



EUROPEAN COMMISSION

DIRECTORATE-GENERAL

CLIMATE ACTION

Directorate C - Climate strategy, governance, and emissions from non-trading sectors

**CLIMA.C.2 - Governance & Effort Sharing**

# EU ETS Monitoring and Reporting – Quick guide for aircraft operators

Version of 9 November 2017

This document is part of a series of documents provided by the Commission services for supporting the implementation of Commission Regulation (EU) No. 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas (GHG) emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council (the [MRR](#))<sup>1</sup>.

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



*This quick guide for aircraft operators builds on the suite of guidance documents already available<sup>2</sup> (see [overview](#) at the end of this guide) with the aim of further supporting operators in fulfilling their emissions monitoring obligations under the EU ETS by providing a step-by-step summary of the main requirements that operators need to take into account.*

*Links to other documents including more detailed guidance on specific issues are provided throughout this document. You can access these other documents by clicking on the [links](#) where they are highlighted.*

This quick guidance document takes into account the discussions within meetings of the informal Technical Working Group on EU ETS Monitoring, Reporting, Verification and Accreditation convened under the WGIII of the Climate Change Committee (CCC), as well as written comments received from stakeholders and experts from Member States. This quick guide was unanimously endorsed by the representatives of the Member States of the Climate Change Committee by written procedure in April 2017.

<sup>1</sup> <http://eur-lex.europa.eu/eli/reg/2012/601>

<sup>2</sup> [https://ec.europa.eu/clima/policies/ets/monitoring\\_en#tab-0-1](https://ec.europa.eu/clima/policies/ets/monitoring_en#tab-0-1)


## STEP 1: OBLIGATIONS UNDER THE EU ETS?

Before you continue with the next steps, you should make sure first that you are an aircraft operator<sup>3</sup> whose aviation activities fall under the scope of the EU ETS. As an aircraft operator you have the most direct control over the type of aircraft in operation and the way in which they are flown. You are covered by the EU ETS if you carry out aviation activities as outlined in Annex I of the [EU ETS Directive](#).

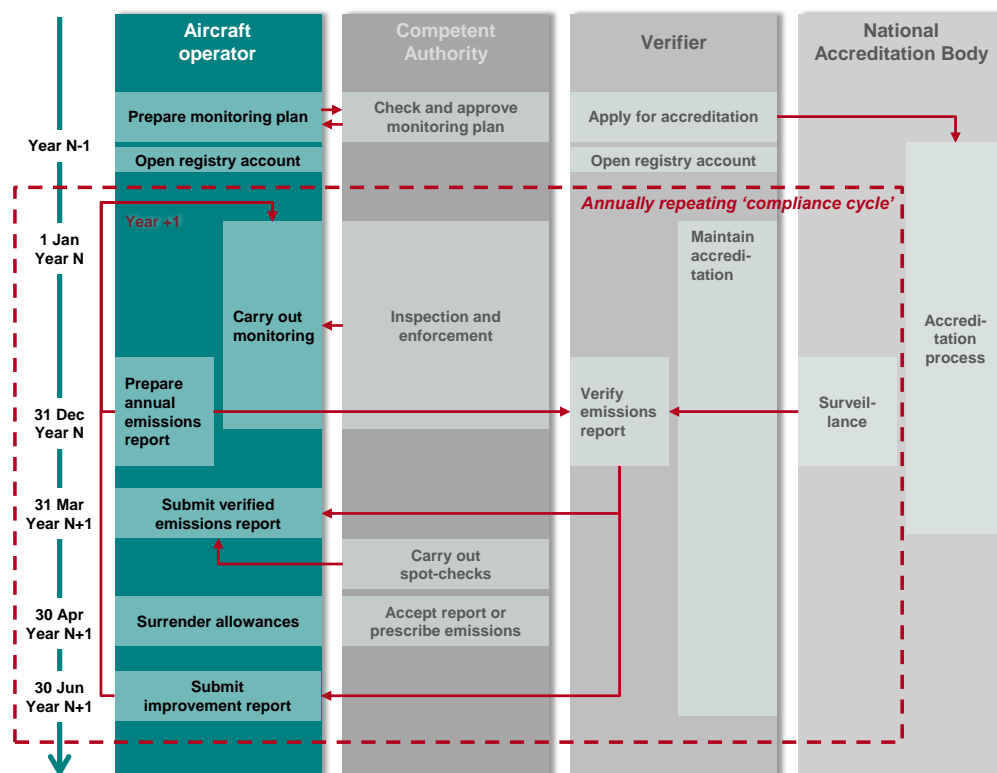
In general, you have obligations under the EU ETS unless you are either

- operating only flights with a maximum take-off weight of less than 5 700 kg, or
- a commercial air transport operator operating less than 243 flights in each of three consecutive four-month periods or your annual fossil emissions are lower than 10 000 t CO<sub>2</sub>, or
- a non-commercial operator with annual fossil emissions lower than 1 000 t CO<sub>2</sub>.

Note that there are further exemptions of certain flights. You are advised to read section 3.1 of the [MRR GD2](#) before deciding if you are included in the EU ETS or not.

 **Result:** If the answer is no, you have no obligations and you can stop reading here<sup>4</sup>. If you conclude that your aviation activities fall under the scope of the EU ETS, you are now one of the four main actors of the 'annual compliance cycle', an aircraft operator. The compliance cycle (picture below) is described in more detail in chapter 4 of [MRR GD2](#).

Note that due to ongoing developments of climate change mitigation policies on the international level (ICAO), you are advised to follow these developments, e.g. by reading the latest news on [DG CLIMA's aviation website](#).



<sup>3</sup> The term 'aircraft operator' is defined in Article 3(o) and further guidance can be found in section 3.2 of the MRR Guidance for aircraft operators ([MRR GD2](#)).

<sup>4</sup> Please note that if you carry out an Annex I activity anytime in the future, you will have obligations under the EU ETS and you are recommended to continue reading.

Monitoring, Reporting and Verification (MRV) of emissions play a key role in the credibility of any emission trading system, ensuring that ‘a tonne emitted is a tonne reported’. For this reason, Article 11 [MRR](#) requires that you [prepare a Monitoring Plan \(MP\)](#) that is approved by your competent authority.

## Year N-1 **STEP 2: PREPARING A MONITORING PLAN (MP)**

Like a recipe in a cooking book or the management handbook for a certified quality management (QM) system, the MP serves as manual for the operator’s monitoring tasks. Further information on timelines is provided in section 4.4.1 [MRR GD2](#). A detailed step-by-step guide on how to prepare an MP is provided in chapter 6 [MRR GD2](#). Furthermore, the Commission has published an electronic [MP template](#) and [data exchange format](#) covering all information required by Annex I [MRR](#).

*Note: These are usually translated and Member State specific versions of the MP template made available. In some Member States dedicated IT systems are used. Therefore, please consult the website of your Competent Authority (CA) or contact the CA on which format to use before proceeding further.*

### **Step 2.1: Find your administering Member State**

Pursuant to Article 18a [EU ETS Directive](#) you are assigned to only one administering Member State in order to ensure an efficient implementation of the EU ETS. This is either the Member State which issued your AOC (if applicable), or the MS to which most of your emissions are assigned. The European Commission publishes preliminary and final lists of administering Member States regularly on its [website](#). Aircraft operator for which no state is assigned in the list of administering Member States shall contact the [European Commission](#). You can find further guidance in section 3.3 [MRR GD2](#).

### **Step 2.2: Source streams, emission sources and definition of a flight**

First, you should ensure that you are familiar with the terms source streams (fuels) and emissions sources (individual aircraft) and how ‘flights’ are defined because you will need them for the next steps below. These and other related terms are legally defined in Article 3 [MRR](#) and technical guidance is provided in section 5.2 and 5.4.2 [MRR GD2](#).

For your monitoring plan you have to provide a list of emission sources (i.e. the aircraft in your fleet), and a procedure for keeping this list up to date for purchase, sale and leasing of aircraft throughout the reporting year. Furthermore, section 3.1 [MRR GD2](#) provides you with guidance on the scope of included aviation activities.

### **Step 2.3: General monitoring approach**

The principles of monitoring are simple. Aircraft operators determine CO<sub>2</sub> emissions using a simplified version of the standard methodology for combustion emissions applying the following formula. More guidance is provided in section 5.4 [MRR GD2](#).

$$\begin{array}{|c|} \hline \text{emissions} \\ \hline \text{t CO}_2 \\ \hline \end{array} = \begin{array}{|c|} \hline \text{fuel} \\ \hline \text{consumed} \\ \hline \text{t} \\ \hline \end{array} \cdot \begin{array}{|c|} \hline \text{emission} \\ \hline \text{factor} \\ \hline \text{t CO}_2 / \text{t} \\ \hline \end{array}$$

This calculation is to be carried out in principle for each individual flight. Furthermore, for the annual emissions report an aggregation of emissions per aerodrome pair and per country of departure and arrival is also to be prepared. Aircraft operators should ensure that their electronic data processing systems are capable of ensuring these aggregations.

If MRV is that simple, why does the [MRR](#) have so many pages and why is there so much guidance?

There are three main reasons:

- It not only covers GHG emissions from aviation but also from 28 different energy-intensive industrial activities (see [Annex I Directive](#))
- It contains various provisions for simplifications to ensure cost-effectiveness, (e.g. [step 2.5](#))
- It contains additional provisions to establish effective data quality control systems ([step 2.7](#)).

#### Step 2.4: Determine the amount of fuel consumed

The [MRR](#) allows two different approaches for aviation (Method A and Method B), see section 1 of Annex III of the [MRR](#) for determining fuel consumption of a flight.

$$\text{Method A: } F_{N,A} = T_N - T_{N+1} + U_{N+1} \quad \text{Method B: } F_{N,B} = R_{N-1} - R_N + U_N$$

- $F_{N,A \text{ or } B}$ ..... Fuel consumed for the flight N determined using method A or B [t]  
 $T_{N(+1)}$ ..... Amount of fuel contained in aircraft tanks once fuel uplift for the flights N and N+1 is complete [t]  
 $R_{N(-1)}$ ..... Amount of fuel remaining in aircraft tanks at the end of the flights N-1 and N, i.e. at block-on before ( $R_{N-1}$ ) / after ( $R_N$ ) the flight N, expressed in [t]  
 $U_{N(+1)}$ ..... Fuel uplift for the flight considered, expressed in [t]

Density: If the fuel amount is determined in units of volume (e.g. litres, US gallons or m<sup>3</sup>), you have the following options for determining the fuel density (see section 5.4.6 [MRR GD2](#) for further guidance):

- actual density of fuel in tanks measured using on-board measurement systems;
- actual density of each fuel uplift as recorded on the fuel invoice or delivery note;
- if none of the above is available, you can use a standard density of 0.8 kg/litre, subject to approval by the competent authority (Article 52(6) [MRR](#)).

#### Step 2.5: Small emitters

You are a small emitter (Article 54(1) [MRR](#)) if:



- you are operating fewer than 243 flights per period for three consecutive four-month periods, or
- you are operating flights with total annual emissions lower than 25 000 tonnes CO<sub>2</sub>.

Further guidance for small emitters, in particular how Eurocontrol's [small emitters tool](#) and [ETS Support Facility](#) could help you simplifying your monitoring approach for estimating fuel consumption and emissions, is provided in section 5.7 [MRR GD2](#).

#### Step 2.6: The 'tier' system on data quality levels

*What tiers are available?*

For aircraft operators the tier system applies for only two parameters, fuel consumption and emission factors. The principles of this 'matrix' are described in section 5.3 [MRR GD2](#).

*Which tier do I have to comply with for determination of the fuel consumption?*

Annex III section 3 [MRR](#) lists the available tiers. For the fuel consumption, Article 52(5) [MRR](#) requires you, in principle, to apply tier 2 (maximum uncertainty < ±2.5 %). However,

| fuel quantity | emission factor |
|---------------|-----------------|
| Tier 1        | Tier 1          |
| Tier 2        | Tier 2          |

er, you may apply tier 1 (< ±5 %) if you are emitting less than 50 000 t CO<sub>2</sub> (fossil) per year, or for all 'minor' source streams<sup>5</sup>.

Article 12(1)(a) [MRR](#) requires you to carry out an uncertainty assessment and submit it to the CA. However, the requirements for aircraft operators are relatively modest (Article 55 [MRR](#)). Detailed guidance is provided in sections sections 6.4 and 7.2 [MRR GD2](#).



If you are a small emitter, you are exempted from submitting the result of an uncertainty assessment to the CA (Article 54(3) [MRR](#)). In particular, if you are estimating the fuel consumption using Eurocontrol's [small emitters tool](#) (Article 54(2) [MRR](#)), there is no need to carry out an uncertainty assessment.

#### *Which tier do I have to comply with for determination of the emission factor?*

For the most commonly used standard fuels (Jet A or Jet A1, Jet B and AvGas) you have to apply tier 1 (default values listed in Annex III [MRR](#)). For other fuels the emission factor has to be determined in accordance with Article 32 to 35 [MRR](#) i.e. by laboratory analyses (see section 6.2.2 [MRR GD1](#) and [MRR GD5](#)).



#### *How do I need to treat fuels or materials containing biomass?*

Articles 38 and 53 [MRR](#) describe how you have to determine biomass fractions. Further guidance on biomass is provided in section 5.5 [MRR GD2](#).



**Result:** Up to this section you should know for each of your [source streams](#) and [emission sources](#) and for each parameter (fuel quantity, emission factor,..) what tiers there are and which ones you have to reach (e.g. tier 2).

### **Step 2.7: Data flow, risk assessment and control activities**

Article 57 [MRR](#) requires that you put in place written procedures on data flow activities, describing 'who takes data from where and does what with it'. Article 58 [MRR](#) requires you to establish an effective control system. This consists of two elements:

- a risk assessment, and
- control activities for mitigating the risks identified.



*This is the key management system for you to identify what might go wrong and how you prevent it from happening in the first place.*

Article 12(1)(b) [MRR](#) requires that you submit the results of your risk assessment to the CA as a supporting document to the MP. Further guidance on those aspects is provided in section 6.3 [MRR GD2](#) and [MRR GD6](#). The Commission has also provided a risk assessment [tool](#) and an [example risk assessment](#)<sup>6</sup>.



If you are a small emitter, Article 54(3) [MRR](#) exempts you from the requirement to submit the result of the risk assessment to the CA. You will still find it useful to carry out a risk assessment for your own purpose, e.g. making it available to your verifier (Article 10 [AVR](#)).

Furthermore, you have to establish written procedures for several other purposes and to keep records of all relevant data and information for at least 10 years (Article 66(1) [MRR](#)).

<sup>5</sup> These are source streams which jointly correspond to less than 5 000 t fossil CO<sub>2</sub> per year, or less than 10% of total emissions up to a maximum contribution of 100 000 t fossil CO<sub>2</sub> per year, whichever is highest in terms of absolute value.

<sup>6</sup> Although this example is focussed on stationary installations, you may still find it useful to understand the underlying concept of a risk assessment.

### Step 2.8: Monitoring of tonne-kilometre (tkm) data

If you want to apply for free allocation of allowances pursuant to Articles 3e or 3f [EU ETS Directive](#) you must monitor tkm data based on an approved MP for tkm data. To this end, the Commission has published an electronic [MP template](#) and [data exchange format](#).

*Note: These are usually translated and Member State specific versions of the MP tkm template made available. In some Member States dedicated IT systems are being used. Therefore, please consult the website of your Competent Authority (CA) or contact the CA on which format to use before proceeding further. Note that the next possibility to apply for allowances is for the fourth trading period, based on tkm data of year 2018.*

Further guidance on tkm monitoring is provided in section 5.6 [MRR GD2](#).

### Step 2.9: Get approval of MP



Once you have completed all sub-steps under Step 2, you have to submit the MP and all necessary additional documentation to the CA and seek their approval.

20 days  
after  
approval

## STEP 3: OPEN A REGISTRY ACCOUNT

The Union Registry operates in a similar way as an internet bank account and is hosted and managed by the European Commission. It records allowance allocations for operators, annual verified emissions, allowance transfers and surrenders of allowances.



You must apply for a Union Registry Aircraft Operator Holding Account within 20 working days from approval of the MP (Article 17(1) [Registry Regulation](#)). You will find the links to the national administrator of your administering Member State, including contact points and further information, on [DG CLIMA's registry website](#).

1 Jan  
Year N

## STEP 4: CARRY OUT MONITORING



**Note:** Steps 1 to 3 only need to be done once, unless there are changes to the MP (see below). From this step onwards, activities are carried out annually as part of the 'compliance cycle'.

As stated at the beginning of [Step 2](#), the MP is like a QM handbook. Therefore, carrying out the emissions monitoring simply requires that you follow the rules and requirements of your approved MP and the [MRR](#).

*What should I do if there are changes during the year?*

Section 6.5 [MRR GD2](#) provides guidance on what significant and non-significant changes are, when they lead to updates of the MP and how you must notify the CA. This reflects the provisions of Articles 14 to 16 [MRR](#) on how to keep your MP up to date.

*What should I do if I have any data gaps during the year?*

Sometimes data gaps (Article 65 [MRR](#), see section 5.8 [MRR GD2](#)) might occur during the year. That Article allows in particular that the same tool as for small emitters (see

[step 2.5](#)) may be used as a last resort for this purpose, including for non-small emitters. The methodology to be used for filling data gaps must be documented in the MP.

*What else is required throughout the year?*

Implement the agreed procedures in your monitoring plan and comply with Articles 59 to 64 [MRR](#). Furthermore, Article 69(1) [MRR](#) requires you to regularly check whether the monitoring methodology applied can be improved.

28 Feb  
Year N

## STEP 5: OBTAINING ALLOWANCES

*Where do I get allowances from?*

There are three options:

- Free allocation: It is granted to aircraft operators who apply for allocation by 31 March of year X-2, submitting verified tkm data of year X-3, where X is the first year of the new trading period (e.g. 2021). The CA will allocate free allowances to operators covered by the EU ETS every year (by 28 February) of the trading period based on a benchmark (t CO<sub>2</sub> per tkm) calculated by the European Commission. For fast growing airlines and new entrants, in a similar procedure an application can be made by 30 June of year X+3. For reporting tkm data, step 6 (electronic reporting template and verification) must be followed as applicable.
- Auctioning: You can find further details on [DG CLIMA's auctioning website](#).
- Allowances on the market: You can purchase and sell allowances from and to other EU ETS participants or other traders. There is no list of recommended traders or market places available, but on the Internet it will be simple to find some institutions or consultancies which offer support. Please note that some aspects of trade in EU ETS allowances are covered by financial markets regulations (e.g. prevention of insider dealing). For details see [DG CLIMA's market oversight website](#).

End of  
Year N

## STEP 6: PREPARING AN ANNUAL EMISSIONS REPORT

At the end of the year (in fact before) you should be preparing to submit your AER to your verifier, in order that the verification can be completed in time for you to file your report to the CA by 31 March<sup>7</sup> of the coming year.

Aircraft operators emitting less than 25 000 tonnes CO<sub>2</sub> per year, both commercial and non-commercial, can choose an alternative to third-party verification. The alternative involves using data from Eurocontrol's [ETS Support Facility](#), which is derived from the [small emitters tool](#), without any modification. If you are approved under your MP by your CA to make use of this option, you can skip to step 7.



### Step 6.1: Engage an *accredited* verifier

Between January and March verifiers will be very busy, so make sure you already hire a verifier well before this period. You should also be aware that the verifier needs time already in the pre-contract stage to allocate budget and resources (see [AVR EGD I](#), especially chapter 3.2.1 and the [quick guide on verification for aircraft operators](#) for further details).

<sup>7</sup> Note that the CA may set an earlier deadline (see step 7).



#### [How can I find an accredited verifier?](#)

The website of the European Co-operation for Accreditation (EA) includes a [list of links](#) to all national accreditation bodies (NABs). They, in turn, publish lists with accredited verifiers. Note that you may choose verifiers accredited in any EU ETS Member State or country. You can only contract a verifier whose scope of accreditation covers your activity (i.e. aviation). As the responsible NAB can withdraw or suspend accreditation or reduce the accreditation scope as consequence of requested changes or the verifier's non-compliance, you must check if the verifier's scope of accreditation is valid for the period of the required verification.

#### **Step 6.2: Get the latest version of the AER template**

The Commission has provided an [AER template](#) and [data exchange format](#) on their website. Make sure you have the latest version or what is required by your specific CA.

*Note: There are usually translated and Member State specific versions of the AER template made available. In some Member States dedicated IT systems are used. Therefore, please consult your CA's website or contact your CA on which format to use before proceeding further.*

#### **Step 6.3: Complete the AER template**

At the end of the monitoring year (31 December), complete the AER and send it to your verifier. The verifier will subsequently prepare a verification report (VR), attach it to your AER and send it back to you.

#### **Step 6.4: Interaction with the verifier**

Already at the pre-contract stage you have to supply the verifier with all relevant information which allows him to understand the scope of your operation and monitoring methodology. More detailed data is required during actual verification (see section 3.2.2 [EGD 1](#)). In principle the verifier needs access to *all* data and information required to fully understand the primary monitoring data and their aggregation in the final AER (Article 10 [AVR](#)). Note that you have to make sufficient time of relevant staff available to the verifier during verification.

#### [What should I know about the verifier's work?](#)

For better understanding of the verifier's work, his responsibilities and requirements, you are invited to refer to the separate [GD III on Verification Guidance for EU ETS Aviation](#).

#### [Is it possible to have any conflicts with verifiers, and if yes, how should I proceed?](#)

If you have concerns about the performance of your verifier, e.g. concerning competence or impartiality, you can file a complaint to the verifier. The verifier must have internal procedures to address these complaints. If you are not satisfied with the verifier's response, you can also submit a complaint to the NAB that has accredited the verifier.

31 Mar  
Year N+1

## **STEP 7: SUBMIT AER TO CA**



**Deadline:** The verified AER for emissions occurring during calendar year N, has to be submitted to the CA by 31 March N+1 at latest, together with the VR. Furthermore, the verified emissions figure must be entered in the verified emissions table of the Registry.

**Note:** Some Member States have set earlier deadlines, but 28 February is the earliest that a Member State may choose. Therefore, please consult your CA's website or contact your CA in order not to miss the deadline that applies in your case.



## STEP 8: SURRENDER ALLOWANCES

30 Apr  
Year N+1

Article 12(3) of the [EU ETS Directive](#) requires that you annually by 30 April surrender from your Registry account the number of allowances equal to the total emissions in your verified AER, which has been submitted to the CA in [Step 7](#). Further guidance can be obtained from the Registry administrator of the administering Member State.



**Deadline:** *The deadline for surrendering allowances for emissions occurring in calendar year N is 30 April N+1 (12:00 midnight of the administering Member State).*

30 Jun  
Year N+1

## STEP 9: SUBMIT IMPROVEMENT REPORTS (IR)

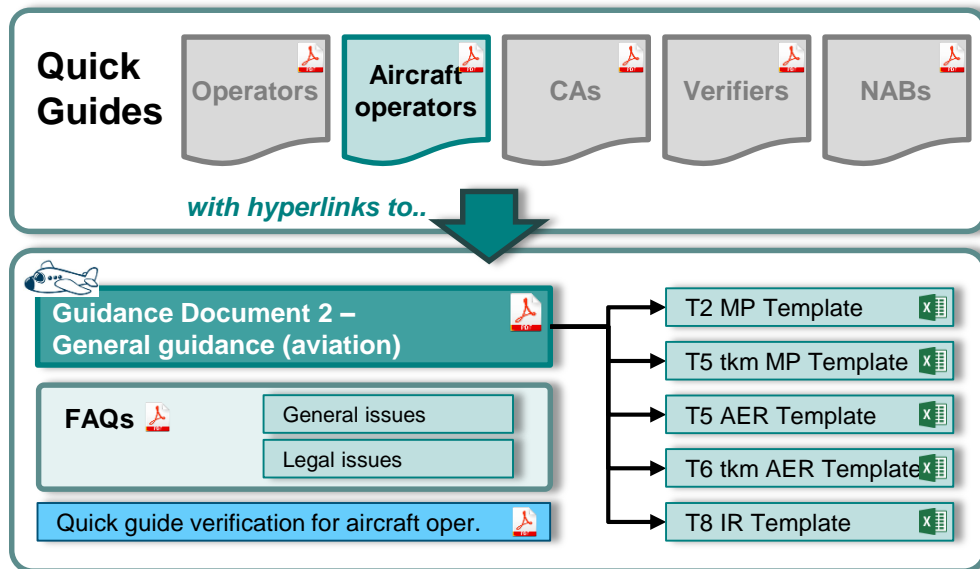
Article 69 [MRR](#) requires that you submit to the CA an improvement report if your verifier stated in the VR outstanding non-conformities or recommendations for improvements (Article 69(4) [MRR](#)). You must submit the report to the CA by 30 June each year the verifier made such statements;

To this end, the Commission has provided an [IR template](#) and [data exchange format](#). You can also find further guidance in section 6.6 [MRR GD2](#).

*Note: There are usually translated and Member State specific versions of the IR template made available. In some Member States dedicated IT systems are used. Therefore, please consult your CA's website or contact your CA before proceeding further.*

## OVERVIEW OF AVAILABLE GUIDANCE MATERIAL

The picture below provides an overview of all available MRR guidance material on the Commission's [website](#), referenced within this quick guide and relevant for aircraft operators. It furthermore displays the relationship between documents. Please note that all AVR documents mentioned within this quick guide can be found on the [website](#) as well. In addition to that, you may also find the Commission's aviation [website](#) useful.



## ABBREVIATIONS

|               |  |
|---------------|--|
| <b>EU ETS</b> | EU Emission Trading Scheme   |
| <b>MRR</b>    | Monitoring and Reporting Regulation <a href="#">Regulation (EU) 601/2012</a>       |
| <b>AVR</b>    | Accreditation and Verification Regulation <a href="#">Regulation (EU) 600/2012</a> |
| <b>MP</b>     | Monitoring Plan  |
| <b>GD</b>     | Guidance Document published on the Commission's <a href="#">website</a>            |
| <b>AER</b>    | Annual Emissions Report  |
| <b>IR</b>     | Improvement Report   |
| <b>VR</b>     | Verification Report  |
| <b>tkm</b>    | tonne-kilometre  |
| <b>NAB</b>    | National Accreditation Body  |
| <b>QM</b>     | Quality Management   |