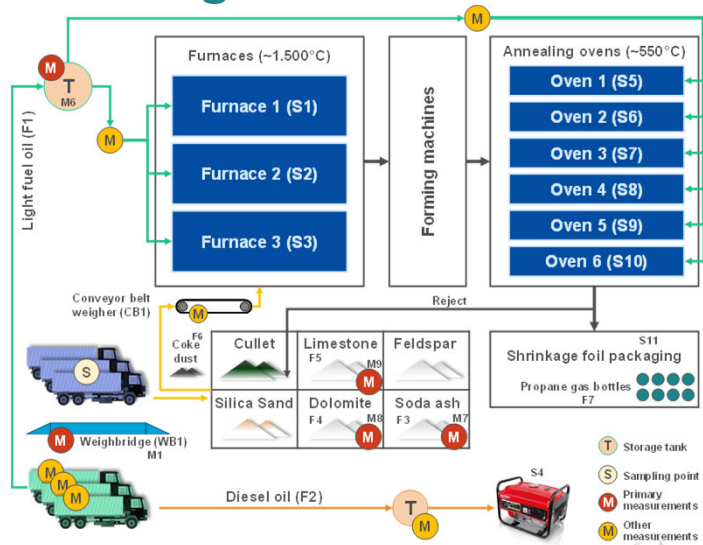
76



Example installation: glass

Category B installation producing container glass

Name	t CO2e
Light fuel oil	75.000
Diesel oil	1
Soda ash	5.500
Dolomite	4.000
Limestone	1.450
Coke dust	50



T Storage tank
S Sampling point
M Primary measurement
M Other measurements

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MP template

(c) List of activities pursuant to Annex I of the EU ETS Directive carried out at the installation:
 Please provide the following technical details for each activity pursuant to Annex I of the EU ETS Directive carried out at your installation.
 Please also provide the capacity of each Annex I activity relevant at your installation.

Please note that 'capacity' in this context means:

- Rated thermal input (for activities whose inclusion in the EU ETS depends on the 20MW threshold), which is the rate at which fuel can be burned at the maximum continuous rating of the installation multiplied by the calorific value of the fuel and expressed as megawatts thermal.
- Production capacity for those specified Annex I activities for which production capacity determines the inclusion in the EU ETS.

Please make sure that the installation boundaries are correct and in line with Annex I of the EU ETS Directive. For further information please consult the relevant sections of the Commission's Guidance on Interpretation of Annex I. This document can be found under the following link:

http://ec.europa.eu/clima/policies/ets/docs/guidance_interpretation_en.pdf

The list entered here will be available as a drop-down list in the tables below where a reference to the activity is required for the installation description.

For showing/hiding examples, press the "Examples" button in the navigation area.

Activity Ref. (A1, A2...)	Annex I Activity	Total Activity Capacity	Capacity units	Rated thermal input in MW(th) (if capacity expressed in tonnes)	GHG emitted
A01	Production of cement clinker	1500	tonnes per day	230	CO2
A02	Combustion of fuels	120	MW(th)	120	CO2
A1	Manufacture of glass	700	tonnes per day	40	CO2

Scope Annex I
MRR
Link: [MRR](#)

Automatic determination of installation category

(d) Estimated annual emissions:

Please enter here the average annual emissions of your installation. This information is required for categorisation. Verified annual emissions of the previous trading period data OR if this data is not available, or is inappropriate, excluding CO2 from biomass.

The resulting category is used for identifying minimum tier requirements in section 8 (Source streams).

Estimated annual emissions	88 000	t CO2e
Installation category in accordance with Article 19	B	

(a) Monitoring approaches proposed to apply:

Please confirm which of the following monitoring approaches you propose to apply:

In accordance with Article 21, emissions may be determined using either a calculation based method or a measurement based method. The use of a specific methodology is mandatory according to the provisions of the MRR.

Note: the operator may, subject to competent authority approval, combine measurement and calculation for different source streams, provided that there is no double counting of reportable emissions occurs.

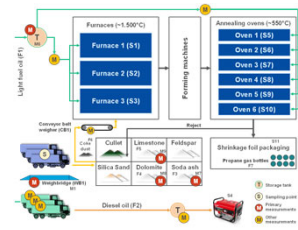
Please make sure that you don't leave these fields empty, because inputs here will trigger conditional formatting, which guides you through

Calculation approach for CO2:	WAHR	Relevant sections: 6 (except d), 7, 8
Measurement approach for CO2:	FALSCH	
Fall-back approach (Article 22):	WAHR	Relevant sections: 12
Monitoring of N2O emissions:	FALSCH	
Monitoring of PFC emissions:	FALSCH	
Monitoring of transferred/inherent CO2 and CCS:	FALSCH	

Decide monitoring approach

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MP template



Source stream category

Source Stream ref. F1, F2,...	Source stream full name (name + type)	Estimated emissions [t CO2e / year]	Possible category	Selected category
F01	Raw meal, Cement clinker: Kiln input based (Method A)	98 000	Major	Major
F02	Heavy fuel oil, Combustion: Other gaseous & liquid fuels	19 300	Major	Major
F1	Light fuel oil, Combustion: Commercial standard fuels	75 000	Major	Major
F2	Diesel oil, Combustion: Commercial standard fuels	1	De-minimis	De-minimis
F3	Soda ash, Glass and mineral wool: Process (method A): carbonate only	5 500	Minor	Major
F4	Dolomite, Glass and mineral wool: Process (method A): carbonate only	4 000	Minor	Minor
F5	Limestone, Glass and mineral wool: Process (method A): carbonate only	1 700	De-minimis	Minor
F6	Coke dust, Combustion: Solid fuels	50	De-minimis	De-minimis
F7	Propane gas, Combustion: Commercial standard fuels	10	De-minimis	De-minimis

Error message (sum of minor source streams):

Error message (sum of de-minimis source streams):

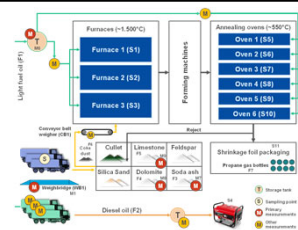
Error message (Total Emissions, difference to 5(d)): 0.0%

Error messages if de-minimis, minor etc. thresholds are exceeded



MP template

Name and category



F3 Source Stream 3:

Soda ash Major
 Source stream type: Glass and mineral wool: Process (method A): carbonate only
 Method applicable according to MRR: Standard method: Process, Article 24(2)
 Parameter to which uncertainty applies: Process input [t]

Required tier

(b) Measurement instruments used: MI1: Weigh MI2: Weigh MI7: Stock

Comment / Description of approach, if several instruments used:
 Amounts from delivery slips (MI2 or MI3) are cross-checked with amounts weighed in on site (MI1) before transferring data into the IT system. Any deviations outside tolerance limits are clarified with suppliers.

(c) Activity data tier level required: 2 Uncertainty shall not be more than ± 1.5%
 (d) Activity data tier used: 1 Uncertainty shall not be more than ± 2.5%
 (e) Uncertainty achieved: 1.55% Comment: see RoundRobin_UncertaintyAss_version-3.pdf

Actual applied tier

Calculation factors:

(f) Applied tiers for calculation factors:

calculation factor	required tier	applied tier	comment
i. Net calorific value (NCV)	n.a.		
ii. Emission factor (preliminary)	2	2	Laboratory analyses
iii. Oxidation factor	n.a.		
iv. Conversion factor	n.a.		
v. Carbon content	n.a.		
vi. Biomass fraction (if applicable)	n.a.		

(g) Details for calculation factors:

calculation factor	applied tier	default value	Unit	source ref	analysis ref	sampling ref	Analysis frequency
i. Net calorific value (NCV)							
ii. Emission factor (preliminary)	2				L1: ACME lab	RoundRobin_S	Quarterly
iii. Oxidation factor							
iv. Conversion factor							
v. Carbon content							
vi. Biomass fraction (if applicable)							



Comments and explanations:
 (h) Comments and justification if required tiers are not applied:
 The application of tier 2 for activity data would incur unreasonable costs (benefit: 20 €/t CO2 * 5 500 t CO2 * (1.55%-1.50%) = 55 €/year). Any new measuring equipment would lead to costs exceeding those benefits and also 2 000 €/year.

Tools supporting MP preparation

Unreasonable costs, uncertainty assessment, risk assessment, frequency of analyses

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Tools supporting MP preparation

Unreasonable costs

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Unreasonable costs tool III

$$Benefit = P \cdot AEm \cdot IF$$

- Guidance, tools and many examples can be found in:
 - GD 1: https://climate.ec.europa.eu/system/files/2023-03/gd1_guidance_installations_en.pdf
 - The “Round Robin test” Training event: https://climate.ec.europa.eu/system/files/2018-12/training_round_robin_test_en.pdf
 - Training event unreasonable costs: https://climate.ec.europa.eu/system/files/2020-02/unreasonable_costs_en.pdf
 - Tool for unreasonable costs: [Tool](#)
- Reference prices and costs (20 €/t, 2000/500 €) may change soon

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Tools supporting MP preparation

Uncertainty assessment

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Uncertainty assessment I

- **Article 12(1) MRR** requires the operator to submit to CA an uncertainty assessment as supporting document to the MP that should contain the following information:
 - Evidence for **compliance** with **uncertainty thresholds for activity data**
 - Evidence for **compliance** with uncertainty required for **calculation factors**, if applicable
 - Evidence for **compliance** with uncertainty requirements for **measurement based methodologies**, if applicable
 - If a **fall-back methodology** is applied, an uncertainty assessment for the total emissions

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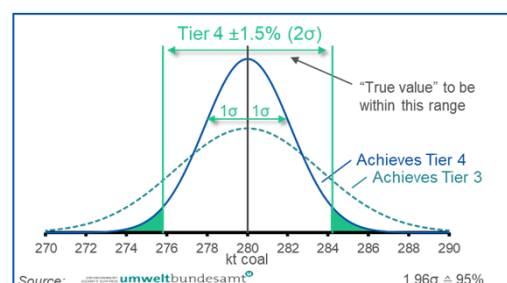


Uncertainty assessment II

Example: Category C installation consumes **280 kt coal**

- **Tier 4** is required for the determination of the fuel quantity (**Uncertainty: $\pm 1.5\%$**)

This means that the measurement system needs to provide results that allow the "true value" to be within 280 ± 4.2 kt ($\pm 1.5\%$) at the 95% (2σ) confidence level.



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Uncertainty assessment III

- Guidance, tools and many examples can be found in:
 - GD 4 & GD 4a: [GD 4](#) and [GD 4a](#)
 - Training events: https://climate.ec.europa.eu/system/files/2020-02/uncertainty_assessment_en.pdf and https://climate.ec.europa.eu/system/files/2016-11/uncertainty_assessment_training_material_en.pdf
 - Tool for uncertainty assessment: [Tool](#)

a. Amount of fuel or material imported to/consumed within the installation									
Quantity (Import, Consumption...)	Quantity per measurement [e.g. t or Nm ³]	Annual number of measurements	Annual quantity [e.g. t or Nm ³]	Uncertainty related to each measurement	Type of distribution	Standard or expanded uncertainty?	Value "in service"?	Conversion factor to "in service"	Correlated or uncorrelated?
Main meter = EVC A	230 000	1	230 000	1.00%	rectangular		in service		
b. Amount of fuel or material exported from the installation									
Quantity (Export)	Quantity per delivery [e.g. t or Nm ³]	Annual number of deliveries	Annual quantity [e.g. t or Nm ³]	Uncertainty related to each measurement	Type of distribution	Standard or expanded uncertainty?	Value "in service"?	Conversion factor to "in service"	Correlated or uncorrelated?
Sub-meter = EVC B	50 000	1	50 000	2.50%	rectangular		in service		
e. Average annual quantity consumed [e.g. t or Nm ³]					180 000		Storage capacity (share of annual quantity)		
f. Total uncertainty (k=1, 1σ, 68%)					0.84%				
g. Total uncertainty (k=2, 2σ, 95%)					1.68%				

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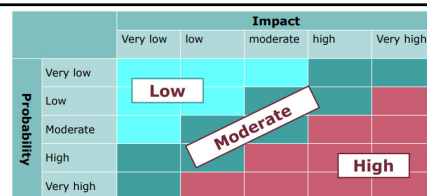
Tools supporting MP preparation

Risk assessment

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Risk assessment I



- Operator has to carry out a risk assessment

$$\text{Risk [t CO}_2 \text{ per year]} = \text{Probability [\%]} \times \text{Impact [t CO}_2 \text{ per year]}$$

- Example to show principle:**

- If a meter fails every five years (i.e. 20% probability in a certain year) and the meter is only read once per year, one whole year's data is lost, at worst.
- If the associated emissions are e.g. 20.000 tCO₂ per year, 4.000 CO₂ per year are at risk, on average

- How can you lower the risk?**

- E.g. install a redundant meter → lowers the probability to 4%
- E.g. read the meter more often, such as monthly → lowers the impact to 1/12

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Risk assessment II

- Inherent risk:** Risk for (material) misstatements in the data flow before any control activities
- Control risk:** Risk for (material) misstatements in the data flow not prevented or detected and corrected on a timely basis by the control system
- Procedures in the MP

(a) Please provide details about the procedures used to assess inherent risks and control risks in accordance with Article 59 of the MRR.
The brief description should identify how the assessments of inherent risks and control risks are undertaken when establishing an effective control system

Title of procedure	Risk Assessment
Reference for procedure	RoundRobin_RiskAss_version 3.xls
Diagram reference (where applicable)	n.a.
Brief description of procedure	<ul style="list-style-type: none"> Risk assessment covers whole data flow from primary data to final annual emissions report, including management and storage of data For all relevant data flow steps identified risk sources are analysed according to the following parameters: <ul style="list-style-type: none"> probability that respective incident might occur, possible impact on emissions, risk, control activities to mitigate the risk, final risk Theoricals for probability and impact levels set according to CO₂ file and "Tool for operator risk assessment" Responsible persons updates the risk assessment whenever the monitoring plan is significantly modified, and checks annually whether the risk assessment is up to date
Post or department responsible for the procedure and for any data generated	Energy and Environment Manager
Location where records are kept	example_installationenergy&environmentETS_proceduresRoundRobin_RiskAss_version 3.xls
Name of IT system used (where applicable)	n.a.
List of EN or other standards applied (where relevant)	n.a.

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Risk assessment V

- Guidance and tools can be found in:
 - GD 6 & GD 6a: [GD 6](#) and [GD 6a](#)
 - Tool for uncertainty assessment: [Tool](#)
 - See example in Round Robin test training material: https://climate.ec.europa.eu/system/files/2018-12/training_round_robin_test_en.pdf

Process/Activity	Incident	Type of risk	Inherent Risk			Residual Risk v Control Risk			
			P	I	Risk	Control Measure(s)	P	I	Risk
Weigh bridge WB1 (LFO)	Cross failure	Activity data lost or inaccurate	2	5	172.0 HIGH	Temporary use of meters as data backup, cross checks with furnace flow meters and production data, procedure for corrective actions, procedure for quality assurance and control of measuring equipment	1	3	4.3 LOW
Weigh bridge WB1 (LFO)	Scale malfunction	Activity data lost or inaccurate	3	2	43.0 MED	Cross check with furnace (operator's metering data) cross checks with furnace flow meters and production data, procedure for corrective actions, procedure for quality assurance and control of measuring equipment	2	1	0.4 LOW
Weigh bridge WB1 (LFO)	Scale independent check not fully passed on weigh bridge or not at standard	Activity data incorrect	4	2	88.0 MED	Feasibility checks, cross check with invoices, with furnace flow meters and production data	2	1	0.4 LOW
Weigh bridge WB1 (LFO)	Display error or misreading, happen when entering data into IT system	Activity data incorrect	4	3	172.0 HIGH	Cross check with supplier's metering data (invoices), furnace flow meters and production data, checks of entered data by responsible person, automatic plausibility check of data entered into IT system, independent review by 2 nd person	3	1	4.3 LOW
Weigh bridge WB1 (LFO)	Not appropriate for the operating conditions or not appropriately installed	Activity data incorrect	2	4	43.0 MED	Checked comparing conditions applied and manufacturer's specifications, personnel regularly educated (see procedure for managing ETS responsibilities), cross checks with invoices	1	1	0.2 LOW
Weigh bridge WB1 (LFO)	Missing or incorrect calibration	Activity data incorrect	4	3	172.0 HIGH	Procedure for quality assurance and control of measuring equipment, cross check with invoices, furnace flow meters and production data	2	2	4.3 LOW
Stack changes (LFO)	Forgetting to determine checks at beginning	Activity data of reporting year incorrect (but no error at a long)	4	2	86.0 MED	Procedure for the determination of stack changes (monthly reminder in calendar of responsible persons), cross checks with	2	2	4.3 LOW

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Tools supporting MP preparation

Frequency of analyses

94



Frequency of analyses I

- When sampling & analysis is required (EF, NCV, C-content,..), the provisions in Articles 32 to 35 have to be applied (sometimes not in full, e.g. where the tiers refers to 'industry best practices')
- Article 35: Minimum frequencies as listed in Annex VII MRR to be applied
- Reasons for derogation:
 - A frequency based on **analytical variation** of results that is no more than **1/3 of the uncertainty value** of the corresponding activity data tier
 - Unreasonable costs

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Frequency of analyses: 1/3 rule

- Step 1: Determine the uncertainty of the analytical results. This could be the expanded standard deviation of the m analytical values using the Student's t-factor ($t_{95\%,m-1}$)

$$u_i = t_{95\%,m-1} \cdot \text{StDev}$$

- Step 2: Determine 1/3 of the tier required for the activity data of that same source stream

$$u_{total} = \frac{AD \text{ tier threshold } \%}{3}$$

- Step 3: determine n as the minimum frequency of analysis

$$n = \frac{u_i^2}{u_{total}^2}$$

Those steps can be performed by the
"frequency of analysis" tool
Link: [Tool](#)

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Frequency of analyses tools II

- Guidance and tools can be found in:
 - GD 5 & GD 5a: [GD 5](#) and [GD 5a](#)
 - Tool for uncertainty assessment: [Tool](#)

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Operator preparing an AER

AER template, data gaps

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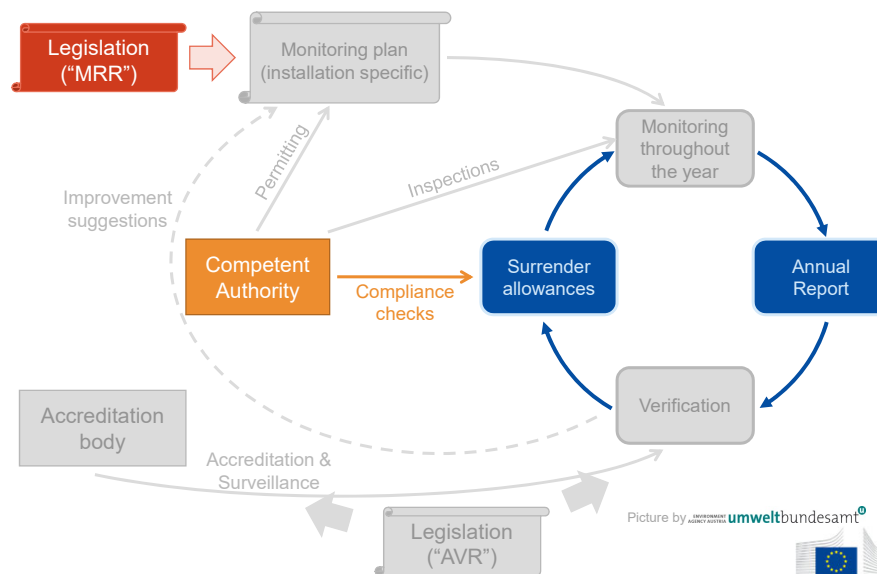
Operator preparing an AER

AER template

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Compliance Cycle



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Picture by [umweltbundesamt](#)



Annual emission report AER

- Operator submits by **31 March** of each year an emissions report that covers the annual emissions of the reporting period and is verified in accordance with MRR
- The annual emissions report shall at least contain the **information listed in MRR Annex X**

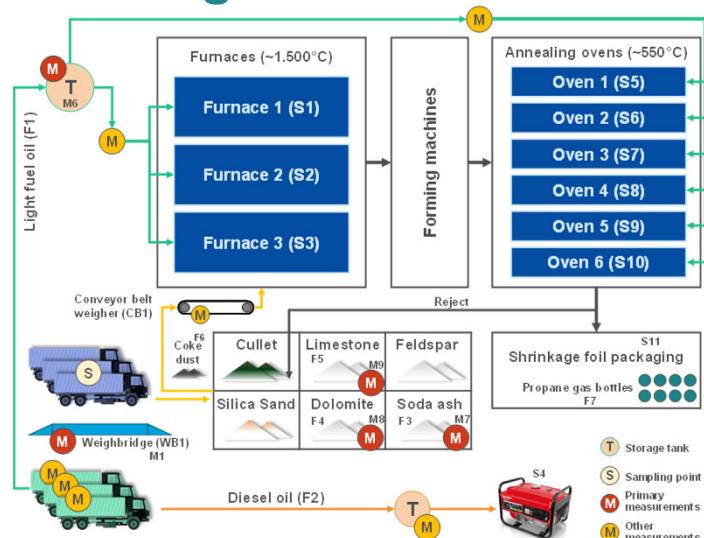
101



Example installation: glass

Category B installation
producing
container glass

Name	t CO2e
Light fuel oil	75.000
Diesel oil	1
Soda ash	5.500
Dolomite	4.000
Limestone	1.450
Coke dust	50



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AER: Sheet B_InstallationDescription

Ref.	Annex I Activity	CRF Category 1 (Energy)	CRF Category 2 (Process emission)	Total Activity Capacity	Capacity units	GHG emitted
A1	Manufacture of glass	1A2f - Energy - Non-Metallic Minerals	2A3 - Process - Glass Production	600	tonnes per day	CO2
A2						

Calculation approach for CO2:	WAHR	Relevant sections: 7(b), 8
Measurement approach for CO2:	FALSCH	
Fall-back approach (Article 22):	FALSCH	
Monitoring of N2O emissions:	FALSCH	
Monitoring of PFC emissions:	FALSCH	
Monitoring of transferred/inherent CO2 and CCS:	FALSCH	

ID	Source stream type	Source stream category	Source stream Name	error
F1	Combustion: Commercial standard fuels	Liquid - Light fuel oil	Light fuel oil	
F2	Combustion: Commercial standard fuels	Liquid - Gas/Diesel Oil	Diesel oil	
F3	Glass and mineral wool: Carbonates (input)	Material - Sodium carbonate	Soda ash	
F4	Glass and mineral wool: Carbonates (input)	Material - Dolomite	Dolomite	
F5	Glass and mineral wool: Carbonates (input)	Material - Limestone	Limestone	
F6	Combustion: Solid fuels	Solid - Coke	Coke dust	
F7	Combustion: Commercial standard fuels	Gaseous - Propane		
CR				

Conditional drop-down depending on Annex I activities

Conditional drop-down depending on source stream type

Can be made conditionally optional

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AER: Sheet C_SourceStreams- LFO

1	F1. Liquid - Light fuel oil; Light fuel oil	Combustion	CO2 fossil: 74 442,3 t CO2e
	Combustion: Commercial standard fuels		CO2 bio: 0,0 t CO2e

Detailed instructions for data entries in this tool can be found at the top of this sheet.

i. AD: Is AD based on aggregation of metering of quantities (i.e. not on continuous metering)? **WAHR**

ii. AD: Open: **625,00** Close: **875,00** Import: **23 137,00** Export: **0,00**

iii. AD:	Tier	tier description	Unit	Value	error
	4	± 1,5%	t	22 887,00	
iv. (prelim) EF:	2a	Type II	tCO2/TJ	78,00	
v. NCV:	2a	Type II	GJ/t	41,70	
vi. OxF:	1	OxF=1	-	100,00%	
vii. ConvF:					
viii. CarbC:					
ix. BioC:	n.a.				
x. non-sust. BioC:	n.a.				

$$Q = I - E + (S_{begin} - S_{end})$$

Tiers valid from: _____ until: _____ Waste catalogue number (if relevant): _____

ID that has been used in the monitoring plan for this source stream: **1**

Comments: _____

Can be used for changes in methodology, data gaps, or temporal deviation from approved tiers

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Operator preparing an AER

Data gaps

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Data gaps

- Operator shall use an **appropriate estimation method** to determine **conservative** surrogate data for the respective time period and missing parameter (written procedure)
- **Requirements** when data gaps have occurred:
 - the source stream or emission source to which each data gap applies;
 - the reasons for each data gap;
 - the starting and ending date and time of each data gap;
 - the emissions calculated based on surrogate data;
 - where the estimation method for surrogate data has not yet been included in the monitoring plan → description of estimation method

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What if...?

- ...a data gap occurred?
 - **Example:** Operator fails to read storage tank level at the end of the year. Last reading was on 20 Dec. Operator proposes to conservatively close data gap based on specific energy consumption
- How can this be reported in the AER?
- What are the implications on verification?

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Model answer

1	F1. Liquid - Light fuel oil; Light fuel oil	Combustion	CO2 fossil: 74 442.3 t CO2e
Combustion: Commercial standard fuels			
Detailed instructions for data entries in this tool can be found at the top of this sheet.			
i. AD: Is AD based on aggregation of metering of quantities (i.e. not on continuous metering)? WAHR			
ii. AD: Open: 625.00 Close: 875.00 Import: 23 137.00 Export: 0.00			
iii. AD: Tier: 4 ± 1.5% tier description: t Unit: 22 887.00 Value: error			
iv. (prelim) EF: 2a Type II iCO2/TJ 78.00			
v. NCV: 2a Type II GJ/t 41.70			
vi. OxF: 1 OxF=1 100.00%			
vii. ComF:			
viii. CarbC:			
ix. BioC: n.a.			
x. non-sust. BioC: n.a.			
Tiers valid from: 01.01.2022 until: 20.12.2022 Waste catalogue number (if relevant):			
ID that has been used in the monitoring plan for this source stream: 1			

Sheet C_SourceStreams

8	F1. Liquid - Light fuel oil; Light fuel oil	Combustion	CO2 fossil: 133.4 t CO2e
Combustion: Commercial standard fuels			
Detailed instructions for data entries in this tool can be found at the top of this sheet.			
i. AD: Is AD based on aggregation of metering of quantities (i.e. not on continuous metering)?			
ii. AD: Open: Close: Import: Export:			
iii. AD: No tier tier description: t Unit: 41.00 Value: error			
iv. (prelim) EF: 2a Type II iCO2/TJ 78.00			
v. NCV: 2a Type II GJ/t 41.70			
vi. OxF: 1 OxF=1 100.00%			
vii. ComF:			
viii. CarbC:			
ix. BioC: n.a.			
x. non-sust. BioC: n.a.			
Tiers valid from: 21.12.2022 until: 31.12.2022 Waste catalogue number (if relevant):			

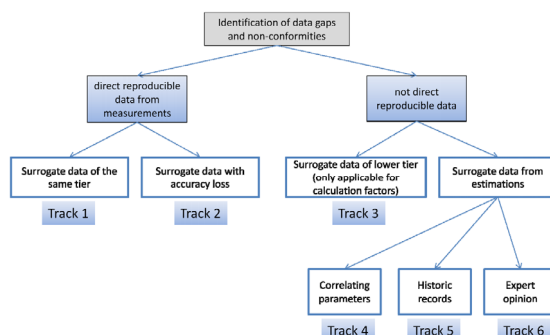
Sheet G_DataGaps

Source stream name or other ID	from	until	Description, reasons and methods	Estimated emissions (t CO2e)
1 F1. Liquid - Light fuel oil; Light fuel oil	21.12.22	31.12.22	Failed to read stock level at the end of the year; conservatively closed with historical correlation "fuel consumption to production".	133

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Data gaps



Task Force paper on data gaps: https://climate.ec.europa.eu/system/files/2020-02/data_gaps_en.pdf

- What are the implications on verification? → see “IR Template”

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Annual emission report

- User manual and template can be found in:
 - User manual AER: https://climate.ec.europa.eu/system/files/2018-07/aer_user_manual_en.pdf
 - AER Template: [Template](#)

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Other templates and tools

IR template, checklist for assessing MPs, AER tool,
checklist for assessing AER and VR, risk-profiling tool

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Other templates and tools

IR template

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Improvement Report I

Two types of improvement reports:

- **Art. 69(1) MRR:** “An operator of an installation shall submit to the competent authority for approval a **report** containing the information referred to in paragraph 2 or 3, [...]” if the following situations are relevant:
 - Art. 69(2) MRR: “[...] operator does not apply **at least the tiers required** pursuant to the first subparagraph of Article 26(1) to major source streams and minor source streams and pursuant to Article 41 to emission sources,[...]”, OR
 - Art. 69(3) MRR: “[...] operator applies a **fall-back monitoring methodology** [...]”
- **Art. 69(4) MRR:** “Where the **verification report** [...] states **outstanding non-conformities or recommendations for improvements** [...]”

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Improvement Report II

- Operator has to submit an IR to the CA for approval by 30 June in regular intervals, if the **required tiers are not met** or a **fall-back methodology** applies:
 - **Category A** installation, every **4 years**
 - **Category B** installations, every **2 years**
 - **Category C** installations, every **1 year**
- Operator has to submit an IR if the verification report contains outstanding non-conformities or recommendations.
 - No IR required if issues already resolved with an updated MP
 - Exempt from reporting on improvements for installation with low emissions

Intervals may change soon
(5y, 3y, 2y)

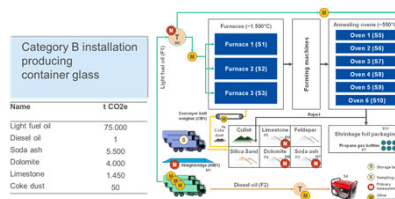
→ CA may extend to 5, 4, 3 years
under certain conditions

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Improvement Report III

- Glass producing installation:
 - Highest tier for Light fuel oil can not be met



(b) Measurement instruments used: MI1: Weigh MI6: Oil level
 Please select here one or more from the instruments which you have defined in section 7(b).
 If more than 5 measurement instruments are used for this source stream, e.g. if the p/T compensation is done using separate instrume

Comment / Description of approach, if several instruments used:
 Please explain why and how more than one instrument are relevant, if applicable. E.g it may be the case that one instrument is needed, instruments might be used alternatively, or for corroboration purposes, etc.

Delivered quantities are determined using MI1, stock changes are determined using MI6.

(c) Activity data tier level required:	4	Uncertainty shall not be more than ± 1,5%
(d) Activity data tier used:	2	Uncertainty shall not be more than ± 5,0%
(e) Uncertainty achieved:	3,17%	Comment: Uncertainty tool

- Data gap occurred (see example AER)
- Verifier recommended improvements for the operator's sampling procedures

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IR Template

1 Reporting of improvements related to non-conformities and recommendations in accordance with Article 69(4) MRR

i. Does the verification report state non-conformities? WAHR Relevant sections: C_VerRepNonConformities (section 8)

Non-conformities Where the verification report established in accordance with Regulation (EU) No 600/2012 states any non-conformities, the operator shall submit to the competent authority an improvement report for approval. This report has to be submitted by 30 June of the year in which that verification report is issued by the verifier.

ii. Does the verification report contain recommendations for improvements? WAHR Relevant sections: D_VerRepImprovements (section 9)

Recommendation Where the verification report established in accordance with Regulation (EU) No 600/2012 states recommendations for improvements (pursuant to Article 30(1) of that Regulation) issued by the verifier.

Installations with low emissions (i.e. installations with < 25,000 t CO2e per year) are exempted from the requirement to submit improvement reports in response to verifiers' recommendations for improvements (Article 47(3)). Please note that this does not exempt installations with low emissions from considering verifiers' recommendations: a verifier is required to check whether an operator has implemented recommendations the following year and to assess the risk of misstatements and non-conformities (Article 30(2) of Regulation (EU) No 600/2012).

2 Reporting of improvements in accordance with Article 69(1) MRR

ii. Do you have to report improvements related to specific source streams? WAHR Relevant sections: 7(1), E_SourceStreams (section 10)

Improvements Improvements related to source streams. Reporting here is:
 - mandatory, if not at least the tiers required pursuant to the first sub-paragraph of Article 26(1) of the MRR are applied for activity data or for any calculation factor.
 - optional, if the improvements are related to the quality of data with no direct impact on tiers, e.g. increased frequency of analyses.

1 Source Streams:

Please list here all source streams for which
 - not at least the tiers required pursuant to the first sub-paragraph of Article 26(1) of the MRR are applied for activity data or for any calculation factor.
 - improvements related to the quality of data but with no direct impact on tiers, e.g. increased frequency of analyses, will be reported here [optional].
 You do not need to enter information on source streams which already comply with the tiers required by the MRR.
 Please select ID numbers and enter names consistent with the latest approved monitoring plan.

ID	Source stream type	Source stream name	Category
E1	Combustion: Commercial standard fuels	Light fuel oil	Major

Not in conformity with approved MP

Verifier's recommendation for improvement

Tiers not met

List of source streams that do not meet tiers

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IR Template: Non-conformities

8 Statements related to non-conformities

Article 69(4) of the MRR states that the verification report established in accordance with Regulation (EU) No. 600/2012 may contain statements related to outstanding non-conformities.

If such statements or recommendations are contained in the verification report, the operator shall submit a report by 30 June of the year the verification report has been issued by the verifier, describing how and when the non-conformities have been rectified or are planned to be rectified.

Please reference here the relevant statements in the verification report, describe what kind of measures those are and the timeline of their implementation.

If information required here has already been reported in another section of the template, you may just reference that section.

IMPORTANT! Improvements reported here do not automatically update the monitoring plan. Whenever improvements require modifications of the monitoring plan (see Article 15 of the MRR), a revised monitoring plan must be submitted to the CA via the normal route according to administrative practice, subject to the CA's approval.

1 i. Measures will be/have been taken: WAHR When? 01.02.2023

ii. Description:

In case you require more space for the description you may also use external files and reference those here.

Title: Missed reading of the oil level gauge at the end of the year

Due to the absence of the responsible staff member, the stock level at the end of the year has not been read until 12 January. The resulting data gap was closed by starting from the level reading taken at 21 Dec and conservatively estimating consumption levels by using the specific energy consumption per tonne multiplied with production levels. Conservative estimation was ensured by using the upper 95% level of the specific energy consumption obtained from historic data of this relationship.

Description:

An updated MP which includes this procedure pursuant to Article 66 of the MRR (data gaps) was submitted to the CA for approval on 1 February.

Further information:
AVR guidance on
reporting issues

Link: [reporting issues](#)

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IR Template: Recommendations for improvement

1 i. Measures will be/have been taken: WAHR When? 01.06.2023

If measures will not be taken, why not?

ii. Description:

In case you require more space for the description you may also use external files and reference those here.

Title: Manual steps during sampling

Verifiers recommendation: The sampling procedure for determining the carbon contents involves a lot of manual steps. Options should be explored to lower the risk of errors, e.g. automatise process steps as much as possible.

Description:

Manual transfer of data between files will be automatized. Any automatic sampling system would however incur unreasonable costs (see attached document demonstrating such).

Verifier has to refrain
from providing
consultancy

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IR Template: Source streams

1	F1. Light fuel oil						Combustion
Combustion: Commercial standard fuels						Major	
Detailed instructions for data entries in this tool can be found at the top of this sheet.							
Activity Data or Calc.		Reason for deviation in the past:		Impact on tiers?		Measures taken:	
Factor:	Tier required:					When?	Tier applied:
i. Activity Data	4	Unreasonable costs	WAHR	FALSCH			
ii.							
iii.							
vi. Description							
<i>In case you require more space for the description you may also use external files and reference those here.</i>							
The costs for installing a measurement equipment that would achieve tier 4 is still unreasonable (see unreasonable costs tool)							

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Other templates and tools

Checklist for assessing MPs

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Checklist for assessing MP

CHECKLIST FOR ASSESSING EU ETS MONITORING PLANS FOR INSTALLATIONS					
Section 3 - Calculation-Based (1/2) - General and Source Streams					
		Number of:			
		Major	Minor	de-minimis	
What type of source streams are relevant?	Standard combustion?	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>		
	Process emissions?	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>		
	Mass balances?	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>		
	PFC emissions?	Yes: <input type="checkbox"/>	No: <input type="checkbox"/>		
Task	Yes/No	Notes			Completed?
Does the description mention all source streams, calculation factors, formulae, etc.?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>	if No:			<input type="checkbox"/>
Are all meters for all source streams included in Measurement Devices Table?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>	if No:			<input type="checkbox"/>
Are all parameters (uncertainty, used range...) for all meters provided?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>	if No:			<input type="checkbox"/>
Are sum of minor and de-minimis emissions below thresholds?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>	if No:			<input type="checkbox"/>
Are all required tiers for all source streams applied?	major source streams	Yes: <input type="checkbox"/> No: <input type="checkbox"/>	minor source streams	Yes: <input type="checkbox"/> No: <input type="checkbox"/>	<input type="checkbox"/>
			estimation for de-minimis source streams OK?	Yes: <input type="checkbox"/> No: <input type="checkbox"/>	
National legal metrological control	Yes: <input type="checkbox"/> No: <input type="checkbox"/>				<input type="checkbox"/>

Link: [Checklist MP](#)



Other templates and tools

AER tool



AER Tool

- Similar to tools for free allocation: NIMs Tool, ALC Tool, NE&C Tool,...
- Integrity checking of operator's AER files
- Aggregation into an Excel database → allows for automatic checking
- Tool not published on website because intended exclusively for competent authorities → contact us in case you do not have it

Filename	File Date	Checking date	Reference filename	Errors found	Unique ID	Installation Name
Tool for checking the integrity of AER Templates and for aggregating AER data - Phase 4 Provided by Umweltbundesamt GmbH for DG CLIMA Version 1.1 of 4 March 2023 Central file list for batch operations Last update of this list: 04.03.2023 13:49 umweltbundesamt						

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Other templates and tools

Checklist for assessing AER and VR

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Checklist for assessing AER and VR

CHECKLIST FOR ASSESSING EU ETS EMISSIONS AND VERIFICATION REPORTS FOR INSTALLATIONS

Link: [Checklist AER and VR](#)

Section 1 - Overview

Reporting year:		Category:	A	B	C
Site Reference:			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inst. Name:		Low emitter:	Yes: <input type="checkbox"/> No: <input type="checkbox"/>		
Unique ID:		included before:	Yes: <input type="checkbox"/> No: <input type="checkbox"/>		
Site Name:		excluded (Art. 27):	Yes: <input type="checkbox"/> No: <input type="checkbox"/>		
Operator:					
Verifier:					

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Other templates and tools

Risk-profiling tool

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Risk-profiling tool

- Risk-based selection for spot checking installations
 - For inspections
 - For detailed MP/AER/VR checking (annually)

Link: [risk-profiling](#)

Ranking	#	Inst. Code	Installation Name	Points scored (%)	Emissions	Result (risk)
						Weighted by CO2e
1	8	AT008	Integrated steel plant1	11,38%	3 500 000	398 154
2	1	AT001	CCGT CHP plant	24,14%	1 500 000	362 109
3	7	AT007	Integrated steel plant	6,77%	3 500 000	236 891
4	2	AT002	CCGT CHP plant2	9,64%	1 500 000	144 559
5	9	AT009	Nitric acid	7,96%	160 000	12 740
6	10	AT010	Nitric acid2	3,95%	75 000	2 959
7	4	AT004	Ceramic plant2	7,68%	15 000	1 153
8	3	AT003	Ceramic plant	6,90%	15 000	1 035
9	5	AT005	District heating plant	6,22%	7 000	435
10	6	AT006	District heating plant2	3,89%	7 000	272
11	11					

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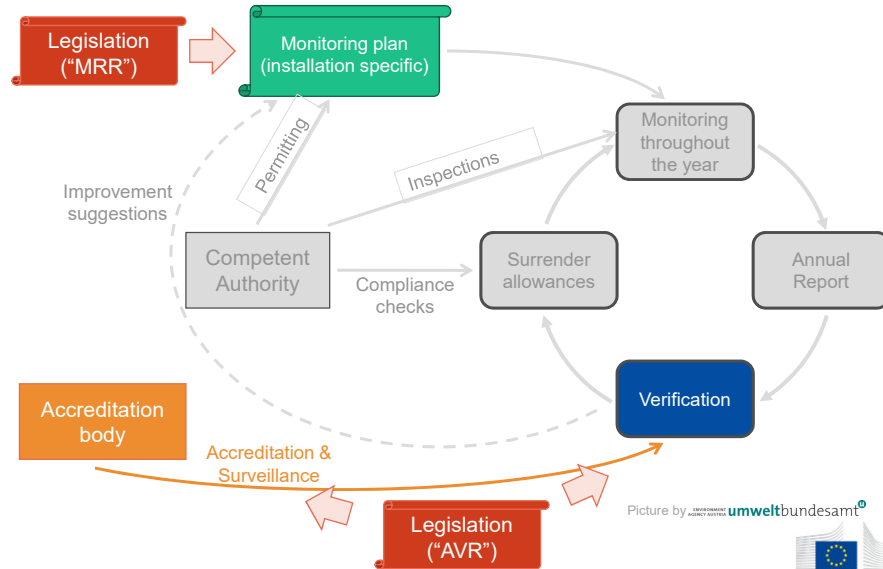
The verifier's and NAB's perspective

General principles and requirements, the verification process

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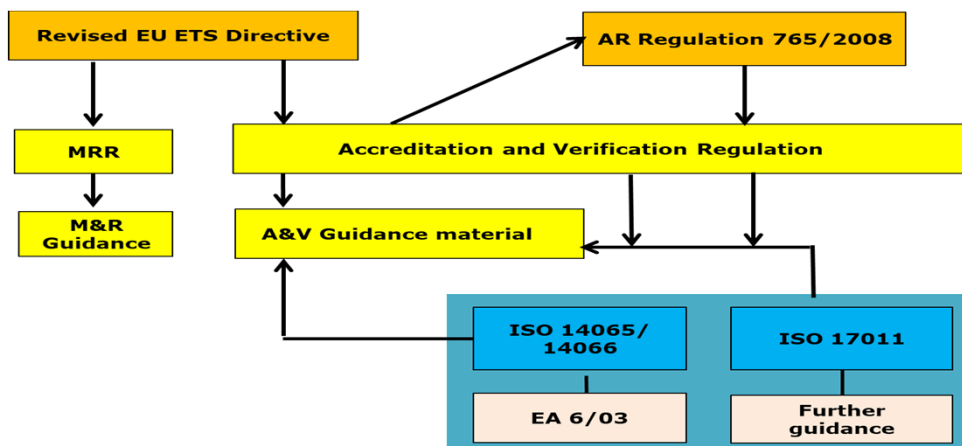
Compliance Cycle: Verification



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Legal A&V Framework



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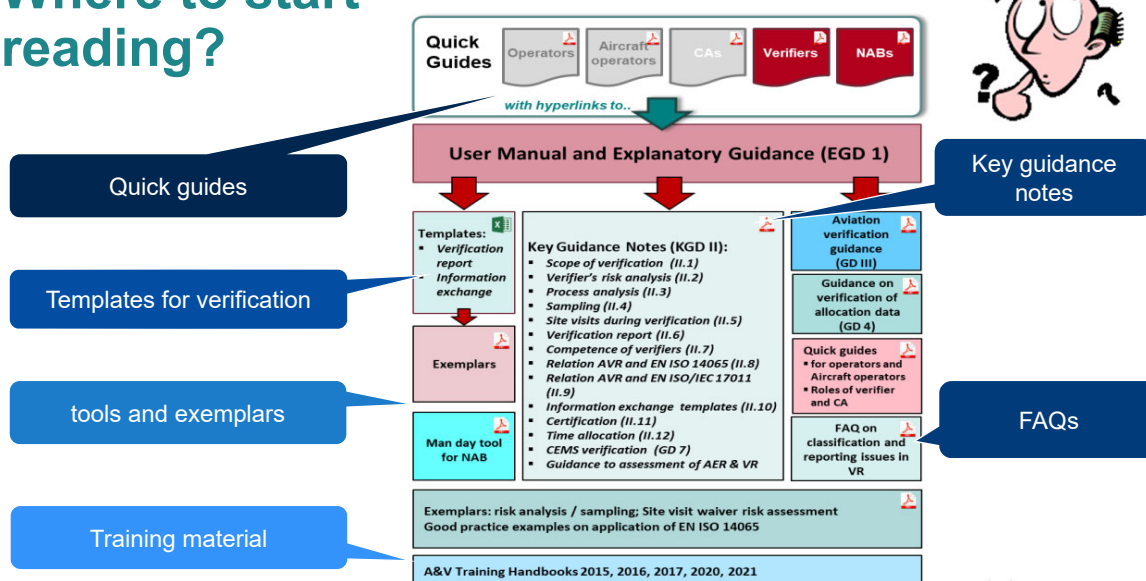


AVR

- Chapter I: General provisions
- Chapter II: Verification
- Chapter III: Requirements for verifiers
- Chapter IV: Accreditation
- Chapter V: Requirements concerning Accreditation Bodies for accreditation of ETS verifiers
- Chapter VI: Information exchange
- Annex I: Scope of accreditation for verifiers
- Annex II: Requirements on verifiers
- Annex III: Minimum requirements of the accreditation process and requirements on accreditation bodies



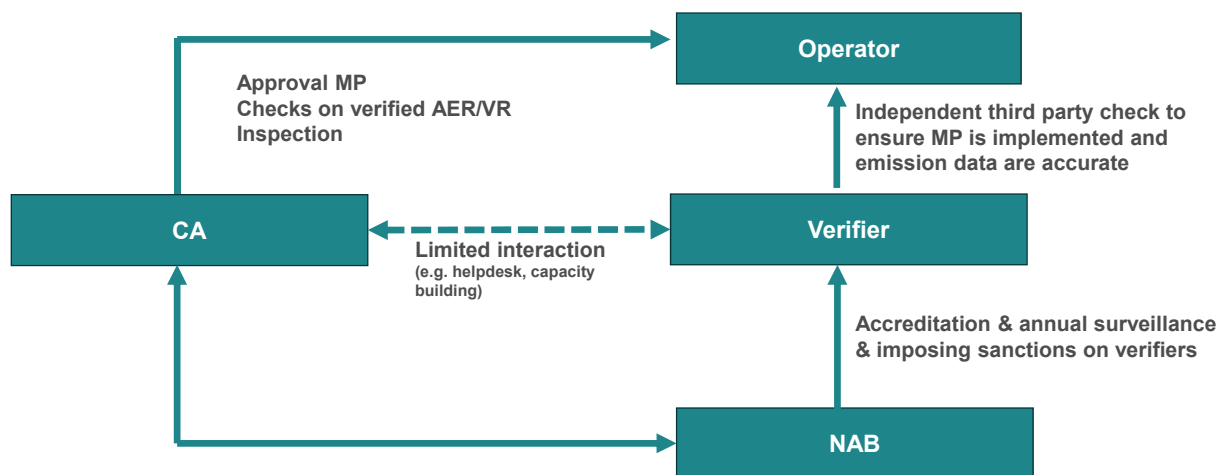
Where to start reading?



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Relation between CA, verifiers and NAB



Information exchange

CA: issues found in inspection or review verified AER/VR

NAB: issues found in accreditation/ surveillance & sanctions imposed



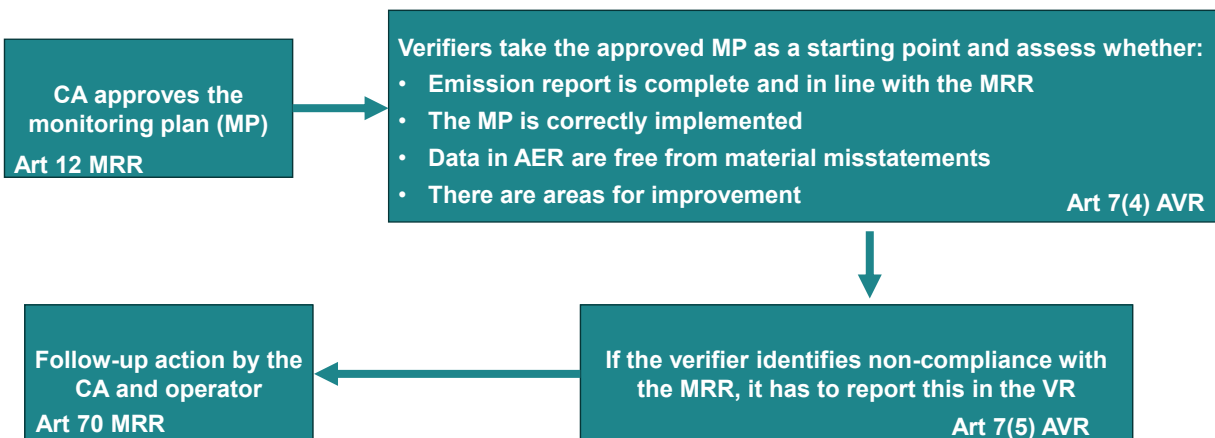
What is EU ETS verification?

- **Verification based on international standards:** ISO 14065 and ISO 17029
 - ETS specific requirements are included in the Accreditation & Verification Regulation
- **Verifier is a legal entity** established in an EEA country and **accredited** by a NAB according to the AVR and ISO 14065
- **Verification has to meet certain key principles (Art 7 & Ch III AVR)**
 - Verifier has to be impartial and independent from the operator and the CA
 - Verifier needs to meet certain key competence requirements
 - Verifier has to assess evidence with professional skepticism (auditing principle)
 - Verifier has to plan and perform the verification in such a way that it can state with **reasonable assurance that the emission report is free from material misstatements** (errors, misrepresentations or omissions in the data)

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Scope of verification



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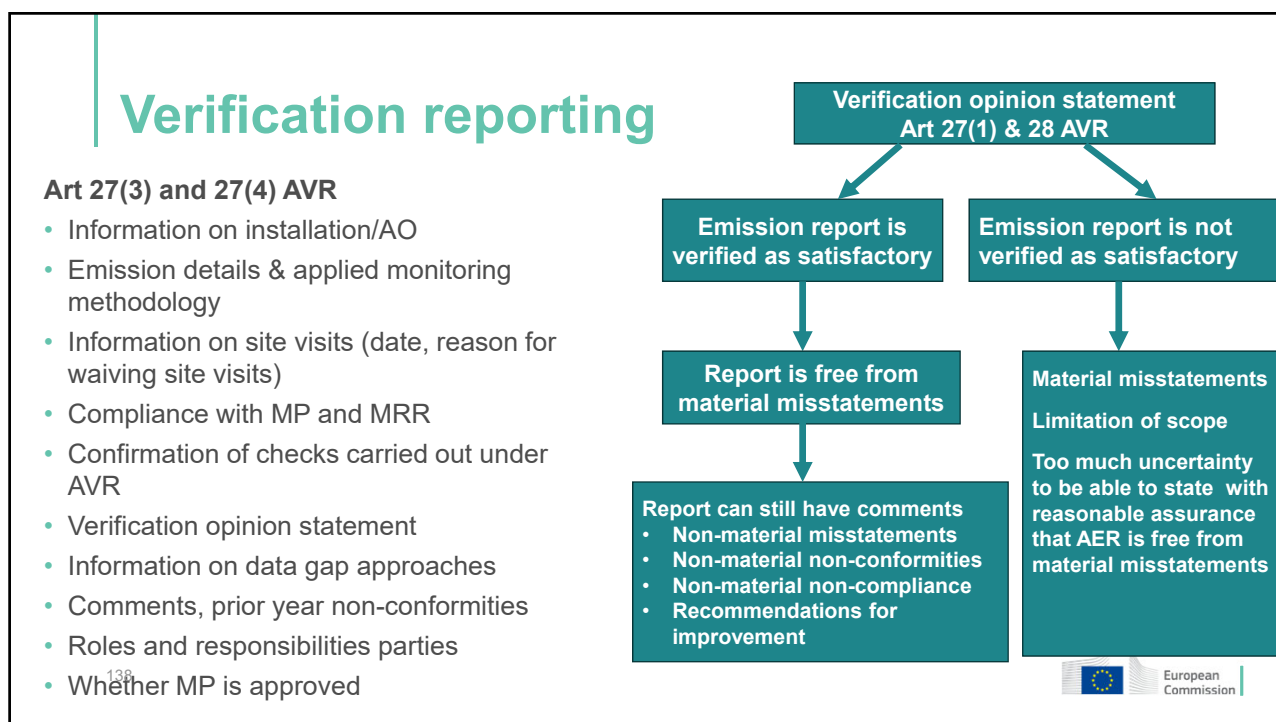
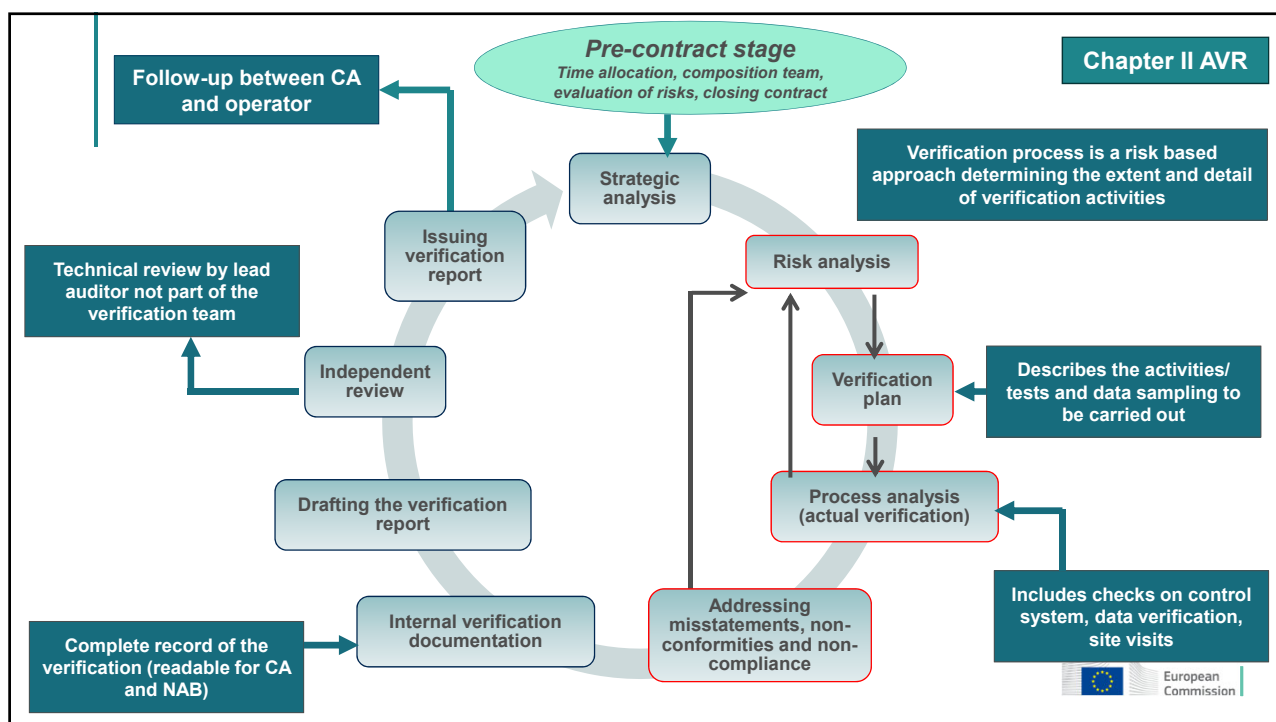


What is materiality?

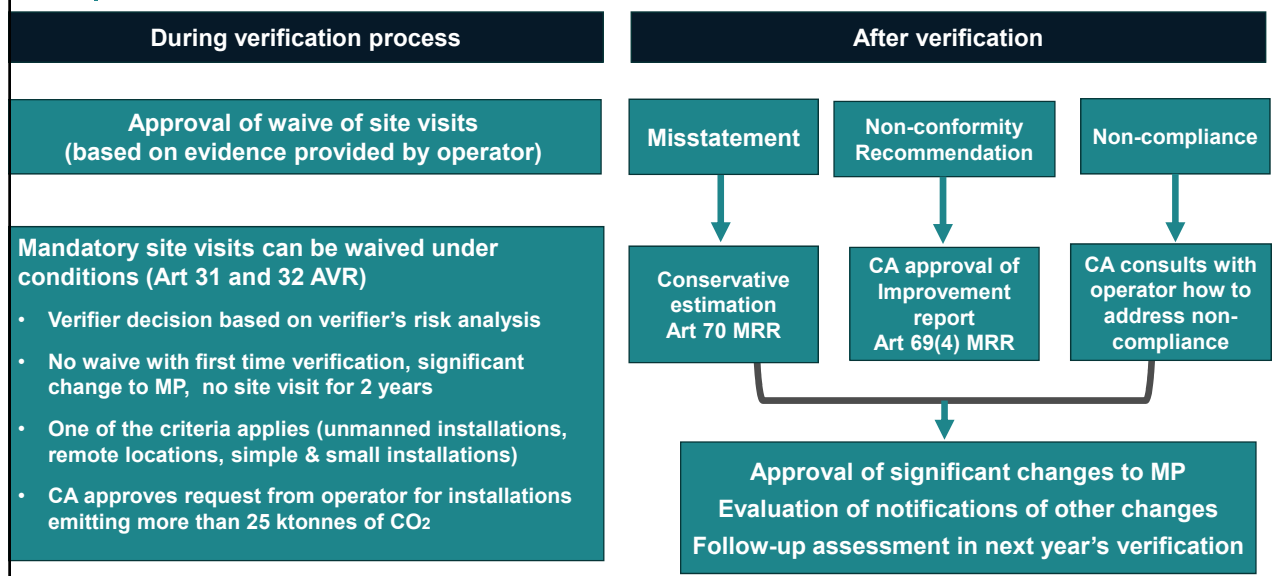
- **Materiality** determines whether a misstatement is material and when an emission report cannot be verified as satisfactory
- Materiality has a quantitative and qualitative aspect (Art 3, 22 and 23 AVR)
 - **Quantitative** → if a materiality level is exceeded (5% of the reported emissions for category A and B installations and 2% for category C installations)
 - **Qualitative** → based on factors that can influence the decision of the CA (circumstances, likelihood of reoccurrence, duration, non-compliance, intent)
- Even if the materiality level is not exceeded, a misstatement can still be material given the particular circumstances
- Any identified misstatements, non-conformities with MP and non-compliance must be **corrected by the operator, even if not material**

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Role of CA in & after verification process



Verifier's competence & impartiality

Competence of lead auditors and auditors (Art 36 – 38 AVR)

- Knowledge of legislation, standards and guidance
- Expertise/knowledge on data & information auditing, ability to carry out verification activities
- Technical expertise for the sector activities of the operator
- Lead auditor must have ability to lead team
- Specific competence rules for independent reviewer & technical expert (Art 39/40 AVR)

Impartiality of verifier and verifier's staff involved in verification (Art 43)

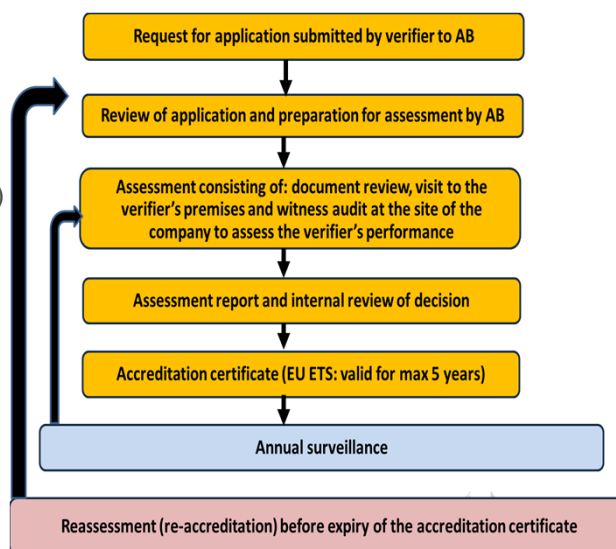
- No verification of operator's reports if there is a conflict of interest (e.g. involved in monitoring process, drafting MP or AER, relations with operator)
- No conflict of interest for staff involved in verification
- Rotation of lead auditor and 3 year consecutive break if the lead auditor has carried out verification for the same operator for five consecutive years of ETS verification

Procedures for ensuring competence and impartiality of verifier & staff

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Accreditation & annual surveillance

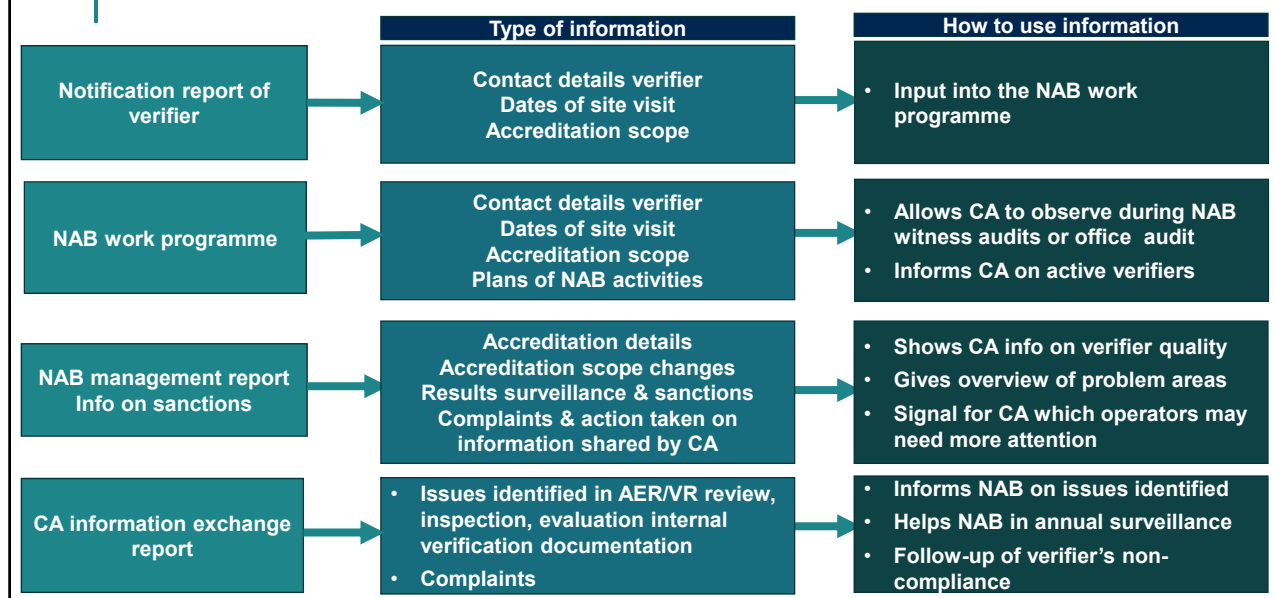
- Accreditation for sector scope in which verifier verifies (Art 44)
- Verifiers must be accredited by the time the verification report has to be issued
- NAB must check whether verifier and staff (Art 45)
 - Have the necessary competence
 - Is verifying in line with AVR & standards
 - Meet requirements in AVR
- NAB has to meet AVR & ISO 17011 rules
- Sanctions if the verifier breaches AVR (Art 54)
 - Suspension
 - Withdrawal of certificate
 - Reduction of scope



Cooperation & information exchange

- Mandatory cooperation between CA and NA (Art 70)
 - Ad hoc meetings, annual workshops, capacity building on new legislative developments
- Mandatory information exchange between CA and NAB (on national basis and across borders) (Art 71 – 73)
 - Verifier notifies the NAB by 15 November of planned site visits
 - By 31 December the NAB submits a work programme on planned activities to the CA of the Member State in which the verifier accredited by NAB verifies (update by 31 January)
 - By 1 June the NAB submits a management report on activities carried out to the CA of the MS in which the verifier accredited by NAB verifies
 - The NAB shares without undue delay information on imposed sanctions to the CA
 - CA submits a report on issues identified in the review of AER, inspection and evaluation of internal verification documentation to the NAB that has accredited the verifier

How to use information exchange?



Main MRVA similarities and differences with other EU ETS sectors

Aviation, Maritime, ETS 2

EU ETS for Aviation

- Regulated entity: Aircraft Operator (AO) – including non-EU AOs
- Every AO has one administering MS (one stop shop regarding linked CH ETS)
- No permit, but MP approved by competent authority
- Aircraft = emission source
- MP to contain a procedure for tracking the fleet of aircraft under aircraft operator's responsibility
- Scope:
 - “Full scope” – all flights from and to EEA airports
 - “Reduced scope” for reporting: only intra-EEA
- Monitoring approach: Only calculation, default emission factors, no tiers
- Method A or Method B for monitoring fuel consumption
- Biofuels: RED II criteria apply
- New from 2024: reporting of “eligible aviation fuels” (application for free allocation)
- Annual reporting: combined for EU ETS, CH ETS and CORSIA (if applicable)
- Improvement reports: Only regarding non-conformities, recommendations for improvement
- Simplification: Small emitter tool, Eurocontrol ETS support facility

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For more details see [GD2](#)



Aviation: further information

- Tools:
 - MP template emissions: [MP template](#)
 - AER template: [AER template](#)
 - IR: [IR template](#)
- GD:
 - Quick Guide for Aircraft operators: https://climate.ec.europa.eu/system/files/2022-03/quick_guide_ao_en.pdf
 - GD 2: https://climate.ec.europa.eu/system/files/2023-05/gd2_guidance_aircraft_en.pdf

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Maritime transport (MRV)

- Since 2018, large ships (>5.000 gross tonnage) loading or unloading cargo or passengers at ports in the European Economic Area (EEA) must monitor and report GHG emissions (currently CO₂, from 2024: CH₄ and N₂O) from journeys starting or ending in a port call in the EEA
- Legal basis not in the EU ETS, but in the “Maritime MRV Regulation”: [Regulation \(EU\) 2015/757 of the European Parliament and the Council](#)
- Monitoring and reporting is done for each ship separately
- Monitoring plans of ships are checked by verifiers, not competent authorities
- After verification, the verifier issues a “Document of Compliance” (DoC) which the ship must carry. Port authorities can thereby check compliance during port calls, and impose penalties for non-compliance
- Verifiers must be accredited in an EEA MS
- All reporting is carried out within Thetis MRV hosted by EMSA (European Maritime Safety Agency)

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Maritime transport in the EU ETS (from 2024)

- Legal basis: EU ETS Directive, but MRV remains under MRV Regulation
- Coverage:
 - Greenhouse gases: 2024: CO₂, from 2026: CH₄ and N₂O
 - Emissions: 50% of voyages to / from EEA, 100% of intra-EEA voyages
 - Phase-in: 40% in 2024, 70% in 2025, 100% from 2026
 - Some specific exemptions / reduction factors (certain small islands, ice-class ships, etc.)
 - Biomass requirements linked to MRR (RED II criteria)
- Compliance system:
 - Shipping companies (incl. non-EU ones) are attributed to the Administering Authority (AA) of a Member State via a list by the Commission, like in Aviation;
 - AA must approve all ships' monitoring plans (after verifiers' checks)
 - Shipping companies submit verified company-level emission reports to AA, aligned with EU ETS scope, and surrender allowances for all their ships (like in other ETS)
- All reporting is carried out within Thetis MRV

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Maritime: Further information

- MRV Maritime Regulation: <http://data.europa.eu/eli/reg/2015/757/2023-06-05>
- MRV Maritime guidance documents: https://climate.ec.europa.eu/eu-action/transport/reducing-emissions-shipping-sector_en#documentation
- FAQ-Maritime transport in EU ETS: https://climate.ec.europa.eu/eu-action/transport/reducing-emissions-shipping-sector/faq-maritime-transport-eu-emissions-trading-system-ets_en
- FAQ - Monitoring, reporting and verification of maritime transport emissions: https://climate.ec.europa.eu/eu-action/transport/reducing-emissions-shipping-sector/faq-monitoring-reporting-and-verification-maritime-transport-emissions_en

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MRV for ETS2 (buildings, road transport and additional sectors)

- Start: monitoring as of 2025, surrender as of 2027 (2028)
- Regulated entity: “Upstream” entities releasing the fuels for consumption (aligned with excise duty regime)
- Source streams called ‘fuel streams’
- Emission sources not defined (essentially the final consumers’ combustion units)
- Similar tier concepts but 2 instead of 3 categories
- Monitoring approach: Only calculation
- Most important difference: the ‘scope factor’ (as not all final consumers are covered by Annex III of the EU ETS)
- Biomass rules: RED II criteria apply
- Improvement reports: similar concepts to ETS1
- Simplification: similar concepts to ETS1

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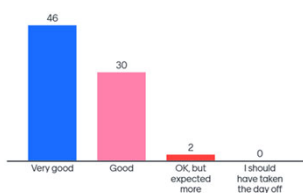
For more details see 2nd Training event on 17 Oct and forthcoming guidance



Mentimeter

Join at: menti.com use code 39034712

How would you rate this training?



What was the most interesting learning on MRVA today for you?
94 responses



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Thank you for your attention

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