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Guidance Document

Biomass issues in the EU ETS

MRR Guidance document No. 3, Updated Version of 27 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 emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council¹.

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

This guidance document takes into account the discussions within meetings of the informal Technical Working Group on the Monitoring and Reporting Regulation under the WGIII of the Climate Change Committee (CCC), as well as written comments received from stakeholders and experts from Member States. The original guidance document was unanimously endorsed by the representatives of the Member States at the meeting of the Climate Change Committee on 17 October 2012.

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

https://ec.europa.eu/clima/policies/ets/monitoring_en#tab-0-1 .

¹ <http://data.europa.eu/eli/reg/2012/601/2014-07-30>

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TABLE OF CONTENTS

1	INTRODUCTION	4
1.1	About this document	4
1.2	How to use this document	4
1.3	Where to find further information.....	5
2	OVERVIEW	7
3	REQUIREMENTS FOR THE ZERO-RATING OF BIOMASS	8
3.1	Definitions.....	8
3.2	Implications of the sustainability criteria	9
3.3	Practical approach for sustainability criteria	11
3.3.1	General responsibilities.....	12
3.3.2	National systems.....	12
3.3.3	Voluntary systems.....	13
3.3.4	Bi- or multilateral agreements	13
4	DETERMINING THE BIOMASS FRACTION.....	14
4.1	General approach.....	14
4.2	Laboratory analyses for biomass fraction	15
4.3	Estimation methods	17
5	OTHER SPECIFIC MRR RULES ON BIOMASS.....	18
5.1	Simplifications by Article 38	18
5.2	Biogas in natural gas grids	19
6	AVIATION SPECIFIC ASPECTS	20
6.1	Sustainability criteria.....	20
6.2	Biofuel determination based on purchase records	20
7	ANNEX.....	21
7.1	List of biomass materials	21
7.1.1	Clarification for some non-biomass materials	21
7.1.2	Biomass materials	21
7.2	List of default values for calculation factors for some biomass materials.....	23
7.2.1	Preliminary emission factors	23
7.2.2	Mixed materials	24
7.3	Acronyms.....	24
7.4	Legislative texts	25

1 INTRODUCTION

1.1 About this document

This document has been written to support the implementation of the M&R Regulation, by explaining its requirements in a non-legislative language. It focusses on biomass issues only. For more general guidance, see GD 1 (General guidance for installations) and GD 2 (General guidance for aircraft operators). This guidance does not add to the mandatory requirements of the MRR, but it is aimed at assisting in more correct interpretation and facilitated implementation.

This document interprets the Regulation regarding requirements for biomass. It takes into account the valuable input from the task force on monitoring established under the EU ETS Compliance Forum, and from the informal technical working group (TWG) of Member State experts established under Working Group 3 of the European Commission's Climate Change Committee.

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

1.2 How to use this document

Where article numbers are given in this document without further specification, they always refer to the M&R Regulation.

New!

This document only refers to emissions starting from 2013. Although most of the concepts have been used in the MRG 2007² before, this document does not provide a detailed comparison with MRG 2007. Instead, a symbol (such as the one in the margin here) indicates where changes to requirements compared to the MRG have taken place, or where concepts have not been used in the MRG before.



This symbol points to important hints for operators and competent authorities.

Simplified!

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



The light bulb is used where best practices or useful hints are presented.



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



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

² Monitoring and Reporting Guidelines, see section 7.4 in the Annex.

1.3 Where to find further information

All guidance documents and templates provided by the Commission on the basis of the M&R Regulation and the A&V Regulation can be downloaded from the Commission's website at the following address:

https://ec.europa.eu/clima/policies/ets/monitoring_en#tab-0-1



The following documents are provided³:

- Guidance document No. 1: “The Monitoring and Reporting Regulation – General guidance for installations”. This document outlines the principles and monitoring approaches of the MRR relevant for stationary installations.
- Guidance document No. 2: “The Monitoring and Reporting Regulation – General guidance for aircraft operators”. This document outlines the principles and monitoring approaches of the MRR relevant for the aviation sector. It also includes guidance on the monitoring plan templates provided by the Commission.
- Guidance document No. 3: “Biomass issues in the EU ETS”: This document. It discusses the application of sustainability criteria for biomass, as well as the requirements of Articles 38 and 39 of the MRR. It is relevant for operators of installations and useful as background information for aircraft operators.
- Guidance document No. 4: “Guidance on Uncertainty Assessment”. This document for installations gives information on assessing the uncertainty associated with the measurement equipment used, and thus helps the operator to determine whether he can comply with specific tier requirements.
 - Guidance document No. 4a: “Exemplar Uncertainty Assessment”. This document contains further guidance and provides examples for carrying out uncertainty assessments and how to demonstrate compliance with tier requirements.
 - Documentation of a training day on uncertainty assessment.
- Guidance document No. 5: “Guidance on Sampling and Analysis” (only for installations). This document deals with the criteria for the use of non-accredited laboratories, development of a sampling plan, and various other related issues concerning the monitoring of emissions in the EU ETS.
 - Guidance document No. 5a: “Exemplar Sampling Plan”. This document provides an example sampling plan for a stationary installation.
- Guidance document No. 6: “Data flow 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.

³ This list is at the current stage non-exhaustive. Further documents may be added later.

- Guidance document No. 7: “Continuous Emissions Monitoring Systems (CEMS)”. For stationary installations, this document gives information on the application of measurement-based approaches where GHG emissions are measured directly in the stack, and thus helps the operator to determine which type of equipment has to be used and whether he can comply with specific tier requirements.
- Guidance document No. 8: “EU ETS Inspections”: Targeted at competent authorities, this document outlines the role of the CA’s inspections for strengthening the MRVA system of the EU ETS.

The Commission furthermore provides the following electronic templates⁴:

- Template No. 1: Monitoring plan for the emissions of stationary installations
- Template No. 2: Monitoring plan for the emissions of aircraft operators
- Template No. 3: Monitoring plan for the tonne-kilometre data of aircraft operators
- Template No. 4: Annual emissions report of stationary installations
- Template No. 5: Annual emissions report of aircraft operators
- Template No. 6: Tonne-kilometre data report of aircraft operators
- Template No. 7: Improvement report of stationary installations
- Template No. 8: Improvement report of aircraft operators



Besides these documents dedicated to the MRR, a separate set of guidance documents on the A&V Regulation is available under the same address. Furthermore, the Commission has provided guidance on the scope of the EU ETS which should be consulted to decide whether an installation or part thereof should be included in the EU ETS. That guidance is available under https://ec.europa.eu/clima/sites/clima/files/ets/docs/guidance_interpretation_en.pdf

Although not directly related to monitoring issues, with the exception of reporting on relevant changes in the installation under Article 24 of the Community-wide Implementation Measures, the set of guidance documents and templates provided by the Commission on the allocation process for the third phase are also acknowledged at this point. That set of guidance can be found on the “Documentation” tab under <http://ec.europa.eu/clima/policies/ets/allowances>.

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

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



Also competent authorities in the Member States may provide useful guidance on their own websites. Operators of installations and aircraft operators should in particular check if the competent authority provides workshops, FAQs, helpdesks etc.

⁴ This list is at the current stage non-exhaustive. Further templates may be added later.

2 OVERVIEW

Whenever an operator or aircraft operator intends to use biomass within his installation or for his aviation activities, the following issues are relevant in addition to the generic monitoring methodology⁵:

- The emission factor of biomass is zero⁶. Thus, no allowances for emissions stemming from biomass have to be surrendered, and the associated costs are avoided. Pursuant to recital 2 of the M&R Regulation, this constitutes a support scheme within the meaning of the RES Directive⁷, and it goes without saying that evidence is required to justify such zero rating. This topic is treated within this guidance as follows:
 - Due to the relation to the RES Directive, sustainability criteria have to be applied, where appropriate. This is discussed in section 3 of this document. For aircraft operators, a copy of this text is provided in Guidance Document No. 2, Annex I.
 - Where materials or fuels contain both, fossil and biomass fractions, the biomass fraction is a “calculation factor” (see chapters 4.3, 6.2 and 6.3 of GD 1). The MRR provides for special requirements for determining the biomass fraction in Article 39, as dealt with in section 4 of this document.
- Biomass often consists of rather heterogeneous materials. Monitoring may be difficult. The MRR (Article 38) allows some pragmatic approaches, which are described in section 5 of this document.
- Information focussing on aircraft operators is given briefly in section 6, and in more detail in guidance document 2.
- The Annex contains a list of biomass materials, a list of acronyms and legislative texts.

The FAQs⁸ provided by the Commission contain some further information, too.

⁵ The “generic methodology” in this context refers to all monitoring and reporting activities required under the MRR for purely fossil materials. Details can be found in the guidance document No. 1 for installations, and GD 2 for aircraft operators.

⁶ EU ETS Directive, Annex IV.

⁷ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

⁸ https://ec.europa.eu/clima/sites/clima/files/ets/monitoring/docs/faq_mmr_en.pdf.

3 REQUIREMENTS FOR THE ZERO-RATING OF BIOMASS

3.1 Definitions

New!

Article 3(20) of the MRR contains the definition of biomass. It has been completely aligned with the definition in the RES Directive⁹, and is therefore different from the definition in the MRG 2007: *“Biomass’ means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste; it includes bioliquids and biofuels.”*

This definition is supplemented by two new definitions, also taken from the RES-D: *“bioliquids’ means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass.”* and *“biofuels’ means liquid or gaseous fuel for transport produced from biomass”*.



The most important implication of these new definitions becomes obvious in the context of recital 2 of the MRR¹⁰: Due to the zero-rating of emissions from biomass, the EU ETS constitutes a support scheme within the meaning of the RES-D. Pursuant to Article 17(1) of the RES-D, bioliquids and biofuels may only receive support and count towards the national targets where they comply with sustainability criteria set out in Article 17 of that Directive. Consequently, **the sustainability criteria must be applied for biofuels and bioliquids that are consumed and zero-rated for greenhouse gas emissions within an installation or an aircraft operator’s activities covered by the EU ETS.**



Note: “Applying the sustainability criteria” within this guidance document means using the sustainability criteria for deciding whether a fuel or material falls within the definition of biomass, and consequently whether its emission factor is zero¹¹. A biogenic material which does not comply with the relevant sustainability criteria of the RES Directive, where they are applicable, is considered as fossil, i.e. the emission factor is greater than zero.



At the time of writing this guidance, no sustainability criteria are applicable to solid biomass and gaseous biomass other than biogas for transport purposes.

⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>

¹⁰ Recital 2: *“The definition of biomass in this Regulation should be consistent with the definition of the terms ‘biomass’, ‘bioliquids’ and ‘biofuels’ set out in Article 2 of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, in particular since preferential treatment with regard to allowance surrender obligations under the Union’s greenhouse gas emission allowance trading scheme pursuant to Directive 2003/87/EC constitutes a ‘support scheme’ within the meaning of Article 2(k) and consequently financial support within the meaning of Article 17(1)(c) of Directive 2009/28/EC.”*

¹¹ This guidance also uses the term “zero rated” for expressing that the emission factor of a fuel or material, or for a defined fraction of a mixed material is counted as zero.

In the context of the EU ETS, at the time of writing this guidance, the following simplified assumptions may be made:

- Source streams of solid biomass and biogases (if not mixed with fossil materials) can always be assumed to have an emission factor of zero. For the treatment of mixed materials see section 3.2.
- Biofuels are only relevant for aircraft operators (as biofuels are per definition always used in transport, and mobile machinery is excluded from the installation boundaries).
- Bioliquids are the only case for the application of sustainability criteria relevant for installations.

Based on the definitions, some more clarifications are needed:

- Where biomass in the liquid state is used as process input in installations (e.g. where a biomass material is used for chemical syntheses), and where no energy purpose can be identified, this biomass does not fall within the definition of bioliquid, and consequently sustainability criteria do not apply. Such material may be zero-rated under the EU ETS if it complies with the definition of “biomass” without further restriction. Because the RES-D sets out only targets for renewable energy consumption, non-energy use of biomass would not count towards the targets. In order to ensure consistency between the calculation of the RES target and emissions monitoring, competent authorities should ensure¹² that only those bioliquids that do not count towards the national RES target are exempted from the sustainability criteria. Where a Member State intends to include the energy input from a certain bioliquid in the calculation for its target, it must be assumed that an energy purpose prevails, and sustainability criteria apply.
- The Commission advocates a broad definition of bioliquids, and therefore suggests including in particular viscous liquids such as waste cooking oil, animal fats, palm oil, crude tall oil and tall oil pitch¹³.
- Black liquor from the pulp and paper industry is generally considered equivalent to solid biomass. It should therefore be assumed by competent authorities (at the time of writing this guidance) that no sustainability criteria are to be applied.

The Annex of this guidance (section 7.1) contains an informative list of materials which can be considered as biomass (without prejudice to application of sustainability criteria).

3.2 Implications of the sustainability criteria

While under the MRG 2007 a source stream¹⁴ has been either fossil, biomass or mixed, the application of sustainability criteria leads now to the following types of source streams (some may appear as theoretical cases):

¹² Competent authorities can for example require an appropriate procedure for obtaining proof of sustainability criteria when they approve the monitoring plan of installations or aircraft operators.

¹³ See Communication 2010/C160/02, for reference see section 7.4.

1. Fossil source streams
2. Biomass where sustainability criteria apply (currently biofuels and bioliquids as defined by the MRR):
 - (a) Criteria are satisfied: Biomass is zero-rated
 - (b) Criteria are not satisfied: Biomass is treated like a fossil source stream.
3. Biomass where no sustainability criteria apply: Always zero-rated.
4. Mixed source streams:
 - (a) Fossil / biomass mix (where either no sustainability criteria apply, or where they apply and are satisfied): The emission factor is the preliminary emission factor¹⁵ multiplied by the fossil fraction.
 - (b) Fossil / biomass mix (where sustainability criteria apply and are not satisfied): The whole source stream is treated as fossil.
 - (c) Biomass mix or fossil / biomass mix, where only a part of the biomass satisfies the applicable sustainability criteria: These source streams are to be treated like those under point 4(a), with the non-sustainable part considered as part of the fossil fraction.



Examples:

- Point (a): This could be fibre wood panels, where biomass (wood, which is solid, and therefore no sustainability criteria are to be applied at the time of writing this guidance) is mixed with resins which are usually made from fossil raw materials.
- Point (b): This could be a liquid fuel where the supplier claims that x% biofuel has been added, but does not provide evidence in accordance with section 3.3 of this guidance for that amount.
- Point (c): An example would be rape seed methyl ester (“biodiesel”), where the rape seed oil satisfies the sustainability criteria and respective evidence is provided, while the methanol is either stemming from fossil sources, or where it is claimed to be biomass, but no evidence for meeting the sustainability criteria is available.



Note that the above classification assumes that the whole source stream has the same composition, or is analysed using the same methodology where calculation factors are not based on default values¹⁶. However, the situation may occur that a certain biofuel or bioliquid is used, where some batches delivered do satisfy the sustainability criteria, while other batches do not. In such a case it would not be appropriate to consider this material as one source stream with different biomass fraction values, but rather as two distinct source streams, one

¹⁴ This term refers to all the items which have to be monitored when using a calculation based approach. The wording is the result of the attempt to quickly express “fuel or material entering or leaving the installation, with a direct impact on emissions”. In the simplest case it means the fuels “streaming” into the installation and forming a “source” of emissions. For details see Guidance document No. 1 (general guidance for installations).

¹⁵ Article 3(35) of the MRR defines: ‘preliminary emission factor’ means the assumed total emission factor of a mixed fuel or material based on the total carbon content composed of biomass fraction and fossil fraction before multiplying it with the fossil fraction to result in the emission factor.

¹⁶ Similar to e.g. different batches of coal which are analysed separately, but all reported under the same source stream “coal”.

being fossil, one biomass. The simplifications of Articles 38 and 39 would only apply to the biomass source stream.

A similar caveat applies to mixed source streams where the biomass fraction only sometimes complies with the relevant sustainability criteria.

The above considerations lead to practical consequences when setting up the monitoring plan in relation to bioliquids and biofuels (as defined): The simplest way forward would be to establish a written procedure¹⁷ which requires the operator to attribute each batch of biomass used in the installation to either a (sustainable) “biomass” source stream or to a “fossil” source stream, depending on whether a proof is available for meeting the sustainability criteria or not. The ways of obtaining such proof are discussed in section 3.3 below.



3.3 Practical approach for sustainability criteria

The Commission has set up a “transparency platform” for publication of all kinds of information related to the RES Directive in general and the sustainability criteria in particular. It can be found at:

<http://ec.europa.eu/energy/en/topics/renewable-energy>.

Further useful entry points for that web site are:

<http://ec.europa.eu/energy/en/topics/renewable-energy/biomass>
and <http://ec.europa.eu/energy/en/topics/renewable-energy/biofuels>.



Furthermore two communications¹⁸ have been published which can help in the understanding of the sustainability criteria. These are:

- Communication from the Commission on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels (2010/C 160/02); and
- Communication from the Commission on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme (2010/C 160/01).

For all issues regarding the assessment of sustainability criteria for individual materials, guidance published on that website should be consulted.

According to the RES-Directive, there are three ways in which economic operators can demonstrate compliance with the sustainability criteria for bioliquids and biofuels:

- by means of a ‘national system’;
- by using a ‘voluntary scheme’ that the Commission has recognised¹⁹;
- in accordance with the terms of a bilateral or multilateral agreement concluded by the Union and which the Commission has recognised for this purpose²⁰.

¹⁷ See guidance document no. 1 on the topic of “written procedures” as supplement to the monitoring plan.

¹⁸ For reference see section 7.4

¹⁹ Communication 2010/C160/01 clarifies: “For bioliquids, the Commission cannot explicitly recognise a voluntary scheme as a source of accurate data for the land related criteria. However, where the Commission decides that a voluntary scheme provides accurate data as far as biofuels are concerned, the Commission encourages Member States to accept such schemes equally for bioliquids.”

Nonetheless, for EU ETS zero-rating, the burden of proof concerning a bioliquid or biofuel as defined meeting the requisite sustainability criteria remains with the EU ETS operator or aircraft operator. Possible proof can be provided from applicable documentation ensuring compliance with a national system or the availability of certificates containing evidence of sustainability issued under a sustainability scheme approved by the Commission under the RES-Directive (see sections 3.3.2 to 3.3.4). The evidence provided should furthermore indicate the amount of delivered biomass and identify the batch to which they relate.

Where such status cannot be confirmed to the satisfaction of the competent authority²¹ concerned, the bioliquid and biofuel will have to be treated as a fossil source stream and not zero-rated.

3.3.1 General responsibilities



The Member State where the installation is situated, or the administering Member State in case of aircraft operators, is responsible for defining the rules under which compliance with the sustainability criteria must be demonstrated for the biofuels or bioliquids used within the Member State.

That Member State also has to define which economic operator (i.e. the producer, supplier or user) of the biomass has to demonstrate compliance with the sustainability criteria, i.e. from whom the operator of the installation or the aircraft operator can obtain the appropriate evidence. If the Member State has not explicitly made other arrangements, it is appropriate in case of the EU ETS that the burden of proof will be on the user of the biomass, i.e. the operator of the installation or the aircraft operator, as these are the persons who have the obligation of reporting emissions. However, for practical reasons, the operator or aircraft operator will have to rely on data²² provided by third parties, i.e. either the supplier or producer of the bioliquid/biofuel.

3.3.2 National systems

Member States' implementations of the RES-D are currently using diverse approaches. There is no complete overview of Member States' national systems on biomass available. Operators and aircraft operators should obtain information on national systems from the relevant competent authority.

Although the RES Directive does not explicitly require a Member State to publish dedicated information, they are also not prohibited from doing so. For the purpose of the EU ETS, Member States are therefore encouraged to consider practical ways of making information available to the public regarding the sustainability of biofuels and bioliquids (by producer, brand, generic type or other suitable grouping), suppliers or producers thereof, or similar information, which allow the user of these bioliquids or biofuels (and any EU ETS verifier) to gather assurance that a material complies with the applicable sustainability criteria.

²⁰ At the time of writing this guidance, no such agreements have been concluded yet.

²¹ Not only the competent authority, but also the verifier during verification will assess if the evidence for meeting the sustainability criteria is sufficient.

²² Depending on the applicable scheme for proving sustainability criteria, those data must be certified.

Because national systems are not harmonised across the EU, it may be especially difficult for operators to comply with these systems where biomass is consumed which is produced in another Member State. Therefore the use of voluntary systems may be more desirable in those cases.



3.3.3 Voluntary systems

Details on all voluntary systems approved by the Commission can be found on the Commission's transparency platform²³. The most important aspect of the voluntary schemes is their applicability across the EU in a harmonised manner. This means that a biofuel certified under such an approved scheme will have to be recognised as sustainable in all Member States. For bioliquids Member States are encouraged to recognise the voluntary schemes in a similar way²⁴.

An operator who purchases a bioliquid or biofuel which has received a certificate of compliance with an approved voluntary scheme, may in any case assume that this bioliquid or biofuel can be considered sustainable under the RES Directive, and can be used with an emission factor of zero in the EU ETS²⁵. However, there are important limitations:

- The operator has to be aware that some voluntary schemes are approved only for some of the required sustainability criteria. If applicable, another proof must be obtained for the remaining criteria.
- Some sustainability schemes have an international background. Some have set up an "EU version" of the same overarching scheme. Usually the EU version has more stringent sustainability criteria in order to comply with the RES-D. Therefore only the EU version is approved by the Commission. Operators, verifiers and competent authorities should be aware of these differences, and only certificates which explicitly refer to those EU versions of the voluntary schemes are eligible for zero-rating in the EU ETS.
- Some schemes are approved with limited geographical scope.
- The Commission's approvals of voluntary schemes are usually valid for five years. Only bioliquid or biofuel supplies covered by a valid approval are eligible for zero-rating in the EU ETS.

3.3.4 Bi- or multilateral agreements

Currently no such agreements have been concluded. Operators are advised to check the Commission's transparency platform²⁶ when in doubt whether this situation has changed.

²³ <http://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/voluntary-schemes>.

Approvals are valid for 5 years. It is therefore necessary to check the validity period of the approval in the relevant Commission Decision.

²⁴ For bioliquids see the caveat in footnote 19.

²⁵ In case of mixed materials or fuels, obviously the zero-rating applies only to the biomass fraction.

²⁶ <https://ec.europa.eu/energy/en/renewable-energy-transparency-platform>.

4 DETERMINING THE BIOMASS FRACTION



This chapter is applicable only for stationary installations.

4.1 General approach

As discussed in more detail in guidance document No. 1 (General guidance for installations²⁷), for the purpose of emission monitoring using a calculation method, calculation factors can be determined either by using default values, or by laboratory analyses. The determination of the biomass or fossil²⁸ fraction of mixed fuels or materials is different from the determination of other calculation factors in two ways:

1. There is no list of default values in Annex VI of the MRR.
2. Laboratory analyses may be difficult due to sampling issues for heterogeneous materials, or may lack reliability due to technical issues of available analytical methods.

The M&R Regulation therefore contains some special rules for this purpose in Article 39, setting out a hierarchical approach as follows:

- The highest tier requirement is bespoke analyses as is the case for other calculation factors (this is tier 2 according to Annex II, section 2.4 of the MRR). However, a specific requirement is added here that the competent authority must explicitly approve the determination methodology, which must be based on relevant standards. See section 4.2 below.
- Where the highest tier is technically not feasible or would incur unreasonable costs (→ GD 1), the operator shall use one of the following:
 - Use default values for the biomass fraction and emission factor published by the Commission, if available (such values may be included in later versions of this guidance²⁹)
 - Use an estimation method published by the Commission, if available (will be developed at a later stage)
 - Where no default values from the Commission are available and no estimation method proposed by the Commission is applicable, the operator shall either
 - assume that the biomass fraction is zero (i.e. make the conservative assumption that the whole material is a fossil material³⁰); or
 - propose an estimation method for the approval by the competent authority. In particular such estimation method may be a suitable mass balance where the material is originating from a known production pro-

²⁷ For reference see section 1.3.

²⁸ Because Biomass fraction = 1 – fossil fraction, it is not important which fraction is determined by analysis. The operator can choose the simpler and more reliable methodology.

²⁹ Note that the default values given in the Annex (section 7.2.1) of this document are *preliminary* emission factors and therefore cannot serve for the purpose discussed here. See also footnote **Fehler! Textmarke nicht definiert.**42 on page 26.

³⁰ In the case of output streams of a mass balance in accordance with Article 25 of the MRR, the same conservative approach would assume that the biomass fraction is 100%. For more details on the mass balance approach see Guidance Document No. 1.

cess (such as e.g. wood based panel wastes, where the amount of (fossil) resins added is a known process parameter).

The estimation methods which an operator may propose should be treated flexibly. Default values in accordance with points (b) to (e) of Article 31(1) may also be considered. Any method should be based on industry best practice and have a sound scientific basis. In addition to estimating the biomass fraction as a separate factor, estimation methods for the overall biomass load of an emission source or source stream should be explored, such as CEMS for ^{14}C , or the “balance method”³¹. However, where the reliability of the method is not certain, the operator should also provide for a method for corroborating the results.

4.2 Laboratory analyses for biomass fraction

For general requirements for laboratory analyses, please see Guidance document No. 5 (Guidance on Sampling and Analysis)³².



For the determination of the fossil and biomass carbon fraction in materials and fuels, Article 39(1) requires in particular: *“Where subject to the tier level required and to the availability of appropriate default values as referred to in Article 31(1), the biomass fraction of a specific fuel or material are determined using analyses, the operator shall determine that biomass fraction on the basis of a relevant standard and the analytical methods therein, and apply that standard only if approved by the competent authority.”* This special highlighting of the competent authority’s approval will be discussed here.

For solid materials (usually waste), the relevant standard is EN 15440 (“Solid recovered fuels - Methods for the determination of biomass content”). Where more specific national or international standards are available, they may be applied as well.

EN 15440 offers three methods for determining the biomass fraction of a mixed material:

1. The selective dissolution method
2. The manual sorting method
3. The ^{14}C method

The informative Annex D of that standard shows that method 1 gives inappropriate and wrong results for several materials (i.e. fossil materials appearing to be biomass, or biomass identified as fossil). Method 2 is only applicable where optically and physically distinguishable fractions can be separated and quantified. The standard states that particle size should be $>10\text{mm}$. Under the standard, method 3 is applicable to all material types.

Therefore, the standard clarifies in section 6.3, that for determining biomass for the purpose of emission trading, “the ^{14}C method or the selective dissolution



³¹ The balance method is based on five mass balances and one energy balance. Each balance describes a certain waste characteristic (e.g. content of organic carbon, heating value). The waste characteristics are derived from routinely measured operating data at the co-incineration plant.

³² Please see section 1.3 for where to find other guidance documents.

may be used.” The dissolution method must not be applied, if materials listed in Table 1 are contained at levels above 5% (for rubber residues the threshold is 10%).

EN 15440 acknowledges that the manual sorting and selective dissolution methods will usually be less expensive and simpler to apply than the ¹⁴C method. Therefore the standard proposes that for routine checks for RES Directive purposes the two simpler methods may be applied (if materials listed in Table 1 are present below the mentioned thresholds only), with the ¹⁴C method as reference method. The standard also points out that the sample preparation for the ¹⁴C method should be simple enough for application in a reasonably equipped laboratory with normal skilled laboratory staff.

Table 1: Materials for which the selective dissolution method is considered inappropriate according to EN 15440:2011.

Solid fuels like hard coal, coke, brown coal, lignite and peat
Charcoal
Biodegradable plastics of fossil origin
Non-biodegradable plastics of biogenic origin
Oil or fat present as a constituent of biomass
Natural and/or synthetic rubber residues
Wool
Viscose
Nylon, polyurethane or other polymers containing molecular amino groups
Silicon rubber

Taking into account both the standard’s requirements and Article 39(1) of the MRR, the following approach is proposed:

- Operators should strive for using the ¹⁴C method, at least for validation of the other methods used. The best cost/benefit balance may be found if the operator ensures correct sampling and sample preparation, which allows sending the sample to an accredited laboratory for the purpose of the ¹⁴C analyses.
- If the operator can show to the satisfaction of the competent authority that ¹⁴C analyses lead to unreasonable costs or are technically not feasible, the operator may use one of the two other methods of EN 15440, and provides evidence to the competent authority that
 - based on several representative samples the selected method has been validated using the ¹⁴C method, and
 - materials listed in Table 1 are found at levels below 5% (10% for rubber residues)..
- If such validation is not possible, but the ¹⁴C method would lead to unreasonable costs, the operator may use one of the lower tier approaches as discussed in section 4.1.

Note that due to the usual heterogeneous character of solid wastes, special care must be taken for sampling and sample preparation. Several standards of the EN 15000 series are referenced for this purpose in EN 15440, and therefore must be applied as appropriate.



For liquid fuels and materials, currently no European standard is available. However, it seems that the ^{14}C method as given in EN 15440 should be applicable without great difficulties. Furthermore ASTM D-6866-16 (“Standard test methods for determining the biobased content of solid, liquid, and gaseous samples using radiocarbon analysis”) may be useful.

Furthermore it should be noted that sampling of CO_2 from the flue gas for the purpose of a ^{14}C analysis seems a useful approach. In this case the biomass fraction determined would represent an average for the whole fuel mix. This approach would be in particular beneficial where highly heterogeneous materials such as municipal waste are combusted. Member States are encouraged to gain experience with the ISO/DIS 13833 standard currently under development.



4.3 Estimation methods

FAQ³³ No. 2.4 gives some example of estimation methods allowable pursuant to Article 39 MRR. Further methods may be approved by competent authorities, if they are based on scientifically proven methods. Preference should be given to methods at least partly referring to EN, ISO or national standards as well as to peer-reviewed publications.

³³ https://ec.europa.eu/clima/sites/clima/files/ets/monitoring/docs/faq_mmr_en.pdf

5 OTHER SPECIFIC MRR RULES ON BIOMASS



This chapter is applicable only for stationary installations.

5.1 Simplifications by Article 38

In principle all source streams in an installation have to be monitored using the same system of tiers which are defined for the calculation based methodology. However, where biomass³⁴ is contained in a source stream, the emissions stemming from this biomass are reported as zero, no matter how big the total emissions are. Adherence to reporting activity data and calculation factors to high accuracy in such cases could be counter to cost effectiveness.

Simplified!

The MRR therefore allows in Article 38 several simplifications:

- Where the whole source stream consists exclusively of biomass (i.e. 100% biomass and an absence of fossil contamination can be ensured, if applicable taking into account sustainability criteria), the operator may
 - take the biomass fraction to be 100% without carrying out further analyses (or estimation methods); and
 - determine the activity data without using tiers. This means that again an estimation method is allowed, similar to de-minimis source streams³⁵. Although it is not explicitly mentioned in the MRR, the NCV and oxidation factor may also be determined using lower tiers or no-tier approaches.

However, it is clear that the operator has to provide some evidence about the biomass nature of the source stream to the competent authority when submitting the monitoring plan.

- Where the fossil fraction of the emissions allows the source stream to qualify as a de-minimis source stream³⁶, or where 97% or more of the carbon³⁷ stems from biomass (taking into account sustainability criteria, where applicable), the same approach regarding use of no-tier methodologies including estimations may be applied. However, evidence must be provided regarding the fossil fraction in this case (see section 4 of this document).

The energy balance method is explicitly mentioned in the MRR as a possible no-tier estimation method, but other methods may be proposed by operators as well.

³⁴ Where sustainability criteria have to be applied, "biomass" here means biomass for which compliance with these criteria has been demonstrated.

³⁵ As the emissions of such a source stream are zero, the biomass source stream qualifies automatically as de-minimis source stream.

³⁶ The operator may select as de-minimis source streams: source streams which jointly correspond to less than 1 000 tonnes of fossil CO₂ per year or to less than 2% of the "total of all monitored items", up to a total maximum contribution of 20 000 tonnes of fossil CO₂ per year, whichever is the highest in terms of absolute value. The "total of all monitored items" means the sum of source stream emissions including where outputs of mass balances are taken into account, absolute values, plus any emissions determined by CEMS. For more details see GD 1 (General guidance for installations).

³⁷ This corresponds to the definition of "pure biomass" in the MRG 2007, where up to 3% impurities are regarded as acceptable within the understanding of "pure".

5.2 Biogas in natural gas grids

In some Member States biogas is fed into the grid of natural gas suppliers. Where EU ETS operators want to claim a certain amount of that biogas³⁸ as part of their purchased natural gas, there are two options:

- The operator uses an approach for determining the biomass fraction of the gas physically consumed (see section 4). This would require either analyses (e.g. [continuous] sampling for ¹⁴C analyses from the gas grid or flue gas) or a recognised estimation method).
- Where an appropriate accounting system for biomass fractions is in place, it may be used under certain conditions. In particular a guarantee of origin system (in accordance with Articles 2(j) and 15 of the RES Directive) might be considered appropriate. One important condition is given by the MRR: In order to avoid double counting, laboratory analyses for the determination of the biomass fraction are not allowed for all installations connected to that grid where a guarantee of origin system is in place.

If Member States want to make use of biogas in a natural gas grid and want to make the benefits thereof easily accessible to operators of EU ETS installations, they need to establish an appropriate accounting and verification system (e.g. using a biogas registry) which allows the accurate, transparent and verifiable identification of biogas amounts fed into the grid and consumed by installations, effectively avoiding double counting of biomass. The system also needs to make provisions for avoiding data gaps or double counting if the grid is connected to other grids, including in other Member States.

Operators using natural gas from such grids should be aware of the Member State's approach for biogas accounting. In case of doubt they should contact their competent authorities for further guidance.

³⁸ At the time of writing this guidance, no sustainability criteria apply for biogas, except where it is used for transport purposes, which would make that biogas fall under the definition of „biofuel“.

6 AVIATION SPECIFIC ASPECTS



This chapter has now been transferred to Guidance document No. 2 (“General guidance for Aircraft Operators”³⁹). It applied only to aircraft operators’ activities covered by the EU ETS.

In the context of aviation and the EU ETS, two issues are of relevance:

1. How to apply sustainability criteria? (→ section 6.1)
2. How to account for biofuel purchases in a pragmatic way? (→ section 6.2)

6.1 Sustainability criteria

Regarding the sustainability criteria, in principle everything discussed in section 3.3 is applicable. Because of the international character of the aviation sector, aircraft operators should in particular strive for receiving evidence based on voluntary schemes approved by the Commission. Section 3.3 is now contained in GD 2 as an annex.

6.2 Biofuel determination based on purchase records

Article 53 of the MRR allows that aircraft operators take calculation factors from purchase records, based on a method uniformly applicable in all Member States and guidelines provided by the Commission. Those guidelines (updated during 2016) are now found in section 5.5 of GD 2.

³⁹ For where to find this document on the Commission’s website please see section 1.3.

7 ANNEX

7.1 List of biomass materials

This informative Annex has been added as guidance for interpretation of the MRR's definition of biomass. The lists below are non-exhaustive. Thus, if a material or fuel is not found on the list, the individual case must be assessed based on the definitions of the MRR (see section 3.1).

7.1.1 Clarification for some non-biomass materials

Peat, xylite⁴⁰ and fossil fractions or contaminations of the materials below are not biomass (see Article 38(3)).

7.1.2 Biomass materials

Note: The following list is based on the MRG 2007 and has been updated only in a few cases.

Note: For all materials listed below it must be taken into account if sustainability criteria of the RES Directive are applicable. At the current stage these criteria apply for biofuels and bioliquids as defined in the RES-D and the MRR (see section 3.1).

If sustainability criteria apply, the material only qualifies as biomass within the meaning of the MRR (i.e. with an emission factor of zero) if evidence for meeting the sustainability criteria is provided.



Note: If the materials listed are contaminated with fossil materials (such as in case of waste wood containing varnishes, colours, resins, etc), these materials have to be treated as mixed materials.

Group 1: Plants and parts of plants:

- straw;
- hay and grass;
- leaves, wood, roots, stumps, bark;
- crops, e.g. maize and triticale.

Group 2: Biomass wastes, products and residues:

- industrial waste wood (waste wood from woodworking and wood processing operations and waste wood from operations in the wood materials industry);
- used wood (used products made from wood, wood materials) and products and by-products from wood processing operations;

⁴⁰ This is a by-product of lignite coal production.

- wood-based waste from the pulp and paper industries, e.g. black liquor (with only biomass carbon);
- crude tall oil, tall oil and pitch oil from the production of pulp;
- forestry residues;
- lignin from the processing of plants containing ligno-cellulose;
- animal, fish and food meal, fat, oil and tallow;
- primary residues from the food and beverage production;
- plant oils and fats;
- manure;
- agricultural plant residues;
- sewage sludge;
- biogas produced by digestion, fermentation or gasification of biomass;
- harbour sludge and other waterbody sludges and sediments;
- landfill gas;
- charcoal;
- natural rubber or latex.

Group 3: Biomass fractions of mixed materials:

- the biomass fraction of flotsam from waterbody management;
- the biomass fraction of mixed residues from food and beverage production;
- the biomass fraction of composites containing wood;
- the biomass fraction of textile wastes;
- the biomass fraction of paper, cardboard, pasteboard;
- the biomass fraction of municipal and industrial waste;
- the biomass fraction of black liquor containing fossil carbon;
- the biomass fraction of processed municipal and industrial wastes;
- the biomass fraction of ethyl-tertiary-butyl-ether (ETBE);
- the biomass fraction of butanol;
- the biomass fraction of waste tyres resulting from natural rubber and fibres.

Group 4: Fuels whose components and intermediate products have all been produced from biomass⁴¹:

- bioethanol;
- biodiesel;
- etherised bioethanol;
- biomethanol;
- biodimethylether;
- bio-oil (a pyrolysis oil fuel) and bio-gas;
- hydro-treated vegetable oil (HVO).

⁴¹ Where a fraction of the carbon contained in these substances stems from fossil sources, such as e.g. when biodiesel is produced using methanol produced from fossil sources, these substances must be treated as mixed materials.

7.2 List of default values for calculation factors for some biomass materials

7.2.1 Preliminary emission factors

Article 38(2) of the MRR makes reference to the use of the preliminary emission factor⁴² for mixed materials and fuels. However, the MRR does not contain default values for the preliminary emission factors. Therefore operators may find it difficult to report these values⁴³. Furthermore such default values might be needed for biomass materials where evidence for meeting sustainability criteria (if applicable) cannot be provided. The following values taken from the IPCC 2006 guidelines (lowest tier approach) may be useful for this purpose⁴⁴. However, the IPCC guidelines also give ranges for those values which may be broad in particular for biomass. Competent authorities should therefore request operators to validate the appropriateness of default values by laboratory analyses, taking into account the total amount of emissions from this source stream such that unreasonable costs are avoided. For higher tiers there may be better values available from the relevant competent authority.

Note that for the application of the preliminary emission factor a FAQ is provided⁴⁵. The Commission's template for the Annual Emission Report further clarifies the issue.

Biomass material	Preliminary EF [t CO ₂ / TJ]	NCV [GJ/t]
Wood / Wood waste	112	15.6
Sulphite lyes (black liquor)	95.3	11.8
Other primary solid biomass	100	11.6
Charcoal	112	29.5
Biogasoline	70.8	27.0
Biodiesels ⁴⁶	70.8	37.0
Other liquid biofuels	79.6	27.4
Landfill gas	54.6	50.4
Sludge gas	54.6	50.4

⁴² According to Article 3(35) of the MRR, the preliminary emission factor is "the assumed total emission factor of a mixed fuel or material based on the total carbon content composed of biomass fraction and fossil fraction before multiplying it with the fossil fraction to result in the emission factor". This is to be distinguished from the [final] emission factor, which by definition is zero for biomass. For further details see section 4.3.1 of Guidance Document No. 1, and the Commission's FAQs.

⁴³ According to point 8(b) of Annex X of the MRR, operators are required to report CO₂ emissions from biomass as memo item where a measurement based methodology is used to determine emissions. This is achieved in a simple way if the preliminary emission factor is reported together with the biomass fraction (the latter being a reporting requirement given by point 6(f) of the same Annex).

Note: This approach of reporting is inter alia necessary for supporting the accurate determination of biomass emissions in the national GHG inventory.

⁴⁴ The full guidelines, including inter alia definitions for these fuels, can be found at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>

⁴⁵ See FAQ 2.1.

⁴⁶ The NCV value is taken from Annex III of the RES Directive.

Other biogas	54.6	50.4
Municipal waste (biomass fraction) ⁴⁷	100	11.6

7.2.2 Mixed materials

An information exchange between Member States and the Commission has not yet resulted in a further need to provide default values for specific mixed materials. As an exception, default values for waste tyres are discussed in FAQ⁴⁸ No. 2.3.

7.3 Acronyms

EU ETS.....	EU Emission Trading Scheme
RES	Renewable Energy Sources
RES-D.....	RES Directive (2009/28/EC)
MRV	Monitoring, Reporting and Verification
MRG 2007 ..	Monitoring and Reporting Guidelines
MRR.....	Monitoring and Reporting Regulation (M&R Regulation)
AVR	Accreditation and Verification Regulation (A&V Regulation)
MP	Monitoring Plan
Permit	GHG emissions permit
CIMs	Community-wide fully harmonised Implementing Measures (i.e. allocation rules based on Article 10a of the EU ETS Directive)
CA	Competent Authority
ETSG	ETS Support Group (a group of ETS experts under the umbrella of the IMPEL network, who have developed important guidance notes for the application of the MRG 2007)
AER	Annual Emissions Report
CEMS	Continuous Emission Measurement System
MPE.....	Maximum Permissible Error (term usually used in national legal metrological control)

⁴⁷ The IPCC guidelines also give values for the fossil fraction of municipal waste:
EF = 91.7 t CO₂/TJ; NCV = 10 GJ/t

⁴⁸ https://ec.europa.eu/clima/sites/clima/files/ets/monitoring/docs/faq_mmr_en.pdf

7.4 Legislative texts

EU ETS Directive: 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, e.g. by Directive 2009/29/EC. Download of the consolidated version:

<http://data.europa.eu/eli/dir/2003/87/2015-10-29>

M&R Regulation: 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. The consolidated version is available under

<http://data.europa.eu/eli/reg/2012/601/2014-07-30>

A&V Regulation: Commission Regulation (EU) No. 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council. It is available under <http://eur-lex.europa.eu/eli/reg/2012/600/oj>

MRG 2007: 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. The download of the consolidated version contains all amendments: MRG for N₂O emitting activities, aviation activities; capture, transport in pipelines and geological storage of CO₂, and for the activities and greenhouse gases only included from 2013 onwards. Download: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2007D0589:20110921:EN:PDF>

RES Directive: Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. Download: <http://eur-lex.europa.eu/eli/dir/2009/28/>

Communication from the Commission on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme (2010/C 160/01). Download: [http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52010XC0619\(01\)](http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52010XC0619(01))

Communication 2010/C160/02 from the Commission on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels. Download: [http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52010XC0619\(02\)](http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52010XC0619(02))