EUROPEAN COMMISSION
DIRECTORATE-GENERAL
CLIMATE ACTION
Directorate B – Carbon Markets & Clean Mobility
Unit B.2 – ETS (II): Implementation, Policy Support & ETS Registry

Guidance Document

The Monitoring and Reporting Regulation – General guidance for ETS2 regulated entities

MRR Guidance document for ETS2,
1st Draft for discussion, 7 December 2023

This document is part of a series of documents provided by the Commission services for supporting the implementation of the "Monitoring and Reporting Regulation (the "MRR"), i.e. Commission Implementing Regulation (EU) 2023/2122 of 17 October 2023 in its current version[1].

The guidance represents the views of the Commission services at the time of publication. It is not legally binding.

This guidance document takes into account the discussions within the meetings of the Commission expert group on climate change policy (CCEG) ETS2 implementation formation and the informal Technical Working Group on MRVA (Monitoring, Reporting, Verification and Accreditation) under the Working Group III (WGIII) of the Climate Change Committee (CCC), as well as written comments received from stakeholders and experts from Member States[2].

All guidance documents and templates can be downloaded from the documentation section of the Commission's website at the following address:

https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification-eu-ets-emissions_en .

[1] Updated by Commission Implementing Regulation (EU) 2023/2122 of 17 October 2023 amending Implementing Regulation (EU) 2018/2066 as regards updating the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council; the consolidated MRR can be found here: http://data.europa.eu/eli/reg_impl/2018/2066/2022-01-01

[2] "Member States" in this document means all countries that apply the EU ETS, i.e. the 27 EU Member States plus the EFTA countries Norway, Iceland and Liechtenstein.

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Version History

Date	Version status	Remarks
6 December	1st Draft for comments	First draft version of the general MRR guidance for ETS2 regulated entities

1 INTRODUCTION

1.1 About this document

This document has been written to support the MRR (Monitoring and Reporting Regulation), by explaining its requirements in a non-legislative language. **This document is written to be a standalone document for ETS2 regulated entities and usually the other guidance documents should not be relevant.** However, for some more specific technical issues, further guidance documents[3] are available, although mainly written for ETS1 stationary installations or aircraft operators. Where this is the case, this guidance document makes specific reference in the relevant sections to such further details which could be of interest for ETS2 regulated entities. The set of guidance documents is further complemented by electronic templates[4] for information to be submitted by regulated entities to the competent authority. It should always be remembered that only the Regulation is legally binding.

This document interprets the Monitoring and Reporting Regulation regarding requirements for ETS2 regulated entities. It builds on similar guidance for stationary installations and aircraft operators and takes into account the valuable input from the Climate Change Expert Group (CCEG) on ETS2 implementation,), the informal Technical Working Group on Monitoring, Reporting, Verification and Accreditation (TWG on MRVA) of Member State experts established under Working Group 3 (WG III) of the Climate Change Committee (CCC).

1.2 How to use this document

Where article numbers are given in this document without further specification, they always refer to the MRR in its current version[5]. For acronyms, references to legislative texts and links to further important documents, please see the Annex.

This symbol points to important hints for regulated entities, verifiers and competent authorities.

This indicator is used where significant simplifications to the general requirements of the MRR are promoted.

The light bulb symbol is used where best practices are presented.

The tools symbol tells the reader that documents, templates or electronic tools are available from other sources.

The book symbol points to examples given for the topics discussed in the surrounding text.

[3] See section 1.3.

[4] Note that Member States may define their own templates, which must contain at least the same information as the Commission's templates.

[5] Implementing Regulation (EU) 2018/2066; The consolidated MRR can be found here: https://eur-lex.europa.eu/eli/reg/2018/2066

1.3 Where to find further information

All guidance documents and templates provided by the Commission on the basis of the MRR and the AVR can be downloaded from the Commission's website at the following address:

https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification-eu-ets-emissions_en

The following **documents** are provided[6] (documents not relevant for regulated entities are highlighted in light grey, documents which might contain elements also relevant for regulated entities are highlighted in green):

- "Quick guides" as introduction to the guidance documents below. Separate documents are available for each audience:
  - Operators of stationary installations;
  - Aircraft operators;
  - ETS2 Regulated entities (planned);
  - Competent Authorities;
  - Verifiers;
  - National Accreditation Bodies.
- General guidance (this document): "The Monitoring and Reporting Regulation – General guidance for ETS2 regulated entities"
- Guidance document No. 1: "The Monitoring and Reporting Regulation – General guidance for installations".
  - An exemplar simplified monitoring plan in accordance with Article 13 MRR.
- Guidance document No. 2: "The Monitoring and Reporting Regulation – General guidance for aircraft operators". This document outlines the principles and monitoring approaches of the MRR relevant for the aviation sector. It also includes guidance on the treatment of biomass in the aviation sector, making it a stand-alone guidance document for aircraft operators.
- Guidance document No. 3: "Biomass issues in the EU ETS": This document discusses the application of sustainability criteria for biomass, as well as the requirements of Articles 38 and 39 of the MRR. This document is relevant for operators of installations and useful as background information for aircraft operators.
- Guidance document No. 4: "Guidance on Uncertainty Assessment". This document for installations gives information on assessing the uncertainty associated with the measurement equipment used, and thus helps the operator to determine whether he can comply with specific tier requirements.
  - Guidance document No. 4a: "Exemplar Uncertainty Assessment". This document contains further guidance and provides examples for carrying out

[6] This list reflects the status at the time of writing this updated guidance. Further documents may be added later.

uncertainty assessments and how to demonstrate compliance with tier requirements.

- Guidance document No. 5: “Guidance on sampling and analysis”. This document deals with the criteria for the use of non-accredited laboratories, development of a sampling plan, and various other related issues concerning the monitoring of emissions in the EU ETS.
  - Guidance document No. 5a: “Exemplar Sampling Plan”. This document provides an example sampling plan for a stationary installation.
- Guidance document No. 6: “Data flow activities and control system”. This document discusses possibilities to describe data flow activities for monitoring in the EU ETS, the risk assessment as part of the control system, and examples of control activities.
  - Guidance document No. 6a: “Risk Assessment and control activities – examples”. This document gives further guidance and an example for a risk assessment.
- Guidance document No. 7: “Continuous Emissions Monitoring Systems (CEMS)”. This document gives information on the application of measurement-based approaches where GHG emissions are measured directly in the stack, and thus helps the operator to determine which type of equipment has to be used and whether he can comply with specific tier requirements.
- Guidance document No. 8: “EU ETS Inspection”: Targeted at competent authorities, this document outlines the role of the CA’s inspections for strengthening the MRVA system of the EU ETS.

The Commission also provides the following **electronic templates**:

- Template No. 1: Monitoring plan for the emissions of stationary installations
- Template No. 2: Monitoring plan for the emissions of aircraft operators
- Template No. 3: Monitoring plan for the tonne-kilometre data of aircraft operators
- Template No. 4: Annual emissions report of stationary installations
- Template No. 5: Annual emissions report of aircraft operators
- Template No. 6: Tonne-kilometre data report of aircraft operators
- Template No. 7: Improvement report of stationary installations
- Template No. 8: Improvement report of aircraft operators
- ETS2 Monitoring Plan template (planned)
- ETS2 Annual Emissions Report template (planned)

In addition, there are the following **tools** available:

- Unreasonable costs determination tool;
- Tool for the assessment of uncertainties;
- Frequency of Analysis Tool;
- Tool for operator risk assessment.

The following MRR **training material** is available:

- Roadmap through M&R Guidance
- Uncertainty assessment
- Unreasonable costs
- Sampling plans
- Data gaps
- Round Robin Test

Besides these documents dedicated to the MRR, a separate set of **guidance documents on the AVR** is available under the same web address.

All EU legislation is found on EUR-Lex: **http://eur-lex.europa.eu/**

The most important relevant legislation is listed in the Annex of this document.

Also, competent authorities in the **Member States** may provide useful guidance on their own websites. The egulated entities should follow if the competent authority provides workshops, FAQs, helpdesks etc.

2 THE 'UPSTREAM' SYSTEM AND SCOPE OF ANNEX III

2.1 General aspects

The EU ETS started in 2005 by putting a carbon price on stationary installations (power plants, steel, cement, etc.) for their annual direct emissions (i.e. the entities that combust the fuel, called "down-stream" regulation, henceforth the "ETS1"). Over the course of time, the scope has been expanded to fuels combusted in aviation and, recently, to maritime transport. When considering expansion of the EU ETS to the further large fuel consuming sectors, in particular transport and buildings, the entities responsible for monitoring and reporting under a "downstream" EU ETS would be individual car owners, building owners, etc. In order to avoid the high administrative burden that would come with putting the reporting obligation on those individuals, the new and separate ETS for road transport, buildings and additional sectors (henceforth the "ETS2") puts the point of regulation "upstream" on the entities releasing the fuel for consumption (i.e. putting the fuels onto the market).

In order to benefit from the existing reporting infrastructure for the types and amounts of fuels in consideration, the ETS2 aims to align with the existing infrastructure under the energy taxation / excise duty regime for the same type of fuels. This is established via the national transposition of the Energy Taxation Directive (Directive 2003/96/EC, henceforth "ETD")[7] and Directive 2020/262/EU[8] (henceforth called the 'Excise Directive' or 'ED'). The links between these three Directives (see illustration in Figure 1) concern the following elements:

- Identifying the **ETS2 regulated entities** to ensure there are no gaps or double counting: this aspect is relevant for the Member States (not the regulated entities) and described inchapter 8.
- Defining the **types of fuels** covered by the scope of ETS2: the relevant types of fuels are defined in Article 3(af) of the EU ETS Directive (→ section 2.2).
- Defining the **event that triggers** the ETS2 reporting obligation: this is achieved by defining the 'release for consumption' in Article 3(ag)[9] of the EU ETS Directive referring to the respective definitions set out in Article 6(3) of the ED.
- Identifying the amounts released for consumption and eventually combusted in sectors listed within the **scope of Annex III** of the EU ETS Directive and distinguishing them from other final consuming sectors. This comprises the following two aspects:
  - How to **categorise the end consumers** into their respective categories listed in Annex III of the EU ETS Directive: the category format for sectoral distinction used is the Common Reporting Format (CRF) used for compiling national GHG inventories following the IPCC Guidelines (→ section 5.4.1).

[7] Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity

[8] Council Directive (EU) 2020/262 of 19 December 2019 laying down the general arrangements for excise duty.

[9] Article 3(ag): 'release for consumption' for the purposes of Chapter IVa of this Directive means release for consumption as defined in Article 6(3) of Directive (EU) 2020/262

- What **types of methods** can be used to demonstrate that fuel amounts are supplied to sector A and not sector B: this is a core element of the ETS2 monitoring methodology (→ chapter 5), the determination of the so-called 'scope factor' which is described in detail later in section 5.4.2.

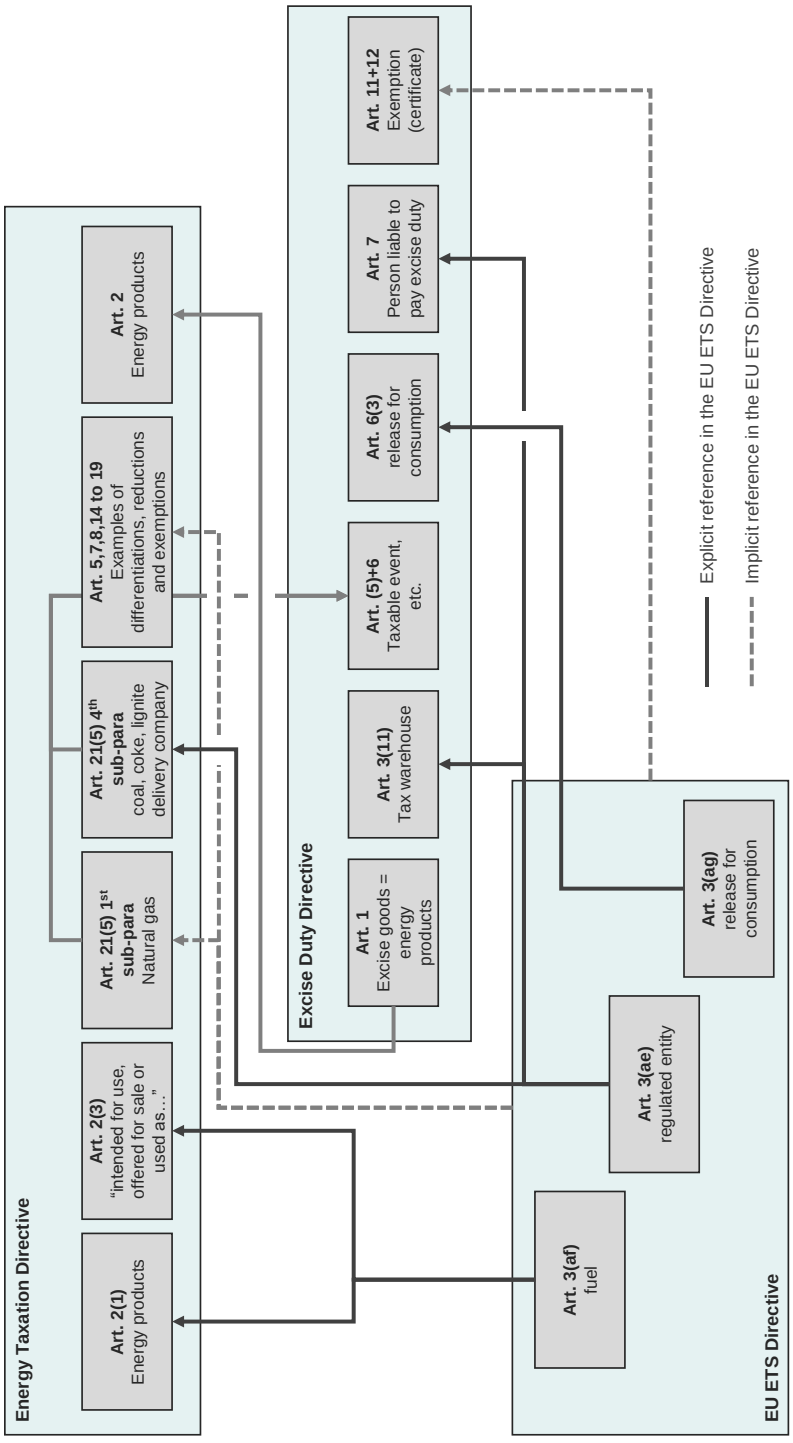

Figure 1: Relation between the EU ETS Directive, the ETD and ED with respect to the ETS2

2.2 Types of fuels covered by ETS2

Article 3(af)[10] defines the scope of fuels covered by the ETS2, which are basically all relevant commercial fuels and other energy products listed in Article 2(1) of the ETD as combined nomenclature (CN) codes. More precisely, it includes the following:

- **fuels listed in Tables A and C** of the ETD: (un)leaded petrol, gas oil, kerosene, LPG, natural gas, heavy fuel oil, coal and coke;
- **any other fuel** offered for sale, used as motor fuel or heating fuel as specified in Article 2(3) of the ETD. This includes any fuel additives, certain bio-based fuels, and any other hydrocarbons, except for peat.

This means that indicatively the following types of fuels are currently excluded from the ETS2:

- Peat;
- Waste used as fuels (hazardous or municipal waste used as fuel, as explicitly excluded from the ETS2 scope in Annex III of the Directive);
- Waste-derived fuels (mostly used in ETS1 installations anyway);
- Solid biomass (e.g. wood-based fuels);
- Charcoal from wood.

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[10] Article 3(af): 'fuel' for the purposes of Chapter IVa of this Directive means any energy product referred to in Article 2(1) of Directive 2003/96/EC, including the fuels listed in Table A and Table C of Annex I to that Directive, as well as any other product intended for use, offered for sale or used as motor fuel or heating fuel as specified in Article 2(3) of that Directive, including for the production of electricity

3 THE EU ETS2 COMPLIANCE CYCLE

3.1 Importance of MRV in the EU ETS

Monitoring, reporting and verification (MRV) of emissions play a key role in the credibility of any emissions trading system. Without MRV, compliance would lack transparency and be much more difficult to track, and enforcement compromised. This holds true also for the European Union Emissions Trading System for buildings, road transport and additional sectors (ETS2). It is the complete, consistent, accurate and transparent monitoring, reporting and verification system that creates trust in emissions trading. Only in this way can it be ensured that regulated entities meet their obligation to surrender sufficient allowances.

This observation is based on the twofold nature of the ETS2: On the one hand it is a market-based instrument. It has allowed a significant market to evolve, in which market participants want to know the monetary value of the allowances they get allocated, they trade and they have to surrender. On the other hand it is an instrument for achieving an environmental benefit. But in contrast to other environmental legislation, the goal is not to be achieved by individuals, but the whole group of ETS2 participants having to achieve the goal jointly. This requires a considerable level of fairness between participants, ensured by a solid MRV system. The competent authorities' oversight activities contribute significantly to ensuring that the goal set by the cap is reached, meaning that the anticipated emissions reductions are delivered in practice. It is therefore the responsibility of the competent authorities together with the accreditation bodies to protect the integrity of the ETS2 by supervising the effective and robust functioning of the MRV system.

Both, carbon market participants and competent authorities want to have assurance that one tonne CO_2 equivalent emitted finds its equivalent in one tonne reported (for the purpose of one allowance to be surrendered). This principle has been known since the early days of the EU ETS as the proverbial postulation: **"A tonne must be a tonne!"**

In order to ensure that this is achieved in a robust, transparent, verifiable and yet cost-effective way, the EU ETS Directive[11] provides a solid basis for a good monitoring, reporting and verification system. This is achieved by Articles 14 and 15 in connection with Annexes IV and V of the EU ETS Directive.[12] Based on Article 14, the Commission has adopted the Monitoring and Reporting Regulation[13]" (MRR), which has been amended several times.

However, it has always been recognised by the Commission, as well as by Member States, that complex and technical legislation such as the MRR needs to be supported by further guidance, in order to ensure harmonised

[11] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC including all amendments.

[12] Article 30f of the EU ETS Directive declares Article 14 and 15 as well as Annex IV and V of the Directive equally applicable to ETS2.

[13] Commission Implementing Regulation (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 601/2012.

implementation throughout all Member States, and for paving the way to smooth compliance through pragmatic and agreed approaches wherever possible.

A Regulation for verification and accreditation of verifiers has also been adopted (the Accreditation and Verification Regulation (AVR)[14]), for which a separate series of guidance documents has been developed by the Commission (dedicated guidance for verifiers will be published later).

3.2 Overview of the compliance cycle

The annual process of monitoring, reporting, verification of emissions, surrender of allowances, and the competent authority's procedure for accepting emission reports is often referred to as the "compliance cycle". Figure 2 shows the main elements of this cycle.

On the right side of the picture is the "main cycle": The regulated entity monitors its emissions throughout the year. After the end of the calendar year (within four months[15]) it must prepare its annual emissions report (AER), seek verification and submit the verified report to the competent authority (CA). The verified emissions must correlate with the surrender of allowances in the Registry system[16] as of 2027. Here the principle "a tonne must be a tonne" translates into "a tonne must be an allowance", i.e. at this point the market value of the allowance is correlated with the costs of meeting the environmental goal of the ETS2. Thereafter monitoring goes on, as shown in the picture. More precisely, monitoring continues without any stop at the end of the year from one cycle to the next.

The monitoring process needs a firm basis. Resulting data must be sufficiently robust for creating trust in the reliability of the ETS, including the fairness of the surrender obligation, and it must be consistent over the years. Therefore the regulated entity must ensure that its monitoring methodology is documented in writing, and cannot be changed arbitrarily. In the case of the EU ETS, this written methodology is called the Monitoring Plan (MP) of the regulated entity (see Figure 2). It is part of the permit[17], which every regulated entity in the EU ETS must have for the emission of greenhouse gases.

Figure 2 also shows that the MP, although specific to an individual regulated entity, must follow the requirements of the EU-wide applicable legislation, in particular the MRR. As a result, the MRV system of the EU ETS is able to square the circle between strict EU-wide rules providing reliability and preventing arbitrary and undue simplifications, and allowing for sufficient flexibility for the circumstances of individual regulated entities.

[14] Commission Implementing Regulation (EU) 2018/2067 of 19 December 2018 on the verification of data and on the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council.

[15] According to national legislation, this period may be shorter, see footnote 23.

[16] For the purpose of simplification, the surrender of allowances has not been included in the picture. Similarly, the picture also ignores the processes of free allocation and trading of allowances.

[17] This permit pursuant to Article 30b of the EU ETS Directive is referred to as the GHG emission permit. Note that for simplifying administration, according to Article 30b(5), the monitoring plan may be treated separately from the permit when it comes to formal changes to the monitoring plan.

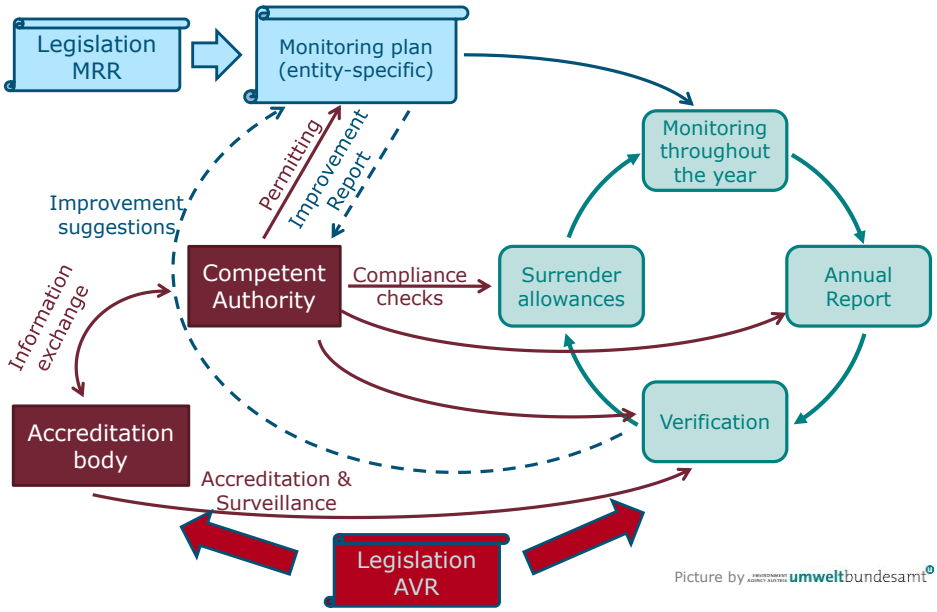

Figure 2: Principle of the ETS2 compliance cycle

Figure 2 also shows some key responsibilities of the competent authority. It has to supervise the compliance of the regulated entities. As the first step, the CA has to approve every MP before it is applied. This means that the MP developed by the regulated entity is checked for compliance with the MRR's requirements. Where the regulated entity makes use of some simplified approaches allowed by the MRR, this must be justified by the regulated entity, for example, based on the grounds of technical feasibility or unreasonable costs, where otherwise required higher tiers cannot be achieved.

Finally, it is the responsibility of the competent authority to carry out checks on the annual emission reports. This includes spot checks on the already verified reports, as well as cross-checks with figures entered in the verified emissions table of the registry system, and checking that sufficient allowances have been surrendered.

Moreover, the compliance cycle has a wider perspective. As Figure 2 shows, there is a second cycle. This is the regular review of the MP, for which the verification report may provide valuable input. Besides which the regulated entity is required to continuously strive for further improving its monitoring methodology.

3.3 The importance of the monitoring plan

From the previous section it becomes apparent that the approved monitoring plan (MP) is the most important document for every regulated entity participating in the EU ETS. Like a recipe for a cook or the management handbook for a certified quality management system, it serves as the manual for the regulated entity's tasks. Therefore, it should be written in a way that allows all, particularly new staff to immediately understand the process and follow the instructions. It must also allow the CA to quickly understand the regulated entity's monitoring activities.

Finally, the MP is *the* 'criteria' for the verifier against which the regulated entity's emission report is to be judged.

Typical elements of a MP include the following activities of the regulated entity (applicability depends on the specific regulated entity's circumstances):

- Data collection (metering data, invoices, etc.);
- Sampling of materials and fuels;
- Laboratory analyses of fuels and materials;
- Maintenance and calibration of meters;
- Description of calculations, formulae and software to be used;
- Description of the methods to identify end consumers' CRF categories;
- Control activities to ensure validation and quality of data processed and reported (e.g. four eyes principle for data collection);
- Data archiving (including protection against manipulation and distruction);
- Regular identification of improvement possibilities.

MPs must be drafted carefully (→ chapter 6), so that administrative burden is minimised and yet they are clear enough for situations when the regulated entity's experienced personnel are not available[18]. Since the MP is to be approved by the CA, it goes without saying that changes to the MP are only allowed with the consent of the CA. The MRR reduces the administrative efforts here by allowing two approaches which should be taken into account when drafting MPs:

- Only changes which are "significant" need the approval by the CA (Article 75b(3) of the MRR, see section 6.8 below);
- Monitoring activities which are not crucial in every detail, and which by their nature tend to be frequently amended as found necessary, may be put into "written procedures", which are mentioned and described briefly in the MP, but the details of which are not considered part of the approved MP. The relationship between MP and written procedures is described in more detail in section 6.6.

Because of the importance of the MP, the Commission will also providing templates for MPs. Some Member States may have provided customized templates based on the Commission's templates, other Member States use a dedicated (usually web-based) electronic reporting system (that must also meet minimum stated Commission requirements). Before developing a MP, regulated entities are therefore advised to check their CA's website or make direct contact with the CA in order to find out the specific requirements for submitting a MP in their Member State. National legislation may also state specific requirements.

[18] E.g. they include clear reference to other systems, processes and procedures that may be required for successful application of the MP

3.4 Milestones and deadlines

3.4.1 The annual compliance cycle

The EU ETS compliance cycle is built around the requirement that monitoring is always related to the calendar year[19], as shown in Table 1. Regulated entities have four months after the end of the year to finalise their emission reports and to get them verified by an accredited verifier in accordance with the AVR. Thereafter regulated entities have to surrender the corresponding amount of allowances by 31 Oct each year. Subject to national legislation, the competent authority may or shall perform (spot) checks on the reports received, and must determine a conservative estimate of the emissions, if the regulated entity fails to submit an emissions report, or where a report has been submitted, but it is either not compliant with the MRR or not verified as satisfactory in accordance with the AVR (Article 75r(1) of the MRR). The CA detects any kind of error in the submitted reports, which may result in corrections to the verified emissions figure to be done by the ETS2 entity (and subject to re-verification). Note that for such corrections no deadline is given by EU legislation. However, there may be some requirement given in national legislation.

Table 1: Common timeline of the annual EU ETS compliance cycle for emissions in year N.

When?	Who?	What?
By 31 Aug 2024 [20]	Regulated entity	Submit to the competent authority a MP for approval
Before 1 Jan 2025	CA	Approve MP and issue a GHG permit
30 April 2025	Regulated entity	Submit report on historic emissions (2024)
1 January N [21]		Start of monitoring period
31 December N		End of monitoring period
by 30 April[22] N+1	Verifier	Finish verification and issue verification report to the regulated entity
By 30 April[23] N+1	Regulated entity	Submit *verified* annual emissions report to CA
By 30 April N+1	Regulated entity / Verifier[24]	Enter verified emissions figure in the verified emissions table of the Registry

[19] Article 3(12) of the MRR defines: '*reporting period' means a calendar year during which emissions have to be monitored and reported* […].

[20] unless the competent authority has set an alternative time limit for this submission. It is however advised to submit the MP as soon as possible, in particular when having in mind that reporting on historic emissions in April 2025 implies monitoring of emissions already during 2024.

[21] First year N is 2025.

[22] Footnote 23 applies here as well.

[23] According to Article 75p(1), competent authorities may require regulated entities to submit the verified annual emission report earlier than by 30 April, but by 31 March at the earliest.

[24] This may be regulated differently in the Member States.

When?	Who?	What?
April – May N+1	CA	Subject to national legislation, possible spot checks of submitted annual emissions reports. Require corrections by regulated entity, if applicable. N.B. Subject to national legislation, there is no obligation for CAs to provide assistance or acceptance of regulated entity reports either before or after 30 April).
By 31 July N+1[25]	Regulated entity	Submit report on possible improvements of the MP to the CA, if applicable[26]
By 31 Oct N+1	Regulated entity	Surrender allowances (amount corresponding to verified annual emissions) in Registry system
(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 to the emissions data and surrender of additional allowances, if applicable (in accordance with Member State legislation).

3.4.2 Preparing for the ETS2

In order to make the compliance cycle work, the MPs of all regulated entities need to be approved by the competent authority before the start of the monitoring period for ETS2 starting on 1 January 2025. Based on experience from previous phases in ETS1, this approval process may require several months and should be well prepared. Relatively long timescales are assumed: Firstly, preparation of the MP by the regulated entity can take up to several months, depending on the complexity of their operations and in particular the market structure when trying to identify end consumers' sectors. Because the CA also needs a few weeks or months for assessing all submitted MPs (depending on current workload) and because regulated entities then need some weeks for finally implementing the new approved MP, the MRR requires regulated entities to submit their MPs for approval at the latest four months before monitoring starts (i.e. by end of August 2024).[27]

[25] Article 75q(1) allows the CA to set a later date, but not later than 30 Sep.

[26] There are two different types of improvement reports pursuant to Article 75q of the MRR. One is to be submitted in the year where a verifier reports improvement recommendations, and the other (which may be combined with the first, if applicable) every 3 years for category B, and every 5 years for category A entities. For categorisation, see section 0 of this document. The CA may set a different deadline, but no later than 30 September of that year.

[27] Unless the competent authority has set an alternative time limit for this submission

An idealised example timeline for the start of the new ETS2 is shown in Table 2.

Table 2: Idealised model timeline for preparing the EU ETS compliance cycle for the start of the ETS2. Note that deadlines may significantly differ according to the Member States.

When?	Who?	What?
March – Aug 2024	Regulated entity	Develop new MP
at the latest by end Aug 2024	Regulated entity	Submit new MP to CA (deadline set by CA)
Aug – Dec 2024	CA	Check and approve MPs
Oct – Dec 2024	Regulated entity	Prepare for implementation of approved MP
1 January 2025	Regulated entity	Start of monitoring period using the approved MP based on the MRR requirements
30 April 2025	Regulated entity	Submit report on historical emissions (2024), i.e. the first annual emissions report
30 April 2026	Regulated entity	Submit first verified report on emissions concerning the reporting year 2025
1 Jan 2027		Trading starts for ETS2

3.5 Roles and responsibilities

The different responsibilities of the regulated entities, verifiers and competent authorities are shown in Figure 3, taking into account the activities mentioned in the previous sections. For the purpose of completeness, the accreditation body is also included. The picture clearly shows the high level of control which is efficiently built into the MRV system. The monitoring and reporting is the main responsibility of the regulated entities (who are also responsible for hiring the verifier and for providing all relevant information to the verifier). The CA approves the MPs, receives and checks the emission reports, is in charge of inspections and may make corrections to the verified emissions figure when errors are detected. Thus, the CA has control over the final result. Finally, the verifier is ultimately answerable to the accreditation body[28]. Note that based on Article 66 of the AVR, Member States must also monitor the performance of their national accreditation bodies, thereby fully ensuring the integrity of the EU ETS system of MRV and accreditation.

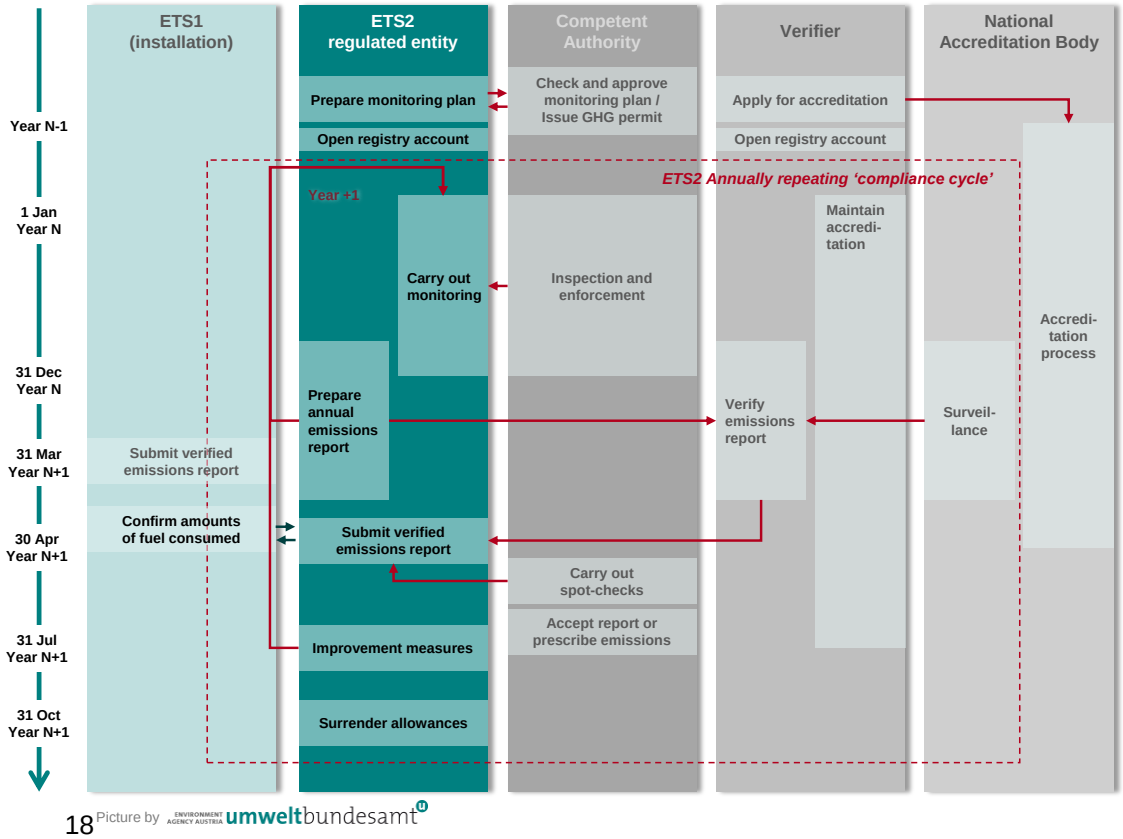

Figure 3: Overview of responsibilities of the main actors in the EU ETS. Regarding "Accreditation body" see also footnote 28.

[28] The AVR also allows in exceptional cases verifiers (if natural persons) to be certified and supervised by a national authority appointed by that Member State (in accordance with AVR Article 55).

4 CONCEPTS AND APPROACHES

This chapter is dedicated to explaining the most important terms and concepts needed for developing a MP.

4.1 Underlying principles

Articles 5 to 9 of the MRR[29] outline the guiding principles which the regulated entities have to follow when fulfilling their obligations. These are:

1. **Completeness** (Article 5): The completeness of fuel streams is at the very core of the EU ETS monitoring principles. In order to ensure completeness of emissions monitored, the regulated entity should take into account the following considerations:
   - Article 4 of the MRR requires that all emissions associated with all fuel streams (→ section 0) are to be included, where these belong to combustion in sectors listed in Annex III of the EU ETS Directive, or which are included in the EU ETS by "opt-in" (pursuant to Article 30j of the Directive).
   - For completeness of system boundaries see 'designating ETS2 regulated entities' in section 8 and 'types of fuels covered' in section 2.2.
2. **Consistency and comparability** (Article 6(1)): Time series[30] of data need to be consistent across the years. Arbitrary changes of monitoring methodologies are prohibited. This is why the MP has to be approved by the competent authority, for significant changes to the MP. Because the same monitoring approaches are defined for all regulated entities the data created is also comparable between regulated entities; although depending on their circumstances the regulated entities may be required to apply different methods according to the tier system (→ section 5.2).
3. **Transparency** (Article 6(2)): All data collection, compilation and calculation must be made in a transparent way. This means that the data itself, the methods for obtaining, processing and reporting them (in other words: the whole data flow) have to be documented transparently, and all relevant information has to be securely stored and retained allowing for sufficient access by authorised third parties. In particular, the verifier and the competent authority must be allowed access to this information.
   It is worth mentioning that transparency is in self-interest of the regulated entity: It facilitates transfer of responsibilities between existing and new staff and reduces the likelihood of errors and omissions. In turn this reduces the risk of over-surrendering, or under-surrendering allowances and penalties. Without transparency, verification activities are more onerous and time-consuming and hence costly to the regulated entity.
   Furthermore Article 67 of the MRR[31] specifies that relevant data is to be stored

[29] Article 75a of the MRR declares these Articles equally applicable to ETS2.

[30] This does not imply a requirement to produce time series of data, but assumes that the regulated entity, verifier or competent authority may use time series as a means of consistency checks.

[31] Article 75o of the MRR declares this Article equally applicable to ETS2.

for 10 years[32] from submission of the verified report. The minimum data to be retained is listed in Annex IX of the MRR.

4. **Accuracy** (Article 7): Regulated entities have to take care that data is accurate, i.e. neither systematically nor knowingly inaccurate. Due diligence is required by regulated entities, striving for the highest achievable accuracy. As the next point shows, "highest achievable" may be read as where it is technically feasible and "without incurring unreasonable costs".
5. **Integrity of the methodology and of the emissions report** (Article 8): This principle is at the very heart of any MRV system. The MRR mentions it explicitly and adds some elements that are needed for good monitoring:
   - The monitoring methodology and the data management must allow the verifier to achieve "reasonable assurance[33]" on the emissions report, i.e. the monitoring must be able to endure a quite intensive test;
   - Data shall be free from material[34] misstatements and avoid bias;
   - The data shall provide a credible and balanced account of a regulated entity's emissions.
   - When looking for greater accuracy, regulated entities may balance the benefit against additional costs. They shall aim for "highest achievable accuracy, unless this is technically not feasible or would lead to unreasonable costs".
6. **Continuous improvement** (Article 9): In addition to the requirement of Article 75q, which requires the regulated entity to regularly submit reports on improvement possibilities, e.g. for reaching higher tiers, this principle also is the foundation for the regulated entity's duty of responding to the verifier's recommendations (see also Figure 2 on page 14).

[32] In practice this means 11 years and 4 months for data originating on $1/1/Y_N$, if the report is submitted on $30/4/Y_{N+1}$

[33] Article 3(18) of the AVR defines: "*'reasonable assurance' means a high but not absolute level of assurance, expressed positively in the verification opinion, as to whether the operator's or aircraft operator's report subject to verification is free from material misstatement.*" For more details on the definition this term, see guidance documents on the A&V guidance, in particular the AVR Explanatory Guidance (EGD I). Section 1.3 provides a link to those documents.

[34] See footnote 33.

4.2 Fuel streams

Fuel streams[35]: This term refers to all the types of fuels which a regulated entity releases for consumption, for which the emissions associated with the eventual consumption (i.e. combustion) have to be monitored when applyingthe calculation-based approach (→ chapter 5). There are however certain requirements in the definition on how to split relevant types of fuels into fuel streams, as well as further practical considerations. The latter include the 'scope factor' (→ section 5.4) and the types of end consumers (→ section 5.4.1) which also play a role when splitting the total amount of fuel released for consumption into 'fuel streams'. Such splitting is discussed in further detail in section 6.3.3.

Commercial standard fuels[36]: This term refers to types of fuels which are internationally standardised and for which the net calorific value therefore only varies within small intervals in all countries. This includes the most important road transport fuels such as gas oil (diesel) or gasoline. For those types of fuels, monitoring requirements are a lot simpler in the MRR (→ section 6.2).

Fuels meeting equivalent criteria to commercial standard fuels[37]: This term refers to fuels which exhibit similar characteristics to commercial standard fuels but only at the Member State level or regional level. Where those conditions are met, monitoring requirements are equally simplified in the same way as for commercial standard fuels (→ section 6.2).

[35] MRR Article 3(64): 'fuel stream' means a fuel as defined in Article 3, point (af), of Directive 2003/87/EC, released for consumption through specific physical means, such as pipelines, trucks, rail, ships or fuel stations, and giving rise to emissions of relevant greenhouse gases as a result of its consumption by categories of consumers in sectors covered by Annex III to Directive 2003/87/EC.
EU ETS Directive Article 3(af): 'fuel' for the purposes of Chapter IVa of this Directive means any energy product referred to in Article 2(1) of Directive 2003/96/EC, including the fuels listed in Table A and Table C of Annex I to that Directive, as well as any other product intended for use, offered for sale or used as motor fuel or heating fuel as specified in Article 2(3) of that Directive, including for the production of electricity

[36] Article 3(32): 'commercial standard fuel' means the internationally standardised commercial fuels that exhibit a 95 % confidence interval of not more than 1 % for their specified calorific value, including gas oil, light fuel oil, gasoline, lamp oil, kerosene, ethane, propane, butane, jet kerosene (jet A1 or jet A), jet gasoline (jet B) and aviation gasoline (AvGas)

[37] Article 75k(2): "The competent authority may require the regulated entity to determine the unit conversion factor and emission factor of fuels as defined in Article 3(af) of Directive 2003/87/EC using the same tiers as required for commercial standard fuels provided that, at the national or regional level, any of the following parameters exhibit a 95 % confidence interval of:

(a) below 2 % for net calorific value;

(b) below 2 % for emission factor, where the released fuel amounts are expressed as energy content.

5 MONITORING METHODOLOGY

5.1 The calculation-based approach

Regulated entities haveto determine the emissions associated with the combustion of fuels released for consumption using the calculation-based approach.

The principle of this method is the calculation of emissions by multiplying, for each fuel stream, the released fuel amount by the corresponding unit conversion factor, the corresponding scope factor and the corresponding emission factor. Figure 4 illustrates this.

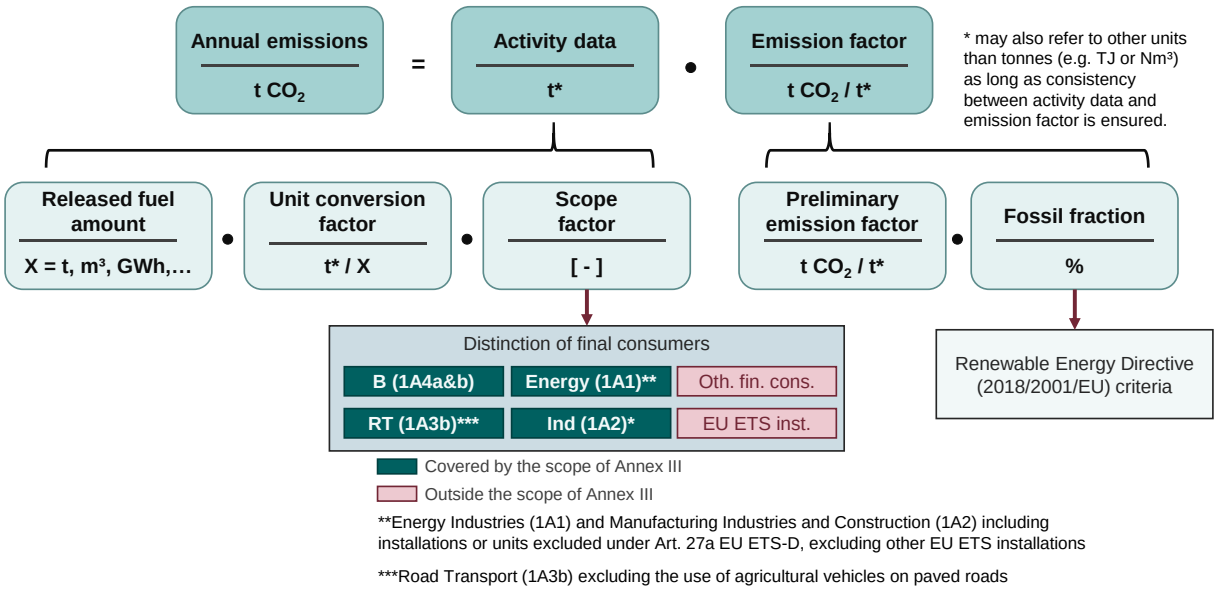

Figure 4: Calculation-based methodology to determine emissions

Parameter	Description
Released fuel amounts	This is the amount of fuel released for consumption (→ section 5.3), expressed usually as t, Nm³ or TJ. Where applicable, this will correspond to the total fuel amount for each fuel type released through the excise duty point.
Scope factor	This is a dimensionless factor between 0 (all fuel released consumed outside sectors covered by Annex III of the Directive) and 1 (all fuel released consumed in sectors covered by Annex III of the Directive). The determination of this factor involves the ability to identify the relevant category of end consumers in terms of their coverage in Annex III (→ section 5.4).
Unit conversion factor	Where applicable, this converts the fuel quantity into units (→ section 5.6.1) compatible with the (preliminary) emission factor. E.g. where fuel quantities are expressed as t or Nm³ this is could be the net calorific value (NCV) with the corresponding EF expressed as t CO_2/TJ.

Preliminary emission factor (EF)	This factor is usually expressed as t CO_2/t, t CO_2/litre or t CO_2/TJ and converts amounts or energy content of the fuels released for consumption into emissions (→ section 5.6.2).
Biomass/ fossil fraction	This is a dimensionless fraction taking into account the fossil fraction of carbon in fuels that comprises the following two aspects (→ section 5.6.3): • The fraction of carbon arising from biogenic origin • The compliance of the biomass component with the sustainability and GHG savings criteria of the RED II.

5.2 The tier system

The EU ETS system for monitoring and reporting provides for a building block approach for monitoring methodologies. Each parameter needed for the determination of emissions can be determined by applying different "data quality levels". These "data quality levels" are called "tiers"[38]. The building block approach is illustrated by Figure 5, which shows the tiers which can be selected for determining the emissions from a fuel stream. The descriptions of the different tiers (i.e. the requirements for complying with those tiers) are presented in more detail in the subsequent sections for each parameter.

In general, it can be said that tiers with lower numbers represent methods with lower requirements and being less accurate than higher tiers. Tiers of the same number (e.g. tier 2a and 2b) are considered equivalent.

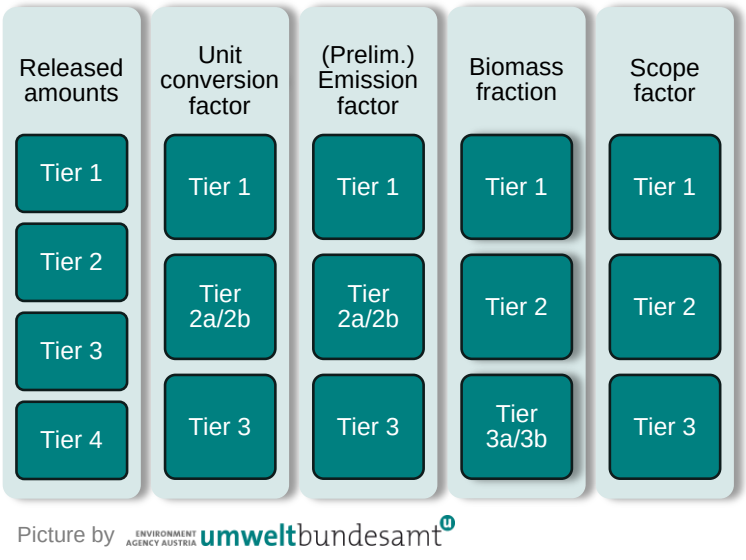

Figure 5: Illustration of the tier system.

[38] Article 3(8) of the MRR defines: *'tier' means a set requirement used for determining activity data, calculation factors, annual emission and annual average hourly emission, and payload.*

Higher tiers are considered, in general, more accurate but more difficult and costly to meet than lower ones (e.g. due to more expensive measurements applied). Therefore, lower tiers are usually allowed for smaller quantities of emissions, i.e. for de-minimis fuel streams (see section 6.3.3) and for smaller regulated entities (for categorisation see section 6.3.1). A cost-effective approach is thus ensured.

Which tier a regulated entity must select according to the requirements of the MRR is discussed in detail in section 6.2.

5.3 Monitoring of released fuel amounts

5.3.1 Tier definitions

As discussed earlier, the tiers (→ section 5.2) for released fuel amounts of a fuel stream are defined using thresholds for a maximum uncertainty allowed for the determination of the quantity of fuel or material over a reporting period. Whether a tier is met, must be demonstrated by an uncertainty assessment. Elements of this uncertainty assessment are discussed in section 6.5. Such an uncertainty assessment is however not required where the measurement methods applied to determine released fuel amounts correspond to the same regulated entity and fuel stream covered by ETD/ED regime, provided those methods are subject to national legal metrological control (→ section 0). For illustration, Table 3 shows the tier definitions for combustion of fuels. A full list of the tier definitions in the MRR is given in section 1 of Annex IIa of the MRR.

Table 3: Typical definitions of tiers for activity data based on uncertainty, given for the combustion of fuels as example.

Tier No.	Definition
1	Amount of fuel [t] or [Nm^3] or [TJ] over the reporting period[39] is determined with a maximum uncertainty of less than **± 7.5 %**.
2	Amount of fuel [t] or [Nm^3] or [TJ] over the reporting period is determined with a maximum uncertainty of less than **± 5.0 %**.
3	Amount of fuel [t] or [Nm^3] or [TJ] over the reporting period is determined with a maximum uncertainty of less than **± 2.5 %**.
4	Amount of fuel [t] or [Nm^3] or [TJ] over the reporting period is determined with a maximum uncertainty of less than **± 1.5 %**.

Note that the uncertainty is meant to refer to “all sources of uncertainty, including uncertainty of instruments, of calibration, environmental impacts”, unless some of the simplifications mentioned in section 6.5.2 are applicable.

[39] Reporting period is the calendar year.

5.3.2 Relevant elements of the monitoring plan

When developing its MP, the regulated entity has to make several choices regarding the way released fuel amounts are determined.

The released fuel amounts comprise the total amount of fuel released for consumption (i.e. put on the market) before taking into consideration which type of consumers (transport, heating of buildings, industry, agriculture, etc.) the fuels are eventually consumed by. The conversion of these total amounts into the relevant amounts consumed only in sectors covered by the ETS2 scope will be done later when multiplying by the scope factor (→ section 5.4).

Quantification of released fuel amounts

The MRR provides for the following three methods to determine the released fuel amounts:

- Measurement methods used under the **ETD/ED regime**, provided that:
  - the regulated entity corresponds to the entity that has reporting obligations for energy products under the ETD/ED regime;
  - the measurement methods are subject to national legal metrological control (NLMC). This should usually be the case for all commercial transaction based on the measurements of fuels for which taxes are paid and duties levied.

  Without explicitly mentioning it, those measurement methods will be based on batch metering or continual metering (see below).
- based on batch metering, i.e. aggregation of measurement of quantities at the point where the fuel streams are released for consumption, such as individual truck deliveries of solid fuels, liquid fuels, or LPG.
- based on continual metering at the point where the fuel streams are released for consumption, such as pipeline transport of liquid or gaseous fuels.

The MRR provides for special provisions for the first method (ETD/ED regime) by allowing CAs to require regulated entities to use this method, if applicable, as well as by allowing regulated entities to assume meeting the highest tier listed in section 5.3.1 without assessment of the measurement uncertainty. Furthermore, the MRR also allows the released fuel amounts to be expressed as the relevant units used for energy taxation, e.g. TJ, litres, GWh (gross calorific value). In all other cases, the units are limited to tonnes, Nm^3 and TJ (as shown in Table 3). In all cases, the released fuel amounts will be converted in a subsequent step into units (e.g. t or TJ) by multiplying with the appropriate unit conversion factor (→ section 5.6.1) compatible with the units of the relevant emission factor (e.g. t CO_2 per t or TJ).

Regulated entity's instruments vs. trading partner's instruments

The MRR does not require every regulated entity to own the measuring instruments at any cost. That would contradict the MRR's approach regarding cost effectiveness. Instead, instruments which are under the control of other parties (in particular fuel trading partners) may be used. Especiallyin the context of commercial transactions such as fuel trading, it is often the case that metering is done by only one of the trade partners. The other partner may assume that the

uncertainty associated with the measurement is reasonably low, because such measurements are often governed by legal metrological control. Alternatively, requirements on quality assurance for instruments, including maintenance and calibration can be included in purchase contracts. However, where the measurement methods are not the ones used under ETD/ED regime, the regulated entity must assess the uncertainty applicable to such meters in order to assess if the required tier can be met (Article 75j(2), 2nd sub-paragraph).

Thus, the regulated entity may choose whether to use its own instruments or to rely on instruments used by the fuel supplier. However, a slight preference is given by the MRR to own instruments: If the regulated entity decides to use or rely on other instruments despite having its own instruments at its disposal, the trading partner's instruments have to allow compliance with at least the same tier, give more reliable results and be less prone to control risks than the methodology based on its own instruments.

In many cases this uncertainty assessment will be short and simple. In particular, if the regulated entity has no alternative instrument available under its own control, so the regulated entity does not have to compare the tier applicable using its own instrument with the tier applicable to the trading partner's instrument.

Furthermore, control risk may be low where invoices are subject to an accounting department's controls[40]. In the case that invoices are used as primary data for determining the material or fuel quantity, the MRR requires the regulated entity to demonstrate that the trade partners are independent. In principle, this should be considered a safeguard for ensuring that meaningful invoices exist. In many cases it will also be an indicator of whether national legal metrological control is applicable.

Timing of measurements

Theoretically, the cut-off time for annual amounts would have to be determined at midnight on 31 December every year, which may not be possible in practice. Therefore, the MRR allows for choosing the next most appropriate day to separate one reporting year from the following one. Data must be reconciled accordingly to the required calendar year. The deviations involved for one or more fuel streams shall be clearly recorded, form the basis of a value representative for the calendar year, and be considered consistently in relation to the next year (Article 75j(2)).

E.g. in the natural gas market, where the tax liable entity (hence most commonly the ETS2 regulated entity) is the natural gas supplier, but the measurements instruments for measuring household consumption are owned by the distribution system operator (DSO). Subject to internal procedures, the DSO will read the meters only once per year on a predefined date (e.g. in May, after the ETS2 reporting deadline) and make the results available to the supplier. Where this transfer of information comes too late for the ETS2 annual emissions reporting deadline of 30 April each year, the released fuel amounts will be based on the same proxy consumption amounts used as the basis for invoicing the household

[40] Note that the existence of the accounting's controls does not automatically dispense the regulated entity from including appropriate risk mitigation measures in the EU ETS related control system. The risk assessment according to Article 59(2) and 75o must include this risk as appropriate.

consumers and only adjusted for in the year Y+1 emissions report based on the actual consumption measurement results.

Example: A natural gas supplier (the ETS2 regulated entity in this example) has direct contractual relationships with households. The annual natural gas consumption is measured once per year on 15 May with a flow meter that is owned and read by the natural gas distribution system operator (DSO). This means that the latest actual measurements available to the regulated entity for reporting on historic emissions during 2024 by 30 April 2025 will be from 15 May 2024. Let's assume this measurement has shown annual consumption of 2 500 kWh between 15 May 2023 and 15 May 2024.

The regulated entity may propose the following procedure to calculate released fuel amounts:

- The regulated entity may use this value of 2 500 kWh as the best available information to estimate the released fuel amounts for the total calendar year 2024 and report this figure in the annual emissions report due by 30 April 2025.
- On 15 May 2024 the DSO reports to the regulated actual consumption between 15 May 2023 and 15 May 2024 to have been 2 300 kWh.
- For reporting on emissions during 2025 due by 30 April 2026, the best available data for released fuel amounts is therefore 2 300 kWh. However, in order to correct for the over-reporting in the previous year, the regulated entity has to deduct the 2 500 kWh – 2 300 kWh = 200 kWh which will lead to reporting released fuel amounts of 2 100 kWh for 2025.
- The above steps would be reported for subsequent years as well.

This approach would take into account a 'balance' between reported and – only available after the reporting deadline of 30 April – actual emissions. This balance will be set to zero when reporting emissions in the next year. This approach would be reminiscent of the down payment rates the natural gas suppliers charge their consumers. The result is shown in the table below.

kWh		**Actual consumption** (May Y-2 to May Y-1)	**Best estimate** (for year Y-1)	**Reported 'released fuel amounts' in AER** (in year Y for Y-1)	**Balance** (reported - actual)
2024	April				
	May	2 500			
2025	April		2 500	2 500	
	May	2 300			200
2026	April		2 300	2 100	0
	May	2 600			-300
2027	April		2 600	2 900	0
	May	2 500			100
2028	April		2 500	2 400	0
	May	…	…	…	…

The fuel suppliers may also propose more sophisticated approaches taking into account e.g. longer history of consumption levels and splits based on estimates of consumption levels before and after 15 May of each year

(winter/summer patterns, e.g. with the support of DSO's data) instead of the 'equal distribution' split implicitly assumed in this example, 'benchmarks' for similar consumers, historic and projected heating degree days, etc. However, whatever approach is proposed, it should be consistent with the down payment plan for the same consumer in order to avoid inconsistenties and incentives for strategic behaviour for arbitrage gains.

There are a couple of take-aways from the above example:

- Actual consumption levels will always lag behind by one year. However, with every year on the relative impacts on the cumulative reported amounts will diminish. This is also how the market works based on down payments and cannot be avoided until there is a wider uptake of smart gas meters which allow for real-time measurements.
- There will always remain uncertainty on which were the actual consumption levels in the first year (in this case between 1 Jan 2024 and 15 May 2025). Like for the above, the uncertainty around this figure will have diminishing relative impacts over time.
- The example table above shows that this 'balance method' can considerably amplify small differences between estimated and actual emissions to the differences in reported 'released fuel amounts' across years. However, since a natural gas supplier will usually have thousands of different consumers, the differences between estimated and actual amounts can be expected to average out at the aggregated level.

In reality, there will also not only be one meter reading day for all consumers, but reading days spread out over the year. The DSO will read meters of some consumers on e.g. 18 Jan, of others on 25 Feb, 10 May and so on. Therefore, the regulated entity may propose a reasonable cut-off date for taking meter readings into consideration for the current year and which ones to base on best estimates and only reconcile in next year's report. Such a date could be e.g. [one] week before the verification takes place. The methodology applied will have to be described in the approved MP.

Information on further requirements regarding determination of released fuel amounts: Further information on maintenance, calibration and adjusting of measuring instruments is listed in section 6.3.

5.4 The scope factor

Article 3(66) of the MRR applies the definition that the *"'scope factor' means the factor between zero and one that is used to determine the share of a fuel stream that is used for combustion in sectors covered by Annex III to [EU ETS] Directive 2003/87/EC"*.

This means that for each fuel stream the regulated entity has to determine the share of the released fuel amounts being combusted in sectors listed in Annex III. For each fuel stream the scope factor can take values of 0 (not covered by Annex III), 1 (fully covered by Annex III) or any value in between (partly covered by Annex III).

The regulated entity will have to identify those amounts eventually combusted by consumers in sectors covered by Annex III and distinguish them from amounts supplied to all other types of end consumers. However, correct identification of the category of end consumer might not be easy in all cases, especially if there is no direct supply connection between the regulated entity and the end consumer. Furthermore, related information must be verifiable. This means that the regulated entity must be able to collect evidence which is sufficiently robust for being used by a verifier for building an opinion with a reasonable level of assurance.

- What type of information is needed to determine in which CRF category an end consumer falls (→ section 5.4.1)?
- What methods can be used to identify end consumers (→ section 5.4.2)

5.4.1 End consumers covered by the ETS2 scope

The method used to identify the end consumers in section 5.4.2 will have to be combined with being able to put those consumers into their respective category with respect to ETS2 coverage. Annex III of the EU ETS Directive lists the sectors buildings, road transport and additional sectors, see details below) for which consumption of the fuels released for consumption by the ETS2 regulated entities should be covered by the ETS2, including any sectors Member States opt-in via Article 30j of the Directive. The sectoral categorisation is done using the Common Reporting Format (CRF) used for compiling national GHG inventories following the IPCC 2006 Guidelines.

- The guidelines can be downloaded from here:
  https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html
- The most important definitions for stationary combustions (closely corresponding to 'heating fuels' as used under the ETD/ED regime) can be found in Table 2.1 of the following document:
  https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
- The most important definitions for mobile combustions (closely corresponding to 'motor fuels' as used under the ETD/ED regime) can be found in Table 3.1.1 of the following document:
  https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_3_Ch3_Mobile_Combustion.pdf

Regulated entities will have to report emissions from fuels combusted in the sectors listed along with their CRF category in Annex III of the Directive (i.e. CRF **1A1**, **1A2**, **1A3b**, **1A4a** and **1A4b)**. This **includes** the following sectoral uses, as well as the main **excluded** sectors from which a regulated entity needs to distinguish uses as part of the scope factor determination:

- **CRF 1A4a & CRF 1A4b**: fuel combustion in commercial/institutional and residential buildings
  - CRF **1A4a includes**: emissions from fuel combustion in commercial and institutional buildings (space heating, warm water, cooking, etc.); all activities included in ISIC[41] divisions 41, 50, 51, 52, 55, 63-67, 70-75, 80, 85, 90-93 and 99;
  - CRF **1A4b includes**: all emissions from fuel combustion in households (space heating, warm water, cooking, etc.);
  - **excludes**: main uses to be separated from the above are other stationary and mobile combustion, in particular excludes any emissions from fuel combustion in agriculture, forestry, fishing and fishing industries such as fish farms (CRF **1A4c**; activities included in ISIC Divisions 01, 02 and 05).
- **CRF 1A3b**: Road Transportation
  - **includes**: all combustion and evaporative emissions arising from fuel use in road vehicles such as from cars, motorcycles, light- and heavy-duty vehicles such as trucks, busses, urea-based additives for catalysts, etc. However, as an important difference, agricultural vehicles used on paved roads (i.e. where the vehicle type is primarily designed for the agricultural purpose but can also be used on paved roads, e.g. tractors) are **excluded** according to Annex 3 from the ETS2 scope despite being included in CRF **1A3b**.
  - **excludes**: main uses to be separated from the above are emissions from other modes of transportation such as aviation (**1A3a**, mostly covered by ETS1 apart from private aviation), off-road vehicles in agriculture (**1A4c**), railways (**1A3c**) water-borne navigation (**1A3d**, mostly covered by ETS1), military operations etc. (**1A5b**), etc.
- **CRF 1A1**: Energy Industries
  - **includes**: emissions from fuels combusted for production of electricity (power plants), combined heat and power (CHP plants) and Heating plants, refineries (**1A1b**), combustion in coke ovens within the iron and steel industry (**1A1c**), etc. The majority of these end consumers (in particular where combustion units exceed a capacity of 20 MW) are covered by ETS1.
- **CRF 1A2**: Manufacturing Industries and Construction
  - **includes**: emissions from fuels combustion in industry (iron & steel, cement, chemicals, etc.), including combustion for the generation of electricity and heat for own use in these industries. This also includes emissions from fuel combustion in any off-road or mobile machinery (such as excavators or construction site mobile machinery) as well as head offices of industrial companies (same economic activity as the industrial sites). As can be seen

[41] International Standard Industrial Classification of All Economic Activities https://unstats.un.org/unsd/publication/SeriesM/seriesm_4rev4e.pdf

in the IPCC GL, the sectoral definitions often refer to ISIC[42] classification. The larger installations are already covered by ETS1.

- **excludes**: fuels used for non-energetic purposes for process input (CRF category **2A to 2H**), such as as chemical reactant (e.g. natural gas for ammonia production) or reducing agent (e.g. iron & steel industry). The larger installations are already covered by ETS1.

Furthermore, Annex III explicitly excludes from the ETS2 scope activities listed in Annex I (i.e. emissions already covered by ETS1). Table 4 compares the main sectors covered by those two Annexes.

Table 4: Comparison of coverage of Annexes I and III of the EU ETS Directive

Annex III coverage	**Covered by ETS1** [43]	**Not covered by ETS1** [44]
CRF category covered by Annex III	Large-scale energy industry and industrial activities (CRF 1A1 & 1A2) Aviation activity above the thresholds in Annex I of the Directive Martitime activity above the thresholds in Annex I of the Directive Large building complexes with combustion units >20MW	Road transport and heating in buildings (<20MW) Small-scale energy industry and industrial , aviation and maritime/water-borne navigation activities below the thresholds in Annex I of the Directive
CRF category not covered by Annex III	Some other stationary combustion activities >20 MW (e.g. pipeline transport 1A3e)	Agriculture, forestry, fishery, etc.

5.4.2 Methods to determine end consumers

The MRR provides a hierarchy of methods for regulated entities to determine the scope factor of each fuel stream taking into account each method's i.a. robustness, risk of fraud, possibility for targeted cost pass-through and administrative burden.

[42] International Standard Industrial Classification of All Economic Activities https://unstats.un.org/unsd/publication/SeriesM/seriesm_4rev4e.pdf

[43] including installations excluded from the EU ETS pursuant to Article 27 of the Directive

[44] including installations excluded from the EU ETS pursuant to Article 27a of the Directive

Table 5: Overview of the tier definitions for the scope factor

Tier	Tier definition
1	Art. 75l(3): Default value of 1 (full scope coverage) Art. 75l(4): (Default value lower than 1 if certain conditions are met; see below)
2	Art. 75l(2)(e): Chain-of-custody (IT-based or paper-based) Art. 75l(2)(f): National marking Art. 75l(2)(g): Indirect methods (correlations)
3	Art. 75l(2)(a): Physical distinction of flows Art. 75l(2)(b): Chemical distinction of fuels Art. 75l(2)(c): Chemical marking (Euromarker) Art. 75l(2)(d): ETS1 verified annual emissions report data

Each method listed in

Table 5 is described in more detail below:

- **Methods based on the physical distinction of fuel flows (Tier 3)**: application of this method requires two criteria to be demonstrated:
  - there is a physical distinction of fuel flows: for example, direct measurements of fuel flows in pipeline networks to which only certain types of end consumers are connected (e.g. households, or fuel stations only dedicated for agriculture or heavy duty vehicles) or fuel flows to remote areas (islands or areas without the existence of outward pipelines). In some Member States, there are separate meters installed for the use of energy products for a specific purpose, e.g. use of electricity only for heating purposes. Potentially these methods could also be used for fuels covered by the ETS2 or to distinguish them from non-ETS2 uses where it can be demonstrated that only certain types of consumers are connected to those separate meters.
  - evidence can be provided that the end consumers either fall under the scope of Annex III or not: this could be based on 'legal zoning', e.g. where the consumers in an area connected to the pipeline are only, e.g. industrial users (CRF 1A2), and legally are not to be allowed to carry out any other economic activities. This evidence could also contain elements as explained under 'chain-of-custody' below, such as a self-declaration from a fuel station to which the pipeline is connected. This self-declaration could have the fuel station confirm that they exclusively supply fuel to road transport, e.g. based on commercial permits.

    Note: despite possibly using similar elements as the 'chain-of-custody' methods described below, this method is considered of higher quality. This is because 1) this method is based on physical infrastructure, which cannot be changed as easily (i.e. it cannot be supplied to other consumers) and 2) due to this limited number of consumers, it is easier to identify the CRF categories of end consumers.
- **Methods based on the chemical properties of fuels (Tier 3)**: application of this method requires two criteria to be demonstrated:
  - that the chemical properties are distinct from other (similar) fuels: the purity, the carbon or sulphur content, calorific value, or any additives added, etc. This might be supported by laboratory analysis (e.g. in accordance with Articles 32 to 35, where applicable)
  - that this fuel is only suitable for specific purposes due to legal, technical or economic reasons:
    - Legal reasons: e.g. high-sulphur content fuels are for environmental reasons legally only allowed to be combusted in combustion units equipped with desulphurisation units, which small-scale consumers outside Annex III (e.g. agricultural, small boats) do not have;
    - Technical reasons: e.g. certain impurities in fuels would cause damage to standard combustion units or engines and can therefore only be combusted in large scale industrial sites covered by existing ETS;
    - Economic reasons: e.g. high purity, high C-content coal is sold with a price premium which makes it only viable for use as process material in industry, but not for energy-purposes in e.g. for use in (non-)ferrous metal industries.

- **Use of fiscal marker in accordance with Council Directive 95/60/EC (Tier 3)**: this would build on the existing practices of fiscal marking of gas oil and kerosene under the Euromarker Directive. The provisions could be extended to other fuels to distinguish between types of uses, i.e. end consumers. This would likely be limited to liquid fuels, while application to natural gas grids would need to be explored further. This is a common method in some Member States to identify agricultural, navigation and aviation fuel use, which are both outside the scope of ETS2. However, the sectoral coverage of end consumers for which a certain colourant is used (i.e. benefitting from reduced tax rates or exemptions) may differ from the CRF sectors within the meaning of the scope of the ETS2. Even though the fiscal marking method may therefore not solve all problems, it could be combined with other methods and could nevertheless be helpful to solve parts of the problem as many Member States have differentiated tax rates for e.g. agricultural activities (although sometimes only for either motor fuels used in off-road machinery or heating fuels), inland water navigation, aviation, etc.
- **Use ETS1 operator's annual emissions report** (→ section 5.4.3 on avoiding double counting)
- **Chain of traceable contractual arrangements and invoices ("chain of custody") (Tier 2)**: this would include e.g. IT-based or paper-based documentation starting from end consumers (declaring their CRF category as consumers for heating of buildings, for agricultural or industrial purposes, etc.) up the supply chain to the reporting entity (supported by corresponding contracts between the consumer and the supplier, where applicable, and further contracts along the supply chain to report the information upstream, where relevant). IT facilities could be systems established and owned by the regulated entity extending to any trading partners, IT systems developed by Member States, or extension of the existing EMCS[45] to further trading partners downstream of the excise duty point. In any case, end consumers would confirm their type of use and amount of fuel (e.g. use for heating offices, industrial or agricultural use, for example by using fuel cards upon pre-registration; see also example below). The potentially most suitable candidate for such approach could be natural gas. Other than self-declaration further sources of information about end consumers could be obtained from ex-ante fiscal/technical or energy audits under the existing excise duty and energy taxation procedures. Although these are often enforcement measures aimed at consumers of the fuel, they could potentially be adapted to ensure regulated entities (fuel suppliers) receive information on the use of the fuels they sell.

  Furthermore, it would not be necessary to have a self-declaration from all (types of) end consumers, but only from either all that are covered by the scope of ETS2, or from those that are not covered. In practice, as end users covered by the scope would have no incentive to prove their CRF category as the price of the fuel for them would be anyway the same, it is more practical to establish a chain of custody to end users that are not covered by the scope. For instance, as the number of agricultural consumers – who are not covered by the scope of the ETS2 – is limited, self-declaration providing sufficient evidence as regards their ETS2 scope from those consumers would be easier to implement than self-declaration from the buildings or road transport sectors. Furthermore,

[45] Excise Movement Control System (for use under Directive (EU) 2020/262)

a Member State's national ETS2 authority may even already require a central registration of those industrial consumers, e.g. consumers that are connected to the gas grid, or consumers that choose to centrally register (via their address, VAT number, their economic activity to confirm the status as agricultural consumers[46]; CRF category 1A4c). Subsequently the Member State could grant regulated entities access to this list in order to exclude corresponding fuel amounts supplied from the annual emissions report. This central registration could lead to higher legal certainty, more robust MRV and easier verification, lower admin burden (due to centralisation) and lower risk of any fraud (i.e. false self-declaration).

- **Use of national markers or colours (dyes) for fuels (Tier 2)**: similar to the fiscal markers under Euromarker Directive above but refers to markers only regulated at the national level. Similar considerations apply.
- **Indirect methods or estimation methods (Tier 2)**: here the CRF category of the end consumers would not be determined directly but via other data or information for which a high correlation with the type of sector is expected. This would however not be a default value at the aggregated level (see example below), but a correlation which allows distinction at the individual consumer level, including:
  - Pressure levels of natural gas supplied: e.g. large industrial customers purchase gas at transmission pressure levels while buildings receive gas at low-pressure level.
  - Fuel consumption capacities or profiles: this would be based on e.g. certain seasonal or day-and-night consumption capacities or patterns that could allow attribution of the consumption to certain types of end consumers, such as households or industrial sites.
  - Using existing public databases: e.g. on urbanisation or zoning plans (to distinguish industrial areas from the rest). Note: this is similar to 'physical distinction of fuel flows' above. However, it is not accompanied with infrastructural limititions (such as pipelines which simply do not allow the supply to other consumers not connected to it), but on other considerations such as economic reasons (e.g. transport costs to other areas might not be viable).
- **Default values (Tier 1)**: where none of the above methods is applicable (→ section 6.4 on derogations), the MRR allows for the use of default scope factors and gives clear preference to setting this factor to "1" (i.e. assumes full ETS2 coverage of end consumers and pass through carbon costs correspondingly). However, the MRR also allows for the following exemptions to deviate from this principle and use default values lower than 1:
  - **Years 2024 to 2026**: for this period the MRR allows the use of a default scope factor lower than 1, if the regulated entity can demonstrate that this leads to more accurate determination of emissions (see example below);
  - **Years 2027+**: default scope factors lower than 1 are only allowed if the regulated entity can demonstrate that this leads to more accurate

[46] Note: in order to confirm the correct system boundaries of activities that are exempted, the information provided about the industrial facility would need to correspond to the exact meter the amounts measured by which are exempted. Such details will usually not be listed, but this information should be traceable in the internal procedures being part of the regulated entity's monitoring plan under the MRR, granting verifiers access to this information.

determination of emissions and at least one of the following conditions applies:

- The fuel stream is a de-minimis fuel stream, OR
- The default scope factor is either 0.05 or lower (where the tend consumers are mostly not covered by ETS2), or 0.95 or higher (where they mostly are covered by ETS2)

Note: Member States may require the regulated entities to use a specific method listed below or a default value for a certain fuel type or in a certain region within their territory, to allow for consistent monitoring and reporting in their jurisdiction. In that case regulated entities might have limited options in choosing among the methods below. The hierarchy of the required tiers, i.e. which methods have to be applied and the reasons for regulated entities to deviate from those and use lower tier methods is described in section 6.2 ff.

1

Example: illustration of the difference between the method ‘indirect/estimation’ and a ‘default value lower than 1’

On the left side of Figure 6 the regulated entity has access to the consumption profiles of the end consumers (e.g. a natural gas supplier directly connected to end consumers). Since the regulated entity could demonstrate that Tier 3 methods are either not available or incur unreasonable costs, it proposes to determine the scope factor based on indirect/estimation methods. For the sake of simplifiaction of this example, the larger consumers (larger bubbles) are considered outside the ETS2 scope (red bubbles), whereas smaller consumers are considered covered by the scope (green bubbles). Correspondingly, a scope factor of “1” is assigned to the fuel stream supplied to the green bubble and a scope factor of “0” to the amounts supplied to the red bubbles. Correspondingly, the carbon costs are either passed through or not. This method could lead to some end consumers being incorrectly assigned to their respective CRF category (i.e. ETS2 coverage), which is the reason this method is considered only Tier 2.

On the right side of Figure 6 the regulated entity supplies fuel to the same consumers, but does not have access to consumption profiles (e.g. because intermediary parties are involved and a ‘chain-of-custody’ method cannot be established without the incurring unreasonable costs). However, since the fuel is only consumed by consumers located in a certain area (e.g. to a city connected to the natural gas grid), the regulated entity proposes to use a default scope factor of lower than 1 that corresponds to the share of end consumers’ ETS2 coverage e.g. based on national energy statistics for this city. If, for example, that factor was 0.5 (corresponding to 50% ETS2 coverage of end consumers), the CA could only accept such a default value for 2024-2026 (or also for 2027+, provided that the fuel stream is a de-minimis fuel stream), provided that the regulated entity can demonstrate that it leads to a more accurate determination of emissions.

The example shows that the main difference is that in the example 1: the regulated entity is able to pass carbon costs through corresponding to the individual categorisation of each end consumer; and in the example 2: the regulated entity is only able to identify the scope factor at the aggregated level and a targeted cost pass-through is not feasible. Some consumers would have too high cost pass-through and some too low. Furthermore, if all consumers in that region were (not) covered by the ETS2 scope, this would qualify as the method: ‘physical distinction of fuel flows’.

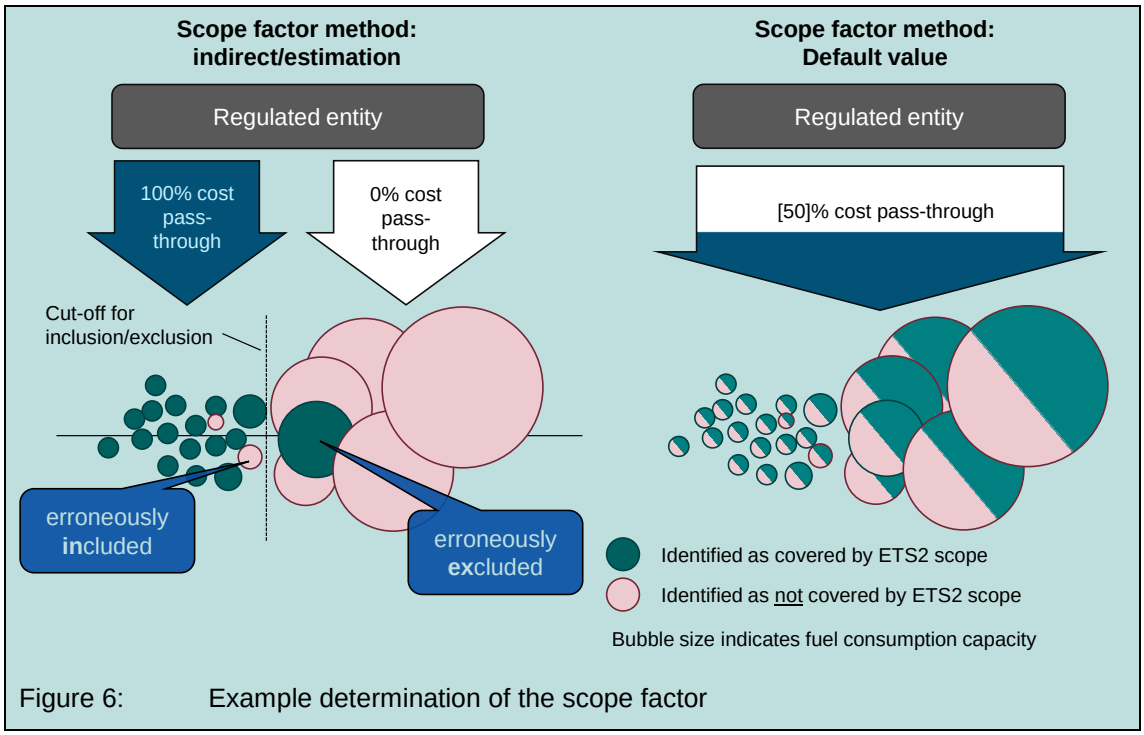

Figure 6: Example determination of the scope factor

5.4.3 Avoiding double counting between ETS1 and ETS2

ETS2 regulated entities are expected to pass on carbon costs to their consumers downstream. Where the end consumers are ETS1 operators (installations, aircrafts, ships) such cost pass-through would constitute double counting or a double burden on them as they would have to bear both the ETS1 and ETS2 costs, this should be avoided. Before talking about the practical implications on the ETS2 regulated entity's monitoring of emissions, the following elements contained in the MRR are relevant:

- The use of ETS1 operators' annual emissions reports is considered as one of the highest tiers (tier 3) methods available to determine the scope factor (→ section 5.4.2);
- Article 75v contains further provisions as to how to avoid double counting. Article 75v(2) obliges ETS1 operators to report, together with their annual emissions report, information on their fuel suppliers (whether an ETS2 regulated entity or not) and the annual amounts of fuels purchased from each entity and consumed in the ETS1 regulated activities (Annex Xa)[47];
- For the purpose of the 2nd bullet point above, Annex I(10) introduces a new provision for the ETS1 operator to include in their MP a related description of procedure on the calculation steps for the Annex Xa information. This will include calculation methods on how to attribute fuel amounts to each regulated entity from whom fuel has been acquired, parameters such as 'fuel used for ETS1 activities during the reporting year', which requires to separate actual consumption from 'fuel put on stock' and 'fuel exported or used for non-ETS

[47] Member States may require that operators make this information available to the regulated entity concerned earlier than 31 March of the reporting year

purposes (e.g. on-site vehicles)'. This provision will however only apply mandatorily from30 June 2024 (earlier only on a voluntary basis), which means that the first time Annex Xa information in the emission reports is made available by ETS1 operators will likely not be submitted to the regulated entity before the reporting year 2026. Guidance for ETS1 operators on calculations and how to report results will be developed at a later stage;

- Annex Xb requires regulated entities to report on the amounts of fuels supplied to each ETS1 operator including information such as clear identification of the operators with their name address and the unique ID used for the EU ETS (this could the one used for the EUTL registry or any national ID assigned by the CA).

Based on the above, the following steps for regulated entities monitoring of fuels supplied to ETS1 operators can be identified:

- As part of the scope factor, the requirements set out in Article 75v as well as in Annexes Xa and Xb of the MRR, ETS2 regulated entity should aim to establish a connection to the ETS1 operators they supply fuels to.
- Where there is a direct contractual relationship, this will be straightforward. Where there are intermediary parties involved, i.e. fuel traders, the regulated entity should engage with them to establish a 'chain-of-custody' (→ see guidance in section 5.4.2 on what this entails).
- If the regulated entity can demonstrate that if the methods listed in Art 75l(2) (a-g) is technically not feasible or would incur unreasonable costs, it does not have to identify corresponding amounts of fuel released and can apply a scope factor of 1 to them.
- In order to apply a scope factor of 0 for those amounts of the respective fuel stream, the following conditions would be necessary:
  - There needs to be a direct contractual partnership between ETS2 entities and the ETS1 operator and a contractual arrangement to agree on how the supplied fuels will be invoiced. This could be called a *declaration of intent to use* the fuels.
  - After the reporting year, the ETS1 operator will provide the information required by Annex Xa to the regulated enitity. This can be done directly, or via the CA, as allowed for by Article 75v(1 and 2).
  - The information and data pursuant to Annex Xa will contain a *confirmation of actual use* of the fuel amounts. Implicitly, the difference between acquired and used amounts will be a confirmation of any amounts put into stock or exported further. Only the amounts labelled as *confirmation of actual use* can have a scope factor of 0 applied.
  - For any remaining amounts supplied to an ETS1 operator but confirmed as per above, a scope factor of 1 has to be applied, and the carbon costs can be passed through (once trading starts in 2027).The risk for the regulated entity to surrender too many or too little allowances due to the difference between sold fuel amounts and actual use in ETS1 installation has to be agreed in contractual arrangements between the regulated entity and the ETS1 installation. There are several ways for the regulated entity and the ETS1 installation to arrange the risk.

5.5 Calculation factors – Principles

Besides the released fuel amounts, the “calculation factors” are important parts of any MP based on the selected calculation methodology. These factors are the (preliminary) emission factor, unit conversion factor and biomass fraction. The scope factor is not included in the definition of ‘calculation factors’ and is described in detail in section 5.4.

Calculation factors can be determined by one of the following principles:

a. As **default values** (→ Section 5.5.1); or

b. by **laboratory analyses** (→ section 5.5.2).

The applicable tier will determine which of these options is used. Lower tiers allow for default values, i.e. for values which are kept constant across the years, and updated only when more accurate data becomes available. The highest tier defined for each parameter in the MRR is usually laboratory analysis, which is more demanding, but of course more accurate. The result of each analysis is valid for the batch from which the sample has been taken, while a default value is usual an average or conservative value determined on the basis of big quantities of that material. E.g. emission factors for coal as used in national inventories might be applicable to a country-wide average of several coal types as may also be used in energy statistics, while an analysis will be valid for only one batch of one coal type.

Important note: In all cases the regulated entity must ensure that activity data and all calculation factors are used consistently. I.e. where a fuel’s quantity is determined in the wet state or of certain purity, the calculation factors must also refer to those conditions. Regulated entities must also be careful not to mix up parameters with inconsistent units. Where the amount of fuel is determined per volume, also the unit conversion factor (UCF) or NCV and/or emission factor must refer to volume rather than mass or energy[48].

For almost all commercially traded fuels, this will be easily ensured as their qualtify and properties will already be specified by the market actors. Furthermore, in many cases, the fuels in question are deemed ‘commercial standard fuels’ or ‘national standard fuels’ (→ for further definition see section 0), in which case national default values can be used for the calculation factors such as the emission factor or NCV (→ section 6.2).

5.5.1 Default values

When a regulated entity intends to use a default value for a calculation factor, the value of that factor must be documented in the MP. The only exception is where the default value or its information source changes on an annual basis. In principle, this is the case where the competent authority regularly updates and

[48] See section **Fehler! Verweisquelle konnte nicht gefunden werden.**, in which conditions are mentioned under which the regulated entity may use emission factors expressed as t CO_2/t fuel instead of t CO_2/TJ.

publishes the standard factors used in the national GHG inventory. In such cases, the MP should contain the reference to the place (webpage, official journal, etc.) where these values are published, instead of the value itself.

The applicable type of default value is determined by the applicable tier definition. Sections 2 to 4 of Annex II of the MRR give a general scheme for these definitions. The sector-specific monitoring methodologies in Annex IV further specify those tiers, or sometimes overrule the tier definitions with more specific ones. A complete listing of all tier definitions would significantly exceed the scope of this guidance. However, a simplified overview of tier definitions given by Annex II is presented in Table 6.

Table 6: Overview of the most important tier definitions for calculation factors, based on Annex II of the MRR. The following abbreviations are used: EF…Emission factor, UCF…Unit conversion factor, NCV…Net calorific value, BF…Biomass fraction. The tier definitions are further specified in the text below.

Factor	Tier	Tier definition
EF[49]	1	Type I default values
	2a	Type II default values
	2b	Empirical correlations (specific coal types)
	3	Laboratory analyses or empirical correlations
UCF (e.g. NCV)	1	Type I default values
	2a	Type II default values
	2b	Purchasing records (if applicable)
	3	Laboratory analyses
BF	1	Type I biomass fraction
	2	Type II biomass fraction
	3a	Laboratory analyses
	3b	Mass balance of fossil and biomass carbon

As can be seen from Table 6, the lowest tier usually applies an internationally applicable default value (IPCC standard factor or similar, as listed in Annex VI of the MRR). The second tier uses a national factor, which is in principle that used for the national GHG inventory under the UNFCCC. However, further types of default values or proxy methods are allowed, which are deemed equivalent. The highest tier usually requires the factor to be determined by laboratory analyses.

The definitions of tier levels in Table 6 have to be understood using the full text as follows:

[49] According to section 2.1 of Annex II of the MRR, the tiers defined shall relate to the *preliminary* emission factor, where a biomass fraction is determined for a mixed fuel or material.

- **Type I default values**: Either standard factors listed in Annex VI (i.e. in principle IPCC values) or other constant values in accordance with point (e) of Article 31(1), i.e. analyses carried out in the past but still valid[50].
- **Type II default values**: Country specific emission factors in accordance with points (b), (c) and (d) of Article 31(1), i.e. values used for the national GHG inventory[51], other values published by the CA for more disaggregated fuel types, or other literature values which are agreed by the competent authority[52]. **For category A entities, commercial standard fuels and fuel meeting equivalent criteria (→ section 0 for definitions) this will be the common method to apply**.
- **Empirical correlations**: These are methods based on empirical correlations for specific coal types as determined at least once per year in accordance with the requirements applicable for laboratory analyses (see 5.5.2). However, because these rather complicated analyses are only carried out once per year, this tier is considered a lower level than full analyses.
- **Purchasing records:** Only in the case of commercially traded fuels may the unit coversion factor value be derived from the purchasing records provided by the fuel trading partner, provided it has been derived based on accepted national or international standards.
- **Laboratory analyses**: In this case, the requirements discussed in section 5.5.2 below are fully applicable. This also includes the use of the 'established proxies', if applicable and where the uncertainty of the empirical correlation does not exceed 1/3 of the uncertainty value associated with the applicable tier for released fuel amounts.
- **Type I biomass fraction[53]**: One of the following methods is applied, these are considered equivalent:
  - Use of values published by the competent authority or by the Commission.
  - Use of values in accordance with Article 31(1), i.e. a "Type I/II default value".
- **Type II biomass fraction[53]**: Use of a value determined in accordance with the second subparagraph of Article 75m(3), i.e. use of an estimation method approved by the competent authority.
- **Mass balance of fossil and biomass carbon**[54]: in this case the biomass fraction is determined based on the mass balance of carbon of defined and

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[50] MRR Article 31(1)(e): "*values based on analyses carried out in the past, where the [regulated entity] can demonstrate to the satisfaction of the competent authority that those values are representative for future batches of the same fuel or material*". This is a considerable simplification for regulated entities, who do not have to carry out regular analyses as described in section 5.5.2. Article 75k declares Article 31(1) equally applicable to ETS2.

[51] MRR Article 31(1)(b): "*standard factors used by the Member State for its national inventory submission to the Secretariat of the United Nations Framework Convention on Climate Change*".Article 75k declares Article 31(1) equally applicable to ETS2.

[52] MRR Article 31(1)(c): "*literature values agreed with the competent authority, including standard factors published by the competent authority, which are compatible with factors referred to in point (b), but representative of more disaggregated sources of fuel streams*". Article 75k declares Article 31(1) equally applicable to ETS2.

[53] Note that it is not discussed here how to determine whether the relevant sustainability and GHG savings criteria are met (if applicable). A short overview is given in section 5.6.4. For biogas in natural gas grids see section 5.6.5. More information on the treatment of biomass issues in the EU ETS are given in guidance document No. 3 (for reference see section 1.3).

[54] Tier 3b: For fuels originating from a production process with defined and traceable input streams, the regulated entity may base the estimation on a mass balance of fossil and biomass carbon

traceable inputs. The typical example for this would be biofuel blended into transport fuels, in which case the biomass fraction can simply be based on the mass balance used to demonstrate compliance with the RED II criteria. This should be readily available and consistent with biofuel amounts reported under the Fuel Quality Directive[55].

5.5.2 Laboratory analyses

Where the MRR refers to determination "in accordance with Article 32 to 35"[56], this means that a parameter must be determined by (chemical) laboratory analyses. The MRR imposes relatively strict rules for such analyses, in order to ensure a high quality of the results. In particular, the following points need consideration:

- The laboratory must demonstrate its competence. This is achieved by one of the following approaches:
  - Accreditation in accordance with EN ISO/IEC 17 025, where the analysis method required is within the accreditation scope; or
  - Demonstrating that the criteria listed in Article 34(3) are satisfied. This is considered a reasonably equivalent to the requirements of EN ISO/IEC 17 025. Note that this approach is allowed only where use of an accredited laboratory is shown to be technically not feasible or involving unreasonable costs (→ section 6.4).
- The way samples are taken from the material or fuel to be analysed is considered crucial for receiving *representative* results. Therefore, regulated entities have to develop sampling plans in the form of written procedures (→ see section 6.6) and get them approved by the competent authority. Note that this also applies where the regulated entity does not carry out the sampling itself, but treats it as an outsourced process.
- Analyses methods usually have to follow international or national standards. Preference is given to EN standards[57].

Note that laboratory analyses are usually related to the highest tiers for calculation factors. Therefore, these rather demanding requirements are rarely applicable to smaller regulated entites. In particular regulated entities with low emissions (→ section 6.3.2) may use "any laboratory that is technically competent and able to generate technically valid results using the relevant analytical procedures, and provides evidence for quality assurance measures as referred

entering and leaving the process, such as the mass balance system in accordance with Article 30(1) of Directive (EU) 2018/2001.

[55] Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC

[56] Article 75k declares Articles 32-35 of the MRR equally applicable to ETS2.

[57] For the use of standards, Article 32(1) defines the following hierarchy: *"The [regulated entity] shall ensure that any analyses, sampling, calibrations and validations for the determination of calculation factors are carried out by applying methods based on corresponding EN standards.*
Where such standards are not available, the methods shall be based on suitable ISO standards or national standards. Where no applicable published standards exist, suitable draft standards, industry best practice guidelines or other scientifically proven methodologies shall be used, limiting sampling and measurement bias."

to in Article 34(3)". In fact, the minimum requirements would be that the laboratory demonstrates that it is technically competent and "capable of managing its personnel, procedures, documents and tasks in a reliable manner", and that it demonstrates quality assurance measures for calibration and test results[58]; evidence for this needs to be sufficient to satisfy the competent authority and the verifier However, it is in the regulated entity's interest to receive reliable results from the laboratory. Therefore regulated entities should strive to comply with the requirements of Article 34 to the highest degree feasible.

Furthermore, it is important to note that the MRR in the activity-specific requirements of Annex IV allows the use of "industry best practice guidelines" for some lower tiers, where no default values are applicable. In such cases, where despite approval to apply a lower tier methodology analyses are still required, it may not be appropriate or possible to apply Articles 32 to 35 in full. However, the competent authority should deem the following as minimum requirements:

- Where the use of an accredited laboratory is technically not feasible or would lead to unreasonable costs, the regulated entity may use any laboratory that is technically competent and able to generate technically valid results using the relevant analytical procedures, and provides evidence for quality assurance measures as referred to in Article 34(3).
- The regulated entity shall submit a sampling plan in accordance with Article 33.
- The regulated entity shall determine the frequency of analysis in accordance with Article 35.

More detailed guidance on topics related to laboratory analyses, sampling, frequency of analyses, equivalence to accreditation etc. are given in Guidance Document No. 5.

5.6 Calculation factors – specific requirements

In addition to the general approaches for determining calculation factors (default values / analyses) discussed in section 5.5, some specific rules for each factor are laid down in the MRR. These are discussed below.

5.6.1 Unit conversion factor (UCF)

Article 3(6) of the MRR applies the definition *"'unit conversion factor' meaning a factor converting the unit in which released fuel amounts are expressed, into amounts expressed as energy in terajoules, mass in tonnes or volume in normal cubic metres or the equivalent in litres, where appropriate, which comprises all relevant factors such as the density, the net calorific value or (for gases) the conversion from gross calorific value to net calorific value, as applicable".*

In order to convert released fuel amounts into energy content (or to match the units in the associated emissions factor where this is other than energy), the UCF is an important parameter to be reported. Converting to an energy basis is the

[58] Examples for such measures are given in Article 34(3), point (j): regular participation in proficiency testing schemes, applying analytical methods to certified reference materials, or inter-comparison with an accredited laboratory.

standard approach defined in Article 75f and allows emission reports to be compared with energy statistics and national GHG inventories under the UNFCCC.

The UCF can comprise a range of different conversion factors, including the following:

- For released fuel amounts expressed as tonnes or Nm^3, the UCF could simply be the net calorific value (NCV) of the fuel, expressed as TJ/t or TJ/1000Nm^3.
  - where the competent authority allowes the emission factors for fuels to be expressed as t CO_2/t fuel or t CO_2/Nm^3 (Article 75f[59]), the UCF would simply equal 1 and NCV (the UCF in general) may be expressed determined based on conservative estimates instead of using tiers, unless a defined tier is achievable without additional effort (i.e. where tier-compliant information is readily available, such as national GHG inventory values) (Article 75h(3)).
- For released fuel amounts already expressed as TJ (net energy content), the UCF will equal 1 as no further conversion is necessary.
- Where released fuel amounts are expressed as gross GWh (as often the case for natural gas), the UCF will be the conversion factor from gross GWh to net TJ.
- For released amounts expressed as litres (e.g. liquid fuels), the UCF would either be the density (t per litre) or the volumetric NCV, again depending on the relevant units the emission factor is expressed as.
- etc.

5.6.2 Emission factor

Article 3(13) of the MRR applies the definition: "*'emission factor' meaning the average emission rate of a greenhouse gas relative to the activity data of …a fuel stream assuming complete oxidation for combustion…"*. Furthermore Article 3(36) is important for materials containing biomass, stating: "*'preliminary emission factor' means the assumed total emission factor of a fuel or material based on the carbon content of its biomass fraction and its fossil fraction before multiplying it by the fossil fraction to produce the emission factor*".

Important: According to section 2.1 of Annex II of the MRR, the tiers defined in the MRR shall relate to the *preliminary* emission factor, where a biomass fraction is determined for a fuel or material. I.e. tiers are always applicable to individual parameters. The reporting of the preliminary emission factor is mandatory for all fuel streams (i.e. including 100% biomass fuel streams)[60].

As reflected by the definition, the emission factor (EF) is the stoichiometry-based factor which converts the (fossil) carbon content (CC) of a material into the equivalent mass of (fossil) CO_2 assumed to be emitted.

[59] This may be allowed by the competent authority if the use of an emission factor expressed as t CO_2/TJ would incur unreasonable costs, or where at least equivalent accuracy can be achieved with this method.

[60] This is not a large administrative burden, since pure biomass fuel streams are always de-minims fuel streams, so that a low tier may be applied. Most appropriate will be the use of default values for the dry biomass, corrected for the moisture content. The latter may be estimated or measured. More guidance is found in Guidance Document No. 3, which also contains some typical preliminary emission factors in an Annex.

For combustion emissions, the standard approach to the emission factor is to express it in relation to the energy content (NCV) of the fuel rather than its mass or volume. However, the competent authority may allow the regulated entity to use an alternate emission factor expressed as t CO_2/t fuel or t CO_2/Nm^3 (Article 75f).

Simplified!

Where the applicable tier requires the emission factor to be determined by analyses, the carbon content is to be analysed. For fuels, the NCV must also be determined (depending on the tier, this may require another analysis of the same sample).

If the emission factor of a fuel expressed as t CO_2/TJ is to be calculated from the carbon content, the following equation is used with f corresponding to the stoichiometric factor of 3.664 to convert C into CO_2:

$$EF = CC \cdot f / NCV \tag{11}$$

If the emission factor of a material or fuel expressed as t CO_2/t is to be calculated from the carbon content (CC), the following equation is used:

$$EF = CC \cdot f \tag{12}$$

5.6.3 Biomass fraction

In order for biomass used for combustion to be zero-rated (i.e. for applying an emission factor of zero), the biomass must satisfy the sustainability and GHG savings criteria defined by the RED II Directive[61] (Article 38(5) of the MRR). From 1 January 2022, the MRR requires that biomass complies with the criteria set out in the RED II.

An introduction to the topic is given in section 5.6.4. A separate guidance document[62] is provided explaining biomass-related topics in detail.

5.6.4 Applicability of RED II criteria

In most cases where "biomass" is mentioned in the MRR, it is added that "Article 38(5) applies"[63] via reference in Article 75m(1). That article[64] clarifies the

[62] Guidance document No. 3. For reference see section 1.3.

[63] An exception is Article 75d(2) on unreasonable costs. In that context, Article 38(5) applies only "*provided that the relevant information … is available to the [regulated entity]"*. This condition is relevant because at the point in time when unreasonable costs are determined, it is often not clear yet whether the biomass intended to be used will comply with Article 38(5) or not.

[64] Article 38(5) of the MRR:

„*Where reference is made to this paragraph, biofuels, bioliquids and biomass fuels used for combustion shall fulfil the sustainability and the greenhouse gas emissions saving criteria laid down in paragraphs 2 to 7 and 10 of Article 29 of Directive (EU) 2018/2001.*

However, biofuels, bioliquids and biomass fuels produced from waste and residues, other than agricultural, aquaculture, fisheries and forestry residues are required to fulfil only the criteria laid down in Article 29(10) of Directive (EU) 2018/2001. This subparagraph shall also apply to waste and residues that are first processed into a product before being further processed into biofuels, bioliquids and biomass fuels.

relationship between the MRR requirements and the RED II, and in particular how the sustainability and GHG saving criteria of the RED II are to be applied in order to allow the emissions from biomass to be zero-rated. The following points are worth noting:

- As the RED II applies to renewable *energy*, the RED II criteria apply only to energy uses of biomass in the EU ETS.
- Not all the criteria given in Article 29 of the RED II apply. In particular:
  - The "land-related" sustainability criteria of Article 29(2) to (7) of the RED II apply;
  - The GHG saving criteria of Article 29(10) of the RED II apply;
  - The additional efficiency criteria for electricity production (Article 29(11) of the RED II) do *not* apply;
- Some provisions contained in Article 29(1) of the RED II are copied into the MRR in order to clarify their applicability. In particular, this includes the simplification that for municipal solid waste the GHG saving criteria do not apply. Furthermore, the RED II criteria apply irrespective of the geographical origin of the biomass.
- The most relevant fuels in the ETS2 are biofuels blended with fossil petrol and diesel for the transport sector and biogas (→ section 5.6.5). For biofuels, demonstration with the RED II compliance should already be ensured under the corresponding reporting obligations of the Fuel Quality Directive[65] and evidence on the sustainability and GHG savings criteria therefore readily available.

Article 75m(2) furthermore links the applicability of the RED II criteria to the thresholds referred to in the fourth sub-paragraph of Article 29(1) of the RED II. The latter says that, for the purposes of the RED II, the RED II criteria shall only apply:

- to solid fuels produced from biomass, such as firewood, only if they are combusted in installations exceeding 20 MW (the revised RED II lowers this threshold to 7.5 MW). However, as discussed in section 2.2, solid biomass is not part of the fuels covered by ETS2, hence the RED II criteria do currently not apply.
- to gaseous biomass fuels, only if they are combusted in installations exceeding 2 MW (→ section 5.6.5).

Electricity, heating and cooling produced from municipal solid waste shall not be subject to the criteria laid down in Article 29(10) of Directive (EU) 2018/2001.

The criteria laid down in paragraphs 2 to 7 and 10 of Article 29 of Directive (EU) 2018/2001 shall apply irrespective of the geographical origin of the biomass.

Article 29(10) of Directive (EU) 2018/2001 shall apply to an installation as defined in Article 3(e) of Directive 2003/87/EC.

The compliance with the criteria laid down in paragraphs 2 to 7 and 10 of Article 29 of Directive (EU) 2018/2001 shall be assessed in accordance with Articles 30 and 31(1) of that Directive.

Where the biomass used for combustion does not comply with this paragraph, its carbon content shall be considered as fossil carbon."

Article 75m(1) declares Article 38 equally applicable to ETS2.

[65] Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC.

If more details are needed, please consult Guidance Document No. 3 which can be downloaded from DG CLIMA's MRVA website[66].

5.6.5 Special rules for biogas

Regulated entities may make use of a special approach to the accounting of biogas pursuant to Article 39(4)[67]. Where biogas is injected into natural gas grids and purchased by a regulated entity, the said entity may report that purchased amount of biogas. This is done by determining and assigning a biomass fraction to the total gas (natural gas plus biogas) based on the fraction of energy content of biogas in the total gas consumption. Although not explicitly mentioned in the MRR, it seems appropriate that such an approach should be considered equivalent to tier 2 (like other estimation methodologies).

The preconditions for that approach are:

- The quantity of biogas used is determined from purchase records;
- The regulated entity demonstrates to the satisfaction of the CA that there is no double counting of the same quantity of biogas. This can be done in particular by making use of a "biogas registry" system or similar database, which also ensures that there is no guarantee of origin disclosed to other users of the biogas. This means that the guarantee of origin (if it has been generated at all) must be closely linked to the defined physical quantity of biogas and cannot be given ("disclosed") to another gas consumer;
- The sustainability and GHG savings criteria laid down in the RED II are complied with.
- Furthermore, as mentioned in the previous section 5.6.4, the RED II criteria only apply if the biogas is combusted in installations exceeding 2 MW, pursuant to Article 75m(2). Conversely, this means that the RED II criteria do not apply where the regulated entity can demonstrate that the end consumer's combustion units are below 2 MW. However, in order to avoid administrative burden where the end consumers' capacity is not known (e.g. if not already used for the determination of the scope factor → section 5.4), while at the same time not follow an assumption that does not respect the relevant threshold in the RED II, the regulated entity may assume the criterion to apply at the aggregated consumer level. The latter would mean to sum up the capacity of all consumers of the regulated entity, which equals their own total capacity of supply, and compare it against the 2 MW threshold in order to determine whether the RED II criteria apply.

Further guidance to the application of these criteria is given in Guidance Document 3 ("Biomass issues in the EU ETS").

[66] https://climate.ec.europa.eu/system/files/2022-10/gd3_biomass_issues_en.pdf

[67] Article 75m(1) declares Article 39, with the exception of paragraph 2 and 2a, applicable to ETS2.

6 THE MONITORING PLAN

6.1 Developing a monitoring plan

This chapter describes the way a regulated entity can develop a monitoring plan (MP). When developing a MP, regulated entities should follow some guiding principles:

- Knowing in detail the situation, the regulated entity should make the monitoring methodology as simple as possible. This is achieved by attempting to use the most reliable data sources, robust metering instruments, short data flows, and effective control procedures. There will certainly be a lot of synergies with the existing reporting requirements under the ETD/ED regime, where applicable.
- Regulated entities should imagine their annual emission report from the verifier's perspective. What would a verifier ask about on how the data has been compiled? How can the end to end data flow be made transparent? Which controls prevent errors, misrepresentations, omissions?
- Monitoring plans must be considered living documents to a certain extent. In order to minimise administrative burden, regulated entities should be careful which elements are laid down in the MP itself, and what can be put into written procedures supplementing the MP.

Note: for regulated entities with low emissions and some other "simple" entities, this chapter is only partly relevant. It is advisable to consult chapter 7 of this document first.

The following step-by-step approach might be considered helpful:

1. Define the regulated entity's boundaries taking into account the provisions described in chapter 2.
2. Determine the regulated entity's category (→ see section 6.3.1) based on an estimate of the annual GHG emissions.
3. List all fuel streams (→ for definitions see section 0) and classify them into major and de-minimis.
4. Identify the tier requirements based on the regulated entity category and the fuel stream classification (see section 6.2).
5. List and assess potential sources of data:
    a. For released fuel streams activity data (for detailed requirements see section 5.3):
        i. How can the amount of fuel or material be determined?
            - Are measurement methods the same as used under the ETD/ED regime and subject to national legal metrological control? If so, those measurements methods can also be used for the purposes of ETS2 and you may go directly to (b) below for the 'scope factor'.
            - Are there instruments for continual metering, such as flow meters, weighing belts etc. which give direct results for the amount of material entering or leaving the stocks over time?

- Or must the fuel or material quantity be based on batches purchased? In this case, how can the quantity in stock piles or in tanks at the end of the year be determined?

ii. Are measuring instruments owned/controlled by the regulated entity available?

- If yes: What is their uncertainty level? Are they difficult to calibrate? Are they subject to national legal metrological control[68]?
- If no: Can measuring instruments be used which are under the control of the trading partner? (This is often the case for gas meters, and for many cases where quantities are determined based on invoices.)

iii. Estimate uncertainty associated with those instruments and determine the achievable tier associated. Note: For uncertainty assessment several simplifications are applicable, in particular if the measuring instrument is subject to national legal metrological control.

b. Scope factor

i. For all regulated entities and fuel streams, the starting point is to apply the highest tier, Tier 3, unless Member States require the use of a specific method. Therefore, can the end consumers' sectors be identified based on physical or chemical distinction of fuel (flows)? Is the Euromarker Directive applicable? Can a contractual link be established with the ETS1 operators fuels are supplied to?

ii. If none of the above are applicable or can be demonstrated to incur unreasonable costs, can other methods lead to more accurate results (demonstrated based on a simplified uncertainty assessment)?

iii. Where ii. applies, are there national markers? If there is a direct contractual relationship with end consumers, try to establish a 'chain-of-custody' via e.g. self-declaration by each consumer, or try to establish 'indirect methods' for a correlation between the end consumers' sectors and e.g. annual consumption levels or capacities, daily/seasonal consumption patterns. Where there is no direct contractual relationship, try to involve intermediary traders in passing information from end consumers back to you.

iv. If none of the above is possible without incurring unreasonable costs, apply Tier 1: a default value of 1, unless a default value below 1 can be demonstrated to provide more accurate results.

c. Calculation factors (NCV, emission factor or carbon content, oxidation or conversion factor, biomass fraction): Depending on the required tiers

[68] Some measuring instruments used for commercial transactions are subject to national legal metrological control. Special requirements (simplified approaches) are applicable to such instruments under the MRR. See guidance document No. 4 (for reference see section 1.3) for details.

(which are determined based on regulated entity category and fuel stream classification):

i. Are default values applicable? If yes, are values available? (Annex VI of the MRR, publications of the competent authority, national inventory values)?

ii. If the highest tiers are to be applied, or if no default values are applicable, chemical analyses have to be carried out for determining the missing calculation factors. In this case the regulated entity must:

- Decide on the laboratory to be used. If no accredited laboratory[69] is available or its use incurs unreasonable costs, establish evidence on the equivalence to accreditation of the laboratory selected to EN ISO 17025 (see section 5.5.2);
- Select the appropriate analytical method (and applicable standard);
- Design a sampling plan (see Guidance Document No. 5 (for reference see section 1.3)).

6. Can all required tiers be met? If not, can a lower tier be met, if allowed in accordance with rules on technical feasibility and unreasonable costs (→ section 6.4)?

7. In the next step, the regulated entity should define all end to end data flows (who takes what data from where, does what with the data, hands over the results to whom, etc.) from the measuring instruments or invoices to the final annual report. The design of a flow diagram will be helpful. More details on data flow activities are found in section 6.7.

8. With this overview of the data sources and data flows, the regulated entity can carry out a risk analysis of its accounting process to identify potential weaknesses (see section 6.7). Thereby it will determine where in the system errors might occur most easily.

9. Using the risk analysis, the regulated entity should:

   a. Assess which measuring instruments and data sources to use for activity data (see point 5.a above). Where there are several possibilities, the one with the lowest uncertainty and lowest risk should be used;

   b. In all other cases which need decisions[70], decide based on the lowest associated risk; and

   c. Define control activities for mitigating the identified risks (see section 6.7).

10. It may be necessary to repeat some of the steps 5 to 9, before finally writing down the MP and the related procedures. In particular, the risk analysis will need update after having the control activities defined.

11. The regulated entity will then write the MP (using the templates provided by the Commission, an equivalent template by a Member State or a dedicated

[69] „Accredited laboratory“ is used here as short form of “a laboratory which has been accredited pursuant to EN ISO/IEC 17025 for the analytical method required”.

[70] E.g. where several departments could handle the data, choose the most suitable with the lowest number of error possibilities.

IT system provided by the Commission or a Member State), and the required supporting documents (Article 12(1)):

a. The result of the risk assessment (→ section 6.7), showing that the defined control system is appropriately mitigating the identified risks (not required for entities with low emissions → chapter 7);

b. Further documents (such as regulated entity description and diagram, data flow diagram etc) may need to be attached;

c. The written procedures referenced by the MP need to be developed, but do not need to be attached to the MP when submitting it to the CA[71] (see section 6.6 on procedures).

The regulated entity should make sure that all versions of the MP, the related documents and procedures are clearly and uniquely identifiable, and that the most recent versions are always used by all staff involved. A good document management system is advisable from the beginning.

6.2 Selecting the correct tier

The system for defining the minimum required tiers is laid down in Articles 75h (released fuel amounts) and 75i (scope factor). **The overarching rule is that the regulated entity should apply the highest tier defined for each parameter**. For major fuel streams within Category B regulated entities this is mandatory. For other fuel streams and smaller entities, the following set of rules defines the **exceptions from the rule**:

1. Instead of the highest tiers defined, category A regulated entities are required to apply at least the tiers specified in Annex V of the MRR for major fuel streams.

2. Regardless of the regulated entity category, the same tiers in Annex V for calculation factors are applicable to commercial standard fuels[72] or fuels meeting equivalent criteria (→ section 0).

3. Where the regulated entity demonstrates to the satisfaction of the competent authority, that applying the tiers required by the previous points leads to unreasonable costs (→ section 6.4) or is technically not feasible (→ section 6.4), the regulated entity may apply to major fuel streams a tier which is up to two levels lower. Tier 1 is always the lowest possible tier.

Regulated entities are also expected to apply tiers equal to or higher than Tier 1 to **de-minimis fuel streams** where this can be achieved "without additional effort" (i.e. without any notable costs). For released fuel amounts this means basing the determination of released fuel amounts on invoices or purchase records, unless a defined tier is achievable without additional effort. The regulated entity should describe this method in the MP.

[71] although the CA may ask to see copies of procedures as part of their approval process

[72] Article 3(32) defines: *'commercial standard fuel' means the internationally standardised commercial fuels that exhibit a 95% confidence interval of not more than 1% for their specified calorific value, including gas oil, light fuel oil, gasoline, lamp oil, kerosene, ethane, propane, butane, jet kerosene (jet A1 or jet A), jet gasoline (jet B) and aviation gasoline (AvGas).*
Commercial standard fuels are considered easy to monitor.

Where the CA has allowed to use emission factors expressed as t CO_2 per tonne (or Nm^3) instead of t CO_2/TJ, the NCV may be determined by using conservative estimates instead of using tiers. However, the highest tier which does not involve additional efforts should be the one applied. The full system of tier selection requirements is summarised in Table 7.

Important note: The MP always has to reflect the tier actually applied, not the minimum one required. The general principle is also that regulated entities should attempt to improve their monitoring systems wherever possible.

Table 7: Summary of tier requirements. Note that this is only a brief overview. For detailed information the full text of this section should be consulted.

<table>
<tr><th>Regulated entity category</th><th>Fuel stream category</th><th>Tier required (scope factor)</th><th>Minimum tier required (released fuel amounts and calculation factors)</th><th>Calculation factors for commercial standard fuels or fuels meeting equivalent criteria (Art. 75k(2))</th></tr>
<tr><td rowspan="2">Cat. B
(> 50kt)</td><td>Major</td><td rowspan="6">highest tier or Member State requirement</td><td>highest tier</td><td rowspan="6">tier 2a/2b (Annex V)</td></tr>
<tr><td>de-minimis</td><td>conservative estimates unless tier is achievable without additional effort</td></tr>
<tr><td rowspan="2">Cat. A
(≤ 50kt)</td><td>Major</td><td>tier in Annex V (EF: 2a/2b)</td></tr>
<tr><td>de-minimis</td><td>conservative estimates unless tier is achievable without additional effort</td></tr>
<tr><td rowspan="2">Entity with low emissions
(< 1 000t)</td><td>Major</td><td>tier 1</td></tr>
<tr><td>de-minimis</td><td>conservative estimates unless tier is achievable without additional effort</td></tr>
<tr><td colspan="2">Reasons for derogation from required tiers</td><td>technical infeasibility (or not available), unreasonable costs, or simplified uncertainty assessment</td><td colspan="2">technical infeasibility or unreasonable costs</td></tr>
</table>

6.3 Categorisation of regulated entities and fuel streams

It is the basic philosophy in the MRV system of the EU ETS, that the largest emissions sources should be monitored most accurately, while less ambitious methods may be applied so smaller emissions sources. By this method, cost effectiveness is taken into account, and unreasonable financial and administrative burden is avoided where the benefit of more efforts would be only marginal.

6.3.1 Regulated entity categories

For the purpose of identifying the required "ambition level" for monitoring (details will be given in section 6.2), the regulated entity has to categorise the regulated entity according to its average annual emissions (Article 75e(2)):

- Category A: Annual average emissions are equal to or less than 50 000 tonnes of $CO_{2(e)}$;
- Category B: Annual average emissions are more than 50 000 tonnes of $CO_{2(e)}$.

The "annual average emissions" here mean the annual average *verified* emissions of the previous trading period from 2031 onwards. As for annual reporting, emissions from sustainable[73] biomass are excluded (i.e. zero-rated). However, since verified emissions are not yet available (only as of 2026), the regulated entity shall use a conservative estimate for the first MP.

Where those average annual verified emissions are not available or no longer representative a conservative estimate of annual average emissions must be applied concerning the projected emissions for the next five years.

The MRR allows that an entity which exceeds one of the mentioned thresholds only once in six years does not have to change its categorisation. For example, a category A entity that emits 51 000 t CO_2 in one year only, does not have to change its category if the regulated entity demonstrates to the CA that its emissions were below 50 000 t CO_2 in the five preceding years and will not be exceeded again in subsequent reporting periods. What is more important, this also means that the applicable minimum tiers do not change due to this one year of higher emissions, and the regulated entity does not have to submit an updated MP for approval.

6.3.2 Regulated entity with low emissions

Regulated entities which on average emit less than 1 000 t $CO_{2(e)}$ per year can be classified as "regulated entity with low emissions" in accordance with Article 75n of the MRR. For these, special simplifications of the MRV system are applicable in order to reduce administrative costs (see section 7).

As for other regulated entity categories, the annual average emissions are to be determined from 2031 onwards as average annual *verified* emissions of the

[73] *New!* This means that the biomass – if used for combustion – must comply with the sustainability and GHG savings criteria established by the RED II in order to be "zero-rated". For further details on biomass see section 5.6.4. Note that this requirement only applies from 1 January 2022.

previous trading period, with exclusion of CO_2 arising from sustainable[73] biomass. From 2027 to 2030 the annual average emissions are based on the average verified annual emissions in the 2 years preceding the reporting period.

Where those average emissions are not available a conservative estimate is to be used concerning the projected emissions for the next five years.

A special situation then arises if the regulated entity's emissions exceed the threshold of 1 000 t CO_2 per year. In that case it is necessary to revise the MP and submit a new one to the CA, for which the simplifications can no longer be applied. However, the wording of Article 75n(6) third subparagraph allows that the regulated entity may continue as an entity with low emissions provided that it can demonstrate to the competent authority that the 1 000 t CO_2 per year threshold has not been exceeded in the previous five years and will not be exceeded again. Thus, high emissions in one single year out of six years may be tolerable, but if the threshold is exceeded again in one of the following five years, that exception will not be applicable anymore.

6.3.3 Identification and categorisation of fuel streams

The identification of fuel streams comprises the following two steps:

- Splitting the fuels released for consumption into fuel streams;
- Categorisation of those fuel streams.

Splitting into fuel streams

The split into fuel streams should take into account the following aspects:

- fuel streams can only be fuels that fall under the scope of EU ETS Directive Article 3(af), which refers to the fuels covered in Article 2(1) of the ETD or any other product intended for use, offered for sale or used as motor fuel or heating fuel as specified in Article 2(3) of the ETD including for the production of electricity (→ section 2.2);
- fuels for consumption can be released by different means. Such means could be via pipelines, truck deliveries, shipping, intermediary parties (e.g. further fuel traders without their own tax warehouse), etc.
- the types of end consumers as identified by their CRF categories (→ section 5.4.1);
- the methods applied to determine the scope factor (→ section 5.4.2).

Ideally, the split into fuel streams should be at a level of aggregation which allows for only one means through which the fuels are released, only one method for the scope factor (at least only one tier) and only one CRF category. This would greatly facilitate the competent authority's approval of the MP and the verification of the annual emissions report, allowing spotting of related risks more easily. The two examples at the end of this section should help to illustrate this approach.

Categorisation of fuel streams

The regulated entity has to classify all fuel streams and compare the corresponding emissions to the "total of all monitored items".

The following steps have to be performed:

- Determine the “total of all monitored items”, by adding up:
  - The emissions ($CO_{2(e)}$) of all fuel streams which are determined (see below);
  - For this calculation, CO_2 from fossil sources as well as “non-sustainable[73] biomass” is taken into account.
- Thereafter the regulated entity should list all fuel streams sorted in descending order of associated emissions quantity.
- The regulated entity may then select fuel streams which it wants to be classified as “de-minimis” fuel streams, in order to apply reduced monitoring requirements to them, where relevant. For this purpose, the thresholds given below must be complied with.

The regulated entity may select as **de-minimis fuel streams**: fuel streams which *jointly* correspond to less than 1 000 tonnes of fossil CO_2 per year. All other fuel streams are classified as **major fuel streams**.

Simplified!

The MRR allows that an entity which exceeds one of the mentioned thresholds only once in six years does not have to change its classification. This means that the applicable minimum tiers do not change due to this one year of higher emissions, and the regulated entity does not have to submit an updated MP for approval.

Example: A supplier of oil products stores two different types of fuels in its tax warehouse. One is Diesel oil which contains 10% of biomass liquids intended for the road transport sector, the other is heating oil for buildings. While the majority of the amount of fuels is transferred to fuel traders via pipelines, small amounts of the heating oil is transferred onto trucks to fuel traders mostly active in the buildings sector and fuel stations. It might therefore be most useful to identify four different fuel streams:

1. the diesel oil released for consumption via pipelines to fuel traders;
2. the heating oil released for consumption via pipelines to fuel traders;
3. the heating oil released for consumption via trucks to fuel traders (mostly active in the buildings sector);
4. the diesel oil transferred via trucks to fuel stations.

Example: categorisation of fuel streams

Fuel stream	Emissions (t CO_2)	Means through which released	(Intermediate) consumer	End consumer sector (CRF)	Scope factor method	Scope factor
1. Light fuel oil 1	50 000 (major)	Pipelines	Energy Industry (non-ETS1)	1A1a	Tier 2 (chain-of custody)	1
2. Light fuel oil 2	30 000 (major)	Pipelines	ETS1 installations Energy Industry (power plant)	1A1a	Tier 3 (ETS1 verified emission report)	0
3. Gasoline	25 000 (major)	Trucks	Fuel stations	1A3b	Tier 2 (chain-of custody)	0.85
4. Light fuel oil 3	5 000 (major)	Trucks	ETS1 installations Industry	1A2c	Tier 3 (ETS1 verified emission report)	0
5. Light fuel oil 4	1 500 (major)	Trucks	Industry	1A2	Tier 2 (chain-of custody)	1
6. Light fuel oil 5	300 (de-minimis)	Trucks	unknown	1A	Tier 1	1

6.4 Reasons for derogation

The MRR allows derogation from the required tiers for released fuel amounts and any factor if any of the following can be demonstrated (→ see Table 7):

- Unreasonable costs
- Technically not feasible
- In addition, the following derogations apply only for the scope factor
  - Tier 3 methods are not available
  - Simplified uncertainty assessment (→ section 6.4.2)

Simplified!

Cost effectiveness is an important concept for the MRR. It is generally possible for the regulated entity to get permission from the competent authority to derogate from a specific requirement of the MRR (in particular the required tier level), if fully applying the requirement would lead to **unreasonable costs**. Therefore, a clear-cut definition for “unreasonable costs” is required. This is found in Article 75d of the MRR. As outlined in section 6.4.1 below, it is based on a cost/benefit analysis for the requirement under consideration.

Similar derogations may be applicable if a measure is **technically not feasible**. Technical feasibility is not a question of cost/benefit, but whether the regulated entity is able in practice to achieve a certain requirement at all. Article 75c of the MRR requires that a regulated entity provides a justification where it claims something to be technically not feasible. This justification must demonstrate that the regulated entity does not have the technical resources available to meet the specific requirement within the required time. Where this can be demonstrated, it would usually lead to unreasonable costs as well.

6.4.1 Unreasonable costs

When assessing whether costs for a specific measure are reasonable, the costs are to be compared with the benefit it would give. Costs are considered unreasonable where the costs exceed the benefit (Article 75d).

Costs: It is up to the regulated entity to provide a reasonable estimation of the costs involved. Only costs which are additional to those applicable for the alternative scenario should be taken into account. The MRR also requires that equipment costs are to be assessed using a depreciation period appropriate for the economic lifetime of the equipment. Thus, the annual costs during the lifetime rather than the total equipment costs are to be used in the assessment. Furthermore, when applying a certain monitoring methodology, the MRR also requires any costs incurred by (final) consumers to be take into consideration. This can be particularly important when selecting the method for the scope factor.

Example: An old measuring instrument is to be exchanged for a new one. The old instrument has allowed reaching an uncertainty of 3% corresponding to tier 2 (±5%) for released fuel amounts (for tier definitions see section 5.3.1). Because the regulated entity would have to apply a higher tier anyway, it considers whether a better instrument would incur unreasonable costs. Instrument A costs 40 000 € and leads to an uncertainty of 2.8% (still tier 2), instrument B costs 70 000 €, but allows an uncertainty of 2.1% (tier 3, ±2.5%) to be achieved. Based on a typical economic lifetime of the measuring equipment, a depreciation period of 8 years is considered appropriate.

The costs to be taken into account for the assessment of unreasonable costs are 30 000 € (i.e. the difference between the two meters) divided by 8 years, i.e. 3 750 €. No cost for the working time should be considered, as the same workload is assumed to be necessary independent of the type of the meter to be installed. Also the same maintenance costs can be assumed as an approximation.

Example: For the determination of the scope factor, the regulated entity demonstrates that none of the Tier 3 methods are available (i.e. no physical/chemical distinction possible, Euromarker not applicable, etc.). Therefore, the regulated entity explores the option to establish a Tier 2 'chain-of-custody' method involving a self-declaration from their directly connected end consumers (i.e. those they already have a direct contractual relation with) via an update of existing Terms & Conditions. As an alternative, the regulated entity also considers the 'indirect method' via correlation between annual amounts and CRF categories.

The assessment of unreasonable costs concerning implementation of either of those approaches will be done by comparing it to the alternative Tier 1 – Default value of 1 method, which would mean all end consumers not covered by Annex III of the EU ETS Directive have to apply for ex-post compensation of the incurred carbon costs that are passed through.

The costs to be taken into account will therefore include the regulated entity's own additional costs (investment in IT software, studies for the correlation, staff costs, etc). But further to that, the assessment should also take into consideration the administrative burden incurred (e.g. for paying a fee for 'fuel cards') or also saved by the end consumers for not having to apply for ex-post compensation (Tier 1) but only having to agree to the updated Terms & Conditions ('chain-of-custody') or no action required at all ('indirect methods'). For this purpose, the corresponding costs saved (e.g. based on annual time saved multiplied with the average staff costs assumed for the specific country) would be deducted from the regulated entity's own costs to obtain the total costs to be compared with the benefit calculated below.

Benefit: As the benefit of e.g. more precise metering is difficult to express in financial values, an assumption is to be made following the MRR. The benefit is considered to be proportionate to an amount of allowances in the order of magnitude of the reduced uncertainty. In order to make this estimation independent from daily price fluctuations, the MRR (Article 75d (1)) requires a constant allowance price of 60 € to be applied. For determining the assumed benefit, this allowance price is to be multiplied by an "improvement factor", which is the improvement in uncertainty multiplied by the average annual emissions caused by the respective fuel stream over the three most recent years[74]. The improvement in uncertainty is the difference between the uncertainty currently achieved[75] and the uncertainty threshold of the tier which would be achieved after the improvement.

Where no direct improvement to the accuracy of emissions data is achieved by an improvement, the improvement factor is always 1%. Article 75d(3) lists some of such improvements, e.g. applying a higher tier for the scope factor, switching from default values to analyses, increasing the number of samples analysed, improving the data flow and control system, etc.

Please note the **minimum threshold** given by the MRR: Accumulated improvement costs below 4 000 € per year are always considered reasonable,

[75] Please note that the "real" uncertainty is meant here and not the uncertainty threshold of the tier.

without assessing the benefit. For regulated entities with low emissions (→ section 6.3.2) this threshold is only 1 000 €.

Summarising the above by means of a formula, the costs are considered reasonable, if:

$$C < P \cdot AEm \cdot IF$$

$$C < P \cdot AEm \cdot (U_{curr} - U_{new\ tier}) \quad (9)$$

Where:

C ..... Costs [€/year]

P ..... specified allowance price = 60 € / t $CO_{2(e)}$

AEm .... Average emissions from related fuel stream(s) over the three most recent years [t $CO_{2(e)}$/year]

IF..... Improvement factor (U_{curr} – $U_{new\ tier}$, where applicable, or 1%)

U_{curr} ..... Current uncertainty (actual uncertainty, not the tier threshold) [%]

$U_{new\ tier}$. Uncertainty threshold of the new tier that can be reached [%]

Example: For the replacement of meters described above, the benefit of "improvement" for instrument A is zero, as it is a mere replacement maintaining the current tier. It cannot be unreasonable, as the regulated entity cannot be operated without at least this instrument.

In case of instrument B, tier 3 (threshold uncertainty = 2.5 %) can be reached. Thus, the uncertainty improvement is $U_{curr} - U_{new\ tier}$ = 2.8% – 2.5% = 0.3%.

The average annual emissions are AEm = 120 000 t CO_2/year. Therefore, the assumed benefit is 0.3% · 120 000 · 60 € = 21 600 €. This is higher than the assumed costs (see above). It is therefore not unreasonable to require instrument B to be installed.

Example: for the same situation as for the example above, when assessing the benefit of achieving a higher tier for any of the calculation factors or the scope factor would equal 1% · 120 000 · 60 € = 72 000 €

Important note: For the reporting of historic emissions in 2024 (i.e. the report due by 30 April 2025) Member States may exempt regulated entities from justifying that a specific monitoring methodology would incur unreasonable costs (Article 75d (1)).

Further guidance[76] can be found in the training event material on "unreasonable costs" published on DG CLIMA's MRVA website (**https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification-eu-ets-emissions_en**). An Excel-based "unreasonable costs determination tool" can also be downloaded there.

6.4.2 Simplified uncertainty assessment for the scope factor

For released fuel amounts and calculation factors, derogation from required tiers (→ see Table 7) is only possible if technical infeasibility or unreasonable costs (→ section 6.4.1) can be demonstrated. For the scope factor (→ section 5.4), in addition to that, derogation from applying the required tier is also possible if the regulated entity can demonstrate that a lower tier method leads to a more accurate identification of end consumers' CRF categories, based on a simplified uncertainty assessment.

Such an uncertainty assessment will take into account the elements discussed in section 6.5 below. However it is simplified in the sense that non quantifiable elements might be considered as well where quantifiable estimates are not available. For example, when conducting a study to establish a correlation between end consumers' seasonal consumption profile and their respective coverage of CRF categories listed in Annex III of the Directive ('indirect methods' scope factor method), the result may contain quantified estimates of the share of end consumers erroneously identified as covered by the ETS2 scope and, vice versa, erroneously identified as not covered by the ETS2 scope. In many other instances, such quantified estimates might not be available, e.g. the share of non-Annex III users as part of the 'physical distinction' scope factor method. For such cases, the MRR introduces the concept of a 'simplified' uncertainty assessment. This term may be understood as regulated entities taking account of the main concepts, yet using any source of reasonable information (e.g. literature sources) to demonstrate a certain lower tier method can lead to a more accurate identification of end consumers.

6.5 Uncertainty assessment

6.5.1 General principles

When somebody would like to ask the basic question about the quality of the MRV system of any emission trading system, they would probably ask: "How good is the data?" or rather "Can we trust the measurements which produce the emission data?" When determining the quality of measurements, international standards refer to the quantity of "uncertainty". This concept needs some explanation.

There are different terms frequently used in a similar way as uncertainty. However, these are not synonyms, but have their own defined meaning (see illustration in Figure 7):

[76] Written for ETS1 installations, but concepts are equally applicable to regulated entities.

- **Accuracy**: This means the closeness of agreement between a measured value and the true value of a quantity. If a measurement is accurate, the average of the measurement results is close to the "true" value (which may be e.g. the nominal value of a certified standard material[77]). If a measurement is not accurate, this can sometimes be due to a systematic error. Often this is can be overcome by calibration and adjustment of instruments.
- **Precision**: This describes the closeness of results of repeated measurement of the same measured quantity under the same conditions, i.e. the same thing is measured several times. It is often quantified as the standard deviation of the values around the average. It reflects the fact that all measurements include a degree of random error, which can be reduced, but not completely eliminated.
- **Uncertainty**[78]: This term characterises the range within which the true value is expected to lie with a specified level of confidence. It is the overarching concept which combines precision and assumed accuracy. As shown in Figure 7, measurements can be accurate, but imprecise, or vice versa. The ideal situation is precise and accurate.

If a laboratory assesses and optimises its methods, it usually has an interest in distinguishing accuracy and precision, as this leads the way to identification of errors and mistakes. It can show diverse reasons for errors such as the need for maintenance or calibration of instruments, or for better training of staff. However, the final user of the measurement result (in the case of the ETS, this is the regulated entity and the competent authority) simply wants to know how big the interval is (measured average ± uncertainty), within which the true value is probably found.

In the EU ETS, only one value is given for the emissions in the annual emissions report. Only one value is entered in the verified emissions table of the registry. The regulated entity can't surrender "N ± x%" allowances, but only the precise value N. It is therefore clear that it is in everybody's interest to quantify and reduce the uncertainty "x" as far as possible. This is the reason why MPs must be approved by the competent authority, and why regulated entities have to demonstrate compliance with specific tiers, which are related to permissible uncertainties.

[77] Also a standard material, such as e.g. a copy of the kilogram prototype, disposes of an uncertainty due to the production process. Usually this uncertainty will be small compared to the uncertainties later down in its use.

[78] The MRR defines in Article 3(6): *'uncertainty' means a parameter, associated with the result of the determination of a quantity, that characterises the dispersion of the values that could reasonably be attributed to the particular quantity, including the effects of systematic as well as of random factors, expressed in per cent, and describes a confidence interval around the mean value comprising 95% of inferred values taking into account any asymmetry of the distribution of values*.

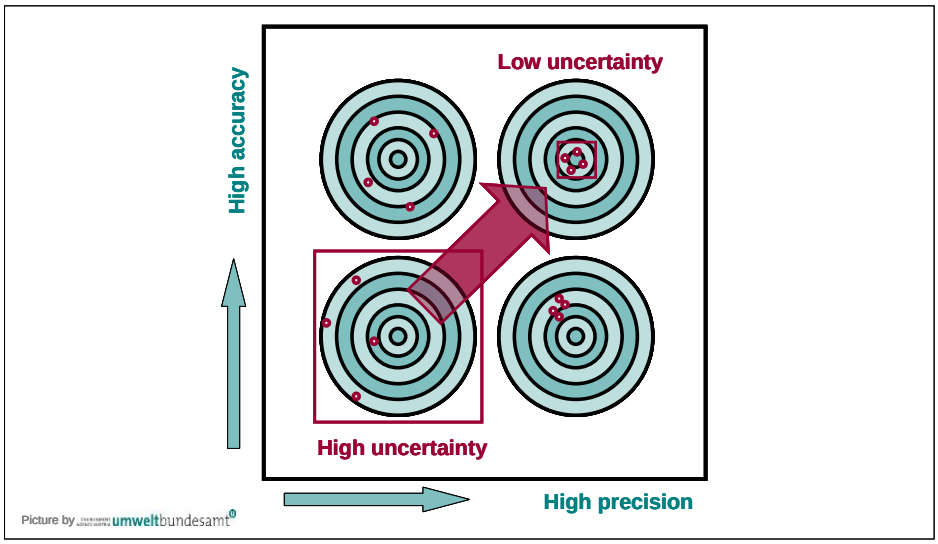

Figure 7: Illustration of the concepts accuracy, precision and uncertainty. The bull's eye represents the assumed true value, the "shots" represent measurement results.

Further guidance[79] can be found on DG CLIMA's MRVA website (https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification-eu-ets-emissions_en):

- Guidance Document No. 4 ("Guidance on Uncertainty Assessment") and No. 4a ("Exemplar Uncertainty Assessment");
- Materials from training events on "uncertainty assessment";
- Excel-based "Tool for the assessment of uncertainties".

6.5.2 General requirements

As shown in section 5.3.1, the tiers for released fuel amounts are expressed using a specified "maximum permissible uncertainty over a reporting period". When submitting a new or updated MP, the regulated entity must demonstrate the compliance of its monitoring methodology (in particular of the measuring instruments applied) with those uncertainty levels.

6.5.2.1 Simplifications for entities under the ETD/ED regime

Article 75j(2) of the MRR does not require an assessment of the uncertainty where all of the following conditions are satisfied:

- the regulated entity corresponds to the same entity with reporting obligations under the ETD/ED regime;
- the regulated entity uses the same measurement methods as under the ETD/ED regime, including the ones used by fuel trading partners;

[79] Written for ETS1 installations, but concepts are equally applicable to regulated entities.

- the measurement methods referred to under the bullet point above are subject to national legal metrological control (in most cases satisfied for all commercial transactions).

Simplified!

Where this is the case, likely in the majority of cases for natural gas, liquid fuels and parts of the coal market, no further assessment is needed and the regulated entity may assume compliance with the highest tiers (as already discussed in section 0). Therefore, the following sub-sections related to the uncertainty assessment are not relevant.

6.5.2.2 Entities or methods not under the ETD/ED regime

For any remaining cases for determining the released fuel amounts, the assessment shall cover (Article 75j(2) via reference to Article 28[80]and Article 29):

- the specified uncertainty of the applied measuring instruments,
- the uncertainty associated with the calibration, and
- any additional uncertainty connected to how the measuring instruments are used in practice.
- Furthermore, the influence of the uncertainty related to determination of stocks at the start/end of the year are to be included, if relevant.

Simplified!

However, for those cases the MRR also contains provisions to greatly simplify the uncertainty assessment (→ sections 6.5.2.3 and 6.5.2.4)

For a regulated entity with low emissions (→ section 7) this assessment is even further simplified. Such an entity may determine the amount of fuel released by using available and documented purchasing records and estimated stock changes, without any further assessment of tier compliance. Such regulated entities are usually found in the coal market and in the small-scale parts of liquid fuels market.

6.5.2.3 Simplification based on calibration results

Simplified!

The MRR (Art. 28 (2)) allows the regulated entity to use the "Maximum Permissible Error (MPE) *in service*"[81] specified for the instrument as overall uncertainty, provided that the measuring instruments are installed in an environment appropriate for their use specifications. Where no information is available for the MPE in service, or where the regulated entity can achieve better values than the default values, the uncertainty obtained by calibration may be used, multiplied by a conservative adjustment factor for taking into account the higher uncertainty when the instrument is "in service".

The information source for the MPE in service and the appropriate use specifications is not specified by the MRR, leaving some room for flexibility. It may be assumed that the manufacturer's specifications, specifications from legal

[80] with the exception of Article 28(2), second subparagraph, second sentence and third subparagraph

[81] The MPE in service is significantly higher than the MPE of the new instrument. The MPE in service is often expressed as a factor times the MPE of the new instrument.

metrological control, and also guidance documents such as the Commission's guidance are suitable sources.

6.5.2.4 Relying on national legal metrological control

The second simplification allowed by the MRR is even more simplifying in practice: Where the regulated entity demonstrates to the satisfaction of the CA, that a measuring instrument is subject to national legal metrological control, the MPE (in service) allowed by the metrological control legislation may be taken as uncertainty, without providing further evidence[82].

6.6 Procedures and the monitoring plan

The MP should ensure that the regulated entity carries out all the monitoring activities consistently over the years, like a recipe book. In order to prevent incompleteness, or arbitrary changes by the regulated entity, the competent authority's approval is required. However, there are always elements in monitoring activities, which are less crucial, or which may change frequently.

The MRR provides a useful tool for such situations: Such monitoring activities may (or even shall) be put into "written procedures"[83], which are mentioned and described briefly in the MP, but are not considered part of the MP. These procedures are tightly linked to, but not part of the MP. They must just be described in the MP with a sufficient level of detail that the CA can understand the content of the procedure, and can reasonably assume that the full documentation of the procedure is maintained and implemented by the regulated entity. The full text of the procedure would be provided to the competent authority only upon request. The regulated entity shall also make procedures available for the purposes of verification (Article 12(2))[84]. As a result, the regulated entity has full responsibility for the procedure. This gives it the flexibility to make amendments to the procedure whenever needed, without requiring an update of the MP, as long as the procedure's content stays within the limitations of its description laid down in the MP.

Note, these procedures do not have to be special procedures for ETS2 compliance; they can be additional sections or clauses in existing procedures used for other purposes. For example, for quality management of measurement instruments, a regulated entity may already have control procedures, so for ETS2 purposes these can be updated with any additional elements needed for ETS2 compliance.

The MRR contains several elements which are by default expected to be put into written procedures, such as:

- Managing responsibilities and competency of all relevant personnel;

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[82] The philosophy behind this approach is that control is exerted here not by the CA responsible for the EU ETS, but by another authority which is in charge of the metrological control issues. Thus, double regulation is avoided and administration is reduced.

[83] Article 11(1) 2nd sub-paragraph: "*The monitoring plan shall be supplemented by written procedures which the [regulated entity] establishes, documents, implements and maintains for activities under the monitoring plan, as appropriate*."

[84] Article 75b declares Article 12(2) equally applicable to ETS2.

- Data flow and control procedures (→ section 6.7);
- Quality assurance measures;
- Estimation method(s) 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[85], if applicable (→ see section 5.5.2), and a procedure for revising the sampling plan, if relevant;
- Procedures for methods of analyses, if applicable;
- Procedure for demonstrating evidence for equivalence to EN ISO/IEC 17025 accreditation of laboratories, if relevant.

The MRR furthermore outlines how the procedure must be described in the MP. Note that for simple regulated entities the procedures will usually be simple and straightforward. Where the procedure is simple, it may be useful to use the procedure text directly as the "description" of the procedure as required for the MP.

Table 8 and Table 9 outline the necessary elements of information required to be put into the MP for each procedure (Article 12(2)), and give examples for procedures.

Table 8: Example related to the management of staff: Descriptions of a written procedure as required in the MP.

Item according to Article 12(2)	Possible content (examples)
Title of the procedure	ETS personnel management
Traceable and verifiable reference for identification of the procedure	ETS 01-P
Post or department responsible for implementing the procedure and the post or department responsible for the management of the related data (if different)	HSEQ deputy head of unit
Brief description of the procedure[86]	• Responsible person maintains a list of personnel involved in ETS data management • Responsible person holds at least one meeting per year with each involved person, at least 4 meetings with key staff as defined in the annex of the procedure; Aim: Identification of training needs

[85] Containing information on the methodologies for preparation of samples, including information on responsibilities, locations, frequencies and quantities and methodologies for the storage and transport of samples (Article 33).

[86] This description is required to be sufficiently clear to allow the regulated entity, the competent authority and the verifier to understand the essential parameters and operations performed.

Item according to Article 12(2)	Possible content (examples)
	• Responsible person manages internal and external training according to identified needs.
Location of relevant records and information	Hardcopy: HSEQ Office, shelf 27/9, Folder identified “ETS 01-P”. Electronically: “P:\ETS_MRV\manag\ETS_01-P.xls”
Name of the computerised system used, where applicable	N.A. (Normal network drives)
List of EN standards or other standards applied, where relevant	N.A.

Table 9: QM-related example for a description of a written procedure in the MP. The regulated entity of the example seems to be a rather complex one.

Item according to Article 12(2)	Possible content (examples)
Title of the procedure	QM for ETS instruments
Traceable and verifiable reference for identification of the procedure	QM 27-ETS
Post or department responsible for implementing the procedure and the post or department responsible for the management of the related data (if different)	Instrumentation Engineer / Business Unit 2
Brief description of the procedure	• Responsible person maintains a schedule of appropriate calibration and maintenance intervals for all instruments listed in table X.9 of the MP • Responsible person checks weekly which QM activities are required within the next 4 weeks according to the schedule. As appropriate, they reserve resources required for these tasks in the weekly meetings with the plant manager. • Responsible person orders in external experts (calibration institutes) when required. • Responsible person ensures that QM tasks are carried out on the agreed dates. • Responsible person keeps records of the above QM activities. • Responsible person reports back to plant manager on corrective action required. • Corrective action is handled under procedure QM 28-ETS.

Item according to Article 12(2)	Possible content (examples)
Location of relevant records and information	Hardcopy: Office HS3/27, shelf 3, Folder identified “QM 27-ETS -nnnn”. (nnnn=year) Electronically: “Z:\ETS_MRV\QM\calibr_log.pst”
Name of the computerised system used, where applicable	XYZ Asset Management Tool, also used for storing documents as attachments chronologically
List of EN standards or other standards applied, where relevant	In the instrument list (document ETS-Instr-A1.xls) the applicable standards are listed. This document is made available to the CA and verifier upon request.

6.7 Data flow and control system

Monitoring of emissions data is more than just reading instruments or carrying out chemical analyses. It is of utmost importance to ensure that data are produced, collected, processed and stored in a controlled way. Therefore the regulated entity must define instructions for “who takes data from where and does what with that data”. These “data flow activities” (Article 58) form part of the MP (or are laid down in written procedures, where appropriate (see section 6.6). A data flow diagram is often a useful tool for analysing and/or setting up data flow procedures. Examples of data flow activities include reading from instruments, taking and sending samples to the laboratory and receiving the results, converting and aggregating data, calculating the emissions using various parameters, and storing all relevant information for later use.

As human beings (and often different information technology systems) are involved, mistakes in these activities can be expected. The MRR therefore requires the regulated entity to establish an effective control system (Article 59). This consists of two elements:

- A risk assessment, and
- Control activities for mitigating the risks identified.

“Risk” is a parameter which takes into account both, the probability of an incident and its impact. In terms of emission monitoring, the risk refers to the probability of a misstatement (omission, misrepresentation or error) being made, and its impact in terms of the final annual emissions figure.

When the regulated entity carries out a risk assessment, it analyses for each point in the regulated entity’s emission monitoring data flow, whether there would be a risk of misstatements. Usually this risk is expressed by qualitative parameters (low, medium, high) rather than by trying to assign exact figures. It also assesses potential reasons for misstatements (such as paper copies being transported from one department to another, where delays may occur, or copy & paste errors may be introduced), and identifies which measures might reduce the identified risks, e.g. sending data electronically and storing a paper copy in the first department; search for duplicates or data gaps in spreadsheets, validation or control check by an independent person (“four eyes principle”)…

Measures identified to reduce risks are implemented. The risk assessment is then re-evaluated with the new (reduced) risks, until the regulated entity considers that the remaining risks are sufficiently low so as to be able to produce an annual emissions report which is free from material misstatement(s)[87].

The control activities are laid down in written procedures and referenced in the MP. The results of the risk assessment (taking into account the control activities) are submitted as supporting documentation to the competent authority when approval of the monitoring plan is requested by the regulated entity (Article 75b(2)).

Regulated entities are required to establish and maintain written procedures related to control activities for at least (Article 59(3)):

(a) quality assurance of the measurement equipment;

(b) quality assurance of the information technology system used for data flow activities, including process control computer technology;

(c) segregation of duties in the data flow activities and control activities and management of necessary competencies;

(d) internal reviews and validation of data;

(e) corrections and corrective action;

(f) control of out-sourced processes;

(g) keeping records and documentation including the management of document versions.

Regulated entities with low emissions: Article 75n(2) exempts entities with low emissions (→ section 6.3.2 and chapter 7) from submitting a risk assessment when sending the monitoring plan for approval by the competent authority. However, it will still be useful to carry out a risk assessment for their own purposes. It has the advantage of reducing the risk of under-reporting, under-surrender of allowances and consequential penalties, and also over-reporting and over-surrender. It will also facilitate demonstrating to the verifier that the regulated entity has proper internal control over its emissions monitoring system.

Note that dedicated documents[88] containing more detailed information on the data flow activities and control system (including risk assessment) have been published (GD No. 6 and 6a, tool for operators' risk assessment; for reference see section 1.3).

6.8 Keeping the monitoring plan up to date

The MP must always correspond to the current nature and functioning of the regulated entity. Where the practical situation at the regulated entity is modified,

[87] The regulated entity should strive to produce "error-free" emission reports (Article 7: Regulated entities "*shall exercise due diligence to ensure that the calculation and measurement of emissions exhibit the highest achievable accuracy*"). However, verification cannot produce 100% assurance. Instead, verification aims at providing a reasonable level of assurance that the report is free from material misstatements. For further information see the relevant guidance document on the A&V Regulation *(see section 1.3).*

[88] Written for ETS1 installations, but concepts are equally applicable to regulated entities.

e.g. because technologies, processes, fuels, means through which the fuels are released for consumption, methods for the scope factor, measuring equipment, IT systems or organisation structures (i.e. staff assignments) etc are changed (where these are relevant to the monitoring of emissions), the monitoring methodology must be updated (Article 14)[89]. Depending on the nature of the changes, one of the following situations can occur:

- If an element of the MP itself needs updating, one of the following situations can apply:
  - The change to the MP is a significant one. This situation is discussed in section 6.8.1. In case of doubt, the regulated entity has to assume that the change is significant.
  - The change to the MP is not significant. The procedure described in section 6.8.2 applies.
- An element of a written procedure is to be updated. If this does not affect the description of the procedure in the MP, the regulated entity can carry out the update under its own responsibility without notification to the competent authority.

The same situations may occur as a consequence of the requirement to continuously improve the monitoring methodology (see section 6.9).

The MRR in Article 16(3) also defines requirements for record keeping about any MP updates, such that a complete history of MP updates is maintained, which allows a fully transparent audit trail, including for the purposes of the verifier.

For this purpose it is considered best practice for the regulated entity to make use of a "logbook", in which all non-significant changes to the MP and to procedures are recorded, as well as all versions of submitted and approved MPs. This must be supplemented with a written procedure for regular assessment of whether the MP is up to date (Article 14(1) and point 1(c) of section 1 of Annex I).

Note: A simplification[90] introduced in Article 75e(2) and (3) helps to avoid a potentially large number of MP updates. In principle, every time a regulated

[89] Article 75b(3) lists a minimum of situations in which a monitoring plan update is mandatory: *(a) changes to the category of the regulated entity where such changes require a change in the monitoring methodology or lead to a change of the applicable materiality level pursuant to Article 23 of Implementing Regulation (EU) 2018/2067;*

(b) notwithstanding Article 75n, changes regarding whether the regulated entity is considered a "regulated entity with low emissions";

(c) a change in the tier applied;

(d) the introduction of new fuel streams;

(e) a change in the categorisation of fuel streams – between major or de-minimis fuel streams where such a change requires a change to the monitoring methodology;

(f) a change to the default value for a calculation factor, where the value is to be laid down in the monitoring plan;

(g) a change in the default value for the scope factor;

(h) the introduction of new methods or changes to existing methods related to sampling, analysis or calibration, where this has a direct impact on the accuracy of emissions data.

[90] The simplification for entity classification is found in the 3rd subparagraph of Article 75e(2): „ *By way of derogation from Article 14(2), the competent authority may allow the regulated entity not to modify the monitoring plan where, on the basis of verified emissions, the threshold for the classification of the regulated entity referred to in the first subparagraph is exceeded, but the regulated entity demonstrates to the satisfaction of the competent authority that this threshold has not already been exceeded within the previous five reporting periods and will not be exceeded again in subsequent reporting periods.*" Similar wording is found in Article 75e(3) for fuel streams.

entity's emissions exceed the threshold for its categorisation (Category A, or regulated entity with low emissions), the regulated entity would have to evaluate if all tiers applied still conform with the requirement (see section 6.2). The same would apply to individual fuel streams, if their emissions exceed the relevant threshold for their classification. The simplification clauses in Article 75e allow the regulated entity to avoid such reclassification of the regulated entity, or fuel stream, if it provides evidence to the competent authority that the relevant threshold was not exceeded during the 5 years before the exceedance, and is unlikely to be exceeded again.

6.8.1 Significant modifications

Whenever a significant modification to the MP is necessary, the regulated entity shall notify the update to the competent authority without undue delay. The competent authority then has to assess whether the change is indeed a significant one. Article 75b(3) contains a (non-exhaustive) list of MP updates which are considered significant[91]. If the change is not significant, the procedure described under 6.8.2 applies. For significant changes, the competent authority thereafter carries out its normal process of approving MPs[92].

The approval process may sometimes need longer than when the physical change of the regulated entity is due to happen (e.g. where new fuel streams are introduced for monitoring). Furthermore, the competent authority may find the regulated entity's MP update incomplete or inappropriate and may require additional amendments to the MP. Thus, monitoring according to the old MP may be incomplete or lead to inaccurate results, while the regulated entity is not sure whether the new MP will be approved as requested. The MRR provides for a pragmatic approach here:

According to Article 16(1), the regulated entity shall immediately apply the new MP where it can reasonably assume that the updated MP will be approved as proposed. This may apply e.g. when an additional means through which the fuel released for consumption is introduced, which will be monitored using the same

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[91] Article 75b(3):

3. In accordance with Article 15, significant modifications to the monitoring plan of a regulated entity include:

(a) changes to the category of the regulated entity where such changes require a change in the monitoring methodology or lead to a change of the applicable materiality level pursuant to Article 23 of Implementing Regulation (EU) 2018/2067;

(b) notwithstanding Article 75n, changes regarding whether the regulated entity is considered a "regulated entity with low emissions";

(c) a change in the tier applied;

(d) the introduction of new fuel streams;

(e) a change in the categorisation of fuel streams – between major or de-minimis fuel streams where such a change requires a change to the monitoring methodology;

(f) a change to the default value for a calculation factor, where the value is to be laid down in the monitoring plan;

(g) a change in the default value for the scope factor;

(h) the introduction of new methods or changes to existing methods related to sampling, analysis or calibration, where this has a direct impact on the accuracy of emissions data.

[92] This process may differ between Member States. The usual procedure will include a completeness check for the information provided, a check for the appropriateness of the new monitoring plan in regard of the changed situation of the installation, and a check for compliance with the MRR. The competent authority may also reject the new monitoring plan or require further improvements. The competent authority may also come to the conclusion that the proposed changes are not significant ones.

tiers as comparable fuels in that regulated entity. Where the new MP is not yet applicable, because the situation in the regulated entity will change only after the approval of the MP by the competent authority, monitoring is to be carried out in accordance with the old MP until the new one is approved.

Where the regulated entity is unsure whether the CA will approve the changes, it shall carry out monitoring in parallel using both the new and the old MP (Article 16(1)). Upon receiving the approval of the competent authority, the regulated entity shall use only the data obtained in accordance with the new MP as approved (Article 16(2)).

6.8.2 Non-significant modifications of the monitoring plan

While significant updates to the MP are to be notified without undue delay, the competent authority may allow the regulated entity to delay notification of non-significant updates in order to simplify the administrative process (Article 75b(1)). Where this is the case and the regulated entity can reasonably assume that changes to the MP are non-significant, they may be collected and submitted to the CA once a year (by 31 December), if the competent authority allows this approach.

The final decision on whether a change to the MP is significant is the responsibility of the competent authority. However, a regulated entity can reasonably anticipate that decision in many cases:

- Where a change is comparable to one of the cases listed in Article 75b(3), the change is significant;
- Where the impact of the proposed MP change on the overall monitoring methodology or on the risk of error is small, it may be non-significant;
- In case of doubt assume it is a significant change and follow section 6.8.1.

Non-significant changes do not need the approval of the competent authority. However, in order to provide for legal certainty, the competent authority must inform the regulated entity without undue delay of its decision to consider changes non-significant where the regulated entity has notified them as significant.

6.9 The improvement principle

While the previous section has dealt with MP updates which are mandated as consequence of factual changes at the regulated entity, the MRR also requires the regulated entity to explore possibilities to improve the monitoring methodology when the regulated entity itself is unchanged. For implementing this “improvement principle”, there are two requirements:

- Regulated entities must take account of the recommendations included in the verification reports (Articles 9 and 75q(4)), and
- Regulated entities must check regularly on their own initiative, whether the monitoring methodology can be improved (Article 14(1) and Article 75q(1)-(3)).

Regulated entities must react to those findings on possible improvements by

- Sending an improvement report to the competent authority for approval,

- Updating the MP as appropriate (using the procedures outlined in sections 6.8.1 and 6.8.2), and
- Implementing the improvements, if relevant according to the time table proposed in the approved improvement report.

"Improvement report" has two different legal bases and deadlines. However, both reports may be combined if possible:

For the **improvement report pursuant to Article 75q(1) on the regulated entity's own initiative** (which may be combined with the one on verifier's findings – see next paragraph) the deadline is the 31 July. It has to be delivered:

- every 3 years for category B installations;
- every 5 years for category A installations;
- for any regulated entity that is using the default scope factor as referred to in Article 75l(3) and (4), by 31 July 2026.

The deadline of 31 July may be extended by the competent authority up to 30 September of the same year.

Where the regulated entity can demonstrate that the reasons for unreasonable costs or for improvement measures being technically not feasible will remain valid for a longer period of time, the competent authority may extend the periods above to a maximum of 4 or 5 years for category B or A installations, respectively.

For the **improvement report responding to a verifier's recommendations (Article 75q(4))**, the deadline is 31 July (or as late as 30 September, if the CA sets such later deadline) *of the year in which the verification report is issued*, irrespective whether an improvement report under Article 75q(1) is also due in the same year. However, if the regulated entity has already submitted an updated MP for approval, which addresses all the issues reported by the verifier, the improvement report pursuant to Article 75q(4) may be omitted (see Article 75q(5)).

The improvement reports pursuant to Article 75q(1) have to contain in particular the following information:

- Improvements for achieving higher tiers, if the "required" tiers are not yet applied. "Required" here means "those tiers which are applicable if no unreasonable costs occur and if the tier is technically feasible".
- The report should contain, for each possible improvement, either a description of the improvement and the related timetable, or evidence regarding technical non-feasibility or unreasonable costs, if applicable (→ section 6.4).

Note: The Commission will provide harmonised templates for improvement reports.

7 REGULATED ENTITIES WITH LOW EMISSIONS

Simplified!

For the definition of regulated entities with low emissions, see section 6.3.2. For those entities, several simplifications are found in Article 75n of the MRR. These are:

- They may apply as a minimum tier 1 for released fuel amounts and calculation factors for all fuel streams, unless higher accuracy is achievable without additional effort for the regulated entity (i.e. no justifications regarding unreasonable costs are required).
- They are not required to submit a risk assessment as part of the control system when submitting a monitoring plan for approval (but are stull required to complete one).
- They may determine the released fuel amounts by using available and documented purchasing records and estimated stock changes, without providing an uncertainty assessment.
- Where they use analyses from a non-accredited laboratory, simplified evidence regarding the competence of the laboratory[93] is needed.

All other requirements for regulated entities are to be respected. However, because an entity with low emissions may apply lower tiers, the overall monitoring requirements are usually relatively easy to meet.

[93] The regulated entity may use “any laboratory that is technically competent and able to generate technically valid results using the relevant analytical procedures, and provides evidence for quality assurance measures as referred to in Article 34(3)”. See section 5.5.2 for further details.

8 IDENTIFYING THE ETS2 REGULATED ENTITIES

This chapter is addressed to Member States to support them with identifying ETS2 regulated entities. The information in this section may however also be helpful for regulated entities, despite them not being the main target audience of the guidance provided here.

The approach for Member States to designate ETS2 regulated entities is set out in Article 3(ae)[94] which defines the ETS2 regulated entities as:

- The authorised keeper of a **tax warehouse** (relevant for liquid fuels, in particular transport fuels) pursuant to Article 3(11) of the ED, who is liable to pay the excise duty pursuant to Article 7 of the ED.
- If the above is **not applicable**, **any other person liable to pay the excise duty** pursuant to Article 7 of the ED, Article 21(5) first and fourth subparagraph ETD (mostly relevant for natural gas and solid fuels, where the concept of a tax warehouse either does not exist or is only used in a few Member States), including any person exempt from paying the excise duty. The latter must be registered by the CA for the ETS purposes, which may particularly be relevant for coal, coke and lignite used in households which are exempt from the excise duty in several Member States, but suppliers of those fuels would still have to be registered by national authorities.
- If the above are **not applicable**, which might e.g. be or if several persons are jointly and severally liable for payment of the same excise duty, Member States may **designate any other person**.

Therefore, while the EU ETS Directive gives clear preference to putting the reporting obligation on the same entities as under the ETD/ED regime, where applicable, it also provides for Member States to deviate from this principle, where considered more appropriate to make the ETS2 implementation applicable. Situations where this could be more appropriate, would include e.g. coal, coke and lignite depending on the situation in the Member State or putting the reporting obligation further downstream on suppliers that have more robust information on the end consumers' sectors. In order to illustrate the implications such a decision,

[94] Article 3(ae): 'regulated entity' for the purposes of Chapter IVa means any natural or legal person, except for any final consumer of the fuels, that engages in the activity referred to in Annex III and that falls within one of the following categories:

(i) where the fuel passes through a tax warehouse as defined in Article 3, point (11), of Council Directive (EU) 2020/262, the authorised warehousekeeper as defined in Article 3, point (1), of that Directive, liable to pay the excise duty which has become chargeable pursuant to Article 7 of that Directive;

(ii) if point (i) of this point is not applicable, any other person liable to pay the excise duty which has become chargeable pursuant to Article 7 of Directive (EU) 2020/262 or Article 21(5), first subparagraph, of Council Directive 2003/96/EC in respect of the fuels covered by Chapter IVa of this Directive;

(iii) if points (i) and (ii) of this point are not applicable, any other person that has to be registered by the relevant competent authorities of the Member State for the purpose of being liable to pay the excise duty, including any person exempt from paying the excise duty, as referred to in Article 21(5), fourth subparagraph, of Directive 2003/96/EC;

(iv) if points (i), (ii) and (iii) are not applicable, or if several persons are jointly and severally liable for payment of the same excise duty, any other person designated by a Member State;

Figure 8 provides a generic supply structure to show how this could be implemented.

Figure 8 (A), the default approach: the market participants **1**, **2** and **3** could be traders of e.g. fuel oil, which all have their own tax warehouse and sell the fuel to fuel suppliers (**4**, **5** and **6**), but not directly to any end consumers. Among the fuel suppliers selling to end consumers (**4**, **5** and **6**), only supplier **5** has its own tax warehouse as well. Participant **2** trades fuel only entirely under duty suspension arrangements and does not release any fuel for consumption. As a consequence, participants **1**, **3** and **5** have obligations under ETD/ED regimes and are, as a first step, the default ETS2 regulated entities.

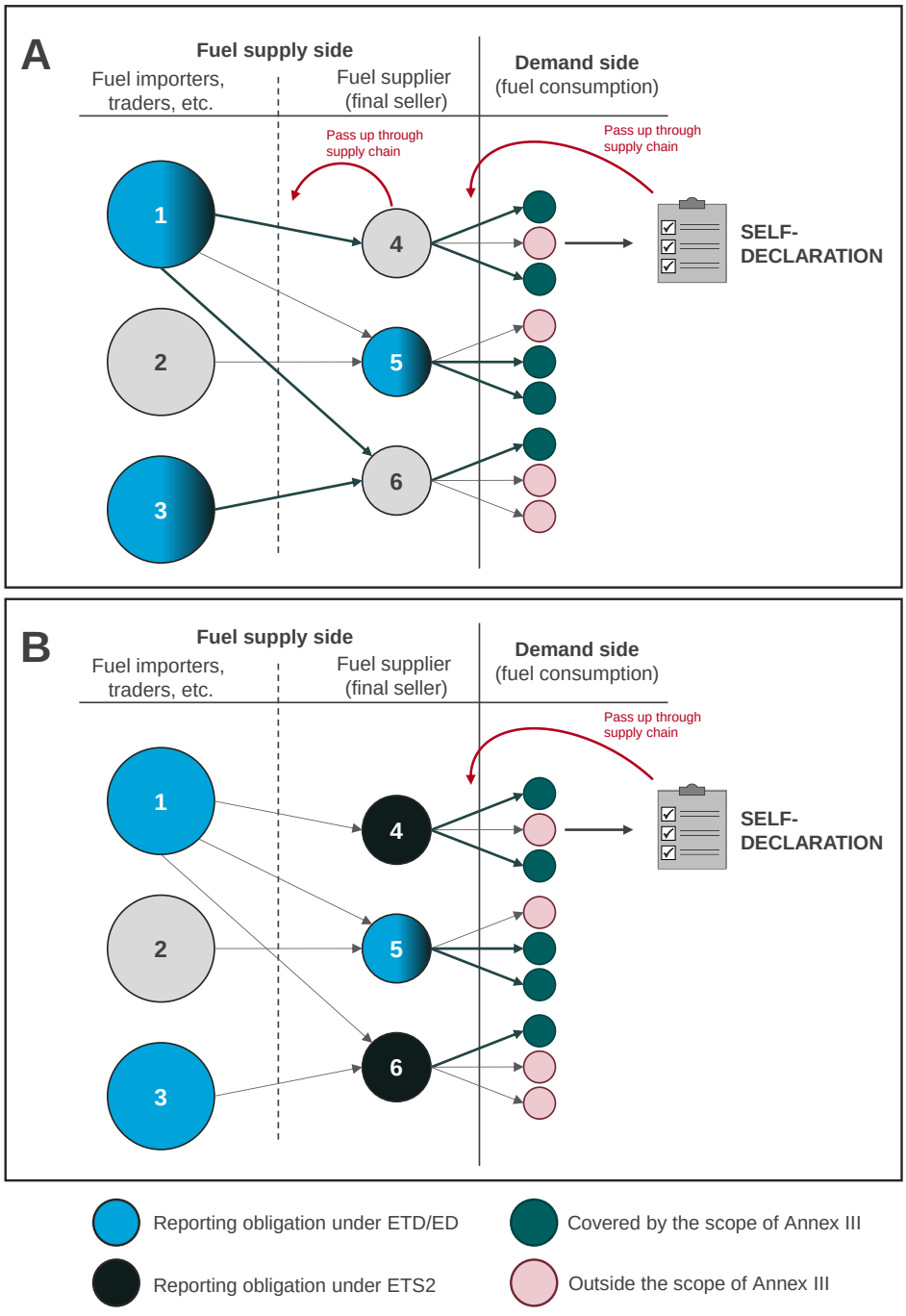

Figure 8: Illustrative example of designating ETS2 regulated entities. A: default approach in Article 3(ae) of the EU ETS Directive; B: alternative approach

Without pre-empting the detailed guidance on the 'scope factor' (→ section 5.4), in order to illustrate the implication let's assume that the information on the end consumers is based on a 'chain-of-custody' method established by the MS. This would start e.g. with a self-declaration from end consumers with respect to their sectoral coverage which needs to be passed on up through the fuel supply chain to the regulated entity. While for participant **5**, who is directly connected to the end users, this passing of information is easy, the situation is more difficult for **1** and **3**, as they depend on **4** and **6** passing onto them the information concerning the amounts of fuels supplied to exempted consumers..

Figure 8 (B), alternative: The default position outlined above could lead to consideration of an alternative for designating ETS2 regulated entities. In order to avoid having intermediary parties being involved in this process, Member States may decide to invoke point iv) of Article 3(ae) and put the reporting obligation on fuel suppliers **4**, **5** and **6** who are connected directly to the end consumers. This would ensure that all reporting entities are directly connected to end consumers. However, this approach would likely lead to a much higher number of reporting entities which also cannot build on the existing ETD/ED reporting infrastructure. Furthermore, this example highlights the possible further difficulties in the case of more complex supply structures. For example, if the obligation were only shifted from **1** to **4**, corresponding amounts trading between those two would need be deducted from **1**'s annual emissions report (they would still need to report amounts supplied to **6**). This additional administrative burden for keeping track of all these additional fuel flows and intermediates could easily outweigh all efficiency gains from putting the obligation further downstream. Point iv) of Article 3(ae) may therefore only present an attractive alternative where there is either a direct supply chain without many branches, or to move the obligation for all traders of this certain type of fuel downstream (e.g. designate fuel suppliers to end consumers). But the latter would also increase the administrative burden for ensuring that no regulated entity is missed.

9 ANNEX II

9.1 Acronyms

AER .....Annual Emissions Report

AVR .....Accreditation and Verification Regulation (A&V Regulation)

CA .....Competent Authority

EF .....Emission factor

EU ETS.....EU Emission Trading System (including ETS 1 and ETS 2)

ETS1.....ETS for stationary installations, aviation and maritime transport

ETS2.....ETS for buildings, road transport and additional sectors

MP .....Monitoring Plan

MPE.....Maximum Permissible Error (term usually used in national legal metrological control)

MRR.....Monitoring and Reporting Regulation (M&R Regulation)

MRV.....Monitoring, Reporting and VerificationMS Member State(s)

NCV .....Net calorific value

Permit .....GHG emissions permit

UCF .....Unit conversion factor

9.2 Legislative texts

EU ETS Directive: Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, amended several times. Download of the consolidated version: **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02003L0087-20230605**

MRR: Commission Implementing Regulation (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No. 601/2012. Download under: **https://eur-lex.europa.eu/eli/reg_impl/2018/2066/oj** and latest amendment under: **https://eur-lex.europa.eu/eli/reg_impl/2023/2122/oj**, consolidated version: **http://data.europa.eu/eli/reg_impl/2018/2066/2022-01-01**

AVR: Commission Implementing Regulation (EU) 2018/2067 on the verification of data and on the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council. Download of consolidated version: **https://eur-lex.europa.eu/eli/reg_impl/2018/2067/2021-01-01**

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 (recast). Download under: **https://eur-lex.europa.eu/eli/dir/2018/2001/2022-06-07**