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Guidance Document

The Accreditation and Verification Regulation - Verification Guidance for EU ETS Aviation

AVR Explanatory Guidance (GD III), Version of February 2026

This document is part of a series of documents and templates provided by the Commission services for supporting the implementation of Implementing Regulation (EU) No. 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.

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 discussions within the meetings of the informal Technical Working Group on MRVA (Monitoring, Reporting, Verification and Accreditation) under the WGIII of the Climate Change Committee (CCC), as well as written comments received from stakeholders and experts from Member States.

This guidance document was endorsed by the representatives of the Member States at the meeting of the Climate Change Committee on 23 December 2021. The guidance document was updated in February 2026.

All guidance documents and templates can be downloaded from the documentation section of the Commission's website at the following address: https://climate.ec.europa.eu/eu-action/carbon-markets/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification_en#documentation

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[1] Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652, OJ L, 2023/2413, 31.10.2023,

[2] Directive (EU) 2024/1711 of the European Parliament and of the Council of 13 June 2024 amending Directives (EU) 2018/2001 and (EU) 2019/944 as regards improving the Union's electricity market design, OJ L, 2024/1711, 26.6.2024.

[3] Commission Delegated Regulation (EU) 2025/927 of 20 May 2025 supplementing Directive 2003/87/EC of the European Parliament and of the Council as regards measures adopted by the International Civil Aviation Organization for the monitoring, reporting and verification of aviation emissions for the purpose of implementing a global market-based measure and repealing Commission Delegated Regulation (EU) 2019/1603, OJ L, 2025/927, 31.7.2025.

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1 Introduction

Article 15 of the EU ETS Directive[4] instructs the European Commission to develop a regulation on the verification of emissions report, the accreditation of verifiers and the supervision of verifiers. On 12 July 2012 the Accreditation and Verification Regulation (AVR) was published in the Official Journal[5]. Together with the Monitoring and Reporting Regulation[6] (MRR) which was published on the same date, the two regulations replaced the 2007 Monitoring and Reporting Guidelines[7] and its amendments including in relation to aviation[8]. In 2018 both the MRR[9] and AVR[10] were revised and re-published. A further revision took place in 2020 and, as a result of revisions in the Directive in 2024[11] and 2025[12]. The consolidated versions of the MRR[13] and the AVR[14] can be found on the Commission website (see the footnotes).

This **Aviation verification guidance (GD III)** is part of a suite of guidance documents developed by the Commission services to explain the requirements in the AVR. To allow immediate access to the verification requirements for small emitters without the need to read this Aviation verification guidance, a quick guidance document has been drafted as addendum to this GD III. The suite of guidance documents supports a harmonised interpretation of the requirements by Member States and consists of:

- an explanatory guidance on the articles of the AVR (EGD I), including a user manual providing an overview of the guidance documents and their interrelation with the relevant legislation;
- key guidance notes (KGN II) on specific verification and accreditation issues;

[4] Directive 2003/87/EC of the European Parliament and 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: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02003L0087-20240301

[5] Commission regulation No. 600/2012 of 21 June 2012 on the verification of greenhouse gas emissions reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ EU,12 July 2012, L181/1.

[6] Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ EU,12 July 2012, L181/30.

[7] Commission Decision (2007/589/EC) of 18 July 2007 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ EU, 31 August 2007, L229/1.

[8] Commission Decision (2009/339/EC) of 16 April 2009 amending Decision 2007/589/EC as regards the inclusion of monitoring and reporting guidelines for emissions and tonne-kilometre data from aviation activities, OJ EU, 23 April 2009, L103/10.

[9] Commission Implementing Regulation (EU) No 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

[10] 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 (OJ L 334, 31.12.2018, p. 94).

[11] Commission Implementing Regulation (EU) 2024/1321 of 8 May 2024 amending Implementing Regulation (EU) 2018/2067 as regards the verification of data and the accreditation of verifiers, OJ L, 2024/1321, 13.5.2024,

[12] Commission Implementing Regulation (EU) 2025/1192 of 18 June 2025 amending Implementing Regulation (EU) 2018/2067 as regards certain aspects on the verification of data and on the accreditation of verifiers, OJ L, 2025/1192, 19.6.2025.

[13] MRR: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02018R2066-20250527

[14] AVR: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02018R2067-20250622

- a specific guidance (GD III) on the verification of aircraft operator's reports;
- a specific guidance (ETS2 AV Guidance) on the verification of regulated entity's emissions reports;
- templates for the verification report and information exchange requirements;
- exemplars consisting of filled-in templates, checklists or specific examples in the explanatory guidance or key guidance notes;
- frequently asked questions.

This Aviation verification guidance (GD III) is specifically designed to clarify the EU ETS requirements on the verification of aircraft operator's reports and to give practical advice to verifiers, aircraft operator (AOs), competent authorities, national authorities and accreditation bodies on how to interpret the requirements of the AVR in a uniform manner. The guidance covers both verification of **aircraft operator's emissions reports** and verification of **aircraft operator's non-CO_2 aviation effects reports**.

It considers how the verification requirements can be met efficiently and effectively, taking into account the scales and geographical spread of many aircraft activities. The guidance will not only explain the basic steps that a verifier has to follow in the verification process, but it will also elaborate on how a verifier shall assess and deal with some aviation specific monitoring and reporting issues. Special attention is paid to the verification of reports of small AOs. For some issues reference is made to relevant key guidance notes that provide a more in-depth explanation of the subject concerned. This guidance document represents the views of the Commission at the time of publication. It is not legally binding.

How to read this Aviation Verification Guidance?

This guidance is structured as follows:

Chapter 2 explains the **general objectives and main concepts of the AVR**. It also outlines the roles and responsibilities of the different parties involved in EU ETS, and describes the interrelation between the AVR and other legislation, harmonised standards and the suite of guidance documents. It provides a user manual to all the guidance documents, templates and exemplars developed to support a common interpretation. Sections 2.4 and 2.5 highlight the changes in scope of EU ETS aviation over the years as well as the latest developments in the MRR and the AVR.

Chapter 3 outlines the legal **verification requirements** laid down in Chapter III of the AVR, explains the steps that a verifier has to carry out to come to a final verification opinion as well as provides guidance on materiality requirements, definition of site visits and other important aspects of the verification process. The explanations in this Chapter apply to verification of emissions reports and the verification of non-CO_2 aviation effects reports.

Chapter 4 highlights **a** key element for reporting reliable and correct emissions: the mapping of the data acquisition and handling procedures **("data flow"**) and **implementing internal procedures for monitoring and reporting**. An AO has to include in its MP descriptions of the data flow applicable to its EU ETS activities and the control procedures especially those designed to control/mitigate against the risks of misstatements (errors, omissions and misrepresentations) and non-conformities in the monitored and reported data.

In this chapter an explanation is provided on how a verifier should assess the data flow activities, control activities and procedures that have been implemented by the AO. This includes the checks that the verifier should carry out on IT systems used by the AO or on outsourced activities like ground handling. This Chapter also outlines how the completeness of ETS flights and sources can be checked and in what way EUROCONTROL facilities and other tools can be used.

Chapter 5 describes **aviation specific** requirements and issues in verifying **annual emissions reports** such as dealing with data gaps, treatment of monitoring uncertainties, fuel density and how to assess consistency between reported data and "mass and balance" documentation.

Chapter 6 explains what requirements apply to **small emitters** monitoring and reporting annual emissions and **AO emitting less than 3000 tonnes of CO_2** on the ETS reduced scope. AOs operating less than 243 flights per period for three consecutive four-month periods or AOs operating flights with total annual emissions less than 25,000 tonnes CO_2 per year are considered small emitters. **Art. 55(2) MRR**

For these aircraft operators simplified monitoring and reporting requirements apply. The box below highlights the simplified requirements.

Overview of simplified monitoring and reporting requirements for small emitters monitoring and reporting CO_2 emissions

I. The emissions are considered verified if:

- an AO emits **less than 25 000 t CO_2 per year** and if the "Environmental Management Information Service (EMIS) (formerly known as ETS support facility) is used to generate the CO_2 emissions report from the EUROCONTROL EMIS without any input from the AO. To apply this threshold, all flights under the **full scope of EU ETS** need to be taken into account.
- If an AO emits **less than 3 000 t CO_2 per year** and if the EUROCONTROL EMIS is used to generate the CO_2 emissions report from the EUROCONTROL EMIS without any input from the AO. To apply this threshold, all flights under the **reduced scope of EU ETS** need to be taken into account. This could cover large AOs carrying out a limited number of flights under the reduced scope of EU ETS.

II. A more simple verification generally applies where:

Small emitters or AO emitting less than 3000 tonnes of CO_2 per year apply the Eurocontrol Small Emitters' tool[15] or the EMIS to estimate their fuel consumption.

For more information please see section 3.1.1, 3.1.2 and 3.2.2 of the MRR Guidance Document No.2 for AOs (MRR GD2)**.**

If a small emitter or AO emitting less than 3000 tonnes of CO_2 per year uses alternative aviation fuels, these simplifications do not apply. Please see section 5.13 of this guidance.

Chapter 7 provides information on **aviation specific** requirements and issues in verifying **non-CO_2 aviation effects reports**: how a verifier checks the different primary data sources such as

[15] The Eurocontrol Small Emitters' tool is a tool that can process all air traffic information and estimate the fuel consumption avoiding any underestimation of emissions. This tool is approved by the European Commission and is presently the only tool approved by the European Commission for that purpose.

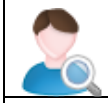
flight trajectory data, aircraft properties and aircraft performance data if the aircraft operator decides to use their own primary source data to calculate their non-CO_2 aviation effects instead of having their full reports automatically generated by the Non-CO_2 Aviation Effects Tracking System (NEATS) or another third-party tool approved by the Commission.

Chapter 8 explains what requirements apply to the verification of CORSIA emissions, CORSIA eligible fuels and CORSIA emissions unit cancellation reports.

Chapter 9 refers to the guidance on **competence and impartiality** requirements for verifiers verifying emissions reports and verifying non-CO_2 aviation effects reports.

Chapter 10 addresses **accreditation of verifiers** verifying emissions reports and non-CO_2 aviation effects reports, peer evaluation of accreditation bodies, mutual recognition of verifiers and information exchange between the different parties involved. Where relevant, reference is made to Chapters 6 -10 of the Explanatory Guidance (EGD I).

Throughout the text of this explanatory guidance and the key guidance documents certain symbols have been inserted to highlight new concepts or certain situations. The following symbols have been used.

	This symbol means that the reader should pay specific attention to the requirement or issue mentioned in the text.
	This symbol means the requirement or issue is solely applicable to AOs.
	This symbol means the text next to this icon is applicable to single verifiers. A single verifier is an enterprise involving one individual (one-man business).
	This symbol is intended to flag requirements or guidelines for the verification of a small emitter.
	This symbol is intended to explain requirements for the verification of non-CO_2 aviation effects.
	This symbol is intended to explain requirements for the verification of CORSIA specific data.

2 User manual to AVR concepts and guidance material

The MRR and the AVR have direct legal effect in the Member States. This means that the regulations do not require transposition and implementation in national legislation since their provisions apply directly to operators or AOs, verifiers, accreditation bodies and other parties mentioned in the MRR and the AVR. The new regulations define the roles and responsibilities of all these parties more strictly, which strengthens each specific element in the compliance chain.

2.1. Roles and responsibilities of the parties in EU ETS

The compliance chain and the roles and responsibilities of each party involved in EU ETS can be summarised by the following figure.

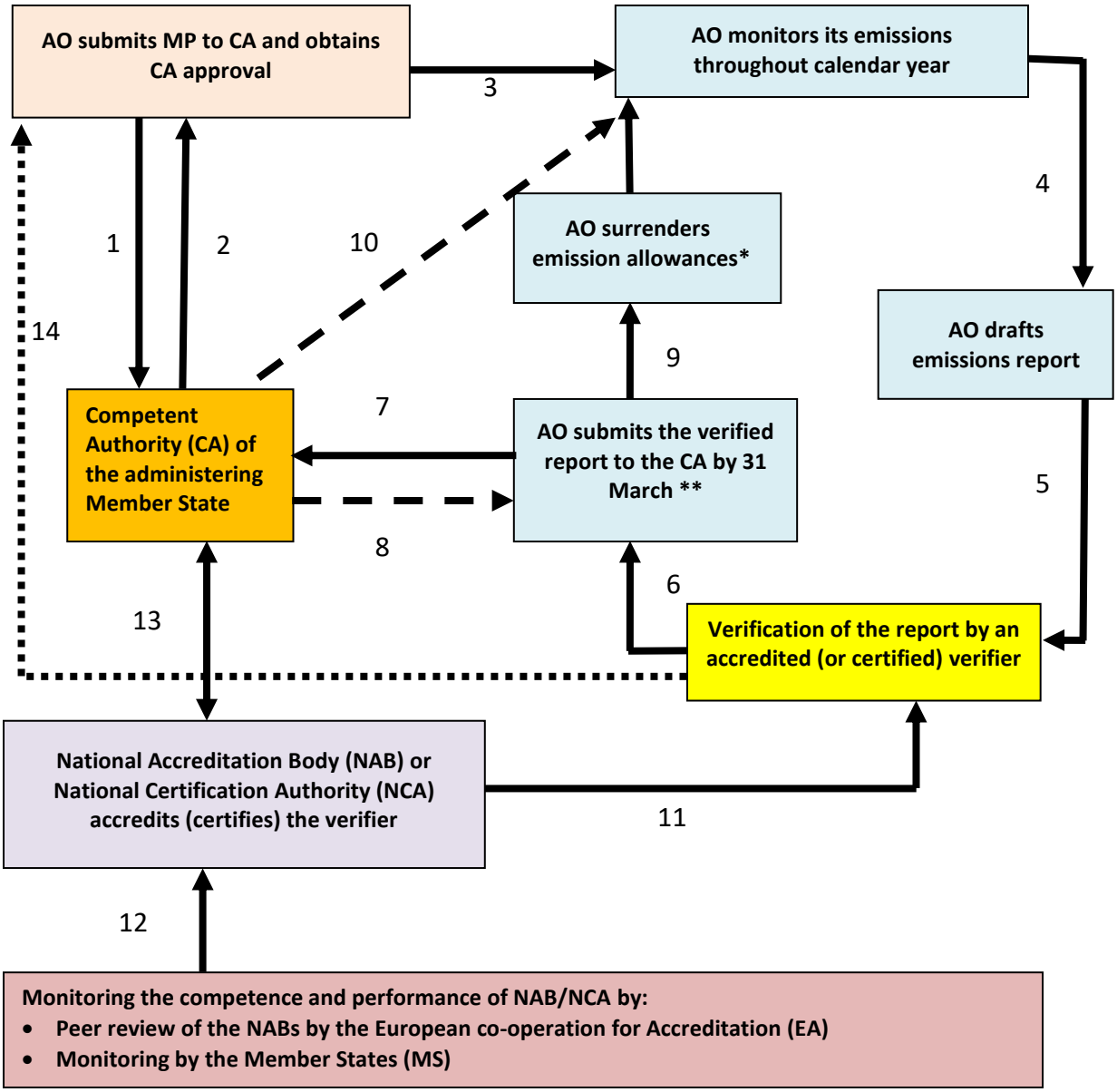


Figure 1 EU ETS Compliance Chain and the roles of parties involved
**only required for CO_2 emissions; **see footnote 20*

The compliance chain starts with the AO submitting its draft monitoring plan (MP) to the Competent Authority (CA) of their administering Member State[16] for approval **(arrow 1)**. If the MP meets the requirements of the MRR and the CA is confident that the AO will be able to monitor in line with the MP, the CA approves the MP **(arrow 2)**. Throughout the calendar year the AO must subsequently monitor its emissions in accordance with the approved MP and the MRR **(arrow 3)**. At the end of the calendar year the AO has to draft an emissions report that meets the requirements of Annex X of the MRR **(arrow 4)**. This report must be verified (**arrow 5**).

As from 1 January 2025 AO also have to monitor and report their non-CO_2 aviation effects. The **same compliance chain applies for the monitoring and reporting of non-CO_2 aviation effects.** The MP describing how an AO applies the monitoring and reporting requirements related to non-CO_2 aviation effects is integrated in the CO_2 MP which simplifies the approval process. The templates for the combined monitoring plan, the CO_2 emission and non-CO_2 aviation effects report can be found on the Commission's website. Even though elements of both the CO_2 and non-CO_2 aviation effects monitoring and reporting process are to some extent streamlined, these are still considered separate processes and require a separate verification with separate verification opinion statements (see Chapter 7).

Non CO_2

Verification involves an independent assessment of the way the MP has been implemented, and of the data sources that have been used to collect and collate the data, and the data quality in the AO's report. Verification is an essential instrument in providing confidence to the CA and other relevant parties that the report submitted to the CA, represents a faithful, true and fair account of the emissions and non-CO_2 aviation effects.

Both Article 15 and Annex V of the EU ETS Directive and the AVR require the verification to be carried out by a **verifier**. A verifier is:

- a legal entity or legal person accredited by a national accreditation body (NAB). The verifier could for example be an enterprise with multiple persons and/or departments or an enterprise that is owned by a single individual[17];
- a natural person that is certified by a National Certification Authority (NCA) according to the requirements of the AVR if a Member State has decided to set up a certification system. The natural person shall in that case not be a legal entity or part of a legal entity. There are currently no natural persons certified by an NCA in Europe.

All verifiers are verification bodies which are accredited by a NAB according to the AVR.

Chapter 6 and 7 highlight specific situations where the verification is **automated** and incorporated in tools approved by the European Commission.

Accreditation involves an independent assessment by the NAB whether the verifier has the competence to carry out the verification, whether it can perform the verification in line with the AVR and whether it meets the requirements in Chapter III of the AVR **(arrow 11)**. The accreditation process concludes with a decision on whether the verifier can be granted accreditation and is thus allowed to perform verification of AO reports. After the accreditation has been granted, the verifier is still continuously monitored by the NAB including through **annual surveillance** and a **reassessment** before the accreditation certificate expires.

[16] Please see section 3.3 of the MRR Guidance document for AOs no.2 (GD.2) for information on administering Member States.

[17] The national law of the Member State in which the legal person or legal entity has its registered office or permanent business establishment provides information on what constitutes a legal person or legal entity.

Certification involves a similar independent assessment of the verifier by the NCA and is only allowed for natural persons intending to carry out verification activities **(arrow 11)**[18]. Legal entities or legal persons cannot apply for certification. The same AVR requirements that apply to the accreditation and monitoring of verifiers are applicable to the certification and monitoring of natural person verifiers by the NCA.

The verifier carries out the various activities required by the AVR to check the implementation of the MP and the data in the AO's report. Once the verifier has concluded on the verification, it issues a verification report to the AO stating whether the AO's report is verified as satisfactory or not **(arrow 6)**. Before or at the latest on the 31st of March of each year, the AO must submit the AO's report, including if applicable the non-CO_2 aviation effects report, and the corresponding verification reports[19] to the CA of the administering MS **(arrow 7)**[20].

Over the years the role of the CA as the overall responsible party for a well-functioning EU ETS compliance chain has been strengthened **(arrow 8)**. If the AO's emissions report or the AO's non-CO_2 aviation effects report is not verified as satisfactory, the CA must undertake action. An emissions report that is not verified as satisfactory, will result in a conservative estimation of the emission data and a non-CO_2 aviation effects report leads to a conservative estimation of non-CO_2 aviation effects data. In both cases enforcement action can be taken.

By 30 September of each year the AO must surrender at least the number of emission allowances equivalent to the verified reported emissions that are entered into the Registry **(arrow 9)**. Surrendering emission allowances is only required for CO_2 emissions. The surrendering of emission allowances does not mean that the roles and responsibilities of the different parties end at that point of time. The CA may carry out inspections on the AO to ensure that the operator is complying with the MRR **(arrow 10)**. Furthermore, the MRR contains requirements for AOs to improve their monitoring methodology under certain circumstances and for them to address outstanding issues that are identified by the verifier **(arrow 14)**.

In addition, **information exchange requirements** have been given in the AVR to invite and enable the CA and the NAB or NCA to exchange information between each other and to inform each other on their activities **(arrow 13)**. For example, if the CA identifies significant errors in the verified emissions report that have been missed by the verifier, this must be communicated with the NAB. If on the other hand the NAB suspends the verifier, the CA must be informed. These information exchange requirements between the various parties in the compliance chain will help each of them to carry out their own tasks more efficiently and effectively.

To ensure that NABs carry out their activities in line with the AVR and maintain the quality of accreditation so that verification also remains of a high quality, the AVR requires that the competence and performance of the NAB[21] is also monitored **(arrow 12)**. This monitoring is carried out by the MS that has appointed the NAB or the NCA. In addition, a regular and

[18] According to Article 55(2) of the AVR, Member States may decide to allow certification of natural persons planning to operate as verifiers in EU ETS. It is the prerogative of the MS whether or not to set up such a certification system in its country.

[19] The verification report related to the emissions report and the verification report related to the non-CO_2 aviation effects report.

[20] CAs may require an AO to submit the verified emissions report earlier than 31 March but by the 28th of February the earliest (Article 68 of the MRR).

[21] Or if applicable the NCA

independent peer evaluation is organised by the European co-operation for Accreditation (EA)[22] to monitor the competence and performance of the NAB. In this peer evaluation process, experts from the EA, NABs and other parties assess whether the NAB that is subject to peer evaluation meets the requirements of the AVR.

All the elements in the compliance chain mentioned above are regulated in the MRR and the AVR. Both regulations are interconnected at several points. This guidance provides an explanation of the requirements in the AVR and their interconnection with MRR on specific issues related to aviation.

2.2. Interrelation between the regulations, harmonised standards and guidance

The EU ETS Directive provides the legal basis for both the MRR and the AVR. The MRR applies to installations, AOs and regulated entities, and contains specific requirements on the monitoring and reporting of aviation activities including in particular Chapter IV, Annex I, section 2, Annex III, Annex IX and X of the MRR. The AVR is applicable to the verification of AO's emissions reports and non-CO_2 aviation effects reports and to verifiers that are carrying out the verification of such reports.

To ensure a common interpretation and application of the requirements in the regulations, two separate **suites of guidance documents** have been prepared by the European Commission: one suite of guidance documents supports the interpretation of the MRR and the other one the AVR. For information on the suite of guidance documents prepared for the MRR please see Annex V. The AVR guidance material is outlined in section 2.3.

The AVR itself is closely linked to the general framework regulation, Accreditation Regulation (EC) No. 765/2008), that regulates accreditation of conformity assessment activities. Synergy between both regulations has been created by stating in the AVR that the general requirements of AR 765/2008 apply where they are not covered by the AVR. In addition, some general provisions in AR 765/2008 have been made EU ETS specific in the AVR (e.g. competence requirements for NAB personnel).

Figure 2 below outlines the interrelation between the different regulations, standards and guidance material.

[22]The European co-operation for Accreditation (EA) is a regional body that is a member of the International Accreditation Forum (IAF). According to Article 55(4) of the AVR the NAB must be a member of the EA.

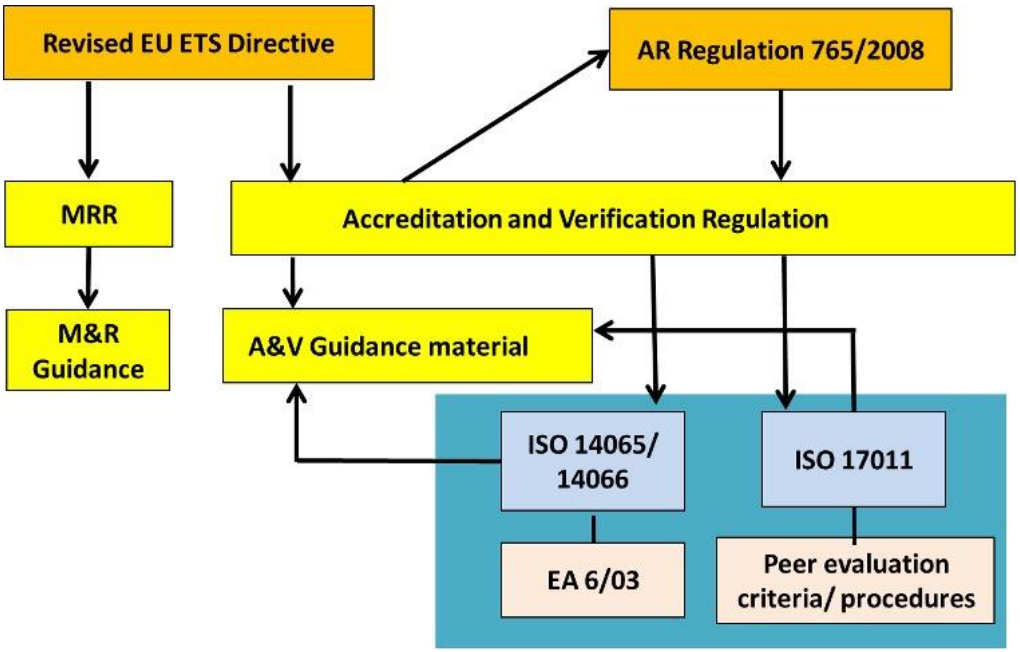


Figure 2 The legislative framework of EU ETS verification and accreditation

The AVR prescribes the application of a **harmonised standard** in the accreditation of verifiers and the assessment of their competence, i.e. EN ISO 17029 and EN ISO 14065, GHG programme neutral standards. NABs or NCAs must use these standards as well as the EU ETS specific requirements in the AVR on verification, competence, impartiality and procedures to assess the verifier's competence and performance.

Similarly, a **harmonised standard** is prescribed for the NAB, i.e. EN ISO/IEC 17011. The NAB must meet the requirements in this standard as well as the EU ETS specific requirements in the AVR. Compliance with these requirements is regularly monitored by the MS and in the peer evaluations. More detailed information on the interrelation between the AVR and both standards is outlined in:

- key guidance note on the relation between the AVR and EN ISO 14065 (KGN II.8); and
- key guidance note on the relation between the AVR and EN ISO/IEC 17011 (KGN II.9).

Besides the MRR, other legislation is relevant for the monitoring and reporting of emissions (e.g. Commission Decision on the interpretation of aviation activities, CORSIA MRV Delegated Act and EU OPS regulation). The verifier must be aware that changes in legislation may have an impact on the monitoring and reporting process and thus on the verification.

2.3. User manual to guidance documents

The **suite of guidance documents** developed by the Commission consists of several types of documents. The explanatory guidance is an overall guidance document that provides an explanation of each article in the AVR. Key guidance notes have been developed to address specific issues in verification and accreditation that require an elaborate or more specific explanation of the issue involved. **Figure 3** below summarises the different guidance documents, templates and exemplars that have been developed and how these relate to each other.

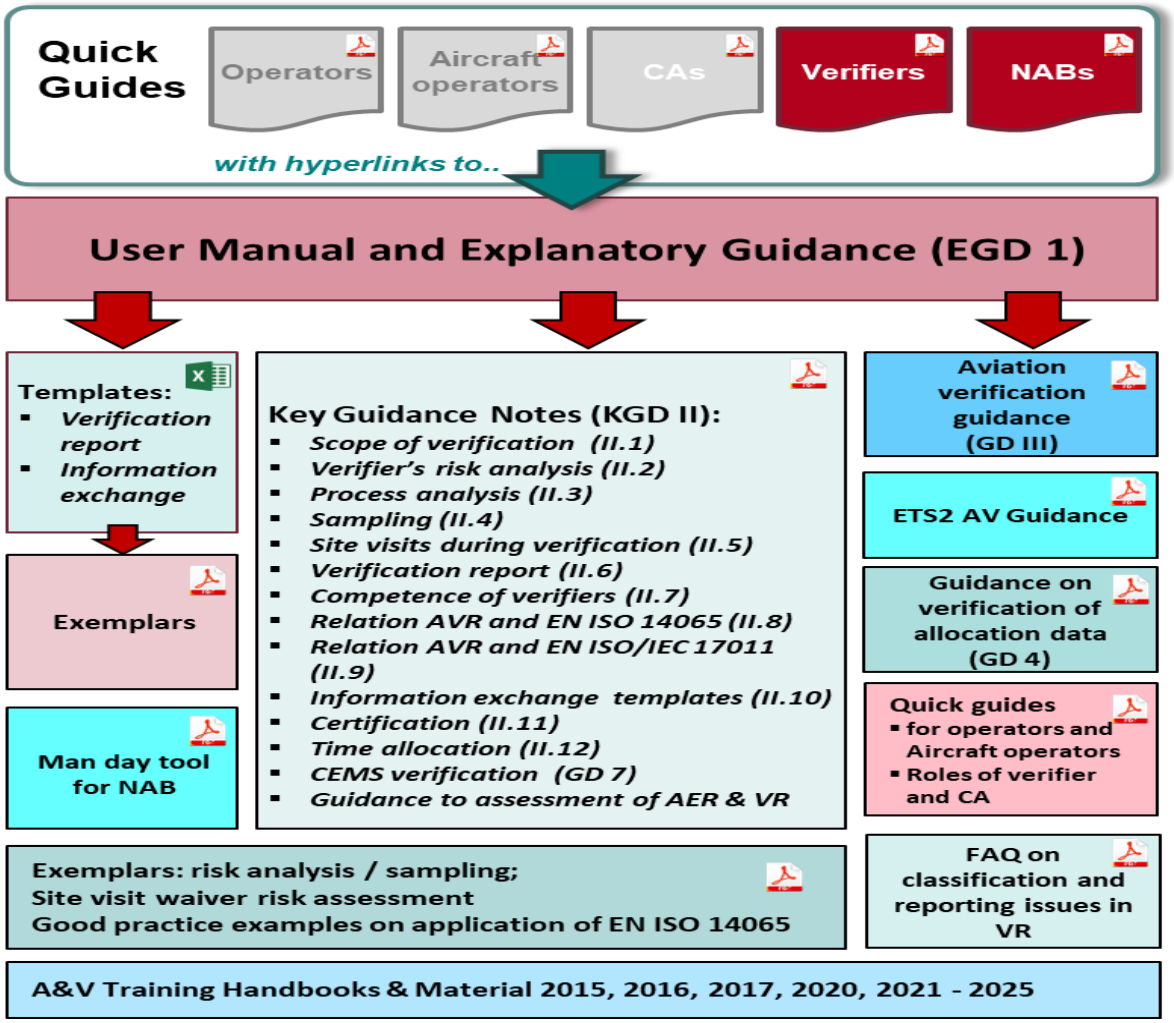


Figure 3 Suite of guidance documents supporting a common interpretation of the AVR

The following key guidance notes or parts of these notes are not applicable to EU ETS aviation:

- Section 2 and 4 of the key guidance note on process analysis (KGN II.3)
- Section 1 -3 of Key guidance note on site visits (KGN II.5)

Figure 4 shows where to find guidance or tools on a particular subject in the suite of guidance documents. An overview is presented of the Chapters II to VI of the AVR and the guidance documents that relate to these Chapters and the explanations of the various subjects that are presented in the individual key guidance notes. Annex III provides a detailed overview linking each article in the AVR to the relevant guidance material.

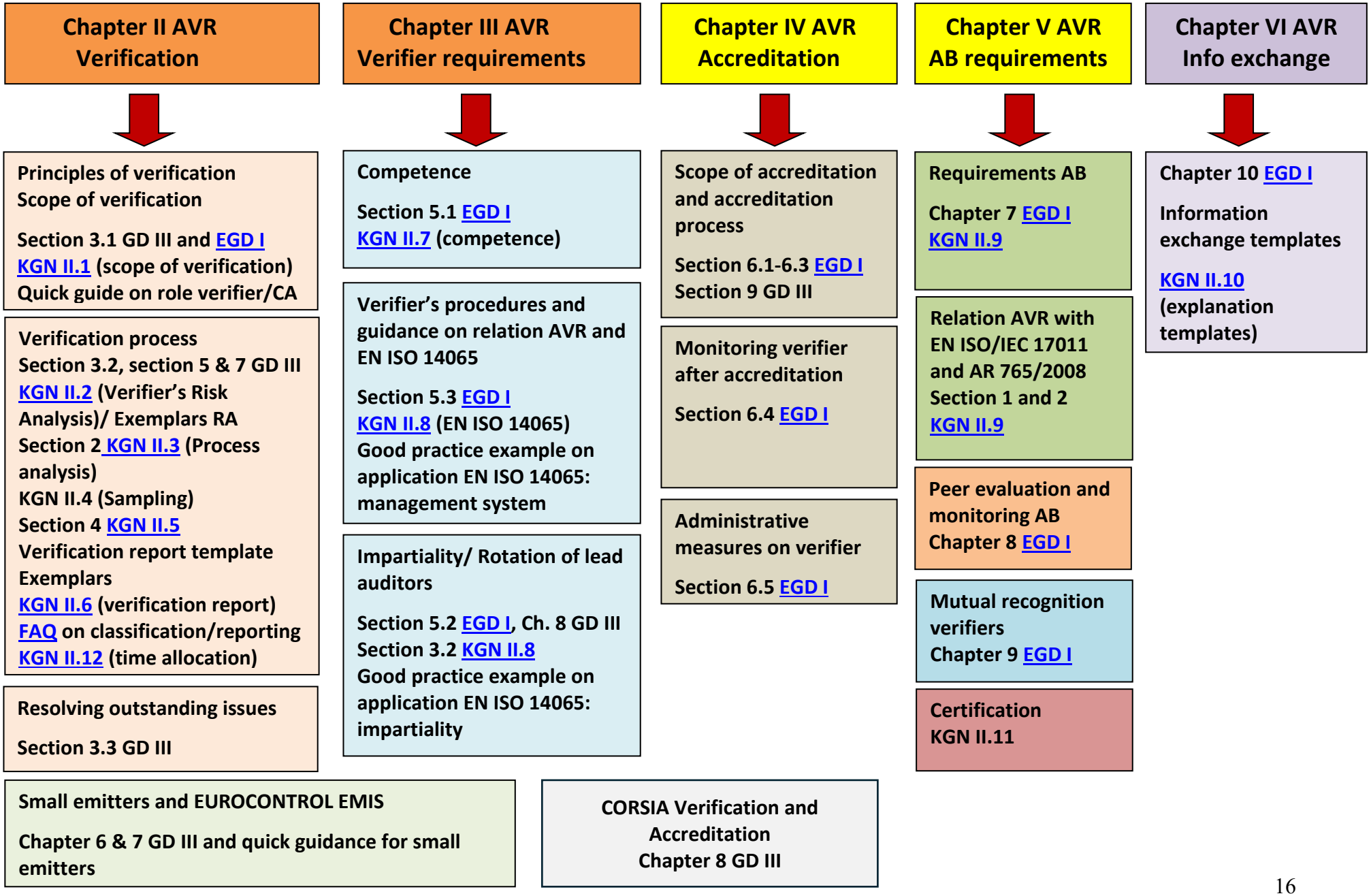


Figure 4 User manual to verification and accreditation guidance documents and templates

2.4. Scope changes in EU ETS aviation

Section 3.1 of the MRR GD2 provides more information on the scope of EU ETS aviation. The **full scope for aviation** under the EU ETS Directive covers all flights to and from a MS to which the EU Treaty applies unless exemptions in Annex I of the EU ETS Directive are applicable. In view of discussions and development of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) the EU ETS Directive was amended by Regulation (EU) 421/2014 to temporarily reduce the scope of EU ETS aviation until 31 December 2026[23] to only intra-EEA flights, flights between an EEA country and an outermost region and flights departing from an outermost region to Switzerland or the UK.[24] Section 3.1.2 of MRR GD2 provides more information.

Note:

Commercial AOs operating fewer than 243 flights per period for three consecutive four-months or operating flights with total annual emissions lower than 10,000 tonnes CO_2 per year **do not fall** under EU ETS.

Flights from very small non-commercial AO (i.e. AO emitting less than 1000 t CO_2 per year are **exempted** from the EU ETS until 31 December 2030.

These thresholds have to be evaluated on an annual basis. For applying the de-minimis thresholds and assessing whether the thresholds are exceeded, flights falling under the **extended full scope** have to be taken into account.

Please see section 3.1.1 and 3.2.2 of the MRR Guidance Document No.2 for AOs (GD2) for information on the extended full scope and how to determine whether de-minimis thresholds are exceeded.

The **linking of the EU ETS with the Swiss ETS** had further consequences for the scope of EU ETS for the aviation sector.[25] Flights from EEA to Switzerland are covered by EU ETS whereas flights from Switzerland to an EEA country are excluded from the full and reduced scope of EU ETS and included in the Swiss ETS. This means that aircraft operators carrying out flights from Geneva to Amsterdam **do not report** the emissions of these flights **under EU ETS but under the Swiss ETS**. However, when determining whether an aircraft operator exceeds the de-minimis thresholds these flights from Switzerland to an EEA aerodrome have to be taken into account. To effectively manage the administration of EU ETS and the Swiss ETS a **one-stop-shop** has been introduced. This means that aircraft operators falling under both schemes have to report both the EU ETS and Swiss ETS emissions in one combined emissions report to the CA of the country to which they are assigned.

The **Trade and Cooperation Agreement[26]** closed between the **EU and the UK** as a result of Brexit caused a further scope change. As from 1 January 2021 flights from the EEA to the UK

[23] Article 28a of Directive 2003/87/EU

[24] Flights connecting an outermost region to its own Member State's mainland, flights between different outermost regions within the same Member State and flights within the same outermost region are excluded. Flights to and from overseas territories which are not part of the EEA are excluded. See section 3.1 of MRR Guidance Document No.2 for AOs (GD2).

[25] Commission Delegated Decision (EU) 2020/1071 of 18 May 2020 amending Directive 2003/87/EC of the European Parliament and of the Council, as regards the exclusion of incoming flights from Switzerland from the EU emissions trading system

[26] Council Decision (EU) 2021/689 of 29 April 2021 on the conclusion, on behalf of the Union, of the Trade and Cooperation Agreement between the European Union and the European Atomic Energy Community, of the

remain under the scope of EU ETS, whereas flights from the UK to an EEA country are excluded and covered under the UK ETS. The same principle applies as for the flights from Switzerland to an EEA country. Aircraft operators carrying out flights from London to Amsterdam **do not report** the emissions of these flights **under EU ETS but under the UK ETS**. Flights from the UK to an EEA aerodrome do however need to be taken into account when determining whether the de-minimis threshold is exceeded. Section 3.1.1, 3.1.2 and 3.1.3 of MRR GD2 provide more information.

CORSIA introduced further changes. Commission Regulation 2025/927[27] requires EU/EEA aircraft operators to monitor and report emissions from international flights.[28] If those aircraft operators have both obligations under CORSIA and EU ETS, they will monitor and report those emissions at the same time. The Commission has provided a monitoring template and an emissions report which can be used simultaneously for the EU ETS and CORSIA (if applicable) to minimise administrative burden.

Aircraft operators below the de-minimis thresholds are excluded from CORSIA reporting obligations: i.e. aircraft operators producing less than 10,000 tonnes of CO_2 from the use of aeroplanes with a maximum certified take-off measure greater than 5700 kg. Section 3.1.5 MRR GD2 explains which flights are covered by CORSIA.

For the **monitoring and reporting of non-CO_2 aviation effects** the **full scope** applies but for the years **2025 and 2026** an AO can choose between the full geographical scope (flight to and from the EEA and intra-EEA flights), the reduced scope (intra-EEA flights) or the scope where only some of the extra-EEA flights are included on top of intra-EEA flights). The approved monitoring plan indicates what scope is applied by the AO for these years. Unlike CO_2 reporting domestic flights departing from or arriving at an outermost region are included in the reduced scope for non-CO_2 in 2025 and 2026. Under the CO_2 reporting obligation these are exempted. Flights from the UK to EEA and from Switzerland to the EEA are excluded from EU ETS. From 2027 onwards, all flights from and to EEA (with flights to and from outermost regions) are covered in the scope.

The verifier should be aware of these changes in scope and read the MRR GD2 as the scope of flights affects the completeness checks of the verifiers on the emissions report. Chapter 5 and 7 contain more information on what to consider when checking the completeness of flights.

2.5. What is new in the revised AVR and how does this impact the guidance?

The MRR and AVR were revised in 2018, in 2020 for phase IV and again in 2024 and 2025 to accommodate revisions in the Directive. Further amendments were made in the EU ETS

one part, and the United Kingdom of Great Britain and Northern Ireland, of the other part, and of the Agreement between the European Union and the United Kingdom of Great Britain and Northern Ireland concerning security procedures for exchanging and protecting classified information (OJ L 149, 30.04.2021, p.2).

[27] Commission Delegated Regulation (EU) 2025/927 of 20 May 2025 supplementing Directive 2003/87/EC of the European Parliament and of the Council as regards measures adopted by the International Civil Aviation Organization for the monitoring, reporting and verification of aviation emissions for the purpose of implementing a global market-based measure and repealing Commission Delegated Regulation (EU) 2019/1603, OJ L, 2025/927, ELI: http://data.europa.eu/eli/reg_del/2025/927/oj.

[28] Flights listed in Annex I of the EU ETS Directive and flights which depart from or arrive in an aerodrome situated in one of the overseas countries and territories listed in Annex II to the Treaty on the Functioning of the European Union.

Directive because of Swiss Linking and CORSIA. The table below summarises the key revisions that were made in 2024 and 2025 and how this impacted the suite of guidance documents.

Table 1 Key revisions in legislation and impact on AV guidance

Key revisions in legislation	Where to find new guidance?
According to Article 28a (6) of the EU ETS Directive **no verification** of annual emissions is required for AO that ▪ have total annual emissions lower than 25,000 tonnes of CO_2 (based on the full scope of EU ETS); or ▪ have total annual emission lower than 3000 tonnes of CO_2 (based on the reduced scope of EU ETS) if the emissions report of these AOs is automatically generated from the EUROCONTROL EMIS.	More information can be found in Chapter 6 and 7 of this guidance
Virtual site visits are allowed in two situations: ▪ in the case of a force majeure circumstance and conditions in Article 34a of the AVR have been met; ▪ if conditions in Article 34b of the AVR have been met.	Section 3.2.7 of this guide and section 4 of KGN II.5 provides guidance on when and how to carry out virtual site visits
New requirements were included on **alternative aviation fuels and eligible aviation fuels** in Article 53 to 54c MRR. As a result, Article 17 (6) of the AVR was introduced in the AVR.	More guidance on alternative and eligible aviation fuels can be found in section 5.12, 5.13 and 5.14 of this guidance.
New requirements were included in the MRR on **zero-rating and non-zero rating** biofuels, renewable fuels of non-biological origin (RFNBO)/ recycled carbon fuels (RCF) and synthetic low carbon fuels (SLCF). As a result, Article 17(6) of the AVR specifies the role of the verifier in assessing the AO's evidence of compliance with sustainability and greenhouse gas criteria.	More guidance on the verifier's role in assessing zero rated biofuels, RFNBO/RCF and SLCF and checking the evidence of compliance with sustainability and greenhouse gas savings criteria is included in section 5.13, 5.14 and Annex V of this guide.
Article 14(5) of the EU ETS Directive and the MRR introduced the requirements for AO to monitor and report **non-CO_2 aviation effects**. The AVR was amended in 2025 to regulate verification of non-CO_2 aviation effects reports.	More guidance on verification of non-CO_2 aviation effects can be found throughout this guide and in particular in Chapter 7, 9 and 10. Examples of competence criteria are provided in Annex VI of this guidance.
CORSIA Regulation (EU) 2025/927 was adopted which defines the scope of **CORSIA** and MRV requirements for AOs. This Regulation also implements requirements on CORSIA eligible fuels (CEF) and Emissions Unit Cancellation	Chapter 8 explains the verifier's role in assessing CORSIA emissions, CORSIA eligible fuels and emissions units cancellation reports. KGN II.7 provides examples of specific competence criteria for the verification of

Key revisions in legislation	Where to find new guidance?
Report (EUCR). This Cancellation report is a report in which the AO specifies the cancellation of carbon offset credits (emissions units) to meet their obligations under CORSIA, proving AO have offset their required emissions and avoided double-counting by publishing details in a registry. The verification of CORSIA emissions reports is regulated by the AVR. Regulation 2025/927 contains requirements on the verifier's assessment of CORSIA eligible fuels and the verification of cancellation reports.	CORSIA emissions, CORSIA eligible fuels and the cancellation reports.

3 Verification

The **objective of verification** is to ensure that emissions or non-CO_2 aviation effects have been monitored in accordance with the MRR and that reliable and correct emissions data or non-CO_2 aviation effects are being reported. This objective is underpinned by general verification principles and obligations laid down in Articles 6 and 7 of the AVR. The same principles apply to the verification of AO reports as to installations. Please see section 3.1.1 to 3.1.5 of the Explanatory Guidance (EGD I) for more information. Of particular relevance is Section 3.1.4 of that guidance which explains the required level of assurance for EU ETS verification for AO and installations.

3.1. Scope of verification

The scope of verification is defined by the tasks the verifier must perform to achieve the objective of verification: i.e. to ensure that the emissions have been monitored in accordance with the MRR and that reliable and correct emission data are reported. The verifier shall take the MP approved by the CA of the administering Member State as the starting point to assess whether the emissions reports are free from material misstatements. The key guidance note on the scope of verification (KGN II.1) provides detailed guidance on:

Art. 7(4) (5) (6) AVR

- what elements the verifier needs to assess during the verification;
- what the verifier must do if there is no approved MP, if the MP has not been updated or if the MP does not reflect the actual situation of the AO; and
- what a verifier must do if it has identified non-compliance with the MRR.

The same principles apply to the scope of **verification of non-CO_2 aviation effects.** The approved monitoring plan is taken as a starting point to assess whether the non-CO_2 aviation effects report is free from material misstatement. However, the verifier will do additional checks on reported data and report in the verification report any identified non-compliance with the MRR.

Non CO_2

3.2. Verification process

The verification process consists of a number of **interconnected and interdependent mandatory steps**. This means that findings during the verification process can result in the need to reconsider one or more steps taken earlier in the verification process and subsequently adjust those steps. The steps in the verification process outlined in the AVR are sketched in the following **Figure 5:**

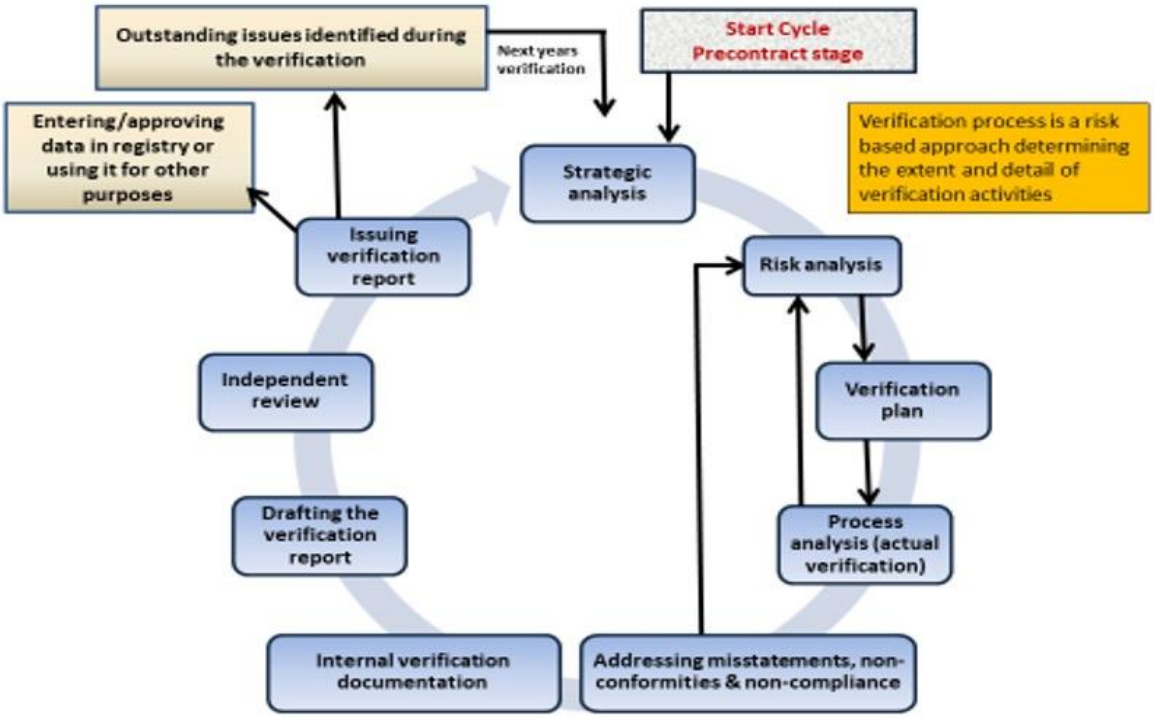


Figure 5 Steps in the verification process

Art. 68 MRR 27(2) AVR

Before or at the latest on 31 March[29] each year, the AO has to submit the verified emissions report, including the non-CO_2 aviation effects reports, together with their corresponding verification reports to the CA. In order for this deadline to be met, it is important for AOs to **start** the process of reporting and for the verifier to start the verification **early** to avoid last minute changes and the writing of the verification report late in February and March when significant demands on AOs, verifiers and the CA could delay the production of the final AO's report and the corresponding verification reports.

It is further recommended that the **verification process starts** during the year being reported on, rather than after the year has ended, as this facilitates checking of conformance and compliance, the timely management of issues and addressing possible data gaps, misstatements or non-conformities identified during the verification. However, sufficient data is needed to initiate the process, and any subsequent changes to the AO's systems must be considered well in time for the verified report to be submitted by 31st March[30]. By the end of the verification the data for the whole reporting year must be verified. Annex I provides a diagram of the stages and actions involved in the verification against this proposed timeline. The timeline applies to verification of emissions reports and non-CO_2 aviation effects reports.

Although the steps outlined in Figure 5 can be combined for the verification of the emission data and verification non-CO_2 aviation effects reports it is important to note that **elements that are specific to emissions or non-CO_2 aviation effects** should be **taken into account in all the steps** if the verifier verifies both reports concurrently. For example, a generic risk analysis would not be sufficient to identify the risks with respect to monitoring emissions and non-CO_2 aviation effects specifically. Please also note that

[29] CAs may require an AO to submit the verified emissions report earlier than 31 March but by the 28th February at the earliest (Article 68 of the MRR).

[30] See footnote 34.

separate verification opinion statements are needed for the verification of emissions reports and non-CO_2 aviation effects reports.

3.2.1. Pre-contract stage

The pre-contract stage is a most important initial phase that precedes the verification process. Before accepting the verification engagement and signing the contract with the AO the verifier shall assess whether it can undertake the verification for that specific AO. This involves the verifier undertaking the following activities:

Table 2 Pre-contract stage

AVR requirement	Clarification
Article 8(1) (a)	Evaluate the **risks involved in undertaking the verification** for the particular AO. The verifier should, in particular, consider: ▪ the AO's MP and the AO's report to see what risks are involved in undertaking the verification engagement; ▪ potential risks to impartiality and independence of the verifier; ▪ risks involved in terms of time allocated to the verification engagement. This evaluation should be fully documented in the internal verification documentation and should show how the verifier has addressed these business risks in the contract with the AO, as well as how these risks have been mitigated: e.g. by allocating, if needed, more time to the particular verification engagement, or by developing clear and transparent conditions in the contract.
Article 8(1) (b)	Undertake a **review of the information** supplied by the AO. The AVR requires the AO to provide the verifier with relevant information to enable it to perform the activities of the pre-contract stage. Relevant information includes, for example, last year's AO's report, the AO's MP and an indication whether access will be provided to relevant EUROCONTROL data[31]. For the verification of CO_2 emissions, whether alternative aviation fuels or CORSIA eligible fuels are used. This affects the type of information needed for the verification. For the verification of **non-CO2 aviation effects report** additional information needs to be provided on whether NEATS, a third-party IT tool approved by the Commission or a combination of these tools is used to generate the AO's report and whether the AO uses some of their own primary data sources.
Article 8(1) (c)	Assess whether the verification of that AO's report falls within the verifier's **scope of accreditation**. The verifier is only allowed to issue a verification report to an AO if it is accredited for aviation activities. For further information on the scope of accreditation please see Chapter 10. Please also note that if the aircraft operator is subject to CORSIA, the verifier needs to have an additional accreditation scope. Please see Chapter 8 of this guide. For the verification of non-CO_2 aviation effects report a specific scope of accreditation may be necessary. Please see Chapter 10 of this guide.

Art. 8(2) AVR

Non CO_2

CORSIA

[31] The AO and the verifier may want to conclude a non-disclosure agreement to facilitate the exchange of documents during this phase.

AVR requirement	Clarification
Article 8(1) (d) and (e)	Assess whether it has the **competence, personnel and resources required** to select a verification team for this specific verification engagement and to complete the verification activities successfully within the timeframe required. This assessment is highly dependent on the type of AO and the type of AO's activities. If the AO uses alternative aviation fuels, eligible aviation fuels or CORSIA eligible fuels, it affects the competence of the verification team. The same applies when the verifier is verifying non-CO_2 aviation effects. For the verification of non-CO_2 aviation effects report additional competence may be necessary. Please see Chapter 9 and Annex IV of this guide. For each particular verification engagement[32] the verifier will select a **verification team** and check whether the composition of that team holds all the competence required by the AVR. Such an assessment could result in the addition of technical experts or EU ETS auditors to the team as well as the addition of back-up personnel. More information on competence and verification team requirements is provided in section 5.1 of the Explanatory Guidance (EGD I) and the key guidance note on competence (KGN II.7).
Article 8(1) (d) and (f)	Determine the **time allocation** needed to properly carry out the verification. The verifier should ensure that the scope of the verification work and the time allocated in the contract is consistent with the risks identified. Insufficient contracted time may not be used to reduce the work needed to satisfactorily complete the verification in line with its risks.

Time allocation

When determining the necessary time allocation for a specific verification engagement the verifier has to take **certain factors** into account such as the extent of an AO's activities, the complexity of the AO's activities and fleet, the complexity of the MP and the monitoring methodology, the applicable materiality threshold, the AO's data flow activities and its internal control system (QA/QC procedures) and the location of information and data related to the emissions or non-CO_2 aviation effects.

Art. 9(1) AVR

Depending on the type and size of the aircraft operation, the verifier will focus on the particularities and characteristics of these elements. In particular the risks associated with multiple locations for records and monitoring methodology and the large data sets have an impact on the time to be allocated. Elements specific to the AO (e.g. holiday charter, number of aircraft, type of flights, method applied for determining fuel consumption etc.) will enable the verifier to make a time allocation.

The **time allocated is not a fixed number**. If during the detailed verification the verifier finds that additional time is needed to properly carry out the necessary verification activities, the time allocation in the contract must be adjusted accordingly. The contract must have a provision for this adjustment. The method used to allocate time should be documented in a transparent way in the internal verification documentation to enable the NAB to assess this method during surveillance.

Art. 9(2) AVR

[32] CO_2 verification or verification of non-CO_2 aviation effects.

3.2.2. Information provided by the AO

The AO must provide the verifier with sufficient information so that it can plan and carry out the verification. The AVR outlines which information needs to be submitted before the verifier can start with its strategic analysis and at other points of time during the verification. For more information, please see section 3.2.2 of the Explanatory Guidance (EGD 1).

Art. 10(1) AVR

Additional information sources

If the AO uses **alternative aviation fuels and eligible aviation fuels**, additional information is needed so that the verifier can perform its checks. This includes for example documentation on the quantities of fuel, proof of sustainability or if applicable proof of compliance. In addition, the verifier needs access to the Union data base if applicable or certificates if the AO demonstrates compliance of biofuel with REDII criteria through voluntary schemes recognised by the Commission. Please see for the type of evidence Annex V of this guidance.

If the AO uses **CORSIA eligible fuels**, additional information is needed on fuel purchase records, product transfer documents, transaction reports and fuel blending records, proof of sustainability, certificates, evidence that no double claiming occurred. See Chapter 8 of this guidance.

CORSIA

For **non-CO_2 aviation effects** additional information is needed:

- Access to NEATS and third-party tools approved by Commissions
- Relevant data related to primary source data inputs that are monitored by the aircraft operator and used for the calculation of CO_{2e} per flight
- Control activities and procedures applicable to the monitoring and reporting of non-CO_2 aviation effects

Non CO_2

3.2.3. Strategic analysis

At the start of verification the verifier shall carry out a strategic analysis of all relevant activities of the AO. This analysis enables the verifier to understand the AO's activities and assess the likely nature, scale and complexity of the verification activities to be performed. It also provides input for the next verification step, i.e. the risk analysis. The **objective of the strategic analysis** is to obtain an understanding of the AO's business and accounting activities: as a minimum the elements in Article 11(3) of the AVR must be considered. **For the verification of emissions and non-CO_2 aviation effects different inputs are relevant.** The examples in Annex IV give an indication of the possible factors and aviation specific inputs that could be relevant when considering these elements.

Art. 11(2) AVR

Art. 11(3) AVR

To obtain an understanding of the elements mentioned in Article 11(3) of the AVR, the verifier shall collect and review the information mentioned in Article 10(1) and consider the applicable materiality level according to Article 23 of the AVR. The verifier should also look into the website of the company and other relevant information.

If the verifier has carried out the prior year(s) verifications for the same AO, the information from those earlier verification(s) must be considered by the verifier. Major deviations compared to previous verifications should attract particular attention from the verifier. Although the strategic analysis will take less time in a situation where, because of earlier verifications, the verifier is already familiar with the AO: this does not negate the verifier from carrying out that analysis for the present verification engagement.

As part of the strategic analysis the verifier shall check:

Art. 11(4) AVR

- whether the MP has been approved[33];
- whether changes have occurred to the MP and whether these changes have been approved by the CA (if these changes to the MP are significant according to Article 15 of the MRR);
- if these changes are not significant or are temporary, whether these have been notified to the CA.

Section 6.5.1 of the MRR GD2 explains what constitutes a **significant change to the MP**. During these checks the verifier assesses whether the MP is up to date and complete. If (part of) the MP is not approved or if significant changes to the MP have not been approved by the CA, the verifier directs the AO to the CA to rectify the situation. In principle the verifier should not continue the verification until such approval has been obtained. This is for example the case if a new fuel has been introduced or if there is a change between the Method A or B for calculating the fuel consumption.

Art. 7(6) AVR

However, in some cases the verifier may continue to carry out the verification activities so long as the AO is fully aware that some activities may need to be repeated based on the final response of the CA and also that the response could impact the opinion of the verifier as the verification progresses. Following approval by the CA, the AVR requires that the verifier continues, repeats or adapts the verification activities. The key guidance note on the scope of verification (KGN II.1) provides guidance on procedures to be followed when approval from the CA cannot be obtained.

3.2.4. Risk analysis

Art. 12 AVR

The verifier must assess the risks of misstatements and non-conformities and the likelihood of a material effect on the reported data. The **outcome of the risk analysis** determines how and to what extent the verification activities should be designed, planned and implemented. The risk analysis centres on identifying, assessing and quantifying two types of risks, i.e. inherent risks and control risks. Together with the detection risk, these risks form the overall verification risk: i.e. the risk that the verifier issues an inappropriate verification opinion.

If alternative aviation fuels, including eligible aviation fuels and/ or CORSIA eligible fuels are used by the AO, the inherent and control risks increase which will have an effect on the detection risk and verification risk. Please see the key guidance note on risk analysis for more information on the relation between inherent/control risks and detection risks and verification risks (KGN II.2).

The risk analysis is an **iterative process** and must be changed if the detailed verification in the process analysis shows that the risks are higher or lower than initially assessed. In that case the verification plan also needs to be updated. This means that as the verification proceeds, verification activities may need to be continually adjusted to meet the requirements for achieving reasonable assurance.

Different risks and control activities are involved in the **verification of non-CO_2 aviation effects data** compared to the verification of emission data. Both verifier's and AO's risk analysis shall therefore focus not only on the inherent and control risks related to the

[33] In some cases, the CA's MP approval decision may include certain specific requirements and conditions. The verifier must take that information into account when carrying out the strategic analysis.

annual emissions, but also make a separate analysis of the risks related to the non-CO_2 aviation effects reported data.

3.2.5. Verification plan

The risk analysis determines how the verifier sets up the verification plan which consists of **three elements**:

Art. 13 AVR

- a verification programme[34] describing the nature and scope of the verification activities as well as the time and manner in which these activities are to be carried out. It involves also a planning of all activities;
- a test plan setting out the scope and methods of testing of control activities and procedures for control activities;
- a data sampling plan setting out the scope and methods of data sampling related to data points underlying the aggregated emissions, in order that the data can be tested for validity.

The verification plan includes information on additional tests and samples to be taken. As part of the verification programme the verification plan includes:

- information on site visit(s) including a description of what activities will be performed on-site and what activities off-site, as well as information on the systems and processes to be checked and interviews to be performed;
- the way the verifier plans to check the completeness of flights and aircraft.

Please see the key guidance note on risk analysis (KGN II.2) for information on how the risk analysis impacts on the set-up of the verification plan. If the actual verification shows that the verification plan is not sufficient and additional risks are identified, the verification plan and the verification activities need to be adapted or expanded; it is therefore a living document to be updated as necessary.

3.2.6. Process analysis (detailed verification)

The objective of this stage in the verification is to collect and document detailed **evidence** upon which the verifier can base its verification opinion. During the process analysis the verifier must implement the verification plan[35] and carry out the activities listed in Article 14 of the AVR.

Art. 14 AVR

[34] The verification programme is not just an agenda for the site visit but should provide sufficient detail of planned tests and activities to inform the team members what activities should be carried out.

[35] The verifier will use standard auditing techniques of document review, interview, observation and corroboration as well as using data from external sources where relevant information is available. This includes walkthrough tests, sampling and analytical review as well as data review procedures.

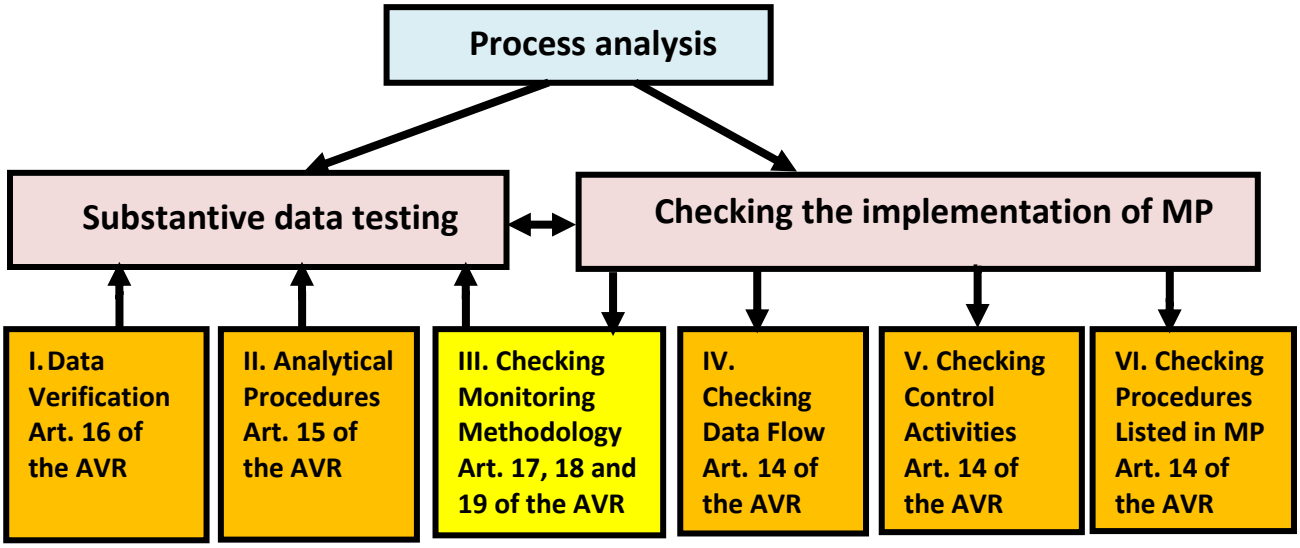


Figure 6 Schematic diagram of activities in process analysis

Part of the process analysis is **substantive data testing. This is detailed data testing and** includes for the monitoring and reporting of emissions the elements in the table below. For the monitoring and reporting of non-CO_2 aviation effects please see section 7.3.

Table 3 Substantive data testing

Activity	Explanation	
I. Data verification	**Data verification** is carried out through applying several methods of testing such as tracing the data back to the primary data source, cross-checking with internal and external data sources, carrying out recalculation of parts of the overall emissions calculation to check certain subsets and elements (e.g. that factors are correctly calculated from source data). **Data verification** includes for example checking primary source data and comparing these sources to data in the central system[36]: ▪ cross-checking fuel uplift data and density data with fuel slips; ▪ checking data that are directly input into the system: e.g. type of flight, aerodrome pairs; ▪ checking the completeness of ETS flights and making sure non-ETS flights are filtered out; ▪ checking whether emissions from EU ETS flights and Swiss ETS flights are correctly attributed and complete; ▪ checking whether emissions from UK ETS flights are excluded from EU ETS flights. ▪ Checking whether CORSIA flights are correctly attributed and complete. **Data verification** includes also analysing data which means among other things: ▪ analysis of data based on single flights in order to come to final emission data: e.g. average fuel density at single airports, minimum, average and maximum fuel consumption for individual aircraft types, analysis of discrepancies that cannot be satisfactorily explained by the AO;	**Art. 16 AVR**

[36] The verifier also checks the central system itself, e.g. the management of the system, the person who is responsible for modifying the data, whether the data are locked and required IT standards are met.

Activity	Explanation	
	▪ checking how emissions determined by using a data gap approach relate to actual reported emissions; ▪ cross-check with the EUROCONTROL data from the EUROCONTROL EMIS and other EUROCONTROL data; ▪ cross-check of fuel consumption (for all flights including non-ETS flights) with total fuel consumption from other sources. **Data verification** also involves the process of extraction of the emissions report from the internal system(s) or collecting/ manipulating the data for the actual drafting of the emissions report .	
II. Analytical procedures	**Analytical procedures** mean an analysis of fluctuation and trends in the data including an analysis of relationships that are inconsistent with other relevant information or that deviate from predicted amounts. This could involve for example comparisons of emissions from the same sources over a period of several years, analysing anticipated emission data, investigation of whether the reported figures can be confirmed by other analytical means. **Analytical procedures** include for example comparison of primary data sources with data in the central system: e.g. ▪ aircraft data (leased and owned), aerodrome pairs, start and destination of flight, dates of flights; ▪ comparison with technical log data (including unusual destinations and diverted flights); ▪ comparison of data with technical log and flight plan to identify anomalies; ▪ comparison with primary source data, ACARS or technical log, fuel uplift and density to check the fuel level for emissions.	**Art. 15 AVR**
III. Checking the correct application of the monitoring methodology	Checking the **correct application of the monitoring methodology** involves for example using spread sheet assurance techniques, recalculating the reported data, or inserting different input data in the calculation spread sheet/ database to check its correct application (re-performance of data aggregation). It concerns for example checking whether: ▪ the method to determine density as mentioned in the MP is applied correctly; ▪ Method A or B has been applied correctly; ▪ the APU has been taken into account; ▪ the approach to data gaps is conservative and does not lead to material misstatements. ▪ AIP data is used in the calculation of distance etc. ▪ Checking the accuracy of the amount of emission reductions and calculation of emission reductions (in the case of CORSIA eligible fuels) and confirming certification of an entity in the supply chain that issued proof of sustainability (see section 8.2) ▪ Checking proof of sustainability or if applicable proof of compliance when alternative aviation fuels or eligible aviation fuels are used (see section 5.13 and 5.14).	**Art. 17 AVR**

Checking implementation of the MP entails the following activities:

Table 4 Checking the implementation of the monitoring plan

Activity	Explanation	
IV. Checking the data flow by tracing the reported data back to its primary source	When checking the **data flow and processes** the verifier carries out interviews with persons responsible for elements of the EU ETS specific data flow activities and understanding the data flow and processes that are EU ETS specific. The verifier will also interview persons that are responsible for internal audit procedures for EU ETS processes (which may be part of other audit activities e.g. Sarbanes Oxley or ETS specific audits). Next the verifier will track the data flow and the systems in the data flow (e.g. input ACARS in central IT systems, input of technical log into central system(s), interface between the central database and fuel management, filtering data from the databases as well as further preparation and extraction of the emissions report from the internal system). For small emitters the data flow and processes can be easily checked especially if the EUROCONTROL EMIS is used to generate an emissions report (see Chapter 1 of this guidance). 	**Art. 14(a) AVR**
V. Checking that the control activities are appropriately documented, implemented, maintained and effective to mitigate the inherent risks	Testing **control activities** is carried out through: ▪ documentation review; ▪ interviews with persons responsible for implementing and maintaining these control activities; ▪ observing or inspecting (seeing how the persons responsible carry out the control activities). The verifier assesses the robustness of the control activities. This includes cross-checks and plausibility checks, checks on outsourced processes (activities performed by third parties), access controls, IT controls, checks on aircraft and flight data input into central system(s), checks on how the AO carries out control activities to ensure completeness of flights, filtering out non ETS flights, ensuring that the overall uncertainty related to the fuel consumption is not exceeded, service level agreements with ground handling agents, cross-checking with EUROCONTROL data, etc. For more information, please see Chapter 4 of this guidance.	**Art. 14(b) AVR**
VI. Checking the procedures listed in the MP	The MRR requires the AO to implement procedures as mentioned in, for example, section 6.2 of the MRR GD 2. The **verifier must check that these procedures:** ▪ are present and properly documented and maintained; ▪ reflect the information listed in the summary of the procedures in the approved MP; ▪ have been correctly implemented and are up to date; ▪ are applied throughout the year; ▪ are effective to mitigate the inherent and control risks.	**Art. 14(c) AVR**
VII. Checking the correct implementation of the	The verifier must assess whether all elements in the MP have been **correctly** applied and whether the MP is up to date. This also includes checking supporting documentation such as information used to calculate the uncertainty assessment.	

Activity	Explanation
monitoring methodology	

Figure 6 shows that substantive data testing and checking of the MP's implementation is interlinked (e.g. checking the monitoring methodology is part of both activities). More guidance on the different tests involved, their impact and clarification in the form of examples is provided in the key guidance note on process analysis (KGN II.3).

Sampling

Art. 20 AVR

For the different checks under data verification and analytical procedures as well as the checks on control activities and procedures listed in the MP, sampling of the actual data related to emissions reporting can be applied provided that it is specific to the AO. The use of a sampling technique or method must be justified based on the risk analysis.

A key element of sampling is that the selection is **representative** of the overall population set in terms of the factors/types of items[37] sampled and the time periods when samples are selected from across the reporting year[38]. The testing of control activities includes checks on whether the approved MP has been implemented and whether the control activities are effective (e.g. cross-checks with EUROCONTROL data, cross-checks between fuel consumption measured by on-board measurements and fuel slips, service level agreements with ground handling agents). For information on how to test manual and automatic control activities please see Chapter 4 of this guidance. With respect to testing manual control activities the magnitude of the test depends on certain factors. Please see the key guidance note on sampling (KGN II.4).

Data sampling relates to the checks on the data and information stream to ensure the accuracy of the data in the emissions report. Data sampling is allowed within the records of emissions from aircraft and flights. This means that the verifier does not have to go to each aircraft to carry out sampling provided that the sample selected (according to the verifier's risk analysis) is representative of the whole set.

More information on sampling is to be found in the key guidance note on sampling (KGN II.4) which explains:

- the principles of sampling;
- how the identification of a misstatement, error or a non-conformity may affect the sampling (e.g. adaptation of the sample size or part of the data population to be sampled);
- what factors play a role in the sampling technique and sample size (an explanation of Article 13(2) and (3) of the AVR);
- examples of different sampling methods.

[37] Data or control activities

[38] Statistical sampling may not always be possible.

Note on sampling in the case of alternative aviation fuels, including eligible aviation fuels, and CORSIA eligible fuels

When checking the operator's evidence of compliance with REDII criteria and checking proof of sustainability or if applicable proof of compliance, the verifier should not carry out sampling.

Sampling should also not be applied when assessing CORSIA eligible fuels or checking cancellation of CORSIA emission units (see section 8.2 and 8.3).

Assessing uncertainty and data gaps

As part of checking the monitoring methodology the verifier checks the reasonableness of methods used to backfill for missing data as well as the validity of the information used to calculate the uncertainty levels as set out in the approved MP. Please see section 5.8 and 5.15 of this guidance.

Art. 18, 19 AVR

Other activities during the process analysis

During the process analysis the verifier assesses the likely material impact that misstatements and non-conformities identified have on reported data (in relation to the overall declared emissions in the report subject to verification). It will then require the AO to correct them where possible (or justify where deemed not possible). Please see section 3.2.8 and 3.2.9 for more information. The process analysis is completed when all activities described in the verification plan (as updated) have been carried out.

3.2.7. Site visit

The verifier must carry out site visits to the AO at one or more appropriate times during the verification. In general site visits are necessary to gather **sufficient evidence** to conclude with reasonable assurance that the AO's emissions report is free from material misstatements. **Activities during site visits** include:

Art. 21 AVR

- interviewing staff, reviewing documents and assessing AO's procedures in practice;
- checking the boundaries of the AO's activities and the data flow;
- actual testing of the control activities and assessing the application of procedures mentioned in the approved MP;
- obtaining physical evidence through assessment of monitoring systems and processes and reviewing relevant documentation and records.

The **verifier's risk analysis** is the determining factor in the selection, planning and organisation of site visit(s), basically determining the number of site visits to be conducted and the activities to be carried out during the site visit(s). If the risk analysis or the process analysis indicates questions or problems that can only be solved by a second or further visit, the verifier shall conduct such a visit to resolve the matter.

For EU ETS aviation the **definition of site** is provided in the AVR. Site visits for AOs relate to where the monitoring process is defined and managed including where relevant data, information and records are controlled and stored. This means that a site visit does not necessarily entail a visit to each and every aircraft or various aerodromes. Following the sequence and interaction of the data flow activities, testing the control activities can also be carried out by the verifier at the office of the aircraft operator where the relevant (electronic) databases and procedures for quality assurance and control activities are located.

Art. 3(14) AVR

In some cases, the necessary databases and procedures can be accessed **remotely** from the verifier's desk top. This includes the main cross-check with EUROCONTROL data on flights to assess the completeness of flights (see Chapter 5 and 6 of this guidance). In those cases, the relevant electronic databases, procedures and EUROCONTROL EMIS constitute the site and an actual physical visit to the different AO's locations, aerodromes and aircraft to assess the data captured in these databases and procedures may not be necessary. **However, some conditions have to be met:**

- the head office is visited to, for example, interview staff and assess control activities;
- the verifier's risk analysis shows that such remote access is justified;
- the AO can demonstrate to the verifier that the AO has a sufficiently robust internal control system in place for the monitoring and reporting process, such that reliance can be placed upon that system and that the risks of misstatements or non-conformities are mitigated to the level required for reasonable assurance. The verifier can take this into account in its risk analysis. If the verifier is confident from its risk analysis that the verification risk is sufficiently low, it can access the necessary databases and procedures remotely from the verifier's desk top;
- the justification for remotely accessing the databases and procedures must be recorded in the internal verification documentation and noted in the verification report.

For **small emitters**, guidance on site visits is given in Chapter 6 of this guidance.

Remote access to databases is different than the **virtual site visit**s that are allowed under **Article 34a of the AVR in the case of force majeure**. In such a case a physical site visit to the office of the aircraft operator does not have to be carried out provided the conditions in Article 34a of the AVR have been met.

Art. 34a AVR

In the 2024 AVR revisions the requirements on **virtual site visits have been relaxed**. Verifiers can also carry out virtual site visits if the following conditions have been met:

Art. 34b AVR

- if a virtual site visit is justified based on the verifier's risk analysis. This analysis should include an assessment of the risks that can occur when carrying out virtual site visits instead of physical site visits (e.g. risks that a verifier does not spot any misstatements, non-conformities or non-compliance without physical site visits);
- all relevant data can be remotely accessed by the verifier;
- the verifier shall take measures to reduce the verification risk to an acceptable level to obtain reasonable assurance that the AO's report is free from material misstatements. Such measures include for example formal procedures describing and documenting the approaches and IT tools that are used for such virtual site visits, additional planning to carry out virtual site visits, additional expertise to manage the IT tools, measures to ensure information security and confidentiality of the data.

A physical site visit is necessary in one of the following cases:

- when the AO's report is verified for the first time by the verifier;
- a verifier has not carried out a physical site visits in two immediately preceding years;

- there have been significant modifications to the monitoring plan;[39]
- in the previous reporting period, the compliance status figure in the Union Registry is other than symbol A. This is the case when insufficient allowances were surrendered covering the reported emissions or when the verified report was not submitted in time. For small emitters this last condition is not applicable. Section 4 of KGN II.5 on site visits provides further information.

The same requirements on site visits, waive of site visits and virtual site visits apply to the verification of **non-CO_2 aviation effects reports**.[40]

Non CO_2

3.2.8. Addressing misstatements, non-conformities and non-compliance

The verifier must inform the AO on a timely basis if it has identified misstatements, non-conformities and non-compliance.

Art. 22(1) AVR

Table 5 Examples of misstatements, non-conformities and non-compliance

Concepts and examples of misstatements and non-conformities	AVR requirement
Misstatement means an omission, misrepresentation or error in the AO's reported data. It is important to note that uncertainty (including the permissible uncertainties related to meeting approved tier levels under the MRR) does not constitute a misstatement. Only known errors, omissions and misrepresentations constitute a misstatement. **Errors may result from:** ▪ uncorrected bias in an instrument's measurement or in a measurement data set; ▪ human error during manual input and calculations which were not filled with data gap approach; ▪ missing flights in flight information data; ▪ incorrect application of the monitoring methodology; ▪ incorrect timestamps in the flight trajectory data (non-CO_2 aviation effects). Often it may be difficult to quantify the degree of misstatement associated with such items. For example, the deviation associated with shortcomings in calibration or maintenance may only become apparent once the calibration or maintenance is completed (i.e. the results of the calibration are known), and this may not be until after the verification report is required. In such a circumstance, the verifier may be uncertain of the degree of associated misstatement (if any) and will have to apply other information and its best judgement as to how to treat the issue. This might, for example, be based on knowledge of the instrument's previous history/typical performance (the results of previous calibrations indicating minimal adjustments are normally required), or that proportion of the AO's overall emissions affected is minimal, or that even the worse-case scenario constitutes a low risk to the verifier's final opinion statement.	Article 3(5)

[39] If the aircraft operator uses alternative aviation fuels for the first time, this is a significant change to the monitoring plan that requires a physical site visit.

[40] This means that the same conditions for physical site visits apply.

Concepts and examples of misstatements and non-conformities	AVR requirement
Non-conformity means any act or omission of an act that is contrary to the requirements in the MP approved by the CA ***Examples of non-conformities in relation to CO_2 emission reporting:*** The AO applies Method B to determine the fuel consumption whereas Method A is the approved monitoring methodology laid down in the MP; new fuels are not included in the MP; not applying the tier as listed in the MP; a change to the MP. ***Examples of non-conformities in relation to non-CO_2 aviation effects reporting*** New aircraft types are not included in the MP; the procedure for determining fuel properties is not established, take-off mass is used to determine aircraft properties instead of actual mass as listed in the approved MP. If a non-conformity results in an error, misrepresentation or omission in the reported data, it shall also be regarded as a misstatement.	Article 3(13)(a) (b) Non CO_2
Non-compliance means any omission or act that is not in line with the MRR, requirements that are imposed in the AVR on operators or other relevant legislation. Other relevant legislation could for example be national legislation that the MS has adopted. ***Example of non-compliance with the MRR in relation to CO_2 emission reporting:*** The AO does not include the fuel consumed by the APU in the determination of the fuel consumption. More examples can be found in the Frequently Asked Questions on classification of issues reported in the verification report. ***Examples of non-compliance with the MRR in relation to non-CO_2 aviation effects reporting*** Incorrect default values applied in the case of data gaps, inconsistency between uploaded flight trajectory data and aircraft performance data. ***Example of non-compliance with the AVR*** The aircraft operator did not submit the information requested by the verifier according to Article 10 AVR. A non-compliance with the AVR can also occur if the verifier is not provided access to an IT tool in order to assess the accuracy of the data, e.g. access to the third-party tool approved by the Commission to determine non-CO_2 aviation effects.	Non CO_2

The AO should strive to **correct any identified** misstatement, non-conformity and non-compliance.

If the AO has corrected the misstatements, non-conformities and non-compliance, the verifier must include note of this in the **internal verification documentation**, marking the item as resolved.

If the AO has **not corrected** the misstatements and/or non-conformities before issuing the verification report, the verifier must assess the impact of the misstatements and/or non-conformities and their material effect on the reported data. If it concerns a non-compliance with the MRR or other relevant legislation, the aircraft operator has to notify the competent authority and correct this non-compliance without undue delay. If that aircraft operator does

not correct or cannot correct the non-compliance before issuing the verification report, the verifier must assess the material effect on the reported data.

The verifier must report accordingly in both the internal verification documentation and the final verification report (see 3.2.13 of this guidance for more information).

3.2.9. Assessing the material effect of misstatements, non-conformities and non-compliance

Assessing the material effect of misstatements, non-conformities and non-compliance has a **quantitative and qualitative aspect**, and both have to be taken into account. The **quantitative** aspect depends on the **size and nature** of the misstatements, non-conformities and non-compliance and their impact on the reported data, and the user of that data, in particular the CA, whereas the qualitative aspect is determined by factors that can influence the user (e.g. particular circumstances, whether it concerns non-compliance).

Art. 22(3) AVR

For the quantitative aspect the **materiality level** plays an important role. The AVR prescribes the following materiality levels:

Art. 23 AVR

Type of AO	Materiality level
AOs with annual emissions equal to or less than 500 ktonnes of fossil CO_2	5% of the total reported emissions in the reporting period subject to verification
AOs with annual emissions of more than 500 ktonnes of fossil CO_2	2% of the total reported emissions in the reporting period subject to verification
Non-CO_2 aviation effects	5% of the total aggregated $CO_{2(e)}$ reported data on non-CO_2 aviation effects in the reporting period subject to verification

Non CO_2

Errors, omissions and misrepresentations in the reported data compared to the actual data that have been established by the verifier have to be taken into account when assessing the material impact of misstatements, non-conformities and non-compliance on the reported data. The following method shows one way that a verifier can calculate whether the materiality level has been exceeded where the 'actual' value is known.

Item	Reported value	Verifier's value	Difference	Material?
Item 1	A	B	A-B = C	C/Z %
Item 2	F	G	F-G = H	H/Z %
Total items	**Z**	**X**	**Z-X = Y**	**Y/Z %**

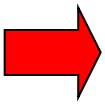
Where the difference between the reported value and the verifier's value is negative, this indicates that the reported value is **understated**; where the difference is positive, this indicates that the reported value is **overstated**. Then, the total difference in value of all items is determined by summation of the individual items, i.e. taking the positive and negative values into account. These positive/negative values need to be taken together into the % calculation to ensure that the total aggregate of the differences is accounted for properly, and the final figure is used by the verifier to assess whether the aggregate of errors and differences is a material over- or under-statement.

A material overstatement of emissions will result in a situation that the AO surrenders more allowances than it needs to. But more important is a material understatement which could lead to an AO surrendering too few allowances.

The example above shows that first the net total difference is to be found which can then be compared against the relevant materiality threshold for the AO concerned. Therefore, it may be that in absolute terms for an individual source stream the difference between a reported and verifier value may be above the relevant materiality threshold, but that taken together with other misstatements, the balance may be below the threshold value. However, this should not be seen as an excuse for leniency. The verifier will continue to look at each individual item and assess the relevance of the difference value for that item with respect to the materiality threshold of that aircraft and source stream[41].

The quantitative aspect and thus the materiality level alone is not the only factor when assessing whether or not a misstatement or non-conformity has material effect. The **qualitative aspect** must also be considered based on a professional judgment of the verifier. The key question for assessing the qualitative aspect is whether a misstatement or non-conformity (individually or combined) could influence the decision of the user of the GHG emission report (the CA in this case). This will depend on the **size and nature** of misstatements, non-conformities and non-compliance as well as on the **particular circumstances of their occurrence.**

Art. 22(3) AVR



It is important to note that misstatements, non-conformities and non-compliance can have a **material effect on the reported data even if the materiality level is not exceeded**. This means the verifier needs to consider whether misstatements in particular items of lesser amounts than the materiality threshold could be reasonably expected to influence the decision of the CA and have to be considered as material misstatements given their size, nature and particular circumstances.

Factors that can be relevant in determining whether or not a misstatement, non-conformity or non-compliance has a material effect can be the following:

- can the misstatements, non-conformities or non-compliance be corrected;
- does the AO refuse to correct the misstatement, non-conformity or non-compliance identified;
- what is the likelihood of the misstatement, non-conformity or non-compliance reoccurring: e.g. applying Method A in practice while the MP states that Method B should be applied;
- what is the duration of a misstatement, non-conformity or non-compliance: e.g. a systematic underestimation of emissions or a non-conformity in the quality assurance and control procedures that has not been addressed for several years by the AO and has therefore grown into a misstatement or non-conformity that is no longer acceptable to the verifier because of its potential impact on the emissions data;
- are misstatements, non-conformities and non-compliance the result of an act with or without intent;
- does the issue concern non-compliance with the MRR?

3.2.10. Concluding on the findings of the verification

When completing the verification and considering all evidence gathered during the verification the verifier is required to carry out the activities listed in Article 24 of the AVR. A

Art. 24 AVR

[41] It must be noted that the materiality threshold is not an allowed margin for error. Any correctable misstatement or nonconformity identified during the verification process needs to be corrected by the AO.

key aspect of this step is that the verifier has to ensure that it has gathered **sufficient evidence** to support the verification opinion statement.

Sufficiency of evidence is influenced by the risk of the AO's report being materially misstated: the greater the risk of a material misstatement, the more detailed verification activities and the more evidence is likely to be required. In addition, the quality of the evidence also plays a role (the better the quality of the evidence, the less important the quantity of the evidence is likely to become). However, merely obtaining more evidence may not always compensate for its poor quality[42].

The **reliability of evidence** is influenced by its source and by its nature, and is dependent on the individual circumstances under which it is obtained. For example:

- if evidence is obtained from external, independent and knowledgeable sources (e.g. EUROCONTROL data, it could be considered more reliable. Verifiers should ~~t~~ake into account possible inconsistencies of this source (EUROCONTROL flight information can sometimes contain inconsistencies);
- evidence that is generated internally is more reliable when the related control activities are effective or if the verification team has directly obtained the evidence (e.g. observing how the AO has carried out a manual cross-check on the data instead of inquiring whether the AO has carried out such a control).

The verifier generally obtains more assurance from consistent evidence obtained from different sources or from evidence of a different nature than from items of evidence considered individually. When evidence obtained from one source is inconsistent with that obtained from another, the verifier will determine what additional verification activities are necessary to resolve the inconsistency.

If the verifier concludes that sufficient evidence cannot be gathered to support the verification opinion statement and it cannot verify the AO's report as satisfactory, it must record this in the verification report (for information on what to record see section 3.2.13 and the key guidance note on verification report (KGN II.6).

3.2.11. Independent review

Before the issuing of the verification report, the internal verification documentation and the verification report must be subject to an independent review. The **objective of this review** is to provide:

Art. 25 AVR

- a quality review function and to look for technical errors or omissions;
- a final check that due professional care and judgement has been applied in the verification process, e.g. that the scope of work is consistent with the AO's activities and to achieve a reasonable level of assurance;
- a final check to confirm that the verification team has carried out the verification in line with the AVR and that the procedures for the verification activities have been correctly applied;

[42] ISO 14066:2023: Greenhouse gases: Competence requirements for greenhouse gas validation teams and verification teams, Annex A.

- an assessment of whether the evidence gathered is sufficient to support the opinion stated in the verification report;
- confirmation that all evidence, decisions and their justification have been properly recorded in the internal verification documentation;
- a proof reading function, e.g. to correct simple errors, typographical mistakes and omissions.

If an independent reviewer has identified errors or concludes that insufficient evidence has been gathered, the Lead Auditor needs to correct these and obtain the missing evidence or corroboration. Changes that the verifier makes in the verification report as a result of the independent review must also be reviewed by the independent reviewer, along with the underlying evidence. The **independent review** must **cover all the steps in the verification process**.

Art. 25(4) AVR

An important requirement is that the independent reviewer must not have carried out verification activities that are subject to his review. This means that the **independent reviewer shall not be part of the verification team** or **be involved in any of the verification activities** for that particular AO. Chapter 5 of this guidance and section 7 of the key guidance note on competence (KGN II.7) provide information on the required competence for an independent reviewer.

Art. 25(2) AVR

3.2.12. Internal verification documentation

The verifier must compile internal verification documentation to provide a complete trail of evaluation and decisions that enabled the verifier to reach its verification opinion with reasonable assurance. **Annex II** contains a **list of minimum elements** to be included in the internal verification documentation.

Art. 26 AVR

The internal verification documentation needs to be **transparent** and must be drafted in such a manner that the independent reviewer and the NAB can assess whether the verification has been performed in line with the AVR. They have to be able to follow the completed document and data trail and assess the critical decisions and issues that occurred during the verification process. There shall be traceable evidence clearly linked to tests and results etc., and clear planning, output and decision trails to support the verification conclusion. The evidence as well as the related tests and findings shall be **fully documented** in the verifier's internal verification documentation (i.e. their own auditable record of the verification carried out).

It is the NAB's responsibility to assess the verifier's internal verification documentation as part of its assessment of the verifier.

In addition to this, the CA may request that the verifier provides access to its internal verification documentation. However, Article 26(3) of the AVR is not a requirement for the CA. The main responsibility for checking the internal verification documentation lies with the NAB.

Art. 26(3) AVR

3.2.13. Verification report

The verifier shall issue a final verification report to the AO for onwards reporting to the relevant CA. Article 27 of the AVR contains requirements on the **content of the verification report** which are explained in the key guidance note on the verification report (KGN II.6) in relation to the associated template that has been developed by the Commission. A template with separate opinion statements for emissions and for non-CO_2 aviation effects has been developed. This allows verifiers to issue separate verification reports.

There shall be a verification report for the annual emissions report and a **separate verification report** for the non-CO_2 aviation effects report. During a combined verification, as part of the process analysis, the verifier shall perform cross-checks between the respective sets of data in both reports. The AO will subsequently submit to the CA of the administering Member State the final emissions report and non-CO_2 aviation effects report (in the case of the AOs fall under the obligations for monitoring and reporting non-CO_2 aviation effects) accompanied with the respective verification report(s).

Two types of verification opinion statements are possible (verified as satisfactory and verified as not satisfactory), with various justifications. Each of those statements and justifications have their own impact and characteristics. **Art. 27(1) AVR**

Table 6 Verification opinion statement

AVR requirement	Clarification
The AO's report is free from material misstatement and thus **verified as satisfactory**	A **report is verified as satisfactory** if: • The report has no material misstatements, non-conformities and non-compliance issues[43] **Art. 27(1) (a) AVR** • The report contains issues that do not have a material impact on the reported data. These are issues that are not resolved at the time of reporting and includes non-material misstatements ▪ non-conformities that have no material effect on the reported data ▪ non-compliances that have no material effect on the reported data **Art. 27(1) (b) AVR** ▪ recommendations for improvement(s) to the AO's monitoring methodology If this is the case these must be reported in the verification report and addressed (see section 3.3). The verifier should select the statement **"verified with comments"** in the verification report template.
The AO's report contains material misstatements that were not corrected before issuing the verification report The AO's report **is verified as not satisfactory**	See section 3.2.9 and section 3.3.
Scope of verification is too **limited** The AO's report **is verified as not satisfactory**	A **limitation of scope of verification** may arise from the following situations (Article 28 of the AVR): **Art. 27(1) (c) AVR** ▪ data is missing that prevents a verifier from obtaining the evidence required to reduce the verification risk to the level needed to obtain reasonable level of assurance, e.g. some or all primary source data is missing and data is only available at an aggregated level ▪ the MP is not approved by the CA, thus not providing a proper reference document for the verifier to check the report against

[43] There can still be recommendations of improvement which have to be addressed (see section 3.3)

AVR requirement	Clarification
	▪ the MP does not provide sufficient scope or clarity to conclude on the verification, e.g. parts of the monitoring methodology are not properly described in the MP ▪ the AO has failed to make sufficient information available to enable the verifier to carry out the verification: e.g. the AO has not provided the verifier with: – the latest version of the MP – primary source data needed to check the accuracy of the reported data such as requested fuel invoices, or results of on-board measurements – information on on-board measurement instruments or measurement equipment used to weigh freight and mail and the quality assurance thereof (manufacturer's information, maintenance records, relevant service level agreements)
Non-conformities individually or combined with other non-conformities provide **insufficient clarity** and **prevent** the verifier from stating with reasonable assurance that the AO's report is free from material misstatements. The AO's report **is verified as not satisfactory**	Usually when non-conformities are found during the verification process, it affects the risk analysis and the planned verification activities. In particular, if these non-conformities increase the risk of misstatements creating uncertainty over the accuracy of the data, the verification activities must be more detailed and further tests and checks will be required to achieve more assurance and confidence in the data. If for example inadequate control activities have been implemented (e.g. no procedures ensuring completeness of flights or filtering out non-ETS flights, no proper IT interface that is used to aggregate the data, ACARS is not functioning properly), the verifier will undertake more substantive testing to assess the accuracy of the data. However further testing will not always provide the verifier with sufficient confidence in the data. In some case these **non-conformities** (individually or combined with other non-conformities) provide **too much uncertainty** for the verifier to positively state with reasonable assurance that the AO's report is free from material misstatements. This could for example happen if the APU is systematically not included or control activities to ensure that the overall uncertainty threshold is not exceeded, have not been implemented (e.g. performing cross-checks between fuel slips and fuel measured), the non-conformity is repeatedly not corrected and the accurate data cannot be traced back by other means thereby causing the verifier to be uncertain whether the reported data is free from material misstatements.

Art. 27(1) (d) AVR

3.3. Addressing outstanding issues in the verification report

Outstanding misstatements, non-conformities and non-compliance with the MRR and recommendations for improvement that have been listed in the verification report, have to be addressed by the AO. Several situations can apply:

Art. 69 and 70 MRR

Table 7 Outstanding issues in the verification report

Type of outstanding issues	How to address	
The verification report contains **no indication** of remaining misstatements, non-conformities, non-compliance with the MRR or recommendations of improvement	No action required	
The verification report contains **non-material misstatements** related to an AO's emissions report	The CA shall assess those misstatements and can make a **conservative estimate** of the total emissions of the AO when it considers that such an estimation is appropriate[44]. The CA shall inform the AO whether and which adjustments are required to the AO's emissions report or the AO's non-CO_2 aviation effects reports. The AO shall make that information available to the verifier.	**Art. 70(2) MRR**
The verification report includes stated **non-conformities** that **do not lead** to a non-satisfactory emissions report (the report is **verified as satisfactory**)	The AO has to submit to the CA an **improvement report** by 30 June[45] which must describe how and when the AO plans to correct non-conformities identified by the verifier. The CA must approve that improvement report. An improvement report does not have to be submitted if the operator has already resolved all non-conformities and recommendations of improvement and has submitted a related significant modification of the MP for approval to the CA. The verifier shall assess during the **next verification** whether these non-conformities have been corrected. If these have not been corrected, the verifier must consider whether this increases or may increase the risk of misstatements. This in turn will affect the planning of the verification and the detail of the verification activities (e.g. the need for further testing). During the verification process the verifier will instruct the AO to **correct** these non-conformities. If the AO still does not correct the non-conformities, this will be one of the factors to take into account when assessing the materiality of misstatements and non-conformities found during the verification. Continued non-correction may lead to minor issues being escalated to material issues in subsequent verification cycles. Small emitters are also required to submit an improvement report. 	**Art. 69(4) MRR** **Art. 29 AVR**

[44] This does not mean that the emissions report is not satisfactory. A satisfactory report can still contain non-material misstatements provided that these are reported in the verification report (see key guidance note on verification report (KGN II.6). Reportable emissions are in that case the verified emission data or non-CO_2 aviation effects data, while the outstanding uncorrected non-material misstatements are reported separately in the verification report. However, in such a situation the CA is entitled to make a conservative estimation according to Article 70(2) of the MRR.

[45] The competent authority may set an alternative date for submission of the report as referred to in this paragraph, but no later date than 30 September of the same year.

Type of outstanding issues	How to address	
The verification report includes stated **non-compliance issues** concerning the MRR	▪ If the non-compliance has led to a non-material misstatement in the emissions report, the CA shall evaluate the misstatement and where appropriate, make a **conservative estimation** of the total emission data. The CA will enter this data in the registry according to Article 31 of the Registry Regulation ▪ If the non-compliance has led to a material misstatement in the emissions report, the CA shall make a **conservative estimation** of the emission data according to Article 70(1) of the MRR, and enter the corrected data in the registry according to Article 31(6) of the Registry Regulation ▪ If the non-compliance does not lead to a misstatement, the CA may request that the AO changes the MP, or consider taking enforcement action.	**Art. 70(2) MRR** **Art. 70(1) MRR**
The verification report states that the AO's emissions report **cannot be verified as satisfactory**	▪ The CA shall make a **conservative estimation** of the emission data according and enter the estimated data in the registry according to Article 31 of the Registry Regulation ▪ The verifier shall **not enter nor approve** the emission figure in the Registry	**Art. 70(1) MRR**
The verification report includes **recommendations for improvement**	The AO has to submit to the CA an **improvement report** by 30 June[46] which must describe how and when the AO has rectified or plans to address the recommendations for improvement identified by the verifier[47]. An improvement report does not have to be submitted if the operator has already resolved all non-conformities and recommendations of improvement and has submitted a related significant modification of the MP for approval to the CA. Recommendations for improvement can cover a **whole range of topics**. It not only includes suggested improvements to the AO's risk assessment, data flow, control activities and procedures but it could also involve recommendations concerning monitoring and reporting emissions such as: ▪ recommendations to improve the accuracy of determining the emission factor for mixed fuels containing biomass ▪ where a verifier considers that the procedures and methods for completing data gaps can be improved ▪ recommendation to determine the actual density instead of applying a standard density factor ▪ recommendations to improve the procedures to ensure completeness or aircrafts and flights ▪ recommendations to improve procedures on cross-checks between fuel uplift quantities from invoices and fuel uplift from on-board measurement instruments	**Art. 69(4) MRR**

[46] The competent authority may set an alternative date for submission of the report as referred to in this paragraph, but no later date than 30 September of the same year.

[47] However, whilst the verifier should identify weaknesses in control activities as part of the recommendations and inform the operator why it is considered a weakness, the verifier shall not communicate in any way how the AO should resolve the weakness, as that would place the verifier in a consultancy role, presenting a conflict of interests and compromising its independence.

Type of outstanding issues	How to address
	▪ recommendations to improve procedures ensuring the uncertainty of measurements comply with the applied tier. In the **following verification year** the verifier shall check whether the AO has implemented those recommendations for improvement and the manner in which this has been done. If those recommendations have not been implemented the verifier must consider whether this increases or may increase the risk of misstatements and non-conformities. This in turn will affect the planning of the verification and the detail of the verification activities (e.g. further testing). Small emitters are also required to submit an improvement report. 

4 How to assess the risks in the AO's data flow and control activities?

An important aspect for ensuring that reliable and correct emissions and non-CO_2 aviation effects are reported is establishing and implementing clear data flow activities as well as control activities to mitigate the risks to misstatements and non-conformities. This Chapter outlines general guidance on how a verifier should deal with data flow activities and control activities implemented by the AO. More specific information can be found in the Chapters 5, 6 (for small emitters reporting annual emissions) and 7 of this guidance.

This Chapter is also relevant for the **verification of non-CO_2 aviation effects** reports if the report is not automatically generated without any input from the aircraft operator from NEATS or a third-party IT tool approved by the Commission. For more specific information please see Chapter 7 of this guidance.

Non CO_2

4.1. Data flow activities

The AO must establish, document, implement and maintain effective **data flow activities**. Data flow activities concern all operational activities that are necessary to produce an emissions report or non-CO_2 aviation effects report from the primary data. This includes measuring, monitoring, analysing, recording, processing and calculating parameters and handling subsequent data: in short, all steps that are needed to derive an emissions or non-CO_2 aviation effects report.

Art. 58 MRR

Primary data can come from many different sources and can arise at different points of time involving different departments in the AO's organisation and management structure. Data may be created centrally (allocation of flight types at flight planning) and in a decentralised way (e.g. fuel uplift). Primary data include for example fuel measurement data, fuel density, flight numbers and schedules, aircraft numbers and routes, mass of freight and mail, number of passengers etc..

There is often redundancy in the data. For instance, the same or similar data can occur in several documents at the same time which are subsequently stored in parallel systems or modules and possibly consolidated before the data come together in other systems and are eventually processed for reporting emissions. For commercial AOs in particular several typical data flow variations can exist rather than just one reporting line. The type and number of data flow variations may depend on operating conditions: e.g. specific data flow activities in the case of ad-hoc charter and leasing arrangements or different data flows per aircraft such as an older aircraft type with manual transmission of fuel data and a new aircraft type using ACARS.

For aviation there are specific procedures for data flow activities that need to be described briefly in the MP. Please see section 6.2 of the MRR Guidance Document No. 2 for AOs (GD 2).

4.2. Verification of the data flow

The **verifier has to assess** whether the data flow as described in the MP meets actual practice by testing the data flow activities and by trailing data through the data flow following the sequence and interaction of the data flow activities. The verifier traces the data back to the primary sources, checks the existence, consistency and validity of these primary source data,

Art. 14(a) AVR

follows each step in the data flow and checks the activities related to that step in the data flow (e.g. what is done, when it is done, which data it concerns, the inputs and outputs etc.).

In addition, **the verifier will check** which **persons are responsible for specific data flow** activities. An important aspect which the verifier shall take into account when assessing the inherent risks related to the data flow activities, is whether these persons are accustomed and competent to deal with these specific data flow activities. In general AOs already monitor flights for internal planning and management purposes as well as for meeting the requirements that are imposed by civil aviation authorities. To this end commercial AOs that perform several flights a day are used to dealing with large amounts of data emanating from many primary data sources. The general data flow is often highly dependent on IT systems.

The verifier cannot rely solely on existing **IT systems** and flight safety procedures without testing the EU ETS specific data flow and EU ETS specific alterations to the existing systems. In particular the coverage of type of flights and number of flights differ for EU ETS purposes. Where the EUROCONTROL EMIS or EUROCONTROL Small Emitters' tool are used to generate or cross-check data, the verifier does not have to check the validity of the facility or the tool. In those cases, the verifier only needs to consider the validity of the data entered into the system or tool and the consistency and validity of the output (see Chapter 6 of this guidance).

To assess the data flow the verifier must understand which data from parallel data flows actually end up in the final emissions data calculations and what the specific primary data sources are. For more guidance on how to understand a data flow please see the MRR Guidance document No. 6 on data flow activities and control system (GD 6).

4.3. Control activities

An AO must avoid misstatements in the reported data and mitigate the risks related to the data flow activities. To ensure that the annual emissions report and the non-CO_2 aviation effects report resulting from the data flow activities do not contain misstatements and are in conformance with the corresponding approved MP and the MRR, the AO has to establish, document, implement and maintain a sufficiently **robust control system**. A control system consists of two components: **the AO's risk assessment and the AO's control activities**.

Art. 59 MRR

An **AO's risk assessment** is an assessment of its inherent risks[48] and control risks[49]. The outcome of the risk assessment determines which and how the control activities need to be set up to mitigate the inherent risks related to the data flow. These control activities include at least the following activities:

Art. 59(2) MRR

- quality assurance of the measurement equipment and information technology;
- internal reviews of reported data;
- control of outsourced processes;
- corrections and corrective actions;

[48] Inherent risk means the susceptibility of a parameter in the operator's or AO's report to misstatements that could be material, individually or when aggregated with other misstatements, before taking into consideration the effect of any related control activities (Art. 3(16) of the AVR). These are risks related to the data flow activities without taking into account the effect of control activities.

[49] Control risk means the susceptibility of a parameter in the operator's or AO's report to misstatements that could be material, individually or when aggregated with other misstatements, and that will not be prevented or detected and corrected on a timely basis by the control system (Art. 3(17) AVR). These are risks that the control system is not functioning properly.

- records and documentation (as well as document retention);
- segregation of duties;
- management of the necessary competences for the responsibilities assigned.

4.4. Verification of control activities

The verifier is required to assess whether the approved MP is implemented correctly and whether this is up to date. To this end the verifier must assess the AO's risk assessment and inform the AO if it has failed to identify the relevant inherent risks and control risks properly. Please see the key guidance note on the verifier's risk analysis (KGN II.2). **Art. 12(3) AVR**

The verifier must also carry out its own assessment and test the control activities, based on the verifier's analysis of the inherent and control risks involved. Assessing the control activities not only concerns assessing the establishment of control activities, e.g. identifying the persons assigned to be responsible for data flow activities and carrying out systematic cross-checks (vertical and horizontal checks, access controls, release checks etc.). It also involves an assessment of the AO's documentation, implementation and maintenance of these control activities including appropriate succession or planning of replacement to accommodate situations when personnel change jobs or take leave. **Art. 14(b) AVR**

The **key question** is to what extent the **control activity is sufficient to mitigate the risk** of misstatements and non-conformities. Relevant questions are for example:

- Are control activities set up such that they can function properly and effectively?
- What is the frequency of the control activities?
- Are the control activities carried out manually or electronically?
- Are the control activities implemented correctly so that they can function in practice? Is there a 4-eye principle (double check by another person)?
- Who is responsible for the control activity and does this person have sufficient knowledge and experience to carry out that control activity properly?
- Are the outcomes of the execution of control activities documented?

The box below shows **different types of control testing** that could be carried out during verification.

Different types of control testing include the following:

- Inquiry of relevant information, e.g. through interviews. Note that inquiry alone will not provide sufficient evidence to support a conclusion about the effectiveness of a control. Accordingly, while inquiry can be useful, it is best used in combination with other control testing techniques;
- Observation consists of looking at a process or procedure being performed by the AO. Observation provides evidence about the performance of a process or procedure, but is limited to the point in time at which the observation takes place, and by the fact that the act of being observed may affect how the process or procedure is performed;
- Inspection to determine whether, when and how manual controls are being performed. It involves:
  - Examining records or documents, whether internal or external, in paper form, electronic form, or other media, for example, manufacturer's specifications or service level agreements.

- Inspection of records and documents provides evidence of varying degrees of reliability depending on their nature and source and, in the case of internal records and documents, on the effectiveness of the controls over their production. Examples are written explanations, manuals detailing information on collection procedures and internal control activities, reports prepared by management, indications of follow-up documentation; or
- Physical examination of, for example, a measurement equipment.

▪ Re-performance testing is generally used when a combination of inquiry, observation and inspection of evidence does not provide sufficient or appropriate evidence that a control activity is operating effectively. In the case of re-performance, the verifier carries out the control activity itself to assess its effectiveness (e.g. cross-checking the data itself).

Some existing control activities may have already been tested or verified by others, e.g. billing systems subject to internal audits and subsequently used to retrieve or cross-check with EU ETS data. This does not relieve the verifier from testing the control activities and especially the EU ETS adaptations. It is especially relevant for the verifier to assess what the scope and subject matter of the test performed by others was, e.g. what parts were not checked, what alterations have been made for EU ETS, who has conducted the audits, is documentation available, what audit procedures were carried out by that third party, have recommendations been made in the audit that are also relevant for EU ETS, and if so, have these recommendations been implemented etc..

The following paragraph describes in general how the verifier should assess the aviation specific control activities and procedures for control activities. More specific issues are mentioned in Chapter 5 and 7 of this guidance.

Testing of quality assurance of the measurement equipment

Article 59(1) of the MRR requires the AO to ensure that all relevant measurement equipment is calibrated, adjusted and checked at regular intervals. However, in most cases calibration will not be possible or applied by AOs to on-board measurement instruments used to determine the fuel consumption and density. In this case the verifier should check the manufacturer's specifications and if relevant maintenance plans and routine aircraft maintenance procedures[50]. Where calibration is applied the verifier may decide, based on its risk analysis, to check the calibration certificates or accredited testing supplier information.

Art. 60(1) MRR

The main objective is to check whether the AO has implemented sufficiently robust control activities to ensure that the meters are functioning properly. Furthermore, the verifier will check the procedure for cross-checking the fuel uplift quantity measured by on-board measurement equipment with the fuel uplift quantity as provided in the fuel invoice, e.g. by testing the cross-checks made by the AO and by performing cross-checks himself.

The verifier will also check the procedures to ensure that on-board equipment and systems are fully functional: by checking for instance whether the procedures for quality assurance of multiple gauges and systems exist and are functioning.

Testing of IT controls

IT systems play an important role in collecting and handling data for aviation emissions or non-CO_2 aviation effects data. Assessment of IT related risks is therefore relevant during the risk

[50] In cases where calibration is not possible or applied, the AO should use alternative control activities to ensure that the measurement instruments are functioning properly (see section 5.10 of this guidance).

analysis. An IT system is more than just hardware and software, it also includes the IT environment/ organisation, the IT based processes, IT applications and IT infrastructure.

- The risks related to IT processes include for example lack of transparency in the data flows (black boxes), malfunctioning of the interface(s), the risk that control measures only see part of the processes, not the whole process, and computer system failures resulting in a failure to collect data from automated monitoring equipment during the time of system failure.
- Risk in IT applications relate to malfunctioning of IT applications, lack of back-up procedures, lack of input controls, process controls and output controls (in particular where updates or new software are rolled out), and potential software coding or scripting errors that could lead to misstatements.
- Risks related to IT infrastructure include the vulnerability to interference and breaches of information security which may lead to increased risk in the collation, transfer, processing, analysis, aggregation, storage and reporting of data.
- Other risks are related to human errors in the computer information system e.g. overwriting a spread-sheet containing last month's data with this month's data before backing up the data.

There can also be a combination of the above risks. Verifiers need to understand the extent of risks and control of IT systems. Verifiers also need to take into account whether the IT systems and processes are managed under an effective IT Management System such as ISO/IEC 20000[51]. In addition, verifiers will also consider the proper use of calculation formulae and access controls, the possibility of recovering data, continuity planning and security with respect to IT.

The **verifier checks the control measures** that are implemented in the IT system and electronic interfaces to ensure:

- timeliness, availability and reliability of data;
- the correctness and accuracy of data, e.g. to avoid, among other things, double counting;
- the completeness of data;
- the continuity of the data to avoid data being lost and to ensure traceability of data;
- access rights: i.e. who has the right to access and modify data;
- the integrity of data: i.e. data are not modified unauthorized.

These measures could include a manual check on whether the IT system is functioning and whether the aforementioned points are met. It will include control activities and maintenance tools built into the IT system such as access controls, backups, recovery, continuity planning, change management and security. The type of testing carried out by the verifier depends on whether these control measures are manual or electronic.

[51] ISO /IEC 20000.1:2018 - Information technology — Service management — Part 1: Service management system requirements.

Please note that the **verifier verifying non-CO_2 aviation effects reports** is not required to check the IT control activities and functionalities in NEATS or a third-party tool approved by the Commission as the controls and functionalities in those systems have already been approved by the Commission.

Non CO_2

Testing of internal review of data and correction of data

The AO must design and implement internal reviews on defined data sets throughout the data flow. This includes horizontal and vertical checks as well as plausibility checks. For more information see MRR Guidance Document No. 6 Data flow activities and control system (GD 6).

Art. 63 MRR

Basically **two types of control activities** performed by the AO exist: controls that monitor the data flow to avoid failures, and detection controls that aim to detect errors. Examples of monitoring controls are the four eyes principle, i.e. data entry double check by another person, and access controls. Examples of detection control are plausibility checks or routine checks for identifying errors. Both types of controls can be carried out manually or electronically.

The verifier will check that these internal review controls and associated corrective actions are undertaken to rectify errors identified in the data. This can include testing of the cross-checks and plausibility checks by for instance having the AO carry out these review checks or by performing cross-checks himself or testing the access controls. The verifier will also assess to what extent these internal review checks and corrective actions are documented and which person is responsible for these checks. This documentation should contain proof that these internal review checks were performed and that clear criteria for rejecting data have been documented. Examples of such proof are visible sign-offs after review, approvals by email or visible reconciliations performed.

Testing of quality assurance in outsourced processes

Major parts of the data flow can be outsourced to external service providers such as flight planning and the check-in at airports. In the case of outsourced processes the AO still remains responsible for the data resulting in the emissions report and non-CO_2 aviation effects report and has to control the quality of these processes.

Art. 65 MRR

The verifier has to check to what extent a certain data flow activity has been outsourced. Moreover it has to test the control activities that the AO has implemented to ensure the quality of the outsourced processes: e.g. assessing the procedures for procurement, internal audit (including the frequency of audits), carrying out plausibility checks on the data, checking service level agreements with ground handling agents, instrument engineers, checking how an AO ensures that his service providers carry out their activities according to the service level agreement etc.

Corrections and corrective action

If any part of the data flow activities or control activities are found not to function effectively or are outside boundaries that are set in the procedures for data flow activities or control activities, the AO must make appropriate corrections and correct rejected data.

Art. 64 MRR

The verifier checks for example whether:

- corrective action is indeed taken in those situations and that the emissions are not underestimated;

- effective control activities have been implemented to prevent data flow activities and control activities from not functioning properly or functioning outside the boundaries set in procedures;
- the criteria in the procedures for data flow activities and control activities are addressed and met by the AO, and whether the details of these procedures are effective to avoid malfunctions;
- the AO has notified the CA of any equipment failure during the reporting period, and that efforts were made to correct the failure as promptly as possible.

Records and documentation

The verifier checks whether and how information on the monitoring methodology, primary data, data flow activities, control activities and procedures are documented and whether the document management system to retain the information is effective. The AO must store information required for the verification of emissions and non-CO_2 aviation effects for at least 10 years after the date that the relevant verified emissions report or non-CO_2 aviation effects report is submitted to the CA. Annex IX of the MRR contains a non-exhaustive list of what data needs to be stored for 10 years.

Art. 67 MRR

Annex IX MRR

Most AOs are only used to retaining primary source data such as fuel slips and flights plans for a couple of months or years. An AO may be allowed to retain primary source data in IT systems or electronic formats, including scanned copies, electronic load data messages and electronically transferred or generated data, provided that the AO implements the control measures mentioned under the paragraph above relating to testing IT systems. In all cases the AO must ensure that the data in the IT system can meet the following principles in the same way as paper based primary source data and that it is of the same quality:

- timeliness, availability and reliability of data;
- the correctness and accuracy of data;
- the completeness of data;
- the continuity of the data to avoid data being lost and to ensure traceability of data;
- the integrity of data: i.e. data is not modified unauthorized.

It is of particular importance that the primary data end up in the IT system in the correct way. The verifier is in that case required to test these control measures and control activities to assess whether these principles and requirements have been met and the IT system/ interfaces are functioning properly. Of particular note is the need to check that data retained in archives/back-up systems remain accessible as IT system design evolves (in the last 10 years systems have shifted from floppy discs to cloud storage, memory sticks and solid state hard drives. It is therefore important to ensure that the AO retains capacity to read stored data in old systems). In addition, where mergers/acquisitions etc. may occur, it is important that the retention requirements of ETS are taken into account in the transfer of IT systems and stored data.

Segregation of duties

The verifier checks whether the persons responsible for the data flow activities and control activities are competent and do not perform conflicting duties (e.g. the responsibilities for recording, processing and reporting are carried out by different persons). The verifier checks how the AO manages the competencies for the persons responsible for the data flows and

Art. 62 MRR

control activities, and the verifier takes that into account when assessing the inherent and control risks.

4.5. Procedures mentioned in the approved MP

The MRR requires several elements to be put into written procedures. The objective of these procedures is to ensure that the control activities are effective and to mitigate the risks that ineffective control activities lead to misstatements and non-conformities. A summary of these procedures must be listed in the approved MP. Examples of such procedures are mentioned in section 6.2 of the MRR Guidance No.2 on AOs (GD 2).

Art. 12 MRR

The verifier must check that these procedures:

Art. 14(c) AVR

- are present and properly documented and retained;
- reflect the information listed in the summary of the procedures in the approved MP[52];
- have been correctly implemented and are up to date;
- are applied throughout the year;
- are effective to mitigate the inherent and control risks.

The specifics related to the verification of some of these procedures are explained in Chapters 5 and 7 of this guidance.

If the verifier considers that the procedures are inadequate, the weaknesses of these procedures should be clearly described and noted in the verification report as non-compliance in order that the AO can make improvements. If improper procedures lead to misstatements or if the verifier comes across a procedure that is not in line with the MRR, this should be reported in the verification report (please see the key guidance note on the scope of verification (KGN II.1)).

4.6. Evaluation of the control system

The AO must monitor the effectiveness of the control system by for example carrying out internal audits using an internal auditor that is not involved in the data gathering, monitoring and reporting process, and by taking into account the findings of the verifier. The verifier is responsible for assessing the quality of these internal audits and evaluation processes, and whether these processes are properly documented and also that findings related to these procedures from prior verifications have been followed up.

Art. 59(4) MRR

[52] For information on the content of these procedures please see the MRR GD 2 .

5 Aviation specific requirements in the verification of the annual emissions

This Chapter explains some of the **aviation specific issues** that are relevant in the **verification of reported annual emissions**. These issues are related to sections in the emissions MP and the emissions report. Please note that this is not a complete list of issues: the verifier needs to check whether additional requirements apply regarding the administering Member State concerned.

5.1. How to identify AO?

AOs are required to fill in data on the identification of the AO (e.g. unique ICAO designator, AOC number, legal structure company). The **ICAO designator** in box 7 of the flight plan is the determining factor for assessing who is the AO and which flights fall under the responsibility of that particular AO. If the ICAO designator is not available, the **registration markings** of relevant aircraft are required, and these take on added significance. Some AOs covered under EU ETS will not have an ICAO designator and hence verifiers are likely to encounter aircraft registration markings. This is particularly the case for small emitters.

Art. 51(3) MRR

The verifier should for example be aware of the following:

- The person indicated in connection to the aircraft's registration may be the owner of the aircraft who may not be the AO;
- An aircraft registration can be shown on more than one MP and report, since the aircraft concerned may be operated by a number of AOs during the year;
- Some aircraft registries (e.g. in the USA) reissue aircraft registrations during the year. It is therefore possible for more than one aircraft to carry the same registration sequentially during a reporting year if a registration has been re-issued. However, it is not possible for two active aircrafts to hold the same registration at the same time.

If the **aircraft operator cannot be identified using the ICAO designator or the registration markings** that are part of the AO's Air Operator Certificate (AOC), the unique aircraft operator is the legal person or natural person that has an employment or other contractual relationship with the captain of the flight. The verifier should in that case check employment contracts and contractual arrangements.

Art. 51(3a) MRR

In cases where the identity of the AO cannot still be determined, the owner of the aircraft shall be regarded as the AO unless it is proved to the satisfaction of the CA who is the responsible AO.

Art. 51(4) MRR

What is to be done if a verifier identifies two ICAO designators for one AO?

AOs are not allowed to add ICAO designators from sister or daughter companies which are AO in their own right because of their own ICAO designators. If there are multiple ICAO designators, the verifier shall direct the AO to the CA of the administering Member State.

What are the implications for wet leased and dry leased aircraft?

Dry leasing occurs when an aircraft is operated under the AOC of the lessee, under commercial control of lessee, using the lessee's ICAO designator and traffic rights. Wet lease means that the aircraft is operated under the AOC of the lessor but operated under the commercial

control of the lessee and using the lessee's ICAO designator code. Whether code sharing, dry leasing or wet leasing, long- or short-term leasing is applied by an AO, it has no bearing on identifying the AO. The ICAO designator in box 7 of the flight plan or, if the ICAO designator is not available, the registration number of the aircraft is the determining factor for assessing whether a flight falls under the responsibility of an AO to monitor and report on that particular flight. If it cannot be determined by the ICAO designator or the registration markings that a particular flight falls under the responsibility of an AO, the flight should be allocated to the owner of the aircraft unless it has been proved to the satisfaction of the CA who was the responsible AO for that flight, e.g. the identification of the legal or natural person that has an employment or other contractual relationship with the captain of flight. However, it is not likely that there would be a dry or wet lease agreement with an AO not having an ICAO designator or registration markings. In some cases EUROCONTROL data can be used to cross-check leased in data since EUROCONTROL possesses data on actual aircraft used (e.g. registration markings) for a given flight.

Art. 51MRR

How to check the accuracy of data when this concerns dry and wet leased aircraft?

When carrying out a risk analysis the verifier shall be aware that short term leasing of aircraft (either dry or wet leased) can lead to risks (i.e. not including ETS flights that fall under the responsibility of the AO or including flights that do not). The AO that is responsible for a particular flight has to ensure that the data related to that flight is accounted for in its AO annual emissions report. In general, the collection of data is regulated through leasing agreements.

During the verification the verifier shall check the control activities the AO has in place to ensure accurate data is transferred (e.g. leasing agreements, cross-checks on manual input of collected data in internal systems, electronic interface if IT systems are used etc.). To ensure reproducibility of the determination of the emissions by verifiers or the CA, the AO shall ensure that data on the leased aircraft is documented.

5.2. How to check (additional) aircraft types?

The AO must submit to the CA details for each aircraft used during the reporting year for which the AO is responsible (aircraft type, aircraft subtype, aircraft registration number, owner of the aircraft as well as starting and end dates if the aircraft has not belonged to the AO's fleet for the whole reporting year). The latter might be the case for aircraft leased to another company. Depending on the verifier's risk analysis for the verification concerned, these reported items shall be checked with the aim of ensuring completeness as well as identifying possible issues of double counting in the data of flights and aircraft.

Consistency between the number of aircraft in the MP and the number of aircraft in the emissions report

In practice the list outlined in the emissions report will not correspond to the number of aircraft submitted in the MP, since the latter number only concerns aircraft that were operated at the time of submission of the MP. The verifier does not have to check consistency between the MP and the emissions report with respect to this point, unless it is of interest to substantiate the activity of the aircraft as approved in the MP in relation to reported data, for example where few of the aircraft listed in the approved MP appeared to have been used during the actual reporting year. If the verifier has decided to check the consistency between the MP and the emissions report and identified discrepancies, and these are not corrected by

the time the verification report is issued, the verifier must report this in the verification report.

Checking of additional aircraft types

The AO must provide an indicative list of additional aircraft types that the AO expects to operate and for which it will be the AO. Discrepancies between actual data on aircraft types used and the data listed in the MP should not in general be determined as non-conformities in the monitoring and reporting process[53].

Checking the application of the monitoring methodology for additional aircraft type

The verifier is responsible for checking whether the monitoring methodology described in the approved MP for different aircraft types has been correctly applied for additional and anticipated aircraft.

Checking the completeness of emission sources (aircraft)

The AO is required to ensure completeness of the aircraft listed in the emissions report. The verifier shall check whether the procedure for tracking completeness of aircraft as described in the MP reflects the information required. This includes responsibilities for tracking completeness, systems used, control activities implemented, etc.. Furthermore, the procedures must be implemented, documented and up to date. See section 4.5 of this guidance for information on how the verifier checks these procedures. **Art. 14(c) AVR**

EUROCONTROL data should be used to corroborate the data on aircraft, subject to the AO explaining discrepancies. This can be done by using the EUROCONTROL EMIS assuming access is authorised. The verifier shall test the AO's implemented control activities for ensuring completeness of aircraft (e.g. by testing how the AO checks completeness, IT controls, and the way data from leased-in or leased-out aircraft are input in the internal systems of the AO etc.).

5.3. How to check completeness of flights?

The AO must submit the total number of flights over the reporting year as well as the aggregated emissions from ETS flights falling under the responsibility of the AO.

Please note:

- Under current legislation, flights that are not intra-EEA flights, are exempted from requirements for monitoring, reporting and verification of emissions and surrendering of allowances. For further guidance please see section 3.1.2, 3.1.3 and 3.1.4 MRR GD.2.
- Flights from the EEA to Switzerland are included under the EU ETS. Flights from Switzerland to the EEA and domestic flights within Switzerland are covered by the Swiss ETS.
- Flights from the EEA to the UK are included under the EU ETS. Flights from UK to the EEA and domestic flights within UK are covered by the UK ETS.
- Flights from Switzerland to the UK fall under the Swiss ETS.

The verifier has to check the completeness of the flights and the associated emissions data and whether flights and emissions are correctly attributed to the appropriate market-based system (EU ETS, Swiss ETS, UK ETS or CORSIA) in the emissions report. When checking the **Art. 16(2) (d) AVR**

[53] See MRR Guidance document No.2 on AOs (GD.2).

completeness of EU ETS flights the verifier shall be assisted by data on AO's traffic from **EUROCONTROL**. This means that the verifier has to request the AO to provide access to EUROCONTROL data to allow a cross-check of the data. The verifier needs to be mindful that EUROCONTROL and EU ETS data may not always be a perfect match, e.g. because Central Route Charges Office (CRCO) data may not be totally aligned with exempted flights under Annex I of the EU ETS Directive (exemption codes missing), because the geographical scope of EUROCONTROL may not be fully consistent with the geographical scope of the EU ETS[54] or because the CRCO invoice reflects a flight that was planned but finally not performed or diverted mid-flight. The verifier also needs to check the procedures and control activities that the AO has in place to ensure completeness of flights.

The cross-check performed by the verifier with EUROCONTROL data shall only be used to identify discrepancies bearing in mind that EUROCONTROL data may not always be complete. In case of discrepancies the verifier shall ask the AO the reason for these discrepancies and assess whether the reason is plausible. The verifier may ask the AO to submit these reasons in the emissions report. If the reason for the discrepancy is not plausible or if the AO cannot give a satisfactory explanation and the reported data is not correct, the reported data needs to be adjusted.

Checking the procedures to ensure completeness of flights

The verifier will check whether the procedure for tracking completeness of flights, reflects the information described in the approved MP, and as required by the MRR and the MRR GD.2 (e.g. responsibilities for tracking completeness, systems used, control activities implemented etc.). Furthermore, the procedures must be implemented, documented and be fully up to date. See section 4.5 of this guidance for information on how a verifier checks these procedures.

Testing the control activities to ensure completeness of aircraft and flights

The verifier shall test the control activities that are implemented by the AO to ensure completeness of flights and aircraft to determine whether flights are EU ETS flights (e.g. by observing and if relevant, auditing how the AO checks completeness by testing IT controls, by testing the way flight data are input in the central system etc.).

Issues to be taken into account when checking the completeness of flights

- Only flights that fall under the responsibility of the AO shall be taken into account in the emissions report. This means that (subject to section 5.1) the ICAO designator is the determining factor for assessing and deciding which flights fall under the responsibility of the AO regardless of whether the aircraft is leased, owned or wet leased. The verifier needs to check that only actual flights end up in the emissions report. Planning systems do not contain accurate data; **Art. 51(3) MRR**
- The verifier needs to be aware of the risk of double counting flights and excluding flights that have to be reported (the data has to be aggregated into different categories: domestic flights/flights from one MS to another MS or third country/flights arriving at a MS from a third country). An overall check on the total number of flights shall be made;

[54] Flights within Iceland and some outermost regions are not part of Eurocontrol data.

- Some overseas territories can be regarded as European MS[55] in which case these are called outermost regions. On the other hand, verifiers need to be aware that some islands within Europe are not considered EU territory such as the Faroe Islands. Other overseas territories that are not part of the EU include Aruba, Wallis & Futuna, New Caledonia, Saint Pierre and Miquelon, French Southern & Antarctic Lands, Curaçao, Sint Maarten, Bonaire, Sint Eustatius and Saba.
- Flights connecting an outermost region to its own Member State's mainland, flights between different outermost regions within the same Member State and flights within the same outermost region are excluded. Flights to and from outermost regions and flights to and from overseas territories which are not part of the EEA are excluded. However, flights between an EEA country and an outermost region and flights departing from an outermost region to Switzerland or the UK are included. Flights from the EEA to Switzerland are included under the EU ETS. Flights from Switzerland to the EEA and domestic flights within Switzerland are covered by the Swiss ETS.
- Flights from the EEA to the UK are included under the EU ETS. Flights from UK to the EEA and domestic flights within UK are covered by the UK ETS.
- Flights from Switzerland to the UK fall under the Swiss ETS.
- Aircraft operators carrying out the flights covered by Article 1(2) Regulation(EU) 2025/927[56] have to monitor and report emissions from international flights. For more information on the type of flights covered by CORSIA please see section 3.1.5 of MRR GD2.

Application of time of departure

The AO must attribute all flights to the calendar year according to the time of departure measured in coordinated universal time. The verifier must check whether the correct time[57] is used for the flights and accordingly, whether flights are attributed to the correct reporting year.

Art. 51(1) MRR

5.4. How can EUROCONTROL EMIS be used by AOs?

The EUROCONTROL EMIS is mainly a data repository system built on all the traffic data acquired from EUROCONTROL's Central Route Charge Office (CRCO). It contains a fuel estimator (SET) [58] and provides the user with a complete set of traffic record details per individual AO derived from the EUROCONTROL data bases and State Sources. The EUROCONTROL EMIS includes a Great Circle Distance tool (GCD tool) providing airport city

[55] The following overseas territories belong to the "territory to which the Treaty applies": the five French overseas departments (Guadeloupe, French Guyana, Martinique, Réunion, Mayotte); the French overseas communities of Saint-Martin; the Spanish Autonomous Community of the Canary Islands; and the Portuguese autonomous regions of the Azores and Madeira; Furthermore the territories Ceuta and Melilla (Spain), Aland Islands (Finland) and Jan Mayen (Norway) belong to the EEA and are therefore covered by the EU ETS.

[56] Flights covered by Annex I of the Directive and flights which depart from or arrive in an aerodrome situated in one of the overseas countries and territories listed in Annex II to the Treaty on the Functioning of the European Union.

[57] In general the time of departure refers to off-block time. The verifier should consult the MP and procedure to identify the correct timing.

[58] The fuel estimator based on a simple Excel sheet that allows users to input the details of flight and aircraft (distance and aircraft type) and to get from the system a fuel estimate for each flight (the Small Emitters Tool - SET).

pair values based on Airport locations (latitude and longitude) as well as the actual distance flown used for ATM purposes.

The EUROCONTROL EMIS can be used in several ways:

- It can assist competent authorities in reviewing the emissions reports.
- AO may subscribe to using the EUROCONTROL EMIS for their own flight data and it can therefore also be used by the AO to perform cross-checks with flight data recorded in their own internal systems. As the data on distance, time flown and aircraft type come from reliable sources, this control activity is relatively robust. It will give the verifier more confidence in the completeness and accuracy of the reported data.
- Specific sections of the emissions report template can be automatically generated from the EUROCONTROL EMIS. This may be of use to AOs and verifiers wishing to corroborate the primary data feeding into the submitted report. It is noted that this corroborative data cannot be used as a substitute for data acquired in accordance with the monitoring methodology approved under the MP, but it may indicate potential misstatements requiring further investigation and correction.
- The entire emissions report can be automatically generated for certain small and big emitters and AO emitting less than 3000 tonnes of CO_2 (for further information please see Chapter 6).

What data is stored in EUROCONTROL EMIS?

The EUROCONTROL EMIS contains traffic and AO data contained and stored in the EUROCONTROL data bases. EUROCONTROL's CRCO data are complemented with traffic information provided by States with EU ETS relevant traffic not covered by the CRCO and by other information provided by AOs, EU ETS CA and other sources. This information includes time of departure and arrival of flights, data on the AO (AOC, operating license, ICAO designator or registration number), the aircraft type involved as well as some of the Central Flow Management Unit (CFMU) operational data, e.g. actual route length. CFMU information is extracted from the updated or Initial Flight plan maintained in CFMU. These traffic and administrative data are further complemented by ETS relevant data such as CO_2 emissions, which are calculated using the small emitters tool methodology, exclusion status of each individual flight and attribution of flights between relevant reporting systems.

How can an emissions report be generated from the EUROCONTROL EMIS?

The whole emissions report can be automatically generated from the EUROCONTROL EMIS. It should be noted that some Member States may have their own reporting templates or specific reporting IT systems. For the known MS specific systems, EMIS may generate the required data in the specific format needed. Where this is the case, it is important for the verifier to assess the comparability and accuracy of the data rather than the automatically generated report.

Where the AO is approved to apply the SET, it should check the data generated against data from his internal systems and ensure that any incomplete data/remaining sections are filled in before submission to the verifier. This should be a minimal exercise mainly focused on justifying changes in the data that might have occurred and that are relevant for the verification of emissions data.

The EUROCONTROL EMIS has a built-in automatic control to identify non-ETS flights. Every effort is made to include actual flight data in the EUROCONTROL EMIS. However, there may still be differences in the data. The AO remains responsible for correcting these errors when reviewing the generated emissions report.

Who has access to the EUROCONTROL EMIS?

The verifier will be granted access to the EUROCONTROL EMIS through an authorisation by the AO[59], assuming that the AO has paid the entry fee for EMIS. The contract between the verifier and the AO should set out the relevant conditions and other details that allow the verifier to access the data in the EUROCONTROL EMIS pertaining to the AO. However, if access is not granted, then the verifier may not be in a position to complete its work as efficiently (they would need to ask CRCO invoices to cross check the flight data information. If the AO refuses to provide the necessary data, this could lead to a limitation of scope and could prevent the verifier from issuing a positive verification opinion statement.

5.5. How to check procedures for determining whether flights are EU ETS flights?

To ensure completeness of EU ETS flights and to avoid double counting and avoid non- EU ETS flights from being included in the total reported data under EU ETS, the AO has to implement a procedure for determining whether flights are EU ETS flights. Please see section 4.5 of this guidance on how a verifier checks this procedure.

Exempted flights

The verifier shall understand how to interpret exempted flights as listed in Annex I of the ETS Directive in accordance with Commission Decision 2009/450 on interpreting Annex I activities[60].

Please note that Regulation 2017/2392, Swiss Linking, CORSIA and Brexit resulted in changes in the scope of EU ETS aviation (see section 2.4 of this guide and Chapter 3 MRR GD.2.

5.6. How to check the methodology and procedures used to monitor the fuel consumption?

Art. 53(2) Annex III MRR

Fuel consumption which shall include fuel used during a flight, fuel consumed by APUs whilst the aircraft is stationary and any fuel that may be dumped during a flight, must be determined by using Method A or B unless the AO is approved to apply the simplified monitoring methodology discussed in Chapter 6[61]. The total fuel consumption has to be reported per fuel type in the emissions report.

Verifiers shall be aware of the following when assessing the monitoring methodology for determining the **fuel consumption**:

- During data verification the verifier shall check whether Method A or B is applied correctly, and that the method applied is actually the method as approved in the MP;
- The APU shall be included (verifiers should be aware that there is an increased risk that the APU will be omitted if an aircraft has been in maintenance);

[59] The data can also be directly downloaded from EMIS provided the AO demonstrates that the downloaded data is from EMIS (e.g. the verifier is present when data is downloaded).

[60] Commission Decision 2009/450 on the detailed interpretation of the aviation activities listed in Annex I to Directive 2003/87/EC of the European Parliament and of the Council, OJ 12 June 2009, L149/69.

[61] Section 5.4.3 and 5.4.4 of the MRR Guidance Document No.2 for AOs, (GD 2).

- If the underlying procedures of the AO as referred to in the approved MP, allow a correction factor to be applied for the APU which would lead to the exclusion of the APU, this is a non-compliance and the verifier must assure himself that the CA is aware of this and refer the AO to the CA if necessary. If the issue is not resolved, the verifier should list this as a misstatement and non-conformity (e.g. submission of Method A or B in the MP implies that the APU shall be included). This must also be noted as a non-compliance with the MRR in the verification report. Excluding the APU is not in line with the EU ETS Directive, the MRR and in principle the MP);
- When non-ETS flights have been performed in-between ETS flights, the verifier shall be aware of added risk that the fuel consumption of the non ETS flight(s) is incorrectly included in the determination of fuel consumption, or fuel consumption of ETS flights is excluded.
- The fuel consumption of each and every flight for which the AO is responsible shall be taken into account (see issues on completeness of flights).

Correspondence check between "mass and balance" documentation and reported data **Art. 16(2) (e) AVR**

The verifier shall check the consistency between reported data and the "mass and balance" documentation if the AO has a "mass and balance" document. AOs use different terminology to indicate "mass and balance" documentation (e.g. load sheet, flight logs containing different flight messages per flight etc.).[62] This overall cross-check is meant to identify inconsistencies in the data as well as to spot and have the AO correct any errors in the reported data. The AOs are required to provide the verifier with credible explanations for inconsistencies and subsequently to correct errors in the data. The "mass and balance" documentation should contain the most accurate data related to single flights. Data in planning systems or documents cannot be regarded as accurate.

Consistency check between aggregated fuel consumption data and data on fuel purchased **Art. 16(2) (f) AVR**

The verifier shall check the consistency between aggregated fuel consumption data and data on fuel purchased or otherwise supplied to the aircraft performing the aviation activity. This could include cross-checking the total fuel consumption as purchased from financial and – if applicable in the relevant MS – tax accounting systems versus total fuel consumption as recorded for flights (from operations systems). The verifier should be aware that there might be discrepancies between the data sources since financial accounting systems do not only contain EU ETS data. If this is the case the cross-check could be less useful. Another cross-check could also be a check between the total fuel uplift data for all departure aerodromes within the EU and the fuel uplift data as recorded for ETS flights.

Checking of the monitoring method to determine fuel uplift and fuel contained in tank

When checking the application of the monitoring method used to determine the fuel uplift and fuel contained in tanks, the verifier checks:

- the control activities that the AO has implemented to ensure accuracy (e.g. testing of the cross-checks AOs do between uplift quantities and pre- and post-uplift tank quantities, and assessment of how AOs deal with inconsistencies/testing of cross-checks by pilots or someone else between fuel slips and fuel measured by on-board systems);

[62] The fuel data in the mass balance documentation is cross checked with the data in the emission report and other internal records.

- In the case of fuel uplift measurement by on-board measurement systems, the appropriate time of measurement made by the flight crew (e.g. checking whether a representative measurement takes place instantly before and after fuel uplift);
- The application of the monitoring methodology by cross-checking reported data in the system against fuel slips, doing plausibility checks (comparing fuel consumption per aerodrome pair and aircraft for different aerodrome pairs).

5.7. How to check fuel density?

If the fuel in tanks and fuel uplift is measured in volumes, the AO has to determine the fuel density to convert these volumes to mass terms. New rules have been included in the MRR on the determination of fuel density. The AO shall use the same fuel density as used for operational and safety reasons. The following methods apply: using actual density values as recorded on the fuel slip or delivery note or applying a standard density factor of 0.8 kg/litre (see section 5.4.5 of the MRR GD 2).

Art. 53(5) MRR

The verifier checks whether the method to determine the fuel density as described and approved in the MP, has been correctly applied. Special attention shall be given to checking:

- consistent application of the procedures for measurement of density;
- consistent and correct application of the approved methodology;
- whether the standard factor is applied correctly;
- whether the procedure describing the determination of the actual value or standard density factor is:
    - present and properly documented and retained;
    - have been correctly implemented and are up to date;
    - is applied throughout the year;
    - is effective to mitigate the inherent and control risks. appropriate application of volume to mass calculations/conversions and records, e.g. comparable metric units and order of magnitude changes.

5.8. How to check deviation from general methodologies for specific aerodromes?

The AO can list where necessary (due to special circumstances at specific aerodromes) any deviations from the general monitoring method for fuel consumption and fuel density that the AO has submitted in the MP. These deviations relate to circumstances that the AO knows about at the time of submitting his MP (see MRR GD 2, for more information). The verifier checks whether the deviations in the approved MP have been implemented and whether additional deviations or special circumstances occurred, and that this has been notified to the CA leading to an update of the MP.

Deviations from the general monitoring methodology that are not mentioned in the approved MP are non-conformities and have to be corrected. If these deviations cannot be corrected, the verifier must assess the material impact of these non-conformities on the reported data and report these non-conformities in the verification report.

Art. 29 AVR

Furthermore, the verifier should recommend the AO to improve its monitoring methodology to avoid deviations and to implement control activities or other measures to enable the AO to apply the general monitoring methodology described in the other sections of the MP.

Recommendation for improvement must be listed in the verification report.

5.9. How to check the uncertainty?

The AO must identify and consider the main sources of uncertainty and their associated levels. In the revised MRR tiers are no longer applicable to the monitoring of most parameters for aviation and AO do not have to submit an uncertainty assessment. The sources of uncertainty concern mainly uncertainty associated with measurement systems and analytical tests of fuels etc.. There can be many sources of uncertainty related to the measurement of fuel uplift, fuel contained in tanks or fuel density. A verifier is not required to assess these or the designated uncertainty levels. Nor is the verifier required to assess whether the overall uncertainty is met. Instead, the verifier is required to check:

Art. 56(1) MRR

- whether fuel uplift is indeed determined by fuel supplier data or on-board measurements;
- the control activities the AO has in place to ensure that the main sources of uncertainty and associated levels are considered and risks to errors and non-conformities are mitigated, e.g. assessment of maintenance records if relevant, the corrective action an AO takes when notable deviations are found.

Unless gross inaccuracies are discovered it is not usual for AOs to check the calibration of on-board instruments, and this may not be possible in all cases, for example where the type of aircraft does not facilitate dip-stick tests. It is not part of the regular airworthiness checks that AOs are required to undertake, and therefore the measurement instruments themselves will not have calibration certificates in most cases. Alternatively, the AO may refer to the aircraft manufacturers' own specifications.

Also, it should be ensured that unresolved inaccuracies have not been recorded in the AO's maintenance records and that there is evidence of routine checks of the satisfactory operation of the fuel measurement systems. This means that the verifier has to check manufacturer's specifications and spot check maintenance procedures and records of an AO to see whether control activities are in place and sufficient to mitigate the risks of errors and non-conformities. In addition, the verifier will itself perform several cross-checks on the fuel consumption data (e.g. cross-checks between the fuel slip and fuel measured, fuel data from financial accounting system against reported data on fuel consumption etc.).

5.10. How to check the procedures for cross-checks between the fuel slips and fuel measured?

If on-board measurements are used to determine the fuel consumption, the AO is required to cross-check the fuel uplift quantity as provided by invoices and the uplift quantity indicated by on-board measurement. The verifier checks not only whether the procedure is functioning, implemented, up to date and documented. He also checks the margin of difference which indicates when the difference between the measured data and the fuel supplier data is no longer acceptable. This margin should be set by the AO in the procedure. The verifier checks whether the margin of difference is plausible and whether corrective action is taken when the margin of difference is exceeded. Furthermore, the verifier checks whether corrective action has been taken where notable deviations have been observed.

Art. 56(5) MRR

5.11. How to deal with emission factors?

The AO must provide information on the commercial standard aviation fuels it uses along with details concerning any alternative aviation fuels and the procedure used to determine the associated emission factors, NCVs, and fractions of alternative aviation fuels(including the sampling, analysis and laboratories employed). The verifier assesses whether the correct factors for the respective fuels as indicated in the MP have been applied. If alternative aviation fuels are being used, the verifier checks whether the monitoring methodology has been applied correctly to the analysis of the fuel in order to determine its emissions factor. For information on the monitoring methodology required for alternative aviation fuels please see section 5.5.4 and 5.5.5 of the MRR GD 2.

5.12. How to deal with neat fuels[63] and mixed (blended) aviation fuels?

Article 53 MRR requires the AO to determine the annual emissions from EU ETS flights by multiplying the annual consumption of each neat fuel by the respective emission factor. For mixed aviation fuels the AO determines the amount of each neat fuel as the total amount of the mixed aviation multiplied by the relevant fraction. Where the mixed fuel contains biomass, RFNBO/RCF or SLCF the AO determines the biomass fraction, RFNBO/RCF fraction or SLCF fraction in accordance with Article 54a and 54b of the MRR. More information on how to determine neat fuels and mixed fuels is included in section 5.5.4 and 5.5.5 MRR GD2.

The verifier checks the application of the monitoring methodology laid down in the approved MP. As part of this assessment the verifier checks the completeness of neat fuels and how the mixed fuel is split in the different neat fuels in line with the approved monitoring plan. The verifier will also trace the data flow, perform recalculations and carry out plausibility and consistency checks on the data in order to assess the application of the monitoring methodology. More information related to determination of fractions of alternative aviation fuels is provided in section 5.13.

5.13. How to deal with alternative aviation fuels?

Article 53a to 54c of the MRR contains requirements on the use of alternative aviation fuels[64]. Such fuels can cover biofuels, RFNBO/RCF or SLCF. More information on these types of fuels can be found in section 5.5.1 to 5.5.3 of MRR GD2.

Art. 53a MRR

- In order for alternative aviation fuels to be zero-rated under EU ETS, these fuels must meet sustainability and greenhouse gas savings criteria laid down in Article 29 (2) to (7) and (10) and 29a of the REDII Directive[65]. If these criteria are not satisfied for such fuels, the alternative aviation fuels may not be zero rated and must therefore be treated as a fossil source stream[66];

[63] Neat fossil fuels include Aviation gasoline (AvGas), jet gasoline (Jet B), jet kerosene (jet A1 or Jet A0). Article 3(23g) of the MRR contains a definition of neat fuel. A fuel in it pure form containing only one type of fraction.

[64] Alternative aviation fuels are neat aviation fuels containing carbon that does not originate from neat fossil fuels listed in table 1 of Annex III MRR. Neat fossil fuels include Aviation gasoline (AvGas), jet gasoline (Jet B), jet kerosene (jet A1 or Jet A0). Article 3(23g) contains a definition of neat fuel. A fuel in it pure form containing only one type of fraction.

[65] 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).

[66] For more guidance please see section 9.1 of the MRR Guidance document No.2 for AOs, (GD 2).

- There are several options for determining the fractions of alternative aviation fuels. The approaches are explained in section 5.5.5 of MRR GD2;
- Aircraft operators must attribute alternative aviation fuels to specific flights undertaken. Two options identified for this attribution are outlined in section 5.5.7 of MRR GD2.

As part of checking the correct application of the monitoring methodology, the verifier must perform checks on:

- completeness of alternative aviation fuels (section 5.13.1)
- the methodology to determine the fractions of alternative aviation fuels and determination of neat fuel volumes (section 5.13.2)
- the attribution of alternative aviation fuels (section 5.13.3)
- zero-rating of alternative aviation fuels and compliance with REDII criteria (5.13.3)

5.13.1. Checks on completeness of alternative aviation fuels

The verifier shall carry out completeness checks on the alternative aviation fuels used by the AO. This includes the following checks:

- whether all alternative aviation fuel streams used by the AO are included in the approved monitoring plan;
- whether the alternative aviation fuels can be considered neat aviation fuels or a blended fuel;
- the fractions of alternative aviation fuels and the delineation between the different fractions;
- whether zero-rated and non-zero rated alternative aviation fuels are correctly delineated and classified in line with the MP and the MRR: e.g. alternative aviation fuels meeting REDII criteria and those not meeting REDII criteria;
- where the AO uses alternative aviation fuels that are delivered in batches, whether the batch is a neat fuel or a blended fuel and whether the fractions of the neat fuels are determined and reported separately.

The verifier will also perform checks on the data flow activities and control procedures the AO has implemented to ensure that only quantities of alternative aviation fuels used for EU ETS flights up to the technical limits for alternative aviation use are taken into account. In those cases, the verifier will check whether:

- procedures are present and properly documented and retained;
- procedures have been correctly implemented and are up to date;
- procedures have been applied throughout the year;
- procedures have been effective ensuring that only quantities of alternative aviation fuels used for EU ETS flights up to the technical limits for alternative aviation fuel use have been taken into account and ensuring the reported neat fuels comply with the conditions in Article 53a of the MRR;
- procedures cover evidence about sales of alternative aviation fuels to third parties;

- if data gaps are found, the fuel correlating to data gaps is conservatively assumed as fossil fuel.

5.13.2. Checks on the methodology to determine the fractions of alternative aviation fuels

The verifier shall check the methodology that the AO has adopted to determine the fraction of alternative aviation fuel. The type of checks depends on the applicable methodology approved by the CA. Table 8 shows examples of checks carried out by the verifier.

Table 8 Examples of checks on methodology to determine the fraction of alternative aviation fuels

Methodology	Examples of checks
Analyses (only applicable for situations where biofuels are physically mixed with fossil fuels and delivered to the aircraft in physically identifiable batches)	The fraction of biofuel is determined by standards and analytical methods prescribed in Article 32 to 35 MRR (see section 5.5.5 MRR GD2. The **verifier does similar checks** as when assessing sampling and analysis of calculation factors: e.g. assessing representativeness of sampling, the implementation of the approved sampling plan, evidence of the laboratories' technical competence, reports. The verifier should be aware that fuels are often blended and that analysis results may not be clearly linked to every specific fuel uplifted. Where the AO provides evidence to the CA that analyses according to Article 32 to 35 MRR would incur unreasonable costs are technically not feasible, the AO may base the estimation of the biofuel content on a material balance of blending fossil fuels and biofuels purchased. In those cases, the verifier does similar checks on the evidence demonstrating unreasonable costs or technical infeasibility as described in KGN II.3 on process analysis. The verifier should be aware that the condition of unreasonable costs and technical infeasibility does not apply if a mass balance in accordance with Article 30 REDII is applicable. The verifier shall also check whether the total quantity of biofuel accounted for under EU ETS does not exceed the total quantity of fuel from the AO's EU ETS flights in the reporting year, or the total quantity of biofuel purchased minus the total quantity of biofuel sold to third parties by the AO.
Mass balance in accordance with Article 30 REDII	The fraction is determined by applying a mass balance in accordance with Article 30(1) of REDII. The proof of sustainability of alternative aviation fuels is recorded in the mass balance system. The verifier checks whether the fractions of the alternative aviation fuels as listed in the approved monitoring plan have been determined correctly. The type of checks carried out on the proof of sustainability depends on the evidence provided by the AO (see Annex V). The verifier checks also whether the total quantity of alternative aviation fuel accounted for under EU ETS does not exceed the total quantity of fuel from the AO's EU ETS flights in the reporting year, or the total quantity of alternative aviation fuel purchased minus the total quantity of alternative aviation fuel sold to third parties by the AO.
Purchase records (generally applicable where the purchased alternative aviation fuel is not physically delivered to a specific aircraft)	The fraction of the alternative aviation fuel is determined by providing the purchase records for relevant fuels. For further information please see section 5.13.3 on the specific checks that a verifier must carry out.

5.13.3. Checks on the attribution of alternative aviation fuels

According to section 5.5.7 of the MRR GD 2[67], the AO can use the following methods to attribute alternative aviation fuels:

[67] MRR guidance document No.2 for AOs (GD 2).

- Option 1: Accounting for **physically traceable fuel**: This method assumes that the alternative aviation fuel does not come from the central fuel tank at the airport but directly from the fuel supplier or blender. In this case the AO attributes the alternative aviation fuel supplied to a specific flight. In order to apply this option, the exact composition of the fuel must be known (see section 5.5.7 of MRR GD2).

  Option 2: Simplified approach for accounting for alternative aviation fuels: The AO attributes the alternative aviation fuels to different aerodrome pairs using the **proportionality principle** outlined in section 5.5.8 MRR GD2. This virtual allocation approach to accounting will be applicable at airports with pipeline/hydrant systems or in situations where the trucks deliver the fuel from the central fuel farm to the aircraft. In those cases, the **alternative aviation fuel cannot be physically attributed to a specific flight**. It is then especially challenging to ensure that no double counting occurs regarding batches of alternative aviation fuel and to match to related evidence for meeting the sustainability and greenhouse gas savings criteria (REDII criteria). Therefore, the conditions given in section 5.5.7, 5.5.8 and 9.1 of MRR GD 2 have to be met.

Regardless of which option is applied, the verifier must check whether the **zero-rated alternative aviation fuels meet the REDII criteria**. When assessing the AO's evidence of compliance with REDII criteria, the verifier has to carry out specific checks. The type of checks depends on the approach the AO has applied to demonstrate compliance with REDII criteria and the type of evidence provided by the AO.[68] A key part of the evidence is the **proof of sustainability** for each batch of alternative aviation fuel. Annex V gives a short summary of the role of the verifier in these checks on the AO's evidence and proof of sustainability. More information can be found in section 4.3 of KGN II.3 on process analysis.

Please note that section 9.1.3.6 of MRR GD 2 outlines that some certification schemes may offer to provide **proof of compliance (PoC)** for those situations where the proof of sustainability has to be used for other purposes than the EU ETS. It is up to the ETS Competent Authority to decide whether a proof of compliance is accepted as evidence for demonstrating compliance with REDII criteria. Verifiers should be aware what is evidence is sufficient in a MS. Annex V describes the types of checks the verifier should carry out in those cases.

Article 17(6) of the AVR requires the verifier to carry out specific checks. The type of checks depends on which option is used to attribute alternative aviation fuels. **Art.17(6) AVR**

Specific checks related to option 1 (attribution of alternative aviation fuels to flights)

The verifier checks whether the quantity of alternative aviation fuels is **correctly attributed** to specific EU ETS flights. Specifically, the alternative aviation fuel must be attributed to the flight immediately following the uplift of that alternative aviation fuel. Where **two or more subsequent flights** are carried out **without a fuel uplift** in between, the verifier checks whether the alternative aviation fuel quantity is proportionally assigned to these flights according to the approach described in the MP and the written procedure implemented by the AO to ensure proper attribution of alternative aviation fuel quantities to flights. The verifier should be aware that any fuel remaining in the tank should be considered fossil fuel.

[68] There are four ways through which aircraft operators can demonstrate compliance with REDII criteria: 1) Union Database; 2) voluntary scheme recognised by the Commission, 3) national scheme, 4) aircraft operator's own evidence. Some countries will have specific requirements on what approach is acceptable to demonstrate compliance with REDII criteria.

In order to check the aforementioned elements, the verifier will assess information included on fuel invoices and purchase records, relevant flight information and proof of sustainability. This includes checking:

- whether the purchase records are properly documented;
- alternative aviation fuel batch references, dates of purchase and alternative aviation fuel quantities against flight information;
- the alternative aviation fuel blend ratio if applicable;
- the preliminary emission factor (e.g. application of the correct default value);
- evidence to assess whether each consignment of alternative aviation fuel used by the AO meets the required sustainability and greenhouse gas savings criteria (proof of sustainability). More information can be found in Annex V;
- whether the monitoring methodology to determine the fraction of alternative aviation fuel is in line with the MP. Depending on the method applied to determine the fraction, additional checks need to be made on sampling and analysis activities or the inputs and outputs of a mass balance approach (see table 8);
- evidence that the total amount of alternative aviation fuel claim on the total flights does not exceed the maximum certified blending limits for the fuel type.
- evidence that the total amount of alternative aviation fuel sold to the AO does not exceed the amount of alternative aviation fuel for which the sustainability and GHG savings criteria are proven to be met, as an indication for effective prevention of double counting.

Specific checks related to option 2 (attribution based on the proportionality principle)

The verifier checks whether the system for tracking the origin of the alternative aviation fuel at each relevant[69] aerodrome complies with the requirements laid down in Article 53a of the MRR, in particular whether it effectively prevents **double counting** of the zero-rated content of the purchased alternative aviation fuel. To that end, the verifier must gather:

- evidence of the transparency of the system used to attribute the alternative aviation fuel based on the proportionality principle;
- fuel invoices for the batches of fuel, containing information on quantities of alternative aviation fuel,
- ratio of alternative aviation fuel in the blend, dates of purchase and batch references;
- evidence that the alternative aviation fuel was purchased and delivered to the fuelling system of departure airport in the reporting period, including a check of the dates of delivery to the fuelling system given on fuel invoices or other relevant documents provided by the fuel supplier;
- evidence that each consignment of alternative aviation fuel used by the AO meets the

[69] Record keeping systems may be different at aerodromes in different countries or even within one country. Since an AO may purchase biofuels at different aerodromes, verifiers may be faced with situations that different systems need to be verified. Therefore “relevant aerodromes” here mean all aerodromes at which the AO has purchased biofuels in the reporting year.

- required sustainability and greenhouse gas savings requirements (proof of sustainability). More information can be found in Annex V;
- evidence that the total amount of alternative aviation fuel claimed on an aerodrome pair and on the total flights does not exceed the maximum certified blending limits for the fuel type;
- evidence that the total amount of alternative aviation fuel sold to the AO does not exceed the amount of alternative aviation fuel for which the sustainability and GHG savings criteria are proven to be met, as an indication for effective prevention of double counting.

The verifier will carry out plausibility checks and cross checks on the AO's evidence to assess whether: **Art.17(6) AVR**

- the alternative aviation fuel is correctly assigned to aerodrome pairs in the AER (see section 5.5.7, 5.5.8 and 5.5.10 of MRR Guidance document 2 for AOs (GD2). This includes checking that
    - the alternative aviation fuel is attributed to EU ETS flights proportionally to the emissions from EU ETS flights departing from the relevant aerodrome or common mass-balance system. For that purpose, the verifier checks whether the proportionality factor has been determined correctly (please see box 1);
    - the alternative aviation fuel was delivered to the fuelling system of the departure aerodrome in line with the approved MP;
- the purchase records and evidence of input data to determine the proportionality factor is well documented;
- the total amount of alternative aviation fuel claimed at each airport does not exceed the total fuel reported by that AO for the flights for which allowances have to be surrendered under the EU ETS (i.e. the reduced scope) originating from that airport at which the alternative aviation fuel is supplied;
- the amount of alternative aviation fuel for which allowances have to be surrendered under EU ETS does not exceed the total quantity of the alternative aviation fuel purchased minus the total quantity of the alternative aviation fuels sold to third parties;
- the ratio between the alternative aviation fuel and fossil fuel attributed to EU ETS flights aggregated for each aerodrome pair does not exceed the maximum allowable (certified) blending limit for that alternative aviation fuel. The maximum blending limit is the limit certified in accordance with a recognised international standard such as ASTM standard;
- the aggregated zero-rated fraction in the alternative aviation fuel does not exceed the amount of alternative aviation fuel for which proof for meeting the sustainability and GHG savings criteria is provided. Please see Annex V on the checks a verifier should carry out on the evidence demonstrating compliance with the applicable sustainability and greenhouse gas savings criteria;
- the same amounts of alternative aviation fuel have not been accounted for and claimed in in an earlier emission report or by another AO or in another carbon pricing

system.

If the Union Database (UDB) for the registration of purchased alternative aviation fuel is in place, the checks mentioned above can be done more easily as most information will be in the UDB. Other cross checks will still be necessary against other evidence such as fuel invoices, signed declarations etc.

Box 1 Checking the application of the proportionality factor

Section 9.1.3.6 MRR GD2 explains that the proportionality factor is determined for each aerodrome separately unless a mass balance system covers aerodromes. In the latter case the **proportionality factor is applicable for all aerodromes** connected the whole system. When assessing the correct application of the proportionality factor, the **verifier checks**:

- the purchase records to assess the total quantity of the fuel and information on the fuel used by AO in the emission report;
- where the aerodrome is part of a mass balance system, whether the proportionality factor covers all flights departing from all aerodromes connected to CEPS where the aircraft operator performs flights;
- whether the proportionality factor is applied for all fuels uplifted at the same aerodrome or at the aerodromes that are part of the mass balance system;
- the accuracy of intra and extra EEA flights departing from an aerodrome or aerodromes covered by the mass balance system by the AO, (e.g. by carrying out plausibility checks on the emissions data and checking completeness of flights);
- whether the proportionality factor is calculated correctly in line with the approved MP.

Checking the accuracy of intra and extra EEA flights used in the determination of proportionality factor involves performing plausibility checks and cross checks with flight information data. The checks are similar to assessing the completeness of flights (e.g. cross checking with EUROCONTROL data).

Reporting of any inconsistencies in the verification report

The verifier has to confirm in its verification report that it has carried out completeness and accuracy checks on the amount of alternative aviation fuel and has to report any inconsistencies identified in the attribution of alternative aviation fuels. Such inconsistency may be identification or uncertainty of whether the AO claimed the alternative aviation full under other schemes that may not be part of the same emissions report.

Art. 27(3) (gh) AVR

5.14. How to deal with eligible aviation fuels?

The revised EU ETS Directive introduced a new mechanism to support the transition from use of fossil fuels to alternative aviation fuels to decarbonise commercial air transport. A maximum of 20 million allowances is reserved to accommodate the price difference between fossil kerosene and aviation fuels that are eligible for that ETS support[70].

Specific rules on the yearly calculation of the price difference between eligible aviation fuels and fossil kerosene are included in Delegated Regulation (EU) 2025/728. Article 1 of the Delegated Regulation (EU) 2025/728 allows commercial AOs to apply for an allocation of allowances in respect of eligible aviation fuels used on subsonic flights for which allowances

[70] The support is valid for the eligible aviation fuels used by commercial AO from 1 January 2024 to 31 December 2030.

have to be surrendered (EU ETS flights under the reduced scope) and for flights covered by Article 3c(8) of the EU ETS Directive. Section 5.5.9 of MRR GD2 provides information on such eligible aviation fuels and the level of support applicable to the different eligible fuel types.

If the commercial AO decides to apply for allowances in respect of eligible aviation fuels from these flights, it must have stated in its annual emissions report for the preceding reporting period the verified amounts of eligible aviation fuels. This verified report must be submitted by 31st March of each year.

Art. 54a MRR

The verifier should carry out the same checks on the methodology to determine the amounts of eligible aviation fuels and the attribution of these fuels to flights (where fuels can be attributed to specific flights) and aerodromes/ aerodrome pairs (where fuels cannot be physically attributed to specific flights). The verifier should however be aware of the different flights covered for the support of FEETS (Fuels Eligible for ETS support) and alternative aviation fuels.

Table 9 Verifier's role in assessing eligible aviation fuels

Component	Specifics in relation to eligible aviation fuels
Checking the completeness of eligible aviation fuels	Similar completeness checks as described in section 5.13
Checking application of the method to determine fraction of eligible aviation fuels	Similar checks as described in Table 8 in section 5.13
Checking the **attribution of eligible aviation fuels** to specific flights (**option 1**)	The verifier should check whether the fuel is correctly attributed to specific flights (see section 5.13). The flights are not only the flight for which allowances have to be surrendered (EU ETS flights under reduced scope) but also the flights listed in Article 3c(8) of the EU ETS Directive.
Checking the **attribution of eligible aviation fuels** to aerodromes and aerodrome pairs (**option 2**)	The verifier should perform the following checks: ▪ whether the eligible aviation fuel is correctly assigned to aerodromes and aerodrome pairs in the emissions report. This includes checking that: o the eligible aviation fuel is attributed to the flights proportionally to the emissions from flights departing from the relevant aerodrome or common mass-balance system. For that purpose, the verifier checks whether the proportionality factor has been determined correctly (see box 1); o the eligible aviation fuel was delivered to the fuelling system of the departure aerodrome in line with the approved MP; ▪ the purchase records and evidence of input data to determine the proportionality factor is well documented; ▪ the total amount of eligible aviation fuel claimed at each airport does not exceed the total fuel reported by that AO for the flights for which allowances have to be surrendered under EU ETS and for flights covered by Article 3c(8) of EU ETS Directive originating from the aerodrome at which the eligible aviation fuel is supplied; ▪ the amount of eligible aviation fuel for which allowances have to be surrendered under EU ETS and for flights covered by Article 3c(8) of the EU ETS Directive does not exceed the total quantity of eligible aviation fuel purchased minus the total quantity of eligible aviation fuel soled to third parties ▪ the ratio between the eligible aviation fuel and fossil fuel attributed to EU ETS flights aggregated for each aerodrome pair does not exceed the

Component	Specifics in relation to eligible aviation fuels
	maximum allowable (certified) blending limit for that eligible aviation fuel. The maximum blending limit is the limit certified in accordance with a recognised international standard such as ASTM standard; ▪ the aggregated zero-rated fraction in the eligible aviation fuel does not exceed the amount of eligible aviation fuel for which proof for meeting the sustainability and GHG savings criteria is provided. Please see Annex V on the checks a verifier should carry out on the evidence demonstrating compliance with the applicable sustainability and greenhouse gas savings criteria; ▪ the same amounts of eligible aviation fuel have not been accounted for and claimed in an earlier emission report or by another AO or in another carbon pricing system.
Checking the **level of EU ETS support** under Article 3c(6) EU ETS Directive	The verifier checks the level of support per fuel category by cross checking the information in the emission reports with internal evidence such as standard labels and documents related to the flights or operations that benefited from the **FEETS support**. The verifier will also check the correct determination of the level of EU ETS support. More information on how to determine the EU ETS support is provided in section 5.9.9 MRR GD2 and Guidance note on FEETS Article 8 Visibility Requirements for Aircraft Operators. The indicative list of 100% support airports can be found at the following website: https://climate.ec.europa.eu/document/download/13dd8dc2-9011-4fdb-acb8-f21c260dd080_en?filename=eea_airports_aviation_fuels_en.pdf

Reporting of any inconsistencies in the verification report

Art. 27(3) (gb) AVR

The verifier has to confirm in the verification report that it has carried out completeness and accuracy checks on the amount of eligible aviation fuels and report any inconsistencies identified in the attribution of eligible aviation fuels. Such inconsistency may be identification or uncertainty of whether the AO claimed the alternative aviation full under other schemes that may not be part of the same emissions report.

5.15. How to deal with data gaps?

Art. 66(2) MRR

If data relevant for the determining the AO's emissions for one or more flights are missing, the AO must use surrogate data for the time period for which the data is missing. Surrogate data must be determined by an alternative method described in the MP approved by the CA. Where surrogate data cannot be determined by that method, emissions for that flight or the relevant flights may be estimated by the AO by using the simplified monitoring tools approved by the European Commission. Currently only the EUROCONTROL small emitters' tool (SET) is approved by the EC.

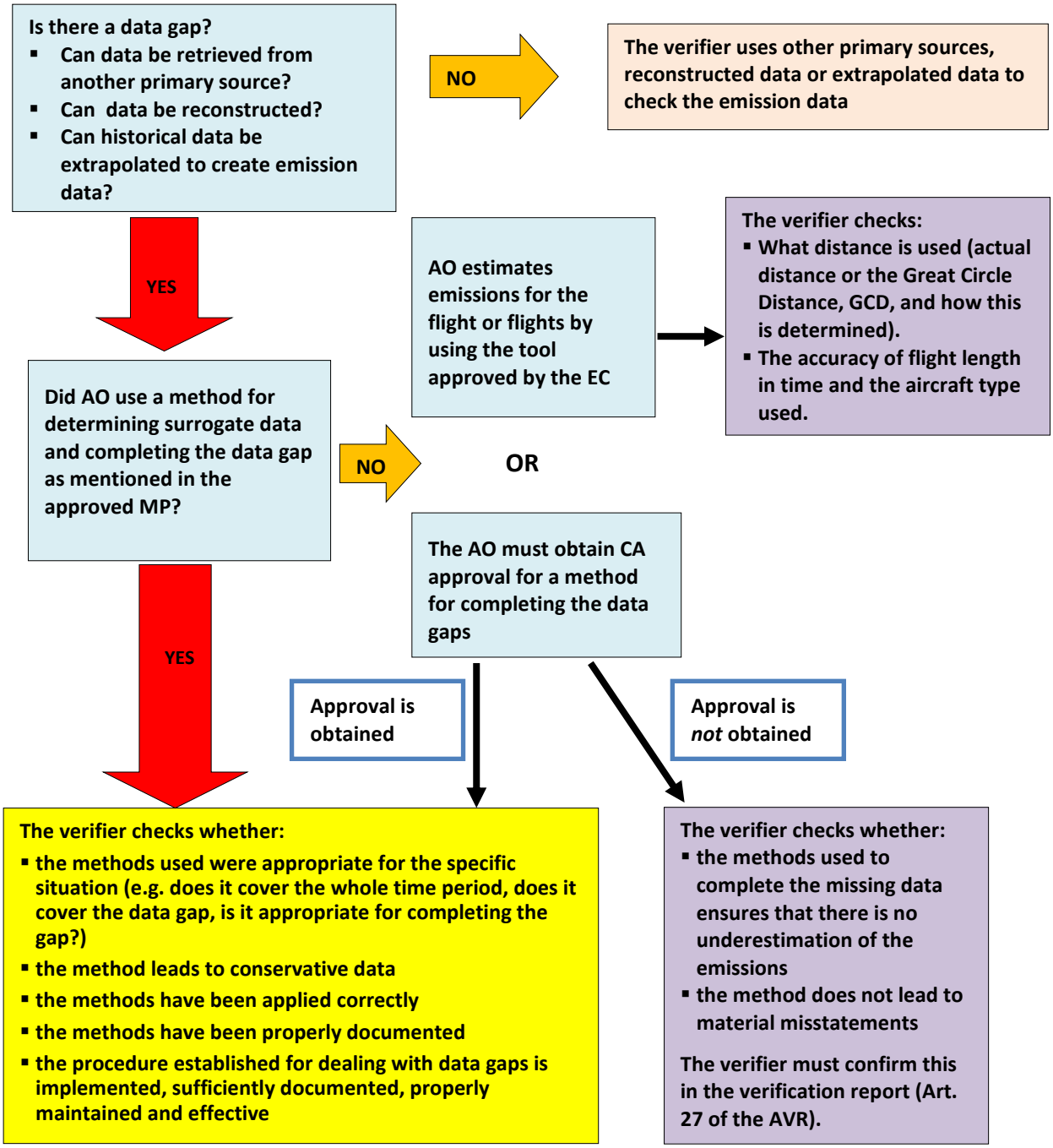


Figure 7 Schematic diagram of how the verifier deals with data gaps

Data gaps must be identified and missing data filled in by the AO itself using the methods described above after which the verifier checks that the result is reasonable. In addition, verifiers can identify data gaps when they are carrying out verification activities and require that the AO corrects them. Figure 7 shows what the verifier is required to check in the case of data gaps.

Art. 18 AVR

A data gap occurring several times over a longer period of time may show that the control activities are not functioning correctly. The verifier will therefore assess the frequency of data gaps occurring and the control activities implemented to avoid these data gaps. The verifier also needs to assess whether the control activities are effective. (e.g. whether IT systems, automatically transferring data, are secure and functioning properly, whether the operator has built in manual controls to ensure that no data gaps occur).

Art. 18(2) AVR

The verifier will also check whether the number of flights with data gaps exceed 5% of the annual flights that are reported, whether the operator has informed the CA thereof and whether action has been taken to improve the monitoring methodology. If the aircraft operator has not done so, the verifier should direct the aircraft operator to communicate with the CA and if this issue is not resolved before the verification report is issued, report this as a non-compliance in the verification report.

5.16. To what extent can the EUROCONTROL EMIS be used when filling in data gaps?

The EUROCONTROL EMIS can be used to provide estimated values for data gaps in most cases, assuming that the AO and verifier have authorised access to the facility. Irrespective of access to the EUROCONTROL EMIS, the CEFA system (CRCO Extranet for Airspace Users) provides AOs (free of charge) with certain data elements which could be useful in filling in data gaps if they are related to ATM (e.g. aerodromes of departure or arrival) or if they are related to flight completeness. It should be noted that, in contrast to the EUROCONTROL EMIS, ETS specific values (like ETS exemptions, estimated fuel burns, precise registration marks and identity of actual ETS AOs) are not available in CEFA.

5.17. How to check roles and responsibilities?

There are different departments and persons responsible for specific elements in the data flow activities and control activities. For example, these departments could include flight planning, operations, flight control, IT, pilots, fuel suppliers, fuel management. The verifier should assess the risks involved with the different personnel responsible for monitoring and reporting processes in particular whether they are sufficiently capable of performing the activities assigned to them. For example, this may be done on the basis of written records, face to face meetings or telephone interviews.

5.18. How to check procedures for data flow and control activities?

See Chapter 4 of this guidance.

5.19. How to check emissions data in the emissions report?

The AO must submit information on the aggregated emissions from ETS flights falling under the responsibility of that AO while making a distinction between domestic flights, flights from one EEA country to another EEA country or flights from outermost region to another EEA country or vice versa. Data on the total number of flights and emissions per aerodrome pair shall also be submitted. The verifier checks these numbers and assesses whether they are complete and correspond to the overall emissions declared in the emissions report. The activities discussed in section 3.2.6 under process analysis (detailed data verification) are performed in order to make these checks including a check against data in the EUROCONTROL EMIS.

5.20. How to deal with rounding of data?

The MRR requires an AO to report emissions as rounded tonnes of CO_2. Rounding should take place at the highest level of aggregation. Emission factors shall be rounded to include only significant digits both for emission calculations and reporting purposes. Rounding of emission factor values is only possible if this does not lead to discrepancies in the calculation of tonnes of CO_2 emissions and does not lead to an inaccurate emission figure. Fuel consumption per flight shall be used with all significant digits for calculation. When the data is recorded through digital instruments the data is usually recorded and reported in whole numbers. In the case of

Art. 72 MRR

analogue gauges and manual recording, problems have been encountered related to the rounding of figures (e.g. the pilot often has to make an estimate of the actual number).

Where data is manually input in an internal system and ACARS is not used, the verifier shall check the procedures the AO has in place to ensure that pilots are rounding figures in the same manner and in a consistent way. This should include a check on how the pilots actually round figures.

6 Simplified verification of annual emissions

Article 55 of the MRR introduces simplified monitoring and reporting requirements for small emitters and AO having total annual emissions lower than 3 000 tonnes of CO_2 from flights other than those referred to in Article 28a(1), point (a), and Article 3c(8) of Directive 2003/87/EC (reduced scope).

A **small emitter** is an AO operating fewer than 243 flights per period for three consecutive four-month periods ***or*** with operating flights with total annual emissions lower than 25,000 tonnes CO_2 per year (according to the "**full EU ETS scope**")

Small emitters and AO having total annual emissions lower than 3000 tonnes of CO_2 are allowed to estimate fuel consumption using tools implemented by EUROCONTROL or another relevant organisation that can process all relevant air traffic information and that are approved by the European Commission. Currently only the EUROCONTROL simplified fuel consumption estimation tool (**EUROCONTROL small emitters' tool - SET**) has been approved by the European Commission[71].

Art. 55(2) MRR

The EUROCONTROL EMIS (formerly known as **ETS Support Facility) integrates the approved simplified tool (SET)**, for the fuel estimation function with validated traffic records as well as ETS related data for all AOs and States that fall under the scope of the EU ETS directive. EMIS can also be used as a **simplified reporting procedure**. The report is in that case automatically generated from the system.

For small emitters further simplified requirements can be found in Article 55(3) of the MRR: i.e. simplified monitoring plan and exemption to submit supporting documentation to the CA. Section 5.6 of MRR GD.2 provides guidance on the requirements that apply to small emitters and AO having less than 3000 tonnes of CO_2 from flights other than those referred to in Article 28a(1), point (a), and Article 3c(8) of Directive 2003/87/EC.

These simplified requirements and the use of SET and the EUROCONTROL EMIS have an impact on verification. **This Chapter** explains the **verification requirements for these simplified monitoring and reporting situations**.

Please note that **very small non-commercial AOs** (i.e. AO emitting less than 1000 t CO_2 per year according to the "extended full EU ETS scope") are **exempted** from the EU ETS until 31 December 2030.[72] Whether or not the threshold is exceeded, should be evaluated on an annual basis.

6.1. When is verification not required?

An AO emitting less than 25 000 t CO_2 per year (according to the full EU ETS scope) or less than 3 000 t CO_2 per year (according to the reduced EU ETS scope) does not need to involve a

[71] This tool was approved by Commission Regulation No 606/2010 of 9 July 2010 on the approval of a simplified tool developed by the European organisation for air safety navigation (EUROCONTROL) to estimate the fuel consumption of certain small emitting AOs, OJ 10 July 2010, L 175/25.

[72] Regulation (EU) 2017/2392 of the European Parliament and of the Council amending Directive 2003/87/EC to continue current limitations of scope for aviation activities and to pre-pare to implement a global market-based measure from 2021, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R2392&qid=1515662616214&from=en

verifier when the EUROCONTROL EMIS is used to generate the emissions report from the EUROCONTROL EMIS independently without any input or changes from the AO. The emissions are considered verified in that case. The thresholds must be calculated using the preliminary emissions factor. Please note that the threshold of 243 flights per 4-month period does not apply. For more information on the application of the small emitters thresholds based on the full and reduced scope please see section 3.1.1, 3.1.2 and 3.2.2 of MRR GD.2.

6.2. What steps in the verification process are applicable to simplified situations?

If EUROCONTROL EMIS is not used to generate the emission report or if the AO amends elements in the reports generated from the EUROCONTROL EMIS, a verification of the emission report is required. Section 6.1 is not applicable in those cases. Small emitters or AOs having less than 3000 tonnes of CO_2[73] can still apply the simplified procedures and in those verifications the **same verification steps** apply as for large aircraft operators. The verifier is still required to do a strategic analysis and risk analysis, draft a verification plan and carry out other verification activities.

However, in some cases these steps can be more straightforward than in other situations, for example, where:

- SET or the EUROCONTROL EMIS is used to determine the fuel consumption (see section 6.4);
- The EUROCONTROL EMIS is used to generate the report but there was some input by AO (e.g. the AO amending data in the EUROCONTROL EMIS or the AO using their own data) (see section 6.4);
- The AO's data flow activities are more confined and the procedures for determining completeness of flights, the eligible aircraft and determining ETS flights are less complex;
- The required control activities to guarantee completeness and avoid double counting are less extensive because the risks of misstatements and non-conformities are relatively low;
- The risk to data integrity is reduced by inherent data security within the approved simplified procedure, e.g. where the procedure involves reduced or no direct data inputs by the AO and the output is independently generated.

Where a small emitter or AO emitting less than 3000 tonnes of CO_2 is choosing not to apply simplified monitoring procedures, the verification will be more extensive (see section 6.3).

6.3. What if a small emitter has opted not to use the simplified tool?

The AO is not obliged to use the simplified tool for estimating the fuel consumption. If the approved MP confirms the AO's decision to apply the standard monitoring methodology, the verifier will have to check the application of the approved monitoring methodology and perform the checks described in section 3.2.6 and Chapter 4. The verifier carries out the same activities as prescribed for the verification of large AO's emissions reports but the data flow and control activities for these types of AO can be more simple.

[73] Situations where the emissions report is not generated automatically from the EUROCONTROL EMIS independently without any input of the AO.

6.4. What does the verification entail if the simplified tool in Article 55(2) MRR is used?

Subject to the availability of the EUROCONTROL EMIS, there are **two options** available to AOs whose approved MP states that they can use the SET:

1. The AO can acquire the output direct from EUROCONTROL through the EUROCONTROL EMIS and submit this with alterations for verification. The larger the number and complexity of the alterations, the more potentially complicated the verification will be. However, this will to a large extent also depend on the quality of the justifications provided by the AO in connection with the alterations. Verification is still required but can be straightforward;
2. The AO can also complete the SET spread-sheet and submit an emissions report based on the fuel consumption estimated by the SET tool. However, verification in this case may be more complicated than in option 1.

In these two cases the verifier shall plan to compare the report submitted by the AO against EUROCONTROL's version generated from the EUROCONTROL EMIS or if the AO does not give the verifier access to EMIS the verifier checks against CRCO data. Where in option 1 and 2 inconsistencies are identified between the two reports or data, the verifier will need to ask the AO to clarify the reasons for the inconsistencies, and assess whether these are reasonable and whether corrective action needs to be taken by the AO.

Please note with respect to all options:
The **AO remains responsible** for correcting all misstatements and non-conformities identified. If the AO has discovered that EUROCONTROL data is not complete or correct, the AO must correct this and ensure that the emissions report contains corrected data.

Site visits for small emitters using the SET published as an Excel tool

Based on the verifier's risk analysis the verifier may decide that small emitters using the simplified tool do not require a site visit to verify the annual emissions report (bearing in mind the definition of 'site'[74] for AOs and Article 33(1) AVR); this is acceptable provided that the AO has given the verifier access to the AO's own data in the EUROCONTROL EMIS to check the completeness of the flights remotely as well as whether the AO has provided sufficient information to assess the accuracy of the flight length and aircraft type remotely.

6.5. What to do if a small emitter exceeds the *de-minimis* threshold?

An AO making use of the simplified tool and exceeding the threshold for small emitters or the threshold of 3000 tonnes during a reporting year must notify this fact to the CA of the administering Member State. The EMIS also contains a functionality that will flag an AO that is getting close to the thresholds applicable to these types of AO[75]. This functionality enables the CA to set a percentage value for those AOs in relation to the threshold so that the status of that AO is closely monitored and the possible exceeding of the *de-minimis* threshold is detected early on.

Art. 55(4) MRR

If the AO can demonstrate to the satisfaction of the CA, that the thresholds have not already been exceeded within the past five reporting periods and will not be exceeded again from the

Art. 55(4) MRR

[74] Site visits for AOs relate to where the monitoring process is defined, managed including where relevant data and information are controlled and stored. The EEUROCONTROL EMIS can be regarded as the place where the monitoring and reporting process is defined.

[75] Either in the total number of flights of 243, or in the total CO_2 emitted, 25,000 tonnes or 3000 tonnes.

following reporting period onwards, the AO does not need to update the MP to meet the regular monitoring requirements for AOs. The EUROCONTROL EMIS can help the CA to assess the information provided by the AO since the facility enables trend analyses. If the AO cannot demonstrate to the satisfaction of the CA that the threshold won't be exceeded, the MP must be updated to meet the additional monitoring requirements laid down in the MRR. The revised MP must be submitted without undue delay to the CA for approval.

7 Aviation specific issues in the verification of non-CO_2 aviation effects

This Chapter explains the role of the verifier when verifying **non-CO_2 aviation effects reports**. Section 7.1 provides an overview of the key requirements of monitoring and reporting of non-CO_2 aviation effects and highlights when verification by an accredited verifier is required. Section 7.2 explains in what situations IT systems approved by the Commission will verify reports automatically. Section 7.3 outlines what activities a verifier must carry out in order to verify with reasonable assurance that the non-CO_2 aviation effects reports are free from material misstatements. Section 7.4 explains how the verifier should deal with data gaps and in section 7.5 information is provided on how to report the verification of non-CO_2 aviation effects reports.

7.1. Overview of key requirements

Article 14(5) of the EU ETS Directive and Article 56a of the MRR require AO to monitor and report non-CO_2 aviation effects from flights performed by aeroplanes equipped with jet engines.[76] The scope of flights to be covered in the monitoring and reporting of non-CO_2 aviation effects is explained in section 2.4.

To calculate the non-CO_2 aviation effects[77], AOs must use the following **methods**:

Art. 56a (4) MRR

- a fuel burn module[78] and emissions estimation module[79];
- method C consisting of an enhanced weather-based approach;
- a default approach if data gaps have occurred.

Small emitters having emissions below 25ktonnes of CO_2 per year can use a simplified methodology: method D, a location-based methodology (climatology approach), instead of method C. More information on these monitoring methodologies can be found in the document: MRV non-CO_2 data collection Guidance for Aircraft Operators.

Article 56a (7) of the MRR requires aircraft operators to use the **Non-CO_2 Aviation Effects Tracking System (NEATS)**, a third-party IT tool or a combination of those tools to apply the calculation- based methodologies. Both NEATS and such third-party IT tools have to meet the key principles and conditions laid down in the MRR and have to be approved by the Commission so that these can be used for the quantification of non-CO_2 aviation effects.

Art. 56a (7) and (8) MRR

Where this Chapter uses NEATS this also refers to third party IT tools approved by the Commission unless otherwise stated. Please note that for the reporting year 2025, only NEATS is available and approved by the Commission.

[76] If the aircraft operator does not operate flights with aeroplanes with jet engines, they are not required to monitor and report non-CO_2 aviation effects. Please see MRV non-CO2 data collection Guidance for Aircraft Operators for more information.

[77] Expressed in CO_{2e} per flight.

[78] The fuel burn module employs detailed aircraft performance modelling models (like EUROCONTROL's Base of aircraft data, BADA) to estimate the fuel flow along flight trajectories.

[79] The emission estimation module is a model that calculates aircraft engine emissions of NO_x, HC, and CO along the flight trajectory based on fuel flow correlation models

NEATS has been developed in such a way that it incorporates the whole monitoring and reporting process, so non-CO_2 aviation effects reports can be automatically generated by the system without any data input by the AO. NEATS performs calculation of non-CO_2 aviation effects using both secondary data sources and primary data sources, where applicable, which are subsequently recorded in the system. It covers the necessary models and functions[80] needed to calculate the CO_{2e} per flight[81] in accordance with the MRR.[82]

Instead of automatically generating the report from the system, the MRR allows the aircraft operator to use their own data for some of the sources in NEATS that can be regarded as primary sources.

Primary source data in NEATS that can either used, or amended in the system by the AO, include the following:

- Flight information data
- Flight trajectory data
- Aircraft properties
- Aircraft performance, including the fuel burn module
- Fuel properties

More information on what data can be regarded as primary source data in NEATS can be found in section 3 of MRV non-CO_2 data collection Guidance for Aircraft Operators for more information.

Other data such as weather data originating from independent third-party sources are built in NEATS without any input from the AO. These independent secondary data sources cannot be amended by AOs in the system.

Similar principles and functionalities apply to third party IT tools that are approved by the Commission. Such IT tools also have to incorporate method C and D using GWPe of 20, 50 and 100 years, weather data based on Numerical Weather Prediction (NWP) models, efficacy to fine-tune the GWPs, as well as default values laid down in the MRR and associated documentation (NEATS guidance). AO can only use flight information, flight trajectory data, aircraft properties, aircraft performance and fuel properties data as primary source data in these third-party tools. Other secondary data must come from independent sources as is the case in NEATS.

The extent to which NEATS or other IT tools are used and the type of monitoring methodology impacts verification of the non-CO2 aviation effects report (see Figure 8).

[80] Base of aircraft data, Boeing fuel flow method, OpenAirClim, Contrail Cirrus Prediction Model, Algorithmic Climate Change Functions.

[81] The aggregated non-CO_2 aviation effects per flight are converted into CO_{2e} per flight.

[82] The calculation of $CO_{2(e)}$ per flight is based on Global Warming Potential metric of 20, 50, and 100 years for each of the monitored flights. It also uses efficacy to refine the GWP in line with Article 56a of the MRR.

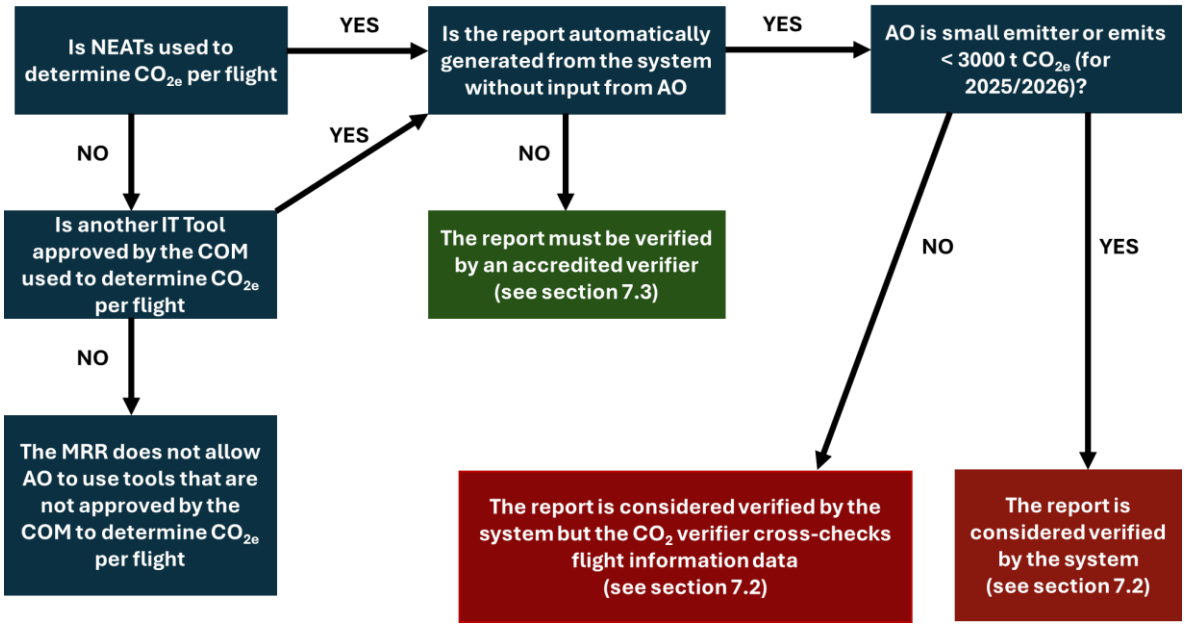


Figure 8 Type of verification

NEATS only

Upon introduction of the non-CO_2 MRV scheme in early 2025, NEATS was still under development and therefore not yet available to generate reports, making a timely calculation of CO_{2e} per individual flight not possible. Article 56b(6) of the MRR provides a clear procedure for such transitional situations. When NEATS cannot be used, the AO must monitor, as a minimum, flight information and aircraft properties per flight. Once NEATS becomes available, the $CO_{2(e)}$ calculation per flight can be performed on the basis of this data.

For the year 2025 the flight information and aircraft properties per flight have been monitored by the AO and will be used to generate the non-CO2 aviation effects report from NEATS. This information is considered primary source data and is subject to verification (see section 7.3). Verifiers accredited against accreditation scope 12a can carry out the verification if the AO uses only the AO's flight information data and aircraft properties data as primary source data. This means that the verifier carrying out verification of a CO2 emission report can also verify the non-CO_2 aviation effects report for 2025.

As the AO was required to monitor flight information data and aircraft properties data in 2025, this information is already available. Furthermore most of the non-CO_2 flight information data will be similar to CO2 flight information data (depending on the scope: see section 2.4).

Before NEATS is available to generate the non-CO2 aviation effects report, the verifier could already start cross checking flight information data and aircraft property data recorded in the AO's spreadsheet against internal records and other relevant information (see section 7.3.3.1 and 7.3.3.3). The verifier will also be able to carry out a strategic analysis, risk analysis and verification planning for non-CO_2 activities. It is recommended that the verifier carries out these checks on the data, control activities and procedures before NEATS is available to generate the report.

Once NEATS has become available and the AO has generated the report from the system, the verifier can then do the final cross-check between the data input to NEATS and the confirmed data in the operator's spreadsheet and so **finalise** the verification. The verifier will then issue the verification report to the AO so that it can submit that report to the CA. Completing the cross checks of the AO's spreadsheet in advance of the report being generated from NEATS, facilitates the process of submitting the verified non-CO_2 aviation effects report as soon as possible after the generation of the report.

If it is not possible to use the NWP model because NEATS is unavailable the AO must use method D in the interim and update the methodology to the correct one once NEATS is operational.[83]

All information monitored by the aircraft operator must be **recorded** and made available to the verifier. This will allow the verifier to carry out the checks outlined in section 7.2 and 7.3.

7.2. Verification of non-CO_2 aviation effects reports by NEATS

If the non-CO_2 aviation effects report is automatically generated from NEATS without any input (primary data) of the AO, there is no need for a verifier to verify the non-CO_2 aviation effects report. An automated verification is carried out by the system performing automated checks and using data from trustworthy secondary sources.

To **ensure consistency with CO_2 reporting where this is appropriate**, the verifier carrying out a verification of an annual emissions report[84] must conduct consistency checks on flight information data in these NEATS generated non-CO_2 aviation effects reports. These includes checks between the flight information data included in the CO_2 annual emissions report and the flight information data contained in the non-CO_2 aviation effects report taking into account the scope covered by CO_2 reporting for annual emissions and the scope of reporting for non-CO2 aviation effects (see section 2.4 of this guidance). As the non-CO_2 aviation effects report is included as an attachment to the CO_2 annual emissions report, a cross check between the two reports is possible without much additional effort. Such a check is not necessary if the AO is a small emitter or if for the years of 2025 and 2026 an AO has total annual emissions lower than 3000 tonnes of CO_2 from flight other than those referred to in Article 28a(1), point (a) and Article 3c(8) of the EU ETS Directive.

If there are inconsistencies with respect to flight information reported under the non-CO_2 MRV, the verifier informs the AO and **reports it in the verification report** corresponding to the annual emission report. It is then up to the CA and the AO to resolve this further (ultimately by triggering a new calculation for the relevant flights through NEATS). This confirmation and consistency check on flight information would form part of the verification of CO_2 annual emission and would not be a separate verification.

Please note for 2025 reporting only:

The cross checks by the CO_2 verifier of the flight information data in the CO_2 emission report and the flight information in the non-CO_2 aviation effects report are carried out during the CO_2 verification.

However, **for the reporting year 2025** NEATS will likely only become available in March 2026, by which time the CO_2 verification may already be closed as the verified CO_2 emissions report has to be submitted by 31 March 2026 or earlier if the Member State has specified this in their legislation.

The non-CO_2 aviation effects report will be generated from NEATS **as soon as NEATS becomes available**. If the CO_2 verification is completed before the non-CO_2 aviation effects report is generated from NEATS, the AO should request the CO_2 verifier to carry out this consistency check after the non-CO_2 aviation effects report is generated. The CO_2 verifier should be aware that this

[83] An update is not needed if the aircraft operator emits less than 25ktonnes of CO_{2e} per year.

[84] It is assumed that aircraft operators always report both the CO_2 and the non-CO_2 aviation effects, unless there are flights with no jet engines, and that the non-CO_2 aviation effects report can be attached to the CO_2 emissions report, in accordance with Article 68(5) of the MRR.

consistency check can occur after the CO_2 verification for reporting year 2025 and consider that in their planning.

Any **inconsistencies** identified in this consistency check should be reported by the verifier to the AO specifying that the verifier has cross checked the consistency between data on flights in NEATS with the data on flights in the emissions report and what type of inconsistencies the verifier has identified in the flight information data.

The non-CO_2 effects report and the report on inconsistencies identified by the CO_2 verifier have to be submitted by the deadline prescribed by the relevant Member State.

7.3. Verification of non-CO_2 aviation effects reports by an accredited verifier

If the non-CO_2 aviation effects report is generated from NEATS or IT tools approved by the Commission but the AO provided **primary data** for some of the **primary source data inputs**, it is important that the verifier checks the accuracy of the data and issues a verification opinion statement on the reported non-CO_2 aviation effects data. In principle several situations can occur:

- replacing only a few data inputs: e.g. replacing third party flight trajectory data with own flight trajectory data (monitored in-flight) or flight plan data, and own data for the aircraft properties. These situations would be relatively straightforward;
- using more significant input from the AO: e.g. the AO uses its own data for several data points, for example flight trajectory data, aircraft properties, aircraft performance and fuel properties;
- the AO applies its own fuel burn module or monitors fuel flow itself along its own flight trajectory data. NEATS would then only be used to perform the calculation under method C or D using the emission models embedded in the system.

As outlined in section 3.2.3, the **verifier's risk analysis** is an important aspect of verification. The higher the risks of misstatements and/or non-conformities, the more extensive the verification activities will be. The magnitude of inherent[85] and control risks[86] is influenced by the nature and likelihood of risks and their impact on the reported data. As explained in KGN II.2 on risk analysis the complexity of the data flow and the robustness of control activities can have an effect on the magnitude of the risks.

The **type of primary data sources** that the AO inputs or amends in NEATS to calculate the CO_{2e} per flight can also affect the magnitude of inherent risks. When an AO only uses their own flight information, flight trajectory data or aircraft properties data, inherent risks may be lower and the checks by the verifier to assess accuracy of the data could be relatively simple and straightforward.

However, when AO's own data is used for aircraft performance or fuel properties and when the AO uses its own fuel burn method or monitors fuel flow themselves, the data flow activities are more extensive and the risk of misstatements in the data flow are therefore higher. This means that more extensive verification activities are necessary and this can in

[85] Inherent risks are risks linked to the data flow activities5 themselves assuming that there are no related control activities to mitigate these risks, and without considering the operator's control environment

[86] Control risks are risks that the control system may not be adequate to prevent, detect or correct misstatements in a timely manner.

some cases influence the required competence of the verifier. The risk of misstatements is also higher if the reported CO_{2e} value per flight strongly deviate from calculated values in NEATS with secondary data. This is a signal for the verifier to perform more detailed checks on the data. Figure 9 provides an overview of verification required in the different situations that can occur when the AO uses their own data.

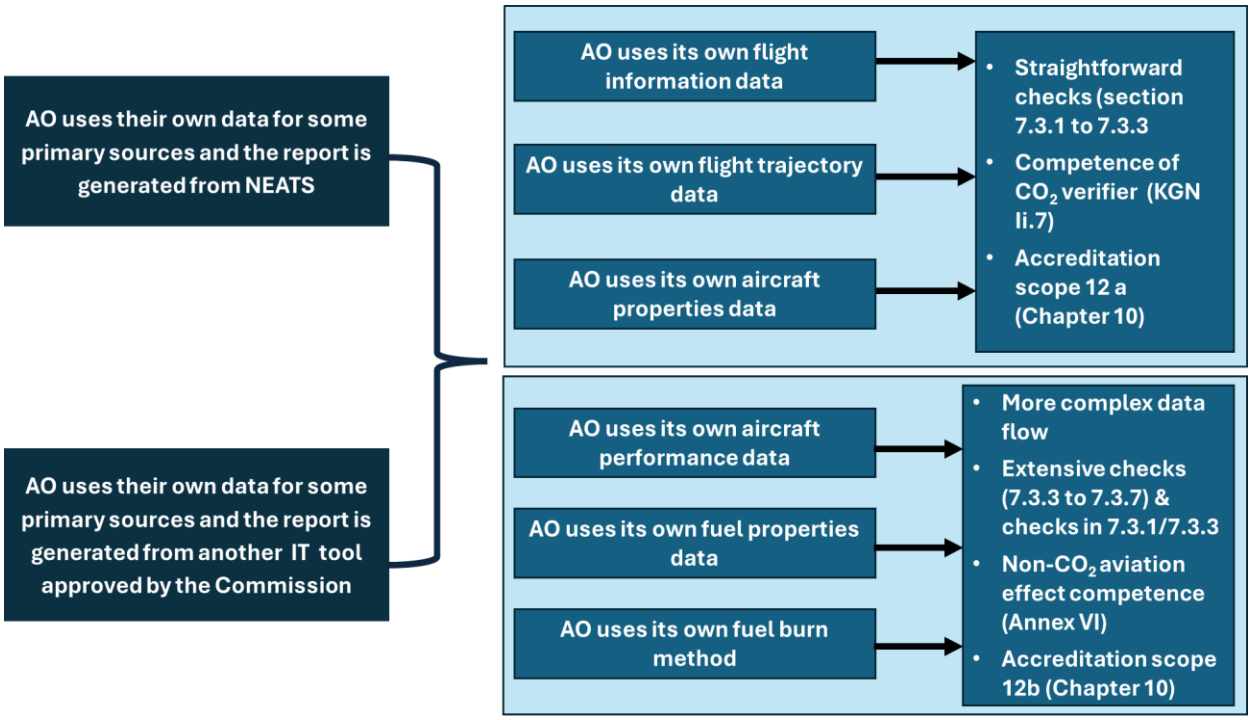


Figure 9 Overview on the detail of verification

Section 7.3.1 provides information on how the verifier should prepare for the verification of non-CO_2 aviation effects reports. Section 7.3.2 explains what checks a verifier carries out in the process analysis of a verification of non-CO_2 aviation effects reports. Section 7.3.3 highlights what activities a verifier must carry out in the different scenarios that can be distinguished when an aircraft operator uses its own data to monitor the CO_{2e} per flight. Section 7.4 explains how a verifier should deal with data gaps whereas section 7.5 outlines the key requirements of verifier's reporting.

7.3.1. Preparation of verification

The same steps in the verification process as described in section 3.2 apply to verification of non-CO_2 aviation effects. Section 3.2 explains each step in the process and highlights where specific requirements need to be considered for verification of non-CO_2 aviation effects. When preparing for the verification at the pre-contract stage, and the strategic analysis and risk analysis, the verifier should take **certain factors** into account:

- **The number of data inputs provided by the AO:** where the AO only uses its own updated flight information data to amend the data sources in NEATs, the data flow is relatively simple and verification can focus on the flight information data input and the data flow process for including flight information data in NEATS. With the updated flight information data, the non-CO_2 aviation effects report is automatically generated and checked by the system;

- **The type of data input provided by the AO:** flight information data, flight trajectory data and aircraft properties data are data inputs that are relatively easy for the verifier to check as it is similar to their activities carried out for CO_2 annual emissions verification. However, aircraft performance data, fuel property data and fuel burn or estimation modules are more complex and require additional checks by the verifier;
- whether **only NEATS, another third-party tool approved by the Commissions or a combination of tools** are used to generate the non-CO_2 aviation effects report has an impact on the data flow. The approved MP provides information on what tools are used and how the data flow processes between the tools are managed and controlled;
- The **type of control activities** and procedures that are implemented to mitigate risks of misstatements and non-conformities in the AO's own primary source data that are used as inputs in NEATS.

Table 10 provides examples of how these factors are taken into account in several stages of the verification.

Table 10 How to take the different factors into account during the verification

Stages in verification	Explanation and examples
Pre-contract stage – assembling verification team	The input of aircraft performance data, fuel property data and fuel burn or estimation emission module require additional expertise. It may be necessary to include a technical expert in the verification team. For more information, please see Chapter 0 of this guidance.
Pre-contract stage – time allocation	Additional time may need to be allocated if the AO: ▪ uses its own aircraft performance data, fuel properties data or fuel burn method to calculate the CO_{2e} per flight as these types of data input are more complex and require more extensive checks by the verifier. ▪ if the AO uses multiple primary source data to input to NEATS as more data and control activities have to be tested.
Strategic analysis	Taking into account the relevant factors helps the verifier to understand what primary source data is used by the AO to input to, or amend existing data in, NEATS and what activities are likely to be necessary to perform checks on these data. Although a third-party tool approved by the Commission is likely to contain similar functionalities as NEATS, the use of a third-party tool approved by the Commission instead of NEATS may likely have influence on the verification: e.g. whether the verifier has access to the system and understand how it operates, differences in how data is input to the system.
Risk analysis	The inherent and control risks are likely to increase: ▪ if the AO uses their own aircraft performance data, fuel property data or fuel burn method to calculate the CO_{2e} per flight as the data flow and the methodology is more complex; ▪ if the AO uses multiple primary source data to input to NEATS or the IT tool approved by the Commission as more data flow and control activities are involved; ▪ if control activities are not robust enough to manage the data flow.

Stages in verification	Explanation and examples
Verification plan	The outcome of the risk analysis has an impact on the detail of verification and the type of checks to be carried out. This will have an impact on the verification plan and implementation of that plan.

In order to understand the activities of the AO. the applicable scenarios of data input and the risk of misstatements and non-conformities, it is crucial that the verifier is provided with **all information that is necessary to carry out the verification**. This means that in the **pre-contract stage** the verifier should be provided access to the monitoring plan of the AO and the non-CO_2 aviation effects report. Particular attention should be paid to how much source data is based on own data from the AO, what the AO has input to or changed in NEATS and what type of data input this concerns. The approved MP indicates for which data sources the AO uses its own data.

This information will allow the verifier to understand what accreditation scope is needed for verification of non-CO_2 aviation effects for that specific AO, what the likely risks are of verifying the report and what auditors and, if applicable, technical experts, need to be included in the verification team in order to conduct the verification.

At the start of the verification and other stages of verification the verifier will need additional information and evidence to be able to give a verification opinion statement that the reported data is free from material misstatements. The verifiers have access to NEATS so that they can cross check the data in NEATS with the own data input provided by the aircraft operator.

The verifier should therefore determine at various stages of the verification what information and evidence are needed and request that information from the AO.

7.3.2. Type of checks during the process analysis of the verification

In the process analysis the verifier will perform the same activities as are prescribed for the CO_2 annual emission verification: the verifier will perform **substantive data testing** and check the **implementation of the monitoring plan** approved by the competent authority.

Substantive data testing for the verification of non-CO_2 aviation effects involves analytical procedures, data verification and to some extent checks on the application of the monitoring methodology. Table 11 shows what activities a verifier should carry out during substantive data testing for verification of non-CO_2 aviation effects. If the verifier identifies inconsistencies when doing substantive testing, the AOs are required to provide the verifier with credible explanations for those inconsistencies and subsequently to correct errors identified in the data.

Table 11 Substantive data testing in the verification of non-CO_2 aviation effects

Activity	Explanation
Data verification	Similar checks are carried out as under the verification of annual CO_2 emissions such as tracing reported data back to the primary data source that the AO has provided, cross-checking with internal and external data sources, checking primary source data and comparing these sources to data in the central system[87] and comparing CO_{2e} reported values with reference values from NEATS. It depends on the type of data input that the AO inputs to NEATS as to what specific checks the verifier carries out during data verification. The sub-sections below provide more information on the specific checks to be carried out. ▪ AO uses their own flight information data (see section 7.3.3.1) ▪ AO uses their own flight trajectory data (see section 7.3.3.2) ▪ AO uses their own aircraft property information (see section 7.3.3.3) ▪ AO uses their own aircraft performance data (see section 7.3.3.4) ▪ AO uses their own fuel property data (see section 7.3.3.5) ▪ AO uses its own fuel burn method or estimation emission module (see section 7.3.3.6). As part of data verification, the verifier will also carry out cross checks between the relevant primary source data the AO uses for the calculation of CO_{2e} per flight, the information included in NEATS, and the final report extracted by the system with the AO's own inputted data.
Analytical procedures	Similar activities will be carried out in the **analytical procedures** as under annual CO_2 verification. Fluctuation and trends in the data as well as the relationships between different data sources will be different as other data source and data flows are involved. However, the verifier will still perform consistency checks on the data sources used by the AO to calculate the non-CO_2 aviation effects, and check whether those primary source data deviate from data in NEATS, how these primary source data compare over a period of several years and what the anticipated CO_{2e} data of all flights are. Specific information related to different data inputs can be found in sections 7.3.3.1to 7.3.3.6.
Checking the correct application of the monitoring methodology	As mentioned in section 7.1 the calculation-based methodology to calculate the CO_{2e} per flight using method C and method D are incorporated into NEATS. So, the verifier does not have to check the application of the methodologies within the system as the functionalities of the system have already been approved by the Commission. The same applies if a **third-party tool** has been approved by the European Commission. The verifier does not have to check application of the methods and calculations within the system. The verifier does however check whether the IT tool or IT tools used by the AO are the same version number as the tools listed in the approved MP, and whether those tools used were approved by the Commission. In addition to other functionalities, the MRR requires third party tools to meet the **same efficacy and NWP** requirements. However, they are allowed to deviate from using efficacy if the AO demonstrates to the CA that the use of efficacy is

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[87] The verifier also checks the central system itself, e.g. the management of the system, the person who is responsible for modifying the data, whether the data are locked and required IT standards are met.

Activity	Explanation
	not possible. In such cases the verifier should check whether the AO has calculated the CO_{2e} per flight using the metrics required by Article 56a(2) of the MRR and whether measures planned to take efficacy into account in the future have been implemented in accordance with the approved MP. Checking the correct application of the monitoring methodology will therefore only take place when the aircraft operator uses its **own fuel burn module or estimation emission module** (see section 7.3.1.6). For example, this may involve using spreadsheet assurance techniques, recalculating data output from the fuel burn module or emissions estimation module, or inserting different input data into the calculation spreadsheet/ database to check its correct application (i.e. re-performance of data aggregation).

In addition to substantive data testing the verifier will also check the implementation of the MP approved by the CA. The MP for the monitoring of non-CO_2 aviation effects is integrated into the MP template used for annual emission reporting. A separate sheet specifically dedicated to non-CO_2 aviation effects monitoring has been added. Table *12* shows what elements need to be considered during verification of non-CO_2 aviation effects and how this influences the type of checks carried out by the verifier.

Table 12 Checking the implementation of the monitoring plan in the verification of non-CO_2 aviation effects

Activity	Explanation
Checking the **data flow** by tracing reported data back to its primary source	The data flow depends on the number and type of data inputs that the AO enters into NEATS. In principle, similar checks will be carried out as on the data flow for annual CO_2 verification but the complexity of the data flow and the relevant data inputs impacts the checks needed. The verifier will trace the data flow from the primary source data used by the AO[88] to the reported data in NEATS. As part of this trailing, the verifier will check systems in the data flow (e.g. input ACARS in central IT systems, input of technical log into central system(s), interface between a central database and fuel management system, filtering data from the databases as well as further extraction of the reported data from NEATS). As part of these checks, the verifier will also assess inconsistencies between primary data sources and the reference data included in NEATS or IT tool approved by the Commission. If the verifier identifies inconsistencies between the information in NEATS and the AO's own primary source data, the verifier has to state this in their verification report. Inconsistencies identified may also cause the verifier to carry out more detailed testing, as inconsistencies may increase the risk of further misstatements and/or non-conformities. When checking the data flow and processes, the verifier carries out interviews with persons responsible for elements of the data flow activities that are specific for non-CO_2 aviation effects.[89] In practice this could be similar personnel as are involved in annual CO_2 monitoring and reporting and in that respect checks on the data flow for annual CO_2 monitoring and reporting and

[88] For example, engine ID and aircraft mass.

[89] As with annual CO_2 verification, the verifier will also interview persons that are responsible for internal audit procedures for EU ETS processes (which may be part of other audit activities e.g. Sarbanes Oxley or ETS specific audits).

Activity	Explanation
	on the data flow and processes for non-CO_2 aviation effects can be done simultaneously.
Checking that the **control activities** are appropriately documented, implemented, maintained and effective to mitigate the inherent risks	The **type of control activities implemented** for monitoring and reporting of non-CO_2 aviation effects are in some cases similar to those for annual CO_2 monitoring and reporting (e.g. four eyes principle applied to aircraft and flight information data, automated checks implemented in the AO's internal IT systems to ensure completeness of flights or filtering out of non-ETS flights, the AO's cross check with Eurocontrol data). Other controls are specific to monitoring and reporting of non-CO_2 aviation effects, e.g. control activities to ensure flight trajectory data are included in central data management systems. When checking the robustness of control activities, similar checks are carried out as for annual CO_2 verification through: ▪ documentation review; ▪ interviews with persons responsible for implementing and maintaining control activities; ▪ observing or inspecting (seeing how the responsible persons carry out their control activities). This includes cross-checks and plausibility checks, checks on outsourced processes (activities performed by third parties), access controls, IT controls, checks on aircraft and flight information data input to central system(s), checks on how the AO carries out control activities to ensure completeness of flights, filtering out of non ETS flights, cross-checking with EUROCONTROL data, etc. For more information, please see Chapter 4 of this guidance.
Checking the procedures listed in the MP	The MRR requires the AO to implement procedures as mentioned, for example, in section 6.2 of the MRR GD 2. For non-CO_2 aviation effects monitoring and reporting this includes procedures for: ▪ ensuring that appropriate data is used to input to the $CO_{2(e)}$ calculation models and that climate effects of all non-CO_2 agents on a per flight basis are taken into account; ▪ identifying and assessing data gaps and applying default values described in Annex IIIa, Section 5 and Annex IIIb of MRR, to complete the data gaps. The verifier must check that these procedures: ▪ are present, properly documented and maintained; ▪ reflect the information listed in the summary of the procedures in the approved MP; ▪ have been correctly implemented and are up to date; ▪ are applied throughout the year; ▪ are effective to mitigate the inherent and control risks.

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Sampling

For the different checks under data verification and analytical procedures, as well as the checks on control activities and procedures listed in the MP, sampling of the actual data related to non-CO_2 aviation effects can be applied provided that it is specific to the AO. The use of a sampling technique or method must be justified based on the risk analysis and the sampling approach recorded in the verification work papers.

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A key element of sampling is that the selection is representative of the overall population set in terms of the factors/types of items[90] sampled and the time periods from which samples are selected across the reporting year[91]. Similar principles apply to sampling applied to data and control activities in relation to non-CO_2 aviation effects as for CO_2 verification.

- the factors applicable to testing control activities and sampling data used by the AO in NEATS for the calculation of CO_{2e} per flight;
- the fact that the verifier does not have to go to each aircraft to carry out sampling provided that the sample selected (according to the verifier's risk analysis) is representative of the whole data set;
- Principles of sampling outlined in Key Guidance note on sampling (KGN II.4);
- the fact that identification of a misstatement or non-conformity may affect the sampling approach and the data population to be sampled;

For more information, please see key guidance note on sampling (KGN II.4).

Other activities during the process analysis

All activities included in the verification plan have to be completed and **sufficient evidence** has to be obtained in order for the verifier to state with reasonable assurance that the non-CO_2 aviation effects report is **free from material misstatements**. Where the verifier identifies misstatements, non-conformities or non-compliance issues when verifying the non-CO_2 aviation effects, the verifier requests the aircraft operator to explain and correct them.

If identified issues are not corrected, the verifier will assess the likely material impact of identified misstatements, non-conformities and non-compliance issues on reported data (see section 3.2.8 and 3.2.9 for more information) and will finalise the verification (see section 3.2.10) before it issues a verification report. The same requirements on site visits and waiver of site visits apply to verification of non-CO_2 aviation effects (see section 3.2.7).

7.3.3. Type of checks applicable to the relevant primary data sources

As mentioned in section 7.3.2, the type and detail of checks carried out during the process analysis (**substantive data testing** and the checking of the **implementation of the monitoring plan** depend on the **primary source data and methods** applied by the AO to calculate the CO_{2e} per flight. The sections below describe what checks the verifier carries out in relation to the specific data input provided by the AO, including checks in relation to:

- AO's flight information data (section 7.3.3.1);
- flight trajectory data (section 7.3.3.2)
- aircraft properties (section 7.3.3.3)
- aircraft performance data (section 7.3.3.4)
- fuel properties) section 7.3.3.5)
- fuel burn method and estimation emissions module (section 7.3.3.6)
- weather data (section 7.3.3.7)

[90] Data or control activities.

[91] Statistical sampling may not always be possible.

- input into NEATS or IT tool approved by the Commission and the generation of the non-CO_2 aviation effects report (section 7.3.3.8).

7.3.3.1. Aircraft operator's flight information data

Where the AO inputs its own flight information data into NEATS, the AO has to monitor the **completeness of flights** that are subject to obligations to monitor and report non-CO_2 aviation effects. Flight information data covers flight numbers, date and timing of departure and arrival, and aerodrome pairs of departure and arrival. The monitored flight data have to be recorded and provided to the verifier. When checking completeness of flight information data, the verifier carries out similar checks as when assessing the completeness of flight information data used for annual CO_2 monitoring and reporting. The flight information data sets for annual CO_2 monitoring and for non-CO_2 aviation effects monitoring are to a large extent similar. However, the verifier should be aware that only non-CO_2 aviation effects from flights operated by aircrafts with jet engines need to be covered, and for 2025 and 2026 the scope of ETS flight coverage can vary.

Overview of the checks to be carried out by the verifier on completeness of flights

The verifier should check whether the non-CO_2 aviation effects are correctly attributed to the flights that are covered under the scope of monitoring and reporting non-CO_2 aviation effects (see section 2.4).

Examples of checks in the data verification and analytical procedures

- checking data that are directly input into the system: e.g. type of flights, aerodrome pairs, aircraft types with jet engines;
- checking the completeness of ETS flights and making sure non-ETS flights and flights not falling under the scope of monitoring and reporting of non-CO_2 aviation effects are filtered out;
- checking whether non-CO_2 aviation effects are correctly attributed to flights covered by the scope (EU ETS flights, flights from the EEA to UK and flights from EEA to Switzerland);
- checking flights to and from outermost regions which have a slightly different scope than the scope for annual emissions (see the next box);
- cross-check with the EUROCONTROL data from the EMIS (formerly known as EU ETS Support Facility) and other EUROCONTROL data;
- consistency checks on aircraft data (leased and owned), aerodrome pairs, start and destination of flight, dates of flights;
- comparison with flight data and technical log data (including unusual destinations and diverted flights) to identify anomalies;
- comparison with primary source data, ACARS or technical log data on aerodrome pairs.

When checking the completeness of flights, the verifier uses timetable data and other data on AO's traffic from EUROCONTROL. The verifier has to request the AO to provide access to EUROCONTROL data to allow a cross check of the data. The cross-check performed by the verifier using EUROCONTROL data shall only be used to identify discrepancies bearing in mind that EUROCONTROL data may not always be complete.

The verifier shall test control activities that are implemented by the AO to ensure completeness of flights and aircraft to determine whether flights are EU ETS flights (e.g. by

observing and if relevant, auditing how the AO checks the completeness by testing IT controls, by testing the way flight data are input in the central system etc.). These tests include a check on the procedures that the AO has in place to ensure completeness of flights. Please see section 4.5and 5.3 for further information.

Issues to consider when assessing the completeness of flight information data

- Only flights that fall under the responsibility of the AO shall be taken into account for the monitoring and reporting of non-CO_2 aviation effects. The ICAO designator[92] is the determining factor when deciding which flights are the responsibility of the AO regardless of whether the aircraft is leased, owned or wet leased.
- For the years 2025 and 2026, an AO can choose between the full geographical scope (flight to and from the EEA and intra-EEA flights), the reduced scope (intra-EEA flights only). or the scope where only some of extra-EEA flights are included on top of intra-EEA flights. The approved MP indicates what scope is applied by the AO for these years, and the verifier will check completeness of the flights in line with this.
- The verifier needs to carry out similar checks to ensure flights are not double counted or flights excluded by Annex I of the EU ETS Directive are not taken into account.
- Flights to and from overseas territories that belong to the EU territory and overseas territories should be regarded to fall into the reduced scope (see section 5.3).
- Non-CO_2 aviation effects should also be reported for Swiss ETS flights.
- The attribution of flights to the calendar year must be done according to the time of departure measured in coordinated universal time. The verifier must check whether the correct time is used for the flights and whether the flights are attributed to the correct reporting year.

7.3.3.2. Flight trajectory data

Trajectory data consists of aircraft latitude, longitude and pressure altitude (flight level) at time stamps between the start and end of the flight.[93] According to Annex IIIa of the MRR the interval between two-time stamps must not exceed 60 seconds.[94] The 4D Flight trajectory data is included in the AO's flight plan and managed by flight data recorder equipment[95] or enhanced flight planning.

When the AO uses their own actual flight trajectory data from the flight plan, flight data recorder equipment and/or enhanced flight planning instead of the secondary data provided

[92] In the flight plan this is called the ICAO call sign.

[93] MRV Guidance on non-CO_2 aviation effects

[94] Longer intervals than 60 seconds can be used if the regular time stamps below 60 seconds are not available and the time stamps have been calculated by linear interpolation of measured data within the same flight phase. The two measurement times closest before and after the time stamp under consideration must be selected within the same flight phase and it must result in homogenous flight trajectory for the given flight phase, especially the cruise phase.

[95] Annex IIIa, section 1 point 10: 'flight data recorder equipment' a specialized electronic device installed on the aircraft for the purpose of recording various parameters and events during flight operations. These parameters may include but are not limited to flight control inputs, aircraft performance information, engine data, navigation information.

in NEATS[96], the verifier checks completeness of flight trajectory data by cross checking a sample of the flight trajectory data in the flight plan with Eurocontrol's Current Tactical Flight Model (CTFM) and Automatic Dependent Surveillance–Broadcast (ADS–B) data, if such data are readily available to the verifier. When sampling flight trajectory data, the verifier follows the principles of sampling as outlined in KGN II.4 on sampling.

Further checks to be carried out by the verifier include the following:

- checks on consistency between the technical log, ACARS and flight plan to identify anomalies;
- where the Eurocontrol flight trajectory (RTFM, FTFM or CTFM) passes through an Ice Supersaturated Region (ISSR) area and contrail information consists of a high CO_{2e} value, while the AO's own trajectory data avoids this area and there is no contrail information and a low CO_{2e} value, the verifier cross checks with ADS-B data, if such data are readily available to the verifier, to assess whether the re-routing actually took place. It is noted that ADS-B can only be used if there is actual trajectory data;
- where the AO uses different data than what was outlined in the approved MP and there is a significant difference in CO_{2e} value between the primary source data provided by the AO and the flight trajectory data as provided by EUROCONTROL, an analysis of the actual trajectory by comparing the AO trajectory data with EUROCONTROL's data or other data sources such as ADS-B, if such data are readily available to the verifier;
- checks on control activities, including IT controls, to assess whether flight trajectory data is correctly included into central systems and processed further;
- whether the method to determine the 4D flight trajectory for each aircraft type as listed in the approved MP has been applied in practice and is applied in line with the approved MP;
- checks on temporal or local outliers in the flight trajectory that result in excessive accelerations. Where actual trajectory data is used, the ADS-B can be used to identify such outliers;
- where the mass is uploaded along the trajectory in NEATS, a check on whether both mass and trajectory information is uploaded in NEATS;
- a sample of flight trajectory data to confirm the consistent application of time stamps in line with the approved MP (e.g. whether it exceeds the requirements of defined interval thresholds);
- check the establishment, implementation, documentation and maintenance of the procedure for determining the 4D flight trajectory data.

For more information on the requirements for flight trajectory data please see Annex IIIa of the MRR and section 2.4 of MRV non-CO_2 data collection Guidance for Aircraft Operators for more information.

[96] EUROCONTROL planned flight trajectory data (Regulated Tactical Flight Model (RTFM), or alternatively, if RTFM is not available, the Filed Tactical Flight Model (FTFM) from EUROCONTROL, or an equivalent model with comparable data accuracy).

7.3.3.3. Aircraft properties

Aircraft property data consists of information on aircraft type, engine identifier and aircraft mass along the flight trajectory. If aircraft mass is not available, take-off mass must be used and if that is not available, the load factor.

Aircraft properties	Verifier's checks
Aircraft type	Aircraft types are listed in the MP and in the flight plan. The verifier carries out checks as described in sections 5.1 and 5.2 to assess the consistency between aircraft types listed in the approved MP, reported data on aircraft types and those types recorded in internal records. NEATS allows AO to also use the aircraft subtype. If the subtypes have been used, the verifier performs consistency checks on subtypes. The verifier will also perform checks on the implementation, maintenance and documentation of the procedure for determining the aircraft type per flight. The verifier should be aware that aircraft properties may not only vary per aircraft type, the same aircraft type can also have different engines and thus UIDs, leading to different CO_{2e}. Take-off mass can also vary per aircraft type and flight.
Engine identifier	Engine identifiers are the aircraft engine unique identifier number as contained in the ICAO engine emissions databank, or equivalent data sources. These identifiers allow identification of the engines of a specific aircraft and assessment of which aircraft have jet engines and so have to be taken into account when monitoring non-CO_2 aviation effects. The engine types are recorded in procedures, manuals and documentation on aircraft registration in national registrations. The **verifier has to cross check** the consistency between these data sources and internal procedures on aircraft engines with the aircraft engine unique identifier number listed in the ICAO engine emissions databank or equivalent data source that is used to identify engines of the aircraft. Section 8 FAQ[97] indicates that in case where the engine is not listed on the ICAO engine emissions databank or equivalent data source, a suitable proxy can be used from the ICAO engine emissions databank. In all cases the verifier will also check whether the engine unique identifiers as listed in the approved monitoring plan have been applied consistently for the aircraft types in line with the approved monitoring plan. Section 8 FAQ[98] highlights situations where an aircraft has different engines and different engine unique identifiers. The verifier should in that case carry out similar checks as to whether the engine unique identifiers listed in the approved MP have been applied correctly for the aircraft in question. If the data set is large, the verifier will likely apply sampling provided that the verification risk analysis allows for this. Annex IIIb of the MRR allows the AO to use a default engine factor for the aircraft if actual engine type data is not available. In those cases, the verifier will check whether actual engine type data is indeed not available and that the correct default is used in accordance with the approved monitoring plan and Annex IIIb of the MRR is used. If the aircraft type and engine type are not listed in Annex IIIb, a suitable proxy (precursor/successor) is selected from the ICAO EDB (see section 8 FAQ, e.g., based on similarities in engine design characteristics). The verifier will then check whether the suitable proxy as approved in the MP has been applied. The verifier will also check the establishment, implementation and maintenance of the procedure for determining the engine unique identifier per flight.

[97] https://climate.ec.europa.eu/eu-action/transport-decarbonisation/reducing-emissions-aviation_en#faqs

[98] https://climate.ec.europa.eu/eu-action/transport-decarbonisation/reducing-emissions-aviation_en#faqs

Aircraft properties	Verifier's checks
Aircraft mass	Aircraft mass is the mass in kilogrammes of the aircraft along the trajectory (the take-off mass minus the fuel burn during the flight at any given moment of time). The aircraft mass is generally included in the mass and balance documentation. **The verifier will carry out the following checks:** • cross check between the data in the mass and balance documentation, and internal records of the aircraft operator, and the data input to NEATS or other IT tool approved by the Commission (e.g. whether the data is correctly input to the system); • check whether the method for determining the mass along the flight trajectory as prescribed for the different aircraft types in the approved MP, is used consistently for the aircraft types; • check the consistent application of time stamps in line with the approved MP (e.g. whether it exceeds the requirements of defined interval thresholds). NEATS can automatically interpolate time stamp data between flight phases so a verifier can also cross check with NEATS secondary data. • check the control activities in place to ensure that the correct mass is included in NEATS or IT tool approved by the Commissions is included correctly in the system (e.g. whether and how the mass is recorded and how it is processed further in the reporting process, whether those processes are sufficiently robust to mitigate risks of misstatements in the reported data). • where the mass is uploaded along the trajectory in NEATS, checks, based on a sample, on: ○ whether both mass and trajectory information is uploaded in NEATS and whether both data sets are consistent; ○ actual mass against information on take-off mass and load factor ○ consistency of the flight trajectory data with the aircraft mass data along this trajectory for a specific flight In addition, a further cross check is done by the verifier running aircraft performance simulations using the fuel burn module embedded in NEATS to compare the values uploaded by the aircraft operator. For the verification of a 2025 non-CO_2 aviation effects report please see the box on cross checks with BADA information in this section.
Take off mass	Take-off mass is the aircraft mass in kilograms at beginning of the take-off run, including everything and everyone carried at that moment. It is used to approximate the actual aircraft mass during the flight if the latter is not provided. If the take-off mass is not available, it can be approximated based on the load factor. The verifier carries out cross checks on the take-off mass data as included in the mass and balance documentation and confirms whether the take-off mass in the mass and balance documentation has been applied consistently across the flight trajectory. The verifier also runs the aircraft performance simulation model to approximate the values uploaded by the aircraft operator.
Load factor	Load factor means the weight of passengers, cargo and baggage, including mail and hand luggage, expressed as fraction of the maximum payload mass. The load factor is used to approximate the take-off mass if the latter is not provided. The verifier carries out cross checks between the load factor in the mass and balance documentation and the input to NEATS, and runs the aircraft performance simulation to approximate the values uploaded by the aircraft operator. If the load factor is not available, a conservative default value shall be used, in accordance with Annex IIIa, Section 5. In those cases, the verifier checks whether the load factor was indeed not available and whether the correct default value of 1 was applied.

Cross checks with BADA information (for the 2025 non-CO_2 aviation effects reporting only)

For the verification of 2025 non-CO_2 aviation effects reports NEATS will not yet include a functionality that allows the verifier to run an aircraft performance simulation using the fuel burn module to compare the values uploaded by the aircraft operator.

In order to cross the values uploaded by the AO on the flight trajectory, fuel flow, engine efficiency, actual mass and true air speed, NEATS will provide the verifier with the possibility to select flights and obtain for each of those flights a **JSON or csv file** which lists for each trajectory data point the following values for fuel flow, engine efficiency, actual mass and true airspeed:

- the values provided by the AO as primary source data; and
- the values estimated by BADA using default values.

For this estimation exercise, all other input (to PyNEATS of primary source data, secondary source data or default values and the NWP weather data) remain unchanged in NEATS. The verifier can use **the csv/JSON file** to cross check values uploaded by the AO with the values estimated by BADA in order to identify significant outliers and so allow the verifier to focus their verification on those areas that shows significant discrepancies. The cross check will only be an approach to help the verifier tailor the planning and focus of their verification activities.

The JSON/ csv file is to be considered **confidential** to the verifier and should not be shared with the aircraft operator or other parties. The confidentiality requirements in the AVR and ISO 14065 will apply and will be monitored by NABs.

7.3.3.4. Aircraft performance

Aircraft performance along the 4D flight trajectory can be used to increase the accuracy of the calculation of CO_{2e} per flight. If the AO uses aircraft performance data in this calculation process, the verifier will have to perform checks on the data.

Aircraft performance data consists of the following elements:

- fuel flow: the mass of fuel in kilograms that passes through the aircraft fuel system and into the aircraft's engines each second during the flight. The fuel flow is measured using the AO's own fuel planning models based on planned flight trajectories, or actual flight trajectory data through in-flight measuring. In both cases a fuel burn module is used;
- the engine efficiency[99] by all of the time stamps during the flight. Efficiency is generally determined by an application of the aircraft fuel burn model in combination with the calorific value of the fuel throughout the flight.
- the aircraft performance data is measured along the flight trajectory which means that the aircraft performance data needs to be consistent with flight trajectory data.

Checks by the verifier on aircraft performance include the following:

- consistency between flight trajectory data and aircraft performance data along the trajectory. This includes:
  - consistency checks on the timestamps used for determination of flight trajectory data and aircraft performance data;

[99] Engine efficiency relates to the work performed by propulsion of an aircraft to the combustion energy provided by the fuel. More information can be found in section 8 FAQ.

- where actual flight trajectory data or CTFM data is used, the aircraft performance is calculated and determined based on actual flight trajectory data and not data taken from planning systems;
- where planned flight trajectory is used, aircraft performance is calculated taking into account the same planned flight trajectory from the planning system;
- consistency checks of fuel flow data points and flight trajectory data.

- consistency between aggregated fuel consumption, data on fuel purchased, evidence[100] or fuel supplied to the aircraft and where relevant, tank measurements;
- assessment of application of the approved methodology to measure the fuel flow. This includes checks on calculations, reproduction of calculations, plausibility checks of fuel measurements points and cross checks with reported data;
- where in-flight measurements are used to determine fuel flow, the verifier should also perform cross checks between fuel uplift quantity on fuel slips and uplift quantity indicated by on-board measurements (these checks are similar to the checks carried out in annual CO_2 verification).
- consistency between data reported by the AO and manufacturer's specifications, internal records and procedures related to the fuel delivered, fuel flow and aircraft engine efficiency;
- checks that the methods for determining the aircraft performance for each aircraft type as listed in the approved MP have been applied in practice and with the approved MP;
- when own fuel burn modules or fuel planning modules are used to determine the fuel flow, the consistency checks described above and also checks on whether these modules have been applied correctly along with the validity of data input in these modules;
- taking a sample of flight trajectory and aircraft performance data and check the consistent application of time stamps in line with the approved monitoring plan (e.g. whether it exceeds the requirements of defined interval thresholds), NEATS has an interpolation function if data points are more than 60 seconds apart, so a cross check with secondary data sources in NEATS can help flag any inconsistencies:
- checks on implementation of control activities that the AO has implemented to ensure accuracy of fuel flow data (e.g. aircraft personnel doing cross checks on fuel quantities pre- and post-uplift tank quantities, IT control ensuring recording of fuel flow measurements and time stamps, how aircraft operator personnel deal with inconsistencies in the data;
- check the establishment, implementation, documentation and maintenance of the procedure for determining the aircraft performance of the different aircraft types.

The procedure for determining fuel flow may include a margin of difference which indicates when the difference between the measured data and fuel supplier data is no longer acceptable. In such cases the verifier will check whether the margin of difference is plausible and whether corrective action has been taken when the margin of difference is exceeded. The verifier would then also check whether corrective action has been taken where notable deviations have been observed.

The verifier shall also run an aircraft performance simulation through Eurocontrol fuel burn module Base for aircraft data (BADA) which is embedded in NEATS to approximate the fuel flow measurements and the engine efficiency and subsequently compare this with the data uploaded by

[100] This can include fuel invoices, fuel supply contracts and other documentation presenting quantities of fuel supplied. If the cross checks are between purchased fuel quantity from tax accounting system and the fuel consumption and fuel flow from in-flight measurements, the verifier should be aware that there might be discrepancies between data sources since financial accounting systems do not only contain EU ETS data.

the AO. For the verification of the 2025 non-CO_2 aviation effects report please see the box on cross checks with BADA information in section 7.3.3.3.

7.3.3.5. Fuel properties

Fuel properties per flight cover for each flight's fuel onboard: the hydrogen-to-carbon ratio, aromatic content and net calorific value, as well as sulphur and naphthalene. As a way to ensure flexibility in the years 2025 and 2026, the maximum values of aromatics content, sulphur, and naphthalene content, and the minimum values of hydrogen [content] [-to-carbon ratio], and net calorific value of all the batches supplied at a given EEA airport in the reporting year are also accepted as the fuel properties for all the flights taking off from the given airport in the relevant reporting year.

Where the fuel properties are provided as primary data by the AO, the verifier will check evidence of the actual fuel properties for the specific fuel as indicated in the approved MP. This may include cross checking fuel slips, fuel contract arrangements and if available, the standard test methods reported by aviation fuel suppliers.

In order to minimise the AOs' administrative burden during the flexibility period in 2025 and 2026, the maximum and minimum values of the relevant fuel properties can be directly provided through NEATS as secondary data. Such secondary data values will not need additional verification.

If no fuel property data is provided as primary or secondary data, the following default values should apply:

- For aromatics, sulphur and naphthalenes, the maximum values of JET A-1 fuel according to the ASTM Standard Specification for Aviation Turbine fuels, as specified in Annex IIIa of the MRR;[101]
- For hydrogen [per carbon ratio] [content] and the net calorific value, the applicable default values.

Where primary data are provided, the verifier would need to cross-check the attribution of fuel properties per flight. In such cases, the verifier would need to take a sample of the data and check on how the maximum (aromatics content, sulphur and naphthalene percentages) or minimum (hydrogen [per carbon ratio] [content], net calorific value) levels of fuel properties for number of airports are defined for a given period of time (e.g. month) and then extrapolate these findings to related flights during that period.

It is assumed that the maximum levels per airport should not be average values but should instead reflect the most conservative levels of fuel properties, as observed in a batch of fuel at the time the fuel batch is supplied to a given airport, during that period of time (e.g. month).

As with the other data, the verifier checks whether the method to determine fuel properties is consistently applied in line with the approve MP and whether the procedure for determining the fuel properties has been established, implemented, maintained and documented and whether it is sufficiently robust to mitigate the risks of misstatements.

[101] Aromatic content: 25% volume; Sulphur: 0.3% volume; Naphtalene: 3% volume

7.3.3.6. Fuel burn method and estimation emission modules

As part of assessing the application of the monitoring methodology, the verifier will check whether the fuel burn method and estimation emissions modules have been applied consistently in line with the approved MP for the aircraft types. The verifier takes the approved MP as a starting point and does not have to test the validity of the model. However, the verifier does check whether the method has been applied in practice, perform recalculations and check the validity of the input data. in such cases the verifier may also carry out recalculation of parts of the overall calculation to check some subsets and elements (e.g. that factors are correctly calculated from source data).

7.3.3.7. Weather data

Weather data is built in the NEATS system using NWP model forecast data, the climate effect models as well as the emissions estimation modules. Any Commission approved third party IT tool must also be based on these NWP data as well for method C. For method D location-based weather data are relevant (temperature, specific humidity and pressure altitude along the flight trajectory). Weather data is built into NEATS originating from independent secondary data sources.[102] While the integration of relevant weather data from AOs or third party-sources is allowed in the common reference NWP model, currently in NEATS this only corresponds to the NWP weather data provided by DWD[103].

7.3.3.8. NEATS or IT tool approved by the Commission

In addition to checks on the validity of data input into NEATS or the Commission approved IT tool, the verifier will also perform some cross checks on the reported CO_{2e} value and reports that are generated from NEATS or the third-party IT tool and perform consistency checks with the relevant primary source data used by the AO and the AO's internal documentation. The verifier does not need to check the calculation modules included in NEATs or the third-party tool or the calculation itself as the system is already approved by the Commission. If Commission approved IT tool approved is used and the report is not automatically generated from that IT tool, the verifier verifying the non-CO_2 aviation effects reports should check whether the IT tool or IT tools used by the aircraft operator are the version number in the tools listed in the approved MP. If a combination of tools is applied, the verifier will assess how the AO uses its own primary data source in the combination of IT tools and the data flow when using the combination of IT tools.

7.4. Data gaps

If data is missing the AO has to demonstrate that it is not possible to retrieve that data via NEATS or other methods. The verifier checks whether this is actually the case or whether the data can be reconstructed with the support of NEATS or a third-party tool approved by the Commission. The verifier shall check whether the default values approved by the CA have been applied correctly. If such surrogate data have not been approved before the verification report needs to be issued to the CA, the verifiers checks whether the approach used by the AO to complete the missing data ensures that non-CO_2 aviation effects are not underestimated and that such approach does not lead to material misstatements.

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[102] In line with the MRR, relevant weather data from AOs or third party-sources is allowed in the common reference NWP model. The verifier only checks whether the weather data input in NEATS or another IT tool approved by the Commission is consistent with the common reference NWP model.

[103] The current common reference NWP model is provided by the German Meteorological Service (The Deutscher Wetterdienst (DWD)).

7.5. Verifier's reporting

Once the data is verified, the verifier issues their verification report to the AO containing the same content as required for annual CO_2 verification. This includes for example:

- Contact details, objectives and scope of verification;
- Reference to the AO's non-CO2 aviation effects report;
- Criteria used to verify AO's reports including all relevant versions of the MP;
- Aggregated CO2e of the non-CO2 aviation effects per AO;
- Responsibilities of the AO, the CA and the verifier;
- The verification opinion statement;
- Outstanding misstatements, non-conformities, non-compliance issues and recommendations for improvement;
- Information on site visits undertaken;
- a statement on whether the method used to complete data gaps led to material misstatements;
- Names lead auditor/auditor, independent reviewer and technical experts;
- Date and signature by an authorised person signing on behalf of the verifier including their name.

For more information on the type of verification opinion statements and follow-up of outstanding issues please see section 3.2.13 and 3.3of this guidance. A template has been developed by the Commission for the verification report. More guidance on how to complete the verification report can be found in KGN II.6.

Outstanding issues reported in the verification report have to be followed-up (see section 3.3). If these outstanding issues are non-conformities or recommendations for improvement, the AO must submit an improvement report to the CA that specifies how to address these issues (see section 3.3). The template developed by the Commission for AO's improvement report has been adjusted to accommodate non-CO_2 aviation effects.

8 Verification of CORSIA data

ICAO CORSIA SARPs ("Standards and Recommended Practices")[104] contains specific MRV requirements to regulate the CORSIA offsetting mechanism. These requirements have been implemented through the EU ETS Directive, the MRR, the AVR and Delegated Regulation (EU) 2025/927.

AOs that hold an aircraft operator certificate from an EEA country or are registered in an EEA country[105], are required to report CORSIA data under the rules of the EU ETS if they exceed the required threshold in Annex I of the EU ETS Directive. CORSIA data covers emissions from CORSIA flights which includes all international flights covered by Annex I of the EU ETS Directive and flights which depart from or arrive in an aerodrome situated in one of the overseas countries and territories listed in Annex II to the Treaty on the Functioning of the European Union.

In addition, the CORSIA Delegated Act contains requirements on reporting of CORSIA eligible fuels and emissions units cancellation reports that AO have to submit if the total final CO_2 offsetting requirement notified by the MS is not zero. Sections 8.1 to 8.3 provides information on the verifier's role in assessing the accuracy of the reported data. This Chapter applies only to AO established in EEA countries.

8.1. How to verify EU ETS data and CORSIA data?

Aircraft operators subject to CORSIA have to monitor and report both CORSIA related data and EU ETS related data in accordance with the MRR. The same requirements on monitoring and reporting EU ETS emissions apply to the monitoring and reporting emissions from CORSIA flights.

According to Article 6(1) of the CORSIA Delegated Act, the **verification of CORSIA related data** of those AO has to meet the requirements of the AVR. This means that the same requirements of the process of verification apply to verifiers verification of CORSIA data as to verification of EU ETS data.

As the EU ETS data and the CORSIA data is reported in the same annual emissions report template, it is likely that the same verifier will be doing the verification of CORSIA data and EU ETS data. This means that the verifier can combine the strategic analysis and risk analysis and combine a site visit to the AO to analyse both datasets and controls.

The verifier should be aware that the **datasets for CORSIA can be different** from those of the **EU ETS**. Thus, it will be important for the verifier to produce two sets of tests in a combined verification plan to ensure that they cover aspects that are specific to EU ETS and CORSIA. In some cases, these tests on data and control measures could overlap: where this occurs, the verifier should indicate that in the verification plan. The extent of the overlap depends on the flights carried out by the aircraft operator.

During the process analysis, the verifier should carry out planned tests and should assess any misstatements, non-conformities and non-compliance as well as their material impact. This should be done for tests and datasets under EU ETS and CORSIA, because it is important to

[104] Volume IV of Annex 16 to the Convention on International Civil Aviation (Chicago Convention); https://elibrary.icao.int/product/229739

[105] EEA territory covers also the outermost regions, dependencies and territories of that State,

know to which data set the misstatement, non-conformity or non-compliance relates (the CORSIA or EU ETS dataset). In some cases, there might again be an overlap. When assessing the material impact on reported CORSIA emissions[106], the verifier should carry out the quantitative assessment (application of materiality level which is the same as for EU ETS emissions) and qualitative assessment of materiality to both the EU ETS data and CORSIA data separately.

Further steps in the verification process can also be combined (e.g. finalisation of the verification process, internal verification documentation, independent review), but the verifier has to be aware of the different datasets and pay attention to that in these activities. In the internal verification documentation, verifiers need to clarify to which system and parts of the datasets checks, misstatements, other observations, tests etc. pertain. It has to be clear to an independent reader what has been done and concluded for the verification of the CORSIA dataset and for the verification of the EU ETS dataset.

The **verifier needs to separately sign off on the EU ETS data and CORSIA data** and provide **two separate verification opinion statements**, as the reportable data for EU ETS is different from the reportable data for CORSIA. Furthermore, compliance obligations on the part of the AO are different for EU ETS data reporting and for CORSIA data reporting.

Two separate verification opinion statements and reports means that a negative opinion statement on CORSIA data would not affect a positive one for EU ETS data and subsequently would not cause complications for compliance with EU ETS obligations.

For this reason, verifiers are required to submit two different verification reports, one on EU ETS data and one on CORSIA data. The same verification report template as published on the Commission's website can be used for both purposes.

8.2. Verification of CORSIA eligible fuels (CEF)

The requirements for monitoring and reporting CEFs are different to monitoring and reporting of zero-rated alternative aviation fuels under the EU ETS. CEFs cannot be zero-rated but these fuels can result in a reduction of the offsetting requirement in line with the life cycle GHG savings of the CEFs. This means that Article 53a, 54a and 54c of the MRR are not applicable to CEFs. Instead, Article 5(1) of the CORSIA Delegated Act requires AO to monitor and report the quantity of neat CEFs purchased. CEFs have to be certified as such by a CORSIA Approved Sustainability Certification Scheme listed in Annex I of CORSIA Delegated Act. Without such a certification, the fuel must be considered to be a fossil aviation fuel and cannot be used to reduce the offsetting requirements.

Section 7.4 of MRR GD2 provides information on what guidance on CEFs must be included in the emissions report. This includes a declaration listing all GHG schemes in which the AO participate and where reduction from the use of CORSIA eligible fuels or other alternative aviation fuels may be claimed. This declaration seeks to avoid double counting by asking the AO to confirm that no claims have been made for the same batches of CEFs used to reduce offsetting requirements under CORSIA.

Art.5(5) CORSIA DA

During verification of CORSIA emissions reports the verifier performs specific checks to assess the accuracy of the amounts of reductions claimed from the use of CEFs over the reported period and to ascertain that the quantity of CEFs is supported by sufficient and appropriate

[106] Emissions covered by the scope of CORSIA as specified in the CORSIA Delegated Act.

internal and external evidence. These include checks on:

- the accuracy of the amount of reductions claimed from the use of CEFs over the reporting period and whether there is sufficient and appropriate internal and external evidence to support this. For this purpose, the verifier will analyse the batches of CORSIA eligible fuels and checking fuel purchase records, product transfer documents, transaction reports, fuel blending records, evidence of fuels sold to third parties;
- whether fuel purchase records, transaction reports and fuel blending records are properly documented;
- whether CEFs used were certified by assessing relevant documents and checking the online certificate database: e.g. whether proof of sustainability is issued for the CEFs by certified entities[107];
- whether the certification was done via a CORSIA approved Sustainability Certification Scheme listed in Annex I of CORSIA delegated act;
- whether the batches of CORSIA eligible fuels or other alternative aviation fuels claimed have not also been claimed by the AO to be used in an earlier report or under any other voluntary or mandatory GHG scheme it has participated in. This check includes whether such a claim has been made during the CORSIA period and the previous CORSIA period[108];
- whether the AO has monitored and reported its use of CEFs in line with Article 5 of CORSIA delegated act (e.g. whether all required information is included in the emissions report, whether the CEFs sold have been subtracted);
- the declaration in the emission report of claimed reduction against supporting evidence: e.g. evidence of fuel sold to third party;
- control activities and procedures in place to ensure that claimed CEFs are certified in accordance with the sustainability certification schemes listed in Annex I to CORSIA delegated act and to ensure that there is no double counting of claimed CEFs.

During the strategic analysis the verifier obtains the above-mentioned evidence from the AO, including on whether the AO participated in any other schemes and whether the AO has sold CEFs to a third party. In the verifier's risk analysis at the start of the verification of the CORSIA emissions report the verifier assesses the risks of misstatements in the amounts of reductions claimed and the need to perform additional verification activities to ensure that the verifier has obtained sufficient evidence to support the AO's claimed reductions.

Any inconsistencies identified during these specific checks or in the evidence must be reported by the verifier in the verification report. The verifier should also confirm in its report that:

- the requirements in Article 5 of CORSIA Delegated Act were complied with
- confirmation that there is sufficient confidence in each CEF claim and that the reductions from their use is an accurate representation;
- confirmation that there is no double claiming of the same batches of CEFs;

[107] Cross checking the proof of sustainability against the batch and delivery numbers

[108] More information on double counting and double claiming can be found in the ICAO's Guidance on verification of CORSIA eligible fuel claims.

- confirmation that CEFs claimed have been certified as such and that this is supported by sufficient evidence.

Please note:

An operator can buy CEFs from a non-certified entity in the supply chain, e.g. trader. So, the verifier must trace the proof of sustainability back to the last certified entity processing the CEF batch. The entity must be certified at the moment the proof of sustainability was issued. The database of the Sustainability Certification Scheme allows the verifier to check whether an entity in the supply chain has been certified. If it cannot be traced back to the last certified entity, the claim cannot be accepted and must be removed from the total CORSIA eligible fuels claimed.

If a CEF batch is split in the supply chain, the verifier should check what proportion of the batch of CEF has been purchased by the AO and what part of the batch has been sold to a third party and subtracted from the total reported quantity of CEFs. The verifier will check this by assessing fuel purchase records, product transfer documents, transaction reports, fuel blending records, evidence of fuels sold to third parties. The verifier will also check the cross reference with the proof of sustainability for the CEF batch.

8.3. Verification of emissions unit cancellation reports

Article 7 of the CORSIA Delegated Act requires the AO to submit a **verified emissions unit cancellation report** if the total final CO_2 offsetting requirement notified by the MS to ICAO is not zero. The next cancellation report and corresponding verification report must be provided to the administering MS by 30 April 2028 for the CORSIA period 2024 to 2026. More information on the submission of cancellation reports can be found in section 7.5 of MRR GD2.

Article 8 of the CORSIA Delegated Act contains requirements on the **verification of emissions unit cancellation reports**. Verification of such reports must be carried out by verifiers accredited under Regulation (EC) No.765/2008 and Article 8 of the CORSIA Delegated Act. Article 8(1) of that Act specifies that the **same requirements as laid down in the AVR apply**. This means that the accreditation and surveillance of verifiers verifying emission units cancellation reports will follow the same procedures as for CORSIA emission verifications. In order for the verifier to carry out verification of units emission cancellation reports **similar competence** is needed as for the verification of CORSIA emission report: e.g. legislation related to CORSIA, knowledge and experience in assessment of GHG emission information and data management systems. In addition, the verifier should have basic knowledge of GHG markets.

For verification of emissions unit cancellation reports the verifier must carry out **the same steps as in a verification of CORSIA emissions** reports starting with a strategic analysis and a risk analysis followed by a verification plan taking into account the results of the risk analysis and then implementation of that plan in the process analysis. A reasonable level of assurance is required for this verification.

During the verification, the verifier shall assess whether the AO has accurately reported its cancellations of emissions units in line with Article 7 of the CORSIA Delegated Act and confirm that the cancelled emissions units used to meet the AO's final offsetting requirements have not been used to offset other emissions. The verifier checks that the reported number of cancelled emissions units is sufficient to meet the AO's total offsetting requirements notified by MS to ICAO and that the AO can demonstrate sole right of use of such cancelled emissions

units. In addition, the verifier checks that the eligible cancelled emissions units have not been used to offset any other emissions in mandatory or voluntary schemes.

When performing these checks, the verifier assesses the information published in an EU registry list [established by an upcoming Implementing Act], and the emissions unit cancellation report. The verifier will also carry out checks on contractual evidence of acquisition and transfer of units in order to determine whether the sole right of use can be determined. The cancellation report provides information on the schemes in which the AO is participating or has participated in. The verifier cross checks this report with information cancelled units in other schemes: e.g. surrendered units in an emission trading or offsetting registry by cross checking the unique identification codes of the emission units, national legislation on the voluntary or mandatory scheme.

Unlike CORSIA emission verification, **no materiality level** has been established for the verification of emission units cancellation report. Furthermore, sampling is prohibited when performing these checks, full dataset needs to be verified.

Taking into account the outcome of the risk analysis the verifier may decide to not carry out a site visit provided that all relevant data can be remotely accessed.

Annex IV of the CORSIA Delegated Act contains information on what to include in the verification report.

8.4. Accreditation of CORSIA data

Only a verifier accredited under both EU ETS and CORSIA may perform verification of CORSIA related data reported by AO subject to the CORSIA Delegated Act. Accreditation of CORSIA scope can be done as part of the **accreditation against scope 12a** or separately depending on the MS specific procedures and procedures of the NAB that is accrediting the verifier.

9 Competence and impartiality requirements

Verifiers that carry out verification of AO's emission and non-CO_2 aviation effects reports must meet the same competence and impartiality requirements as verifiers that are verifying installation emissions reports. For guidance on required verifier **competence** and on ways to demonstrate competence, please see Chapter 5 of the Explanatory Guidance (EGD I). Specific competence requirements of the verification team, EU ETS lead auditors, EU ETS auditors, independent reviewers and technical experts are explained in a key guidance note on competence (KGN II. 7). This includes aviation specific examples. For the verification of non-CO_2 aviation effects reports specific competence criteria for lead auditors and auditors are included in Annex VI of this Guidance.

Chapter 5 of the Explanatory Guidance explains the **impartiality** requirements laid down in the AVR. As part of the normal impartiality procedures and measures outlined in section 5.2 of the explanatory guidance verifiers shall take measures to reduce impartiality risks, including risks that occur when verifying the same aircraft operator as in the previous year.

Art. 43(6a) AVR

In order to comply with requirements laid down in CORSIA SARPs, **mandatory rotation** of the EU ETS lead auditor has been implemented. Article 43(7) of the AVR requires a rotation of the EU ETS lead auditor if that lead auditor has undertaken six consecutive annual GHG emission verifications or non-CO_2 aviation effects verification for the same aircraft operator. After those six consecutive annual verifications the EU ETS lead auditor will have to take a three consecutive year break from providing verification services to that same aircraft operator.

Art. 43(7) AVR

Verifiers can decide to rotate lead auditors more frequently or change the lead auditor because of other reasons (e.g. the lead auditor is leaving the company or is on sick leave). Impartiality concerns within the verifier may even require the verifier to rotate lead auditors.

If the lead auditor is rotated before it has undertaken six consecutive annual GHG emission verifications for the same aircraft operator, Article 43(7) of the AVR is not applicable. However, that does not mean that no break period applies. If the verifier rotates more frequently or impartiality concerns require an earlier rotation, the break period during which the lead auditor cannot carry out verification for the same aircraft operator will be defined by the verifier itself, tailored to the applicable impartiality risks. As described in section 5.2 of EGD I this will be done as part of the normal impartiality procedures of the verifier which is required by EN ISO 14065. The NAB will assess these internal rotation procedures and monitor the impartiality of the verifier and its staff.

In some cases rotation of other staff such as auditors may also be required because of impartiality risks. In those cases, internal procedures set-up by the verifier determine how and when rotation is carried out. This is very much dependent on concrete circumstances and tailored to the applicable impartiality risks (see section 5.2 of EGD I).

In organisations with multiple lead auditors that are competent to verify in the relevant sector scopes, rotation of lead auditors will be easier to arrange for. Ideally verifiers select lead auditors who have not been involved in the verification or independent review of the same installation. However, this may not always be possible. A few issues need to be considered by the verifier:

- Where verifiers are small and have two lead auditors in their organisation, the lead auditors can rotate among themselves. In those cases, the lead auditor can for

example be rotated with an independent reviewer even if that reviewer has been doing the independent review of that same aircraft operator for six consecutive years. The verifier does however need to ensure no impartiality risks arise and measures are taken to reduce familiarity risks;

- A lead auditor cannot be rotated with an EU ETS auditor unless that EU ETS auditor has become a lead auditor and meets the relevant competence requirements.

Please note that **rotation is not the only mechanism** to mitigate familiarity risks. Verifiers have to implement several safeguards to ensure continued impartiality of the verifier and its personnel.

Verifiers should ensure that lead auditors in their organisation meet the competence requirements of Article 38 of the AVR. If verifier contract lead auditors from outside, they need to be competent as well.

When lead auditors rotate, the new lead auditor may be less familiar with the aircraft operator and needs time to understand the installation's processes and risks. High quality internal verification documentation will facilitate this process and ensure that the risk that a new lead auditor may overlook misstatements, non-conformities or non-compliance is mitigated.

10 Accreditation and other AVR requirements

The AVR contains specific requirements on the accreditation and certification of verifiers, the requirements on NABs or NCA, peer evaluation, mutual recognition of verifiers and the exchange of information between NABs, NCAs and verifiers. Figure ***10*** shows against what accreditation scopes verifiers have to be accredited when verifying AO's emissions reports and non-CO_2 aviation effects reports.

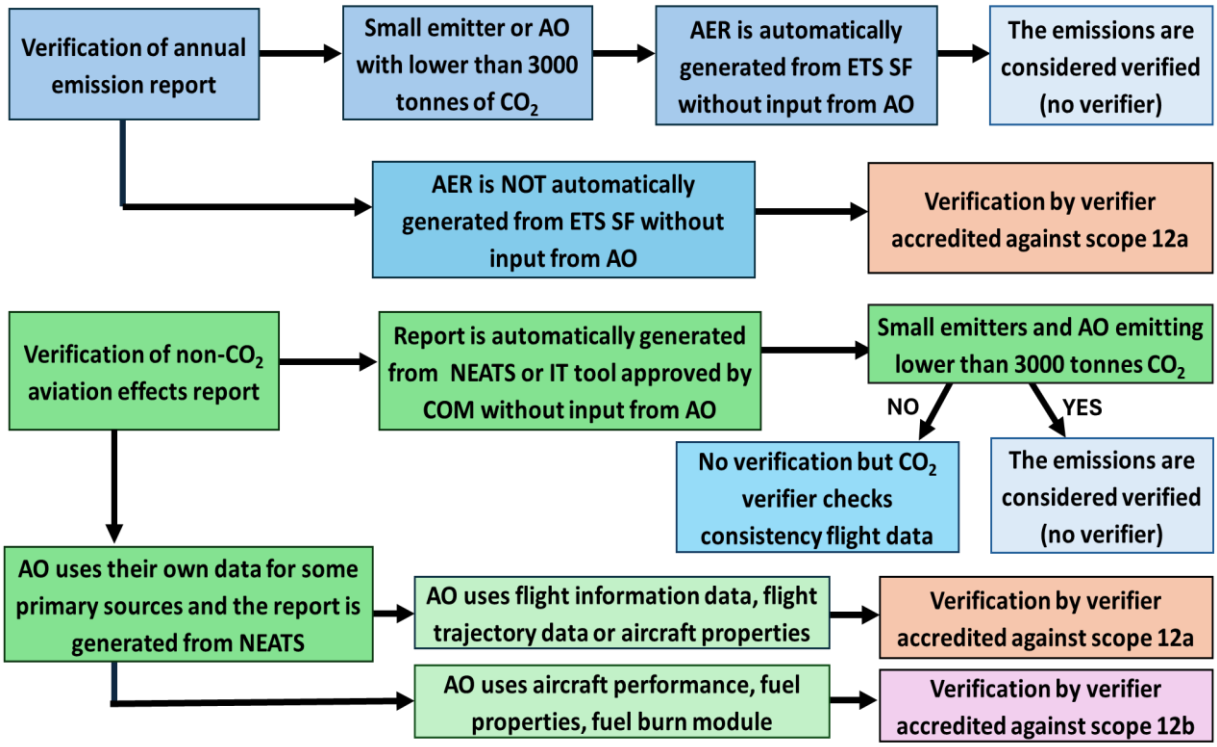


Figure 10 Accreditation scopes in aviation sector

Verifiers verifying AO's emissions reports have to be accredited against **accreditation scope 12a.** This is the same accreditation scope as accreditation scope 12 that was applicable before the AVR was amended in June 2025. Verifiers that have already been accredited against accreditation scope 12 and whose accreditation certificate was valid on 31 March 2025, are considered to be accredited for accreditation scope 12a. There is no need for those verifiers to obtain a new accreditation under accreditation scope 12a until their accreditation certificate is due to expire and a reassessment is needed.

Only in situations where the emissions report of an AO emitting less than 25 ktonnes of CO_2 or an AO emitting less than 3000 tonnes of CO_2 is automatically generated by the ETS Support Facility without any input from the AO are **emissions considered verified** (section 6.1). In other situations, verification is required.

If **non-CO_2 aviation effects reports** are automatically generated from NEATS or a third-party tool approved by the Commission without any input from the AO, the emissions are **considered verified** as well (see section 7.2). For AOs emitting more than 3000 tonnes of CO_2 annually and AO that are not small emitters, the verifier carrying out the CO_2 verification has to do consistency checks on the flight information data during the verification of the emissions reports.

Non CO_2

In other situations, **verification of the non-CO_2 aviation effects reports** by a verifier accredited in accordance with the AVR is required. If AO are using their own flight information data, flight trajectory data or aircraft properties data to calculate the $CO_{2(e)}$ per flight and input in NEATS or the third-party IT tool approved by the Commission to generate the report, the verifier verifying the non-CO_2 aviation effects reports has to be accredited against **accreditation scope 12a**. This means that a verifier accredited to verify annual emissions report can verify these types of non-CO_2 aviation effects reports. The competences required to assess the report and these primary source inputs are similar to verifiers that are verifying annual emissions reports.

When the AO is using its own aircraft performance data, fuel properties data or their own fuel burn module or emission estimation module, additional competence is needed and the verifier verifying such reports have to be accredited against **accreditation scope 12b**.

More information on the necessary competence requirements for accreditation scope 12a and 12b is provided in Annex VI of this guidance.

Art. 53 AVR

In order to obtain an accreditation against accreditation scope 12b existing EU ETS verifiers need to **extend their scopes of accreditation**. Such an extension of scope will be relatively straightforward if the verifier already has an existing accreditation against scope 12a or the original accreditation scope 12. In those cases, the organisation, management system, procedures and processes will have already been assessed by the NAB in the initial accreditation process and previous surveillance activities by the NAB. In the evaluation of the application for a scope extension the NAB will focus on those areas where the verifier has to adjust processes and verification personnel's competence that are needed for the verification of those complex non-CO_2 aviation effects reports. An extension of accreditation is likely to take less time than a full accreditation process. For more information on extension of scope please see section 6.4.4 of Explanatory Guidance on ETS verification (EGD I).

Accreditation bodies accrediting verifier in accordance with accreditation scope 12a and 12b follow the same steps as accreditation against the accreditation scopes applicable to stationary installations. More information on the accreditation process and surveillance of verifiers can be found in Chapter 6 of Explanatory Guidance (EGD I).

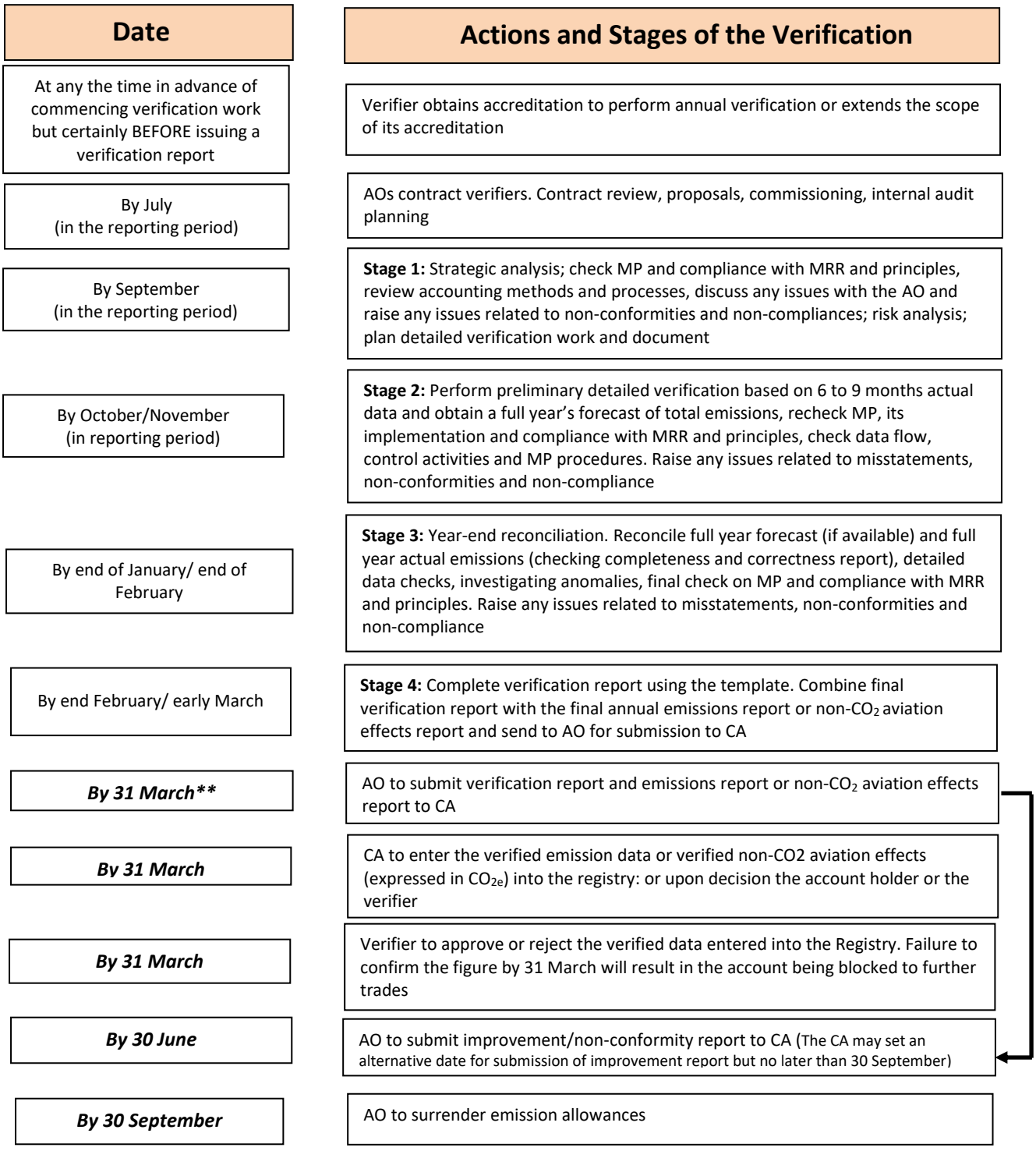
Accreditation assessors involved in the accreditation of verifiers that applied for accreditation against scope 12a or 12b need to have knowledge of the relevant legislation, guidance and standards and data and information auditing in order to evaluate the competence of verifier personnel carrying out activities. The accreditation assessment team includes at least one person with the knowledge of monitoring and reporting GHG emissions or non-CO_2 aviation effects that are relevant for the accreditation scope 12a or 12b and the competence and understanding required to assess the verification activities for an AO.

Please see the following Chapters of the Explanatory guidance (EGD I):

- Chapter 6: guidance on the accreditation process and monitoring of the verifier
- Chapter 7: requirements on NABs
- Chapter 8: peer evaluation
- Chapter 9: mutual recognition of verifiers
- Chapter 10: information exchange between verifiers, NABs, NCAs and CAs.

Annex I. Timeline for verification

The figure below provides a flow diagram of the stages and actions involved in the verification against a proposed annual time line. Dates in ***bold italics*** are compulsory and set by legislation. Dates in normal text are suggested to keep the process on track and ensure verifications are completed on time and within the available verifier resources. Please note that the suggested timelines are not mandatory and may not be applicable for all AOs.



** *The CA may require the AO to submit the verified emissions report or non-CO_2 aviation effects report earlier than by 31 March, but by 28 February the earliest (Article 68 of the MRR)*

Figure 11: Flow chart showing verification process and due or proposed dates

Once the verifier has been contracted by the AO, the formal verification process begins. **Stage 1** involves the strategic analysis, site visit, risk analysis and development of the verification plan by the verifier. **Stage 2** involves performing a preliminary verification of available data (six to nine months' worth) to determine any potential issues of concern that may need to be resolved between the AO and CA. This important step aims to reduce the amount of work required towards the end of the year. **Stage 3** involves the verifier checking the remainder of the year's data and recommending improvement opportunities, and assuring that the AO's annual emissions report or non-CO_2 aviation effects report is complete and correct. A thorough, independent review is also required before the verification report is finalised. **Stage 4** requires the verifier to submit the final verification report (incorporating the verified annual report) to the AO.

Annex II. Internal verification documentation

Art. 26 AVR

Section 3.2.12

The internal verification documentation of the verifier should at least cover the following elements:

- Results of the evaluation of risks of undertaking the verification during the pre-contract stage and the evaluation itself;
- The time allocation as well as any revisions in the time allocation and reasons for such a revision;
- The contract with the AO and any other relevant information used to prepare the verification;
- Information on the verification team that has performed the verification and how this team was compiled:
  - names of the EU ETS auditor, EU ETS Lead auditor and other relevant team members;
  - competence of the team to cover the scope of accreditation in which the AO's activities are covered;
  - roles and responsibility of each verification team member;
  - time spent on verification activities by each team member.
- Conclusions on the independence and impartiality checks and clearance of the independence of reviewers at the start the verification;
- Scope of the verification. This should in principle be in line with the scope of the verification activities that have been indicated in the verification plan unless changes have occurred during the verification process;
- The identification of the criteria against which the emissions report or non-CO_2 aviation effects report was verified so as to understand the basis for the verifier's verification conclusion;
- Conclusions on follow-up of points/recommendations from previous audits;
- What AO's information the verifier has used to cross-check data and carry out other verification activities
- The AO's emissions report or non-CO_2 aviation effects report;
- The conclusions of the strategic analysis, risk analysis and process analysis and these analyses in full;
- The verification plan, any revisions and updates of that plan and reasons for amending the plan, additional activities to be carried out and other conclusions related to the verification plan and process analysis;
- The verification activities undertaken and results of checks made on the control activities, procedures and data. The activities described in the internal verification documentation should in principle be in line with the verification plan unless changes have occurred during the verification process;
- Relevant evidence gathered during the verification;

- Information on what activities are performed on site and which off-site;
- If a site visit has been waived, reasons for waiver of the site visit, how the data has been checked and verification has been carried out without the site visit;
- If a virtual site visit was carried out because of force majeure, the justification for carrying out virtual site visits as well as the assessment of risks, any evidence that all conditions for carrying out virtual site visits have been met, how virtual site visit was carried out; what technologies were used and whether there were complications during the virtual site visit; activities carried out during the virtual site visits and dates on which these activities took place; experts and team members involved in virtual site visit; the CA approval and correspondence on this; information on whether a physical site visit was carried out after the virtual site visit and the reasons for carrying out this physical site visit. More information can be found in section 4 of KGN 5 on site visits;
- If a virtual site visit was carried out outside force majeure in accordance with Article 34b of the AVR, the justification for carrying out virtual site visit and the assessment of risks, any evidence that the requirements and conditions in Article 34b of the AVR were met, how virtual site visit was carried out; what technologies were used and whether there were complications during the virtual site visit; activities carried out during the virtual site visits and dates on which these activities took place; experts and team members involved in virtual site visit. More information can be found in section 3.2.7 and section 4 of KGN 5 on site visits;
- Changes that have occurred during the verification process;
- Information and evidence on the sample size, samples taken and what sampling method was used;
- Reasons for increasing or decreasing the sample size and resolution of all issues identified which required further investigation and their eventual outcome, as well as evidence on the rationale for the conclusions reached on the emissions report or non-CO_2 aviation effects report;
- The results of all sampling and testing (including both null and negative results), as well as results of cross-checks on data, results of assessing control activities and compliance with the MP, recalculation test, reproduction tests etc.
- Conclusions on data quality and materiality with regard to the approval of the AO's data in the emissions report or non-CO_2 aviation effects report. This includes the materiality threshold that has been applied and a justification for judgments made concerning the quantitative and qualitative assessment of whether misstatements or non-conformities have material impact on the reported data;
- Non-conformities, misstatements and non-compliance that have been identified by the verifier, and a description on how these have been resolved. If these misstatements, non-conformities and non-compliance are closed during the verification, this should be marked as such;
- Justifications for the verification opinion made by the verifier;
- Where appropriate, a description of any significant, inherent limitation associated with the verification of the emissions report or non-CO_2 aviation effects report against the criteria. It should be clear whether there is a limitation of scope in the verification, whether

there were circumstances or whether a restriction was imposed that prevented the verifier from obtaining evidence required to reduce the verification risk to a reasonable level;

- The conclusions on the verification of the emissions report or non-CO_2 aviation effects report;
- Results of the independent review and the name of the independent reviewer.

Annex III. Detailed user manual to guidance material

Chapter II AVR

Principles of verification and scope of verification	
Art 6	3.1.1 GD III
Art 7(1) –(3)	3.1.2 - 3.1.5 GD III
Art 7(4) – (6)	3.1 GD III, KGN II.1

Verification process	
Art 8-10	3.2.1 and 3.2.2 GD III, KGN II.12,
Art 11	3.2.3 GD III
Art 12	3.2.4 GD III, KGN II.2, Exemplar
Art 13	3.2.5 GD III, KGN II.2, KGN II.4
Art 14-19	3.2.6 and Chapter 4, 5 and 7 GD III, KGN II.3
Art 20	KGD II.4, Exemplar
Art 21,33, 34a, 34b	3.2.7 GD IIII. Section 4 KGN II.5
Art 22-23	3.2.8 -3.2.9 GD III
Art 24	3.2.10 GD III
Art 25	3.2.11 GD III
Art 26	3.2.12 GD III, Annex II GD III
Art 27 -28	3.2.13 GD III, KGN II.6, VR Template, FAQ classification, Training HB 2015,
Art 29-30	3.3 GD III, FAQ classification.

Simplified verification (Art 33 AVR) - Chapter 6 GD III

Verification of non-CO_2 aviation effects - Chapter 7 GD III

Verification of CORSIA- Chapter 8 GD III

Chapter III AVR

Competence	
Art 36	5.1 EGD I
Art 37	2 and 3 KGN II.7
Art 38	4 and 5 KGN II.7
Art 39	7 KGN II.7
Art 40	6 KGN II.7

Procedures/ records/ communication/ EN ISO 14065	
Art 41	3.8 3.9 KGN II.8, Good practice example application EN 14065
Art 42	3.5 KGD II.8
Annex II	KGN II.8

Impartiality & rotation of lead auditors(Art 43)
5.2 and 5.3 EGD I
8 GD III
3.2 KGN II.8
Good practice example application EN ISO 14065

Presumption of conformity with requirements (Art 4)

Section 1 and 2 KGN II.8

Chapter IV AVR

Scope of accreditation and accreditation process	
44 and Annex I	6.1 EGD I & 10 GD III
45	6.2 EGD I
46	6.3.1 EGD I
47	6.3.2 EGD I
48	6.3.3 EGD I
49	6.3.4, 6.3.5 EGD I

Monitoring verifier and administrative measures	
50	6.4.1 EGD I
51	6.4.2 EGD I
52	6.4.3 EGD I
53	6.4.4 EGD I
54	6.5 EGD I

Chapter V AVR

NAB requirements	
55 (1) (4)- (6)	7.1 EGD I KGN II.9
56	7.2 EGD I
57	1 and 3.2 KGN II.9
58	3.3 KGN II.9
59	3.3 KGN II.9
60	3.3 KGN II.9
61	3.4 KGN II.9
62	3.4 KGN II.9
63	3.6 KGN II.9
64	3.7 KGN II.9
Annex III	KGN II.9

Peer evaluation/ mutual recognition /certification	
65 (1) – (4)	Chapter 8
55 (2) (3)	KGD 11
65 (5)	KGD 11
66	Chapter 8
67 -68	Chapter 9
69	

Framework Accreditation (Art 5)

Section 1 and 2 KGN II.9

Chapter VI AVR

Chapter 10 EGD I

Information exchange templates

KGN 10 (explanation templates)

Annex IV Examples of issues relevant for strategic analysis

This table includes example of issues that could be relevant for the strategic analysis.

Element in article 11(3) AVR	**Example of issues that could be relevant for the strategic analysis**
Size and nature of the AO, the distribution of information in different locations and the number and type of flights (point b)	▪ The composition of the fleet (number of aircraft, aircraft types, owned and long term leased aircraft, wet leased aircraft etc.); ▪ The geographical focus of flights, the number of flights, the type of flights (scheduled flights, flights to and from EU that fall under the responsibility of the AO and flights that are exempted from EU ETS). For non-CO_2 aviation effects, it is also relevant to know which flights are operated with jet engines and whether the flights fall within the scope that is indicated in the approved monitoring plan; ▪ What business model the AO is using (cargo, charter, network or mixed). The business model has an impact on the flight planning processes and the implementation of flight planning. This could involve different internal departments and systems, each with its own risks; ▪ How the legal and organisational structure of the AO is set up. The organisational structure can be complex in the aviation industry when different ICAO designators or registration numbers are used by an AO (e.g. if there is a merger). In that case these would normally be considered as different AOs. Conversely parent companies and subsidiary airlines can use the same ICAO designator which would then be regarded as a single AO; ▪ The departments or persons responsible for specific elements in the data flow (e.g. Flight Planning, Operations, Flight Control, IT, pilot, fuel suppliers, fuel management); ▪ How the flights are allocated to the AO (ICAO designator or aircraft registration number if the ICAO designator is not available); ▪ Whether wet and/or dry leases are applied and to what extent these aircraft fall under the responsibility of the AO; ▪ Whether the AO is commercial or not according to the definition of commercial AO in the EU ETS Directive; this is relevant for AOs that fly less than 243 flights per period for three consecutive four months period or operate flights with total emissions lower than 10,000 tonnes of CO_2 per year. If commercial AOs are below the de-minimis threshold they fall outside the EU ETS; ▪ Whether the AO is a small emitter, as defined in Article 55(1) of the MRR or not; ▪ Whether the AO has emissions lower than 3000 tonnes of CO_2 from flights other than those referred to in Article 28a(1) point (a) and Article 3c(8) of EU ETS Directive; ▪ Type of data collection and management system used.
MP (point c) Understanding the MP gives an indication of the	▪ The type of procedures described in the approved MP giving an analysis of their robustness in terms of controlling accounting processes and risks; ▪ The locations where documents are stored and where monitoring and reporting activities are carried out;

Element in article 11(3) AVR	Example of issues that could be relevant for the strategic analysis
complexity of the AO and the accounting process and hence the type and size of verification tasks necessary to complete the verification.	▪ The type of primary sources that an AO uses to calculate the $CO_{2(e)}$ per flight in non-CO_2 aviation effects reports (whether only flight information data, flight trajectory data or aircraft properties are involved or whether also fuel properties or aircraft performance (the more complex data sources) are used; ▪ The number of IT tools used by the AO to generate the non-CO2 aviation effects reports (e.g. only NEATS or a third-party tool approved by the Commission or a combination of those tools).
Specifics of the monitoring methodology and the monitoring equipment used (point d)	***Understanding the monitoring methodology for emissions*** ▪ What method the AO has chosen to monitor the fuel consumption (Method A or B), or whether a simplified monitoring tool has been applied for a small emitter (such as the EUROCONTROL small emitters' tool). The consumption of fuel by the auxiliary power unit needs to be included; ▪ An overview of the data needed for the calculation of the total fuel consumption: whether the flight falls under the AO's ICAO designator, aircraft type and registration number, departure and arrival aerodromes, local time of departure, type of flight, fuel consumption, source stream; ▪ The source streams used and the relevant emission factor applicable. As commercial AOs often use only jet kerosene, the emission factor is usually 3.16 kg. If another source stream is used other emission factors may be applicable); ▪ Whether the fuel uplift is measured as volumes (not mass) and if this is the case what method is used to determine the fuel density (preference is for actual measurement of fuel density on board or from fuel supplier data; the alternative as a last resort is using a standard factor of 0.8); ▪ How data gaps are filled (e.g. based on the method defined in the MP or by using the EUROCONTROL small emitters' tool or another tool approved by the Commission). ▪ Whether alternative aviation fuels and eligible aviation fuels were used and the risk of double counting: e.g. the number of different types of alternative aviation fuels, number of chains of custody, the type of evidence used to demonstrate compliance with REDII criteria, where fuel can be physically attributed to flights or whether the alternative aviation fuel cannot be physically attributed and the proportionality principle applies; ▪ Whether CORSIA eligible fuels (CEFs) are used and if CEFs are used: e.g. the number of fuels, whether CEF batches are split, the type of documentation used for purchased and sold fuels, the complexity of the fuel supply chain; ▪ When verifying cancellation unit emission reports, e.g. the number of mandatory or voluntary schemes in which the AO participates, the number of units acquired and transferred. ***Understanding the monitoring methodology for non-CO_2 aviation effects*** ▪ What IT tool is used to calculate the $CO_{2(e)}$ per flight (NEATS, third party tool approved by the Commission or a combination of these tools);

Element in article 11(3) AVR	Example of issues that could be relevant for the strategic analysis
	▪ Whether the AO used its own fuel burn module or emission estimation module and how the parameters in these modules were determined; ▪ Which type of mass is used for the determination of aircraft performance (actual mass, take-off mass or load factor).
Dataflow, its control system and the control environment (point e)	***Understanding the data flow*** ▪ The documents that serve as a primary data sources for the calculation parameters (for example, aerodrome pairs and fuel used for emissions; or the type flight trajectory and time stamps for the determination of non-CO_2 aviation effects); ▪ The way the information from primary source data ends up in the emissions report or non-CO_2 aviation effects report, e.g. paper-based through manual input or electronically via ACARS and messages from service providers at airports; or a combination of both; ▪ The way data is input to the central system(s) (manually or electronically or a combination); ▪ The way the emissions report or non-CO_2 aviation effects report is extracted from the central system and whether there is any subsequent manipulation of data to finalise the report. ***Understanding the control system of an AO*** ▪ The AO's established, documented, implemented and maintained risk assessment and control activities; ▪ The type of quality controls used to mitigate the risks in the data flow (see section 4.4 for examples of quality controls); ▪ Controls on recording and transmitting data into IT systems that have been implemented prior to and as a result of the introduction EU ETS and are still used; ▪ The robustness of the AO's procedures for data flow activities and control activities (see also Chapter 4 of this guidance).

Annex V Summary on checking compliance with RED II criteria

Biofuels used for combustion by AOs have to meet sustainability and GHG savings criteria laid down in Articles 29(2) to (7) and (10) of RED II in order to apply an **emission factor of zero** for the biomass and to waive the obligation to surrender emissions allowances for the emissions arising from biomass. If these criteria have not been met, the biomass may not be zero-rated and must be treated as a fossil source stream (meaning that emissions are calculated based on the preliminary emissions factor / the total carbon content of the biomass material).

For **RFNBO/RCF** greenhouse gas savings criteria have been introduced in Article 29a of REDII, Article 39a(3) of MRR allows operators or AOs to only zero-rate the RFNBO/RCF fraction of a source stream if greenhouse gas savings criteria laid down in REDII Article 29a have been met.

For SLCF, the **definition of SLCF** that originates from the Gas Framework Directive[109] includes GHG savings criteria[110]. Only if these criteria are met, can the SLCF fraction be zero-rated.

An AO that wants to zero-rate the emissions from biofuels, RFNBO/RCF or SLCF must provide evidence that the REDII criteria are not applicable or, if they are applicable, that these criteria have been met. In principle, there are four approaches which AOs can use to demonstrate compliance with REDII criteria:

1) the Union Database (UDB) or national databases linked with the UDB in accordance with Article 31a of REDII;

2) a voluntary scheme recognised by the Commission;

3) a national scheme;

4) the AO's own evidence. Note: This approach is not relevant for RFNBO/RCF or SLCF.

Some countries have specified in their legislation what approach is acceptable to demonstrate compliance with REDII criteria and what requirements apply. Verifiers should therefore familiarise themselves on the approaches and evidence that are required in the country in which they are carrying out verification. Section 9.1 MRR GD 2 provides more information.

The evidence used to demonstrate compliance with REDII criteria can differ between the four approaches outlined above. This, in turn, has an impact on the type of checks that a verifier carries out on the evidence. *Table 13* below provides a summary of the type of checks a verifier carries out on the AO's evidence of compliance with REDII criteria. Verifiers should also read section 3.4 of KGN II.3 on process analysis to confirm which

[109] Article 2(13) of Directive (EU) 2024/1788

[110] The life cycle emissions of SLCF have to be 70% lower than the emissions of a fossil fuel comparator.

checks they have to carry out on the applicability of, and compliance with, REDII criteria. Section 3.4.5 of KGN II.3 on process analysis provides further information on how a verifier addresses a situation when a non-compliance with REDII criteria has been identified.

Table 13 Summary of verifier checks on AO's evidence of compliance with RED II

Approach 1: Union Database or national database linked to Union database	
<u>Type of evidence required:</u> The UDB provides full electronic implementation of the mass balance required by REDII Article 30(1). It covers biofuels and will in the near future be extended to RFNBO/RCF and SLCFs. Section 5.5. of GD3 provides more information on the content and functionalities of the UDB. Evidence includes: ▪ A certificate that the *economic operator under RED II*[111] obtains from a certification system showing that the economic operator is capable of issuing 'proofs of sustainability' (POS). ▪ The UDB contains the 'proof of sustainability' issued under the Commission recognised schemes and the full mass balance allowing a verifier to trace the mass balance back to the point of origin.	<u>Checks by verifiers:</u> ▪ the PoS IDs in the UDB allow the verifier to easily check to which batch the POS relates. The verifier will cross check information in the UDB with fuel invoices and fuel blending reports; ▪ the following additional checks have to be done: o whether the type of biofuel, RFNBO/RCF or SLCF and applicable REDII criteria are covered by a recognised voluntary scheme; o whether the geographical scope of biofuel, RFNBO/RCF or SLCF is in line with the scope of the applicable certification system(s); o whether the certificate covers the whole chain of the biofuel, RFNBO/RCF or SLCF, or whether further certificates and POS are available for missing parts of the chain. These checks can be done more easily as the whole mass balance is covered in the UDB. In principle, checks on the validity of the certificate will have been carried out in the UDB, but the verifier is recommended to double check whether the certificate was still valid when the fuel was produced and supplied to the AO (e.g. whether the certification of the economic operator was suspended or withdrawn).

[111] Article 2(11) of Commission Implementing Regulation (EU) 2022/996: *economic operator means a producer of raw material, a collector of waste and residues, an operator of installations processing raw material into final fuels or intermediate products, an operator of installations producing energy (electricity, heating or cooling) or any other operator, including of storage facilities or traders that are in physical possession of raw material or fuels, provided that they process information on the sustainability and greenhouse gas emissions saving characteristics of those raw materials or fuels*.

Approach 2: Voluntary scheme recognised by the Commission	
Type of evidence required: ▪ a certificate that the *economic operator under RED II*[112] obtains from a certification system showing that the economic operator is capable of issuing 'proofs of sustainability' (POS). ▪ evidence that each batch of biomass, RFNBO/RCF or SLCF is complying with the applicable RED II criteria. This is also called a POS and is a unique declaration[113] from the economic operator that the batch supplied is compliant with RED II criteria and conformant with its certified processes for ensuring RED II criteria are met. ▪ additional evidence if the certificate does not cover all types of biomass, RFNBO/RCF or SLCF or the whole chain of custody (see section 4.3.4 KGN II.3 on process analysis for further information). Please note that section 9.1.3.6 of MRR GD 2 outlines that some certification schemes may offer to provide **proof of compliance (PoC)** for those situations where the proof of sustainability has to be used for other purposes than the EU ETS. It is up to the ETS Competent Authority to decide whether a proof of compliance is accepted as evidence for demonstrating compliance with REDII criteria.	Checks by verifiers include the certificate, the POS and, if applicable, any additional evidence. With respect to biofuels, RFNBO/RCF or SLCF this means that the verifiers checks whether the: ▪ POS relates to the appropriate batch and is complete when checked against batch/delivery numbers and flight information. Verifiers perform checks on fuel invoices focusing on the amounts of biomass, RFNBO/RCF or SLCF delivered or produced, the dates on which biofuel, RFNBO/RCF or SLCF was purchased and the date of delivery to the aerodrome fuelling system, and the blending ratio of biofuel, RFNBO/RCF or SLCF; ▪ POS for the particular batch was supplied in line with the requirements of the relevant certification system; ▪ certificate is issued by a voluntary scheme recognised by the Commission ▪ type of biofuel, RFNBO/RCF or SLCF and applicable REDII criteria are covered by the declared voluntary scheme; ▪ geographical scope of the origin of biofuel, RFNBO/RCF or SLCF is in line with the scope of the applicable certification system; ▪ certificate covers the whole chain of biofuel, RFNBO/RCF or SLCF, or if further certificates and POS are available for missing parts of the chain; ▪ certificate was still valid when the fuel was produced and supplied: the POS should be valid until the fuel is actually consumed; ▪ certification of the *economic operator under RED II* is suspended or withdrawn and any implications of this. Where **a PoC** is used, the **verifier does similar checks** as on the proof of sustainability. The verifier will however also check whether the Member State has allowed the PoC as

[112] Article 2(11) of Commission Implementing Regulation (EU) 2022/996: *economic operator means a producer of raw material, a collector of waste and residues, an operator of installations processing raw material into final fuels or intermediate products, an operator of installations producing energy (electricity, heating or cooling) or any other operator, including of storage facilities or traders that are in physical possession of raw material or fuels, provided that they process information on the sustainability and greenhouse gas emissions saving characteristics of those raw materials or fuels*.

[113] See Article 2(23) of Commission Implementing Regulation (EU) 2022/996.

	evidence, whether the PoC is based on specific proof of sustainability, and whether there was no double use of the same consignment of biomass, RFNBO/RCF or SLFCF by different actors.
Approach 3: National scheme:	
Type of evidence required: The type of evidence is dependent on the individual national scheme and national rules. This includes proof of sustainability (POS) of the batches of biofuel, RFNBO/RCF or SLCF. If the evidence does not cover the whole chain of custody, the AO has to provide additional evidence of compliance for those stages that are not covered by the POS under the national scheme.	Checks by verifiers: In principle the verifier will carry out similar checks as for the Commission's recognised schemes. Depending on the requirements of the national scheme and the certification and POS evidence required by it, specific additional checks may be necessary. This includes checks on whether the: ▪ POS is available and relates to relevant batch, this is confirmed by checking against batch/delivery numbers and flight information. Verifiers perform checks on fuel invoices focusing on the amounts of biomass, RFNBO/RCF or SLCF delivered or produced, the dates on which biofuel, RFNBO/RCF or SLCF was purchased and the date for delivery to aerodrome fuelling system, and the blending ratio of biofuel, RFNBO/RCF or SLCF; ▪ certificate, statement or other form of evidence is consistent with the rules of the national scheme; ▪ biomass, RFNBO/RCF or SLCF and associated RED II criteria are covered by the scheme concerned; ▪ certificate/ statement covers the specific batch(es) of fuel/material and the different fuel/material types; ▪ statement or certificate is still valid or is not valid because of expiry, suspension or withdrawal; ▪ assessment of the scope and results of the REDII audit indicate that the audit results are acceptable and can be relied upon e.g. the opinion statement, non-conformities, applied level of assurance, and/or applied standards;

	▪ audit and certificate/statement cover the mass balance and the full chain of custody[114], or only parts thereof. If it only covers parts of the chain the AO has to provide additional evidence for the missing parts; ▪ the independent auditor for the national scheme is appropriately qualified, competent and accredited by a NAB or recognised by a competent authority[115] to undertake the audit.
Approach 4: Own evidence by aircraft operator	
Type of evidence required: The AO assesses compliance with sustainability criteria and carries out GHG calculations to show compliance with GHG savings criteria; this information must be independently audited by a competent auditor. Evidence would include, for example, actual values of emissions and other relevant data, GHG calculations, how information is transmitted through the chain of custody (e.g. delivery notes), and the independent auditor's report(s). **This approach is not relevant for RFNBO/RCF or SLCF.**	Checks by verifier: The verifier will have to carry out more extensive checks on the evidence required. This includes checks on whether: ▪ there is evidence of compliance with RED II criteria provided by the AO for the different batches of fuel covers the full biomass chain; ▪ an appropriate chain of custody audit has been carried out by an independent auditor that has examined evidence back to the primary source, and showing that at every step in the biomass chain the required criteria have been met; ▪ the independent auditor used is appropriately qualified, competent and accredited by a NAB or recognised by a competent authority to undertake the audit; ▪ assessment of the scope and results of the audit indicate that the audit results are acceptable and can be relied upon: i.e. whether: the level of assurance and standards applied are appropriate for the audit, the full chain of custody was included in the audit; appropriate evidence is referenced in the audit report; the audit report is consistent with the requirements in the applicable rules, any non-conformities were identified,. and the statement provides sufficient information; ▪ the POS relates to the appropriate batch, it is complete: covering all batches when checked against batch/delivery numbers and flight information, and the mass balance is complete, consistent and correct. Verifiers perform checks on fuel invoices

[114] Chain of custody audit means that there has been an audit check back though each stage from the installation to the original supplier and that all evidence is in place to show at each stage that the fuel meets the sustainability requirements; and that evidence is associated with a specific batch of fuel and this has been passed along the chain of supply.

[115] Depending on the national rules that apply to national schemes.

	focusing on the amounts of biomass delivered or produced, the dates on which biofuel was purchased, and the date of delivery to aerodrome fuelling system, and the blending ratio of biofuel, RFNBO/RCF or SLCF; ▪ the audit covers the full chain of custody. If it does not or if evidence for the different batches does not apply to the whole biomass chain, the verifier informs the AO and requests it to provide additional evidence on the parts that are missing. Section 3.4.4 KGN II.3 on process analysis explains what checks are carried out by the verifier in that case. Section 4.3.4 of KGN II.3 on process analysis outlines the conditions under which an EU ETS verifier may carry out such a REDII audit.

Annex VI. Competence criteria (non-CO_2 aviation effects)

The persons involved in verification activities have to be **competent** to perform verification. Competence is not only knowledge but also the skills to apply that knowledge and to carry out the prescribed activities. Specific competence requirements are included in the AVR for the verification team as a whole, for the auditor and lead auditor involved in the verification, as well as for the independent reviewer and any technical experts used.

Table 14 shows what competence is needed by auditors verifying non-CO_2 aviation effects reports under accreditation scope 12a[116] and how that competence compares to auditors verifying non-CO_2 aviation effects reports under accreditation scope 12b.[117]

Table 14 Competence requirements for an auditor

Accreditation scope 12a	**Accreditation scope 12b**
Knowledge of legislation that is specific to non-CO_2 aviation effects	
Knowledge of legislation that is similar to that required by CO_2 verifiers. but auditors should be aware of the specific legislation and guidance for non-CO_2 aviation. ▪ the Directive, MRR and AVR; ▪ the applicable ISO standards[118]; ▪ this guidance, GD2 on aviation and other MRR/AVR guidance and FAQs that are relevant for MRV of non-CO_2 aviation effects (see section 2.2and Annex VII) ▪ other relevant legislation applicable to non-CO_2 aviation effects: ▪ Commission Decision on the interpretation of aviation activities ▪ Reporting Template[119] ▪ Relevant national legislation and guidance issued by the MS in which the verifier is carrying out a verification.	Knowledge of the same legislation and guidance but an auditor operating under scope 12a does not need to know all details of aircraft performance, fuel properties, fuel flow methods, fuel burn methods. However, auditors operating under scope 12b must have detailed knowledge of all relevant legislation and guidance material on these topics.
Knowledge and experience of data and information auditing:	
KGN II.7 provides information on what competence criteria are required for a CO_2 verifier.	Similar competence criteria apply but the technical specific elements concerning non-CO_2 aviation effects will make the assessment of risks or the sampling of data more complex.

[116] When the AO only uses its own flight information data, flight trajectory data and aircraft properties data in NEATS or another third-party IT tool approved by the Commission.

[117] When the AO uses its own aircraft performance data, fuel properties data or its own fuel burn model or monitors it own fuel flow along the trajectory.

[118] ISO 14064-3, ISO 14065, ISO 14066 and ISO 17029

[119] The non-CO_2 aviation effects report is incorporated in the CO2 monitoring plan and emission report template.

Ability to perform verification activities	
For most steps in the verification process similar competences as for verifiers carrying out verification of AO's annual emissions reports are required.	Similar competence criteria apply but the technical specific elements concerning non-CO_2 aviation effects will make some activities in the verification more complex.
Knowledge and experience of technical monitoring and reporting aspects	
See Table 15	See Table 15

A lead auditor has to meet the same competence requirements as an auditor and in addition must be able to lead the team and be responsible for carrying out verification activities and reaching verification conclusions. This is no different to the situation for CO_2 emissions auditors.

Table 15 shows examples of the technical competence criteria that apply to an auditor operating under accreditation scope 12a and an auditor operating under accreditation scope 12b.

Table 15 Technical competence criteria specific to non-CO_2 aviation effects

Accreditation scope 12a	Accreditation scope 12b
Assessing aspects of the monitoring plan	
Being able to assess and understand: ▪ how the approved MP is implemented by the AO ▪ how to check the `non-CO_2 aviation effects report against the approved MP; ▪ how to analyse information and data to confirm whether the MP is still appropriate and is being implemented.	The auditor must have similar abilities to assess the MP but the parts related to aircraft performance, fuel properties, fuel flow are more technical and require more expertise to be able to determine whether the MP has been implemented in practice.
Specific GHG activity and technology	
Being able to: ▪ identify and understand which key operations impact the AO's non-CO_2 aviation effects ▪ understand the actual operational processes and data flow of the AO; ▪ how to access NEATS or other approved third party IT tool (and confirm that it has been approved by the Commission) (if applicable)) ▪ how to run cross checks with Eurocontrol's Current Tactical Flight Model (CTFM) and Automatic Dependent Surveillance–Broadcast (ADS–B) data. This may require some training or knowledge of guidance on how ADS-B data can be used ▪ check data that are directly input to NEATS: e.g. type of flights, aerodrome pairs, aircraft types with jet engines ▪ identify and understand generic knowledge of GHG and global warming potentials relevant to aviation.	Similar competence requirements apply but in addition auditors need have knowledge of and understand the specific systems that are used by the AOs to collect and manage data on aircraft performance, fuel properties, fuel flow along the trajectory and other parameters that are relevant for the determination of these elements. For example, knowledge on how to check consistency with timestamps with ADS-B data.
Relevant GHG sources	
Being able to understand and have knowledge of: ▪ the typical level of emissions of the AO	Similar competence requirements apply but knowledge is required on the possible data inputs related to aircraft performance, fuel properties, the application of the fuel burn method or the actual monitoring of fuel flow along

Accreditation scope 12a	Accreditation scope 12b
▪ which flights are excluded from the EU ETS (including how to deal with Swiss and UK flights) ▪ which flights are the responsibility of the aircraft operator: identification of flights by ICAO designator, registration markings and other means ▪ how to deal with leased-in flights ▪ the scope of flights for monitoring and reporting of non-CO_2 aviation effects, and how to check the completeness of ETS flights and make sure non-ETS flights and flights not falling under the scope of monitoring and reporting non-CO2 aviation effects are filtered out; ▪ how to assess completeness of aircraft types and cross check what data pertains to which aircraft type; ▪ how to assess completeness of flight trajectory data, and identify anomalies and outliers by cross checking a sample of flight trajectory data in the flight plan with Eurocontrol's Current Tactical Flight Model (CTFM) and Automatic Dependent Surveillance–Broadcast (ADS–B) data. This may require some training or knowledge of guidance on how ADS-B data can be used; ▪ how to interpret data from Eurocontrol and other data sources, and how to cross check flight information data with the ETS Support Facility and other EUROCONTROL data; ▪ how to check whether non-CO2 aviation effects are correctly attributed to the flights covered by the scope.	the trajectory and application of emissions estimation modules if the AO's own data sources are used to input into NEATS.
Quantification, monitoring and reporting specific issues	
Being able to understand and have knowledge of techniques relevant for monitoring and reporting which require skills such as the ability to: ▪ assess the selection, use and maintenance of data management systems to collect data for monitoring non-CO_2 aviation effects;	Having knowledge and understanding of monitoring issues specific to non-CO_2 aviation effects such as how to determine the specific parameters in the fuel burn method, determination of fuel properties and aircraft performance Competence also involves the ability to:

Accreditation scope 12a	Accreditation scope 12b
▪ determine the extent of testing needed to check the completeness, accuracy and reliability of information used in analysis; ▪ identify corroborating information that supports the material correctness of the reported data; ▪ conclude on whether to accept or reject information, and/or whether to modify testing; ▪ identify the purpose of computations and what methodology is required; ▪ how to check consistency of data sources and internal procedures on aircraft engines with the aircraft engine unique identifier number listed in the ICAO engine emissions databank; ▪ how to check whether the engine unique identifiers as listed in the approved monitoring plan have been applied consistently for the aircraft types in line with the approved monitoring plan; ▪ how to cross check actual mass, take-off mass or load factor in the mass and balance documentation and other internal records of the AO against the data input to NEATS or an approved third-party IT tool. Having knowledge and understanding of monitoring issues specific to non-CO2 aviation effects such as the: ▪ ability to check whether the method for determining the mass along the flight trajectory as prescribed for the different aircraft types in the approved MP, is used consistently for the aircraft types; ▪ application of the monitoring and reporting principles laid down in MRR Articles 5 to 9[120];	▪ run the aircraft performance simulation to approximate the values for aircraft performance parameters uploaded to NEATS; ▪ check consistency between flight trajectory data and aircraft performance data along the flight trajectory.; ▪ check consistency between aggregated fuel consumption, data on fuel purchased, evidence of fuel supplied to the aircraft and where relevant, tank measurements; ▪ assess application of the approved methodology to measure fuel flow. This includes checks on calculations, reproduction of calculations, plausibility checks on fuel measurements points and cross checks with reported data; ▪ cross check between fuel uplift quantity on fuel slips and uplift quantity indicated by on-board measurements (these are similar to the checks carried out for CO_2 data verification). ▪ check consistency between data reported by the aircraft operator and the manufacturer's specifications, internal records and procedures related to fuel delivered, fuel flow and aircraft engine efficiency; ▪ take a sample of flight trajectory and aircraft performance data and check the consistent application of time stamps in line with the approved MP; ▪ check evidence of actual fuel properties of the specific fuel as indicated in the approved MP; ▪ cross-check attribution of fuel properties per flight by taking a sample of the data and checking how the maximum (aromatics content, sulphur and naphthalene percentages) or minimum (hydrogen per carbon ratio, net calorific value) levels of fuel properties for a number of airports are defined for a given period of time (e.g. month) and how these findings are extrapolated to related flights during that period.

[120] Commission Implementing Regulation (EU) No 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.

Accreditation scope 12a	Accreditation scope 12b
▪ assessment of data gaps ensuring: conservativeness of the approach to fill a data gap, the use of default values, and measures to avoid double counting of non-CO_2 aviation effects.	▪ check whether the fuel burn method and estimation emissions module has been applied consistently in line with the approved MP for the aircraft types
AO's organisation and quality assurance	
Knowledge and understanding of the following items and ability to assess: ▪ AO's specific data flow and risk assessment; ▪ AO's specific control activities in relation to its data flow; ▪ AO's overall organisation with respect to monitoring and reporting, as well as the control environment in which it's accounting system operates; ▪ procedures mentioned in the MRR; e.g. for: data flow activities, control activities; and managing AO's responsibilities for monitoring and reporting; ▪ AO's control activities to determine whether primary source data such as mass, flight information data is correctly included in the central system; ▪ whether data from the AO's internal central system are correctly input to NEATS, if the AO uses its own primary source data.	The data flow and control system has specific complexities if the primary source data inputs involve aircraft performance, fuel properties, monitoring of fuel flow along the trajectory, application of the fuel burn method.
Verification agreements	
Understanding contracts or other agreements with the AO to manage conflicts that could impact the verification (e.g. personnel and time allocation in contracts with the regulated entity).	The same understanding is required but the auditor must be aware that verification of non-CO2 aviation effects under accreditation scope 12b requires more time to be allocated to deliver the additional checks required.

More information on the competence criteria applicable to the verification team, the independent reviewer and the technical expert are provided in KGN II.7.

Annex VII. Relevant legislation and MRR guidance

Relevant legislation

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, amended several times: Download consolidated version: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02003L0087-20240301

Commission Implementing Regulation (EU) No 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: Download under: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02018R2066-20250527

Commission Implementing Regulation (EU) No 2018/2067 of 19 December 2018 on the verification of data and the accreditation of verifiers pursuant to Directive 2003/87 of the European Parliament and of the Council: Download under: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02018R2067-20250622

Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93, OJ EU, L 218/30.

Commission Decision of 8 June 2009 on the detailed interpretation of the aviation activities listed in Annex I to Directive 2003/87/EC of the European Parliament and of the Council, OJ 12 June 2009, L 149/69: Download: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009D0450

Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the operation of air services in the Community (Recast), OF 31 October 2010, L 293/3: Download: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008R1008-20201218

Commission Regulation (EU) No 606/2010 of 9 July 2010 on the approval of a simplified tool developed by the European organisation for air safety navigation (EUROCONTROL) to estimate the fuel consumption of certain small emitting AOs, OJ 10 July 2010, L 175/25: Download: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010R0606

Commission Delegated Regulation (EU) 2025/927 of 20 May 2025 supplementing Directive 2003/87/EC of the European Parliament and of the Council as regards measures adopted by the International Civil Aviation Organization for the monitoring, reporting and verification of aviation emissions for the purpose of implementing a global market-based measure and repealing Commission Delegated Regulation (EU) 2019/1603, OJ L, 2025/927, , ELI: http://data.europa.eu/eli/reg_del/2025/927/oj

Regulation (EU) No 421/2014 of the European Parliament and of the Council of 16 April 2014 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in view of the implementation by 2020 of an international

agreement applying a single global market-based measure to international aviation emissions, OJ 30 April 2014, L 129/1: Download: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02014R0421-20140430

Swiss Linking agreement: Agreement between the European Union and the Swiss Confederation on the linking of their greenhouse gas emissions trading systems Download under: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02017A1207(01)-20241204

EEA agreement: Inclusion of the EU ETS for Aviation in the EEA agreement: Decision of the EEA Joint Committee No 6/2011 of 1 April 2011 amending Annex XX (Environment) to the EEA Agreement: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:093:0035:0037:EN:PDF

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/legal-content/EN/TXT/PDF/?uri=CELEX:02018L2001-20240716

Guidance documents developed to support the interpretation of the MRR

Quick guides" as introduction to the guidance documents below. Separate documents are available for each audience:

- Operators of stationary installations;
- Aircraft operators;
- Competent Authorities;
- Verifiers;
- National Accreditation Bodies.

Guidance document No. 2: "The Monitoring and Reporting Regulation – General guidance for AOs". This document outlines the principles and monitoring approaches of the MRR relevant for the aviation sector. It also includes guidance on the MP templates provided by the Commission.

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, 39 and 53 of the MRR. This document is relevant for operators of installations as well as for AOs.

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 further guidance and an example for a risk assessment.

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

- Monitoring plan for the emissions of aircraft operators
- Monitoring plan for the tonne-kilometre data of aircraft operators

- Annual emissions report of aircraft operators
- Improvement report of aircraft operators
- Verification report template

The quick guides for operators, aircraft operators and CA provide roadmaps to all MRR Commission guidance documents, exemplars, templates and FAQ. The guidance documents can be found at: (https://climate.ec.europa.eu/eu-action/carbon-markets/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification_en#documentation)

Relevant guidance on MRV of non-CO_2 aviation effects
MRV non-CO2 data collection Guidance for Aircraft Operators

Questions and Answers on the inclusion of non-CO2 aviation emissions in the Monitoring, Reporting and Verification (MRV) framework

Other relevant legislation and guidance are published on the Commission's website: https://climate.ec.europa.eu/eu-action/carbon-markets/eu-emissions-trading-system-eu-ets/monitoring-reporting-and-verification_en#documentation and https://climate.ec.europa.eu/eu-action/transport-decarbonisation/reducing-emissions-aviation_en

On this website you will also find contact details of the Competent Authorities responsible for EU ETS aviation in the EU Member States.

Annex VIII. Abbreviations

Abbreviation	Explanation
AO	Aircraft Operator
ACARS	Aircraft Communications Addressing and Reporting System
AIP	Aeronautical Information Publication
AOC	AO's certificate
APU	Auxiliary Power Unit
ATM	Air Traffic Management
AR	General framework regulation, Accreditation Regulation (EC) No. 765/2008
AVR	EU ETS Accreditation and Verification Regulation (A&V Regulation)
CA	Competent Authority
CEFS	CORSIA Eligible Fuels
CEFA	CRCO Extranet for Airspace Users
CFMU	Central Flow Management Unit
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CRCO	Central Route Charges Office
EA	European cooperation for Accreditation
EMIS	Environment Management Information Service
EU ETS	EU Emission Trading Scheme
FEETS	Fuels eligible for ETS support
GCD	Great Circle Distance
ICAO	International Civil Aviation Organization
IATA	International Air Transport Association
MP	Monitoring Plan
MRG 2007	Monitoring and Reporting Guidelines
MRR	EU ETS Monitoring and Reporting Regulation (M&R Regulation)
MS	Member State(s)
NAB	National Accreditation Body
NC	Non-conformity in figure 5
NCA	National Certification Authority
NEATS	Non-CO_2 Aviation Effects Tracking System
RFNBO/RCF	Renewable fuels of non-biological origin/ Recycled Carbon Fuels
SET	EUROCONTROL small emitter's tool
SLCF	Synthetic low carbon fuels
UDB	Union Database of liquid and gaseous renewable and recycled carbon fuels