



D.3.2 / Proposal on cross-border biomethane administration

Deliverable:	Proposal on cross-border biomethane administration
Author(s):	Attila Kovacs (EBA), Sandra Rostek (GBA), Andreas Wolf (AGCS), Ciaran Burns (REA), Lorenzo Maggioni (CIB)
Version:	Final
Quality review:	Stefano Proietti (ISIS)
Date:	08/01/2016
Grant Agreement N°:	646533
Starting Date:	01-01-2015
Duration:	36 months
Coordinator:	Stefano PROIETTI (ISIS)
Tel:	0039 063 212 655
Fax:	0039 063 213 049
E-mail:	sproietti@isis-it.com



Table of Contents

1. Introduction.....	4
2. Letter to Commissioner Mr. Miguel Arias Cañete	5
3. Annex to COM 2010/C 160/01	8
4. Review of sustainability certification and mass-balancing related EU legislation	11
5. Sustainability certification and mass-balancing in different biomethane applications.....	17
6. Mass-balancing with other energy sources/energy carriers.....	19
6.1 Cross-border natural gas movements.....	19
6.2 Liquid biofuels	19
6.3 Renewable electricity certificates.....	21
7. Interrelation between mass balancing and sustainability certifications	24
7.1 General sustainability requirements.....	24
7.2 Chain of custody.....	24
7.3 Proving compliance	25
7.4 Sustainability verification for biomethane production in Germany	26
7.5 Specifics of different biomethane applications	28
8. Mass-balancing in cross-border biomethane trade	30
9. Sustainability certification regarding production in the 6 participating countries	31
9.1 Austria.....	31
9.2 France.....	32
9.3 Germany	32
9.4 Hungary	35
9.5 Italy	35
9.6 United Kingdom.....	39
10. Sustainability certification regarding transfer through the natural gas grid in the 6 participating countries	41
10.1 Austria.....	41
10.2 France.....	41
10.3 Germany	42
10.4 Hungary	42

10.5	Italy	42
10.6	United Kingdom.....	43
11.	Challenges in securing mass-balancing in cross-border biomethane trade.....	44
11.1	Biogas raw materials with different GHG characteristics.....	44
11.2	Mass balance system boundaries	45
12.	Proposed administrative solution.....	46
12.1	Annex to COM 2010/C 160/01.....	46
12.1.1	Sustainability verification.....	46
12.1.2.	Cross-border transfer of volumes and mass balancing of biomethane in the European natural gas network.....	47
12.1.3.	Definition of the European natural gas network.	48
12.2	Documentation system for cross-border movements of biomethane.....	48
11.2.1	Objective.....	48
12.2.2	Expectations towards the documentation system.....	49
12.2.3	Three pillars	49
12.3	EBCS - “Non-typical” voluntary scheme	50



1. Introduction

This deliverable aims to provide a technical-economic proposal to the European Commission on removing certain administrative barriers hindering the establishment of the integrated European biomethane market.

The proposal is composed of three components:

- a) Draft Letter to Mr. Miguel Arias Cañete, EU Commissioner for Energy (Chapter 2)
- b) Draft Annex to COM 2010/C 160/01 (Chapter 3)
- c) Analysis – as background information (Chapters 4 – 11)

The detailed analysis has confirmed that biomethane can fulfil all legislative obligations just like liquid biofuels until the point of injection into the natural gas grid. After that, however, we need a clarification on how to handle the fact that, from the moment of getting blended with natural gas, biomethane cannot be physically tracked. This document offers a comprehensive administrative solution to the question regarding biomethane injected into the European natural gas network with cross-border trade destination – in harmony with the existing relevant EU regulations.

The key step for establishing the European biomethane market is the recognition of the European natural gas network as a single, closed logistical facility in which the injected and withdrawn volumes of biomethane can be properly mass balanced.

Under the proposed approach, the sustainability verification of biomethane will cover the full chain of custody (from raw material supplies till the end-user), as stipulated in the RED, FQD and other relevant EU documents. Nevertheless, the use of the European natural gas network makes it necessary that the sustainability verification consist of two steps:

- 1) the first part of the chain of custody – from raw material supplies through production/upgrading till grid injection – will be covered by one of the established sustainability verification procedures (by national governmental agencies or typical voluntary schemes), exactly like in case of liquid biofuels;
- 2) the second part of chain of custody – from the moment of grid injection till the withdrawal by the end-user – will be covered by a new voluntary scheme applying the mass balancing methodology in relation to biomethane blended with natural gas in the grid.

For avoidance of any misunderstanding: the proposal addresses only administrative questions and it goes strictly about solving an administrative – and not a political – issue. The removal of the existing administrative barriers does not interfere with the rights of the EU member states to decide on their own about biomethane support systems. The recognition of the European natural gas network as a single logistical facility regarding cross-border biomethane transactions does not imply that the so imported biomethane should be qualified for financial support in the receiving country.

2. Letter to Commissioner Mr. Miguel Arias Cañete

**European Commission
Mr. Miguel Arias Cañete
EU Commissioner for Energy
Brussels**

Brussels, "...." January, 2016

Dear Commissioner Arias Cañete,

continuing the work started under the IEE Green Gas Grids project (www.greengasgrids.eu) the Horizon 2020 BIOSURF consortium (www.biosurf.eu) has thoroughly studied the prevailing EU regulations with regard to cross-border trade of biomethane.

We have concluded that although the RED, FQD and Communication 2010/C 160/01 are valid for gaseous biofuel (biomethane), these documents do not contain the necessary details for the practical situation when biomethane is to be transferred from one Member State to another by means of the European natural gas network. For this reason, we request the European Commission to issue an explanatory/interpretation type document which would enable the cross-border trade of biomethane injected into the European natural gas network in full harmony with the existing biofuel legislation. Biomethane can fulfil all legislative obligations just like liquid biofuels until the point of injection into the natural gas grid. After that, however, we need a clear procedure on how to handle the fact, that from the moment of getting blended with natural gas biomethane cannot be physically tracked.

The requested document – which could potentially take the form of an Annex to Communication COM 2010/C 160/01 – is expected to clarify two issues:

- a) Sustainability verification for gaseous biofuel (biomethane) injected into the European natural gas network

In relation to sustainability verification, the Communication COM 2010/C 160/01 contains: "The method by which a connection is made between information or claims concerning raw materials or intermediate products and claims concerning final products is known as the chain of custody. The chain of custody would normally include all the stages from the feedstock production up until the release of the fuels for consumption."

With regard to biomethane injected into the European natural gas grid the principal question to be answered is: how to interpret the "release of the fuels for consumption" for such case?

Due to the fact that in the natural gas network the injected biomethane cannot be tracked, the most practical approach is to cover the whole chain of custody (from raw material supplies till the end-user) in two stages:

1) The first part of the chain of custody starts with the raw material supplies and covers **production** (both anaerobic digestion and biogas upgrading) up to the **injection** into the natural gas network. This part is documented by one of the established sustainability verification procedures (see below), exactly like in case of liquid biofuels;

2) The second part of the chain of custody covers pipeline **transportation** from the moment of grid injection till the withdrawal by the end-user. This part will be administered by the new voluntary scheme applying the mass balancing methodology in relation to biomethane blended with natural gas in the grid.

b) Biomethane in European natural gas network

The injected biomethane is blended with natural gas in the pipeline and the methane molecules cannot be differentiated anymore. Hence, mass balancing and appropriate documentation is the only thinkable methodology to keep track of the renewable fuel (biomethane) in the natural gas grid (in this case the injected and withdrawn volumes of biomethane are balanced – differently from biofuel production where mass balancing handles the mix of different raw materials).

In order to enable proper administration for mass balancing of injected biomethane, it is necessary that the European Commission defines the natural gas network operated on the territory of the European Union as a single, integrated unit, i.e. as a closed logistical facility with specific regard to mass-balancing of biomethane injected into the natural gas system where every injection is physically connected to an export/consumption.

We are fully aware that the above mentioned definition of the European natural gas system is the first and most important step but it has to be accompanied with proper documentation for performing the mass balancing in the system. An independent, transparent documentation scheme is to be organised for mass balancing of biomethane within the European natural gas network.

The recommended approach to documentation is to establish a “non-typical” voluntary scheme recognized by the Commission (in accordance with COM 2010/C 160/01) for the special purpose of handling the mass balancing of biomethane distributed by the European natural gas network. This non-typical voluntary scheme is provisionally named as the “European Biomethane Certification Scheme” (EBCS) and the intended administrative solution is described in the Attachment.

To avoid any misunderstanding: we wish to underline that it goes strictly about solving an administrative – and not a political – issue and the administrative solution does not interfere with the rights of the EU Member States to decide on their own renewable energy support systems. By other

words: the recognition of the European natural gas distribution network for an integrated, closed mass-balancing network with respect to cross-border biomethane transactions does not automatically imply that the so imported biomethane should be qualified for financial support in the receiving country – the decision will remain in the hands of the national governments.

Best regards

Dr. Jan Stambasky
President
European Biogas Association

Copy: Cabinet of Vice-President Maros Sefcovic
European Commission

Attachments:

- a) Draft for Annex to COM 2010/C 160/01
- b) Background information: analysis of administrative preconditions for cross-border biomethane trade in EU

3. Annex to COM 2010/C 160/01

INFORMATION FROM EUROPEAN UNION INSTITUTIONS, BODIES, OFFICES AND AGENCIES

EUROPEAN COMMISSION

Annex to

COM 2010/C 160/01 Communication from the Commission on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme

1. Introduction

The EU introduced in 2009 the most comprehensive and advanced binding sustainability scheme of its kind anywhere in the world. The Renewable Energy Directive¹ sets out these sustainability criteria for biofuels and bioliquids. For biofuels, corresponding criteria are set out in the Fuel Quality Directive². In line with the Renewable Energy Directive and the Fuel Quality Directive, the European Commission issued the Communication COM 2010/C 160/01 detailing the rules for sustainability verification. These ground-laying documents were created with focus on liquid biofuels and do not sufficiently cover specific issues related to gaseous biofuel distributed by means of natural gas pipelines. In the meantime, the production of gaseous biofuel meeting the technical requirements for injection into the natural gas pipeline system have been advanced and the possibility for creating an internal EU market for gaseous biofuel has become a technical reality.

This Annex recognises that the sustainability characteristics of biomethane remain unchanged after the injection into the natural gas pipeline, and the verification of sustainability of biomethane production must be completed prior to injection.

Nevertheless, the cross-border trade of biomethane requires exact administrative separation of biomethane from natural gas at the point of withdrawal. Mass balancing is the methodology to be applied for handling blends of biomethane with natural gas in the European natural gas network and for ensuring the exclusion of double counting of injected volumes.

The purpose of this Annex is to provide explanations and interpretations for the practical application of COM 2010/C 160/01 with regard to gaseous biofuel distributed along the European natural gas network.

¹ 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.

² Directive 2009/30/EC of the European parliament and the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC

2. Definitions

“Biomethane” is a gaseous biofuel, a blend of gases consisting predominantly of methane produced from biomass with quality corresponding to the national standards valid in the country of production or to the European standard prEN16723-1 (in preparation).

“European natural gas network” is the system operated on the territory of the European Union consisting of the natural gas transmission system (as defined in Article 2.3 of Directive 2009/73/EC) together with the natural gas distribution system as defined in Article 2.5 of Directive 2009/73/EC.

3. European natural gas network as logistical facility

- 3.1. The European natural gas network is considered as a single, closed logistical facility with regard to sustainability documentation and mass-balancing of biomethane injected into the system.
- 3.2. Biomethane is considered as injected into the European natural gas network upon injection into either the transmission system (as defined in Directive 2009/73/EC Article 2.3) or into the distribution system (as defined in Directive 2009/73/EC Article 2.5) The fact of injection is to be confirmed by either a transmission system operator (as defined in Directive 2009/73/EC Article 2.4) or by a distribution system operator (as defined in Directive 2009/73/EC Article 2.6).
- 3.3. Biomethane is considered as withdrawn from the European natural gas network upon withdrawal from either the transmission system (as defined in Directive 2009/73/EC Article 2.3) or from the distribution system (as defined in Directive 2009/73/EC Article 2.5) The fact of withdrawal is to be confirmed by either a transmission system operator (as defined in Directive 2009/73/EC Article 2.4) or by a distribution system operator (as defined in Directive 2009/73/EC Article 2.6).
- 3.4. The volume of withdrawn biomethane (expressed in MWh) must not exceed the volume of injected biomethane (expressed in MWh). The mass balance methodology is to be applied to exclude double counting.

4. Sustainability verification

- 4.1. The sustainability verification for every biomethane consignment must be completed in accordance with the Renewable Energy Directive, the Fuel Quality Directive and the Communication COM 2010/C 160/01 prior to the injection into the European natural gas network.

- 4.2. With regard to Article 2.3.3 of the Communication COM 2010/C 160/01, biomethane injected into the European natural gas network is considered as having been “released for consumption” upon injection into the natural gas pipeline, provided that the fact of injection is properly documented and confirmed by a biomethane registry issuing the Guarantee of Origin covering the consignment. The Guarantee of Origin must be accompanied with documents confirming that the sustainability of the production of the consignment was verified in accordance with Communication COM 2010/C 160/01.

5. Mass balancing in natural gas network

- 5.1. Article 2.2.3 covers the specific task of mass balancing biomethane injected into the European natural gas network and is independent from the application of the same methodology (mass balance) for verification of sustainability of biofuel production.
- 5.2. The mass balancing of biomethane injected into and withdrawn from the European natural gas network is to be carried out by one dedicated “non-typical” voluntary schemes established in accordance with Communication COM 2010/C 160/01 and recognized by the European Commission.
- 5.3. By means of the “non-typical” voluntary scheme, economic operators of every European country connected to the European natural gas network must ensure that the aggregated volume of biomethane in their custody is in balance. The biomethane balance in the European natural gas network can be continuous in time, in which case a “deficit”, i.e. that at any point in time more biomethane has been withdrawn than has been added, must not occur. Alternatively, the balance could be achieved over an appropriate period of time and regularly verified. In both cases, it is necessary for appropriate arrangements to be in place to ensure that the balance is respected.



4. Review of sustainability certification and mass-balancing related EU legislation

The Renewable Energy Directive sets out these sustainability criteria for biofuels and bioliquids. For biofuels, corresponding criteria are set out in the Fuel Quality Directive. They apply to biofuels/bioliquids produced in the EU and to imported biofuels/bioliquids. Member States are responsible for making sure that the sustainability criteria are met by economic operators when biofuels/bioliquids are taken into account for the purposes listed in the Renewable Energy Directive, the Fuel Quality Directive, the Community Guidelines on state aid for environmental protection and the Regulation on CO₂ from passenger cars.

Directive 2009/28/EC (RED Directive)

Article 17 of Directive 2009/28/EC³ on the promotion of the use of energy from renewable energy sources establishes sustainability criteria that biofuels and bioliquids have to comply with in order to be counted towards the targets in the Directive and to qualify for inclusion in public support schemes. Article 18 (1) (“Mass-balance”) of Directive 2009/28/EC deals with the verification of compliance with the sustainability criteria and requires economic operators to use a mass-balance system for this purpose.

The following features of the mass-balance system are specified in this Article:

- “(a) allows consignments of raw material or biofuel with different sustainability characteristics to be mixed;
- (b) requires information about the sustainability characteristics and sizes of the consignments referred to in point (a) to remain assigned to the mixture; and
- (c) provides for the sum of all consignments withdrawn from the mixture to be described as having the same sustainability characteristic, in the same quantities, as the sum of all consignments added to the mixture.”

Directive 2009/30/EC (Fuel Quality Directive)⁴

³ 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

⁴ Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC

Article 16 of the Fuel Quality Directive (FQD) provides the reasoning for applying the mass balance method of verifying compliance with sustainability criteria:

“Sustainability criteria will be effective only if they lead to changes in the behaviour of market actors. Those changes will occur only if biofuels meeting those criteria command a price premium compared to those that do not. According to the mass balance method of verifying compliance, there is a physical link between the production of biofuels meeting the sustainability criteria and the consumption of biofuels in the Community thus providing an appropriate balance between supply and demand and ensuring a price premium that is greater than in systems where there is no such link. **To ensure that biofuels meeting the sustainability criteria can be sold at a higher price, the mass balance method should therefore be used to verify compliance.** This should maintain the integrity of the system while at the same time avoiding the imposition of an unreasonable burden on industry.”

Article 7c of the FQD sets the basic rules for verification of compliance with the sustainability criteria for biofuels (corresponding to Article 18 of the RED Directive):

“Member States shall require economic operators to show that the sustainability criteria set out in Article 7b (2) to (5) have been fulfilled. For that purpose, they shall require economic operators to use a mass balance system which:

- (a) allows consignments of raw material or biofuel with differing sustainability characteristics to be mixed;
- (b) requires information about the sustainability characteristics and sizes of the consignments referred to in point (a) to remain assigned to the mixture; and
- (c) provides for the sum of all consignments withdrawn from the mixture to be described as having the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture.”

COM 2010/C 160/01⁵

Article 2.2.3 of this Communication specifies the mass balance system in relation to biofuels:

“Typically, biofuels/bioliquids have a production chain with many links, from field to distribution of the fuel. Feedstock is often transformed into an intermediate product and then into a final product. It is in relation to the final product that complies with the requirements of the Directive needs to be shown. To show this, claims will need to be made about the raw material and/or intermediate products used.

⁵ COM 2010/C 160/01 Communication from the Commission on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme

(Interpretation: biomethane is the final product, raw materials are the substrates used for biogas generation, biogas is the intermediate product).

“The method by which a connection is made between information or claims concerning raw materials or intermediate products and claims concerning final products is known as the chain of custody. The chain of custody would normally include all the stages from the feedstock production up until the release of the fuels for consumption. The method laid down in the RED Directive for the chain of custody is the mass balance method.”

The voluntary scheme should require verification of the mass balance system to be performed simultaneously with verification of correctness in respecting the scheme's criteria. This should include the verification of any evidence or systems used for the purpose of complying with the requirements of the mass balance system.

The mass balance system means a system in which “sustainability characteristics” remain assigned to “consignments”. Sustainability characteristics could include for example:

- evidence showing compliance with the Directive's sustainability criteria, and/or
- a statement that the raw materials used were obtained in a way that complies with the Directive's land related sustainability criteria, and/or
- a greenhouse gas emission figure, and/or
- description of the raw material used, and/or
- the statement production has been awarded a certificate of type X from recognised voluntary scheme Y”, etc.

The Communication COM 2010/C 160/01 also specifies the mass balance approach regarding mixing of consignments with different sustainability characteristics:

“When consignments with different (or no) sustainability characteristics are mixed, the separate sizes and sustainability characteristics of each consignment remain assigned to the mixture. If a mixture is split up, any consignment taken out of it can be assigned any of the sets of sustainability characteristics (accompanied with sizes) as long as the combination of all consignments taken out of the mixture has the same sizes for each of the sets of sustainability characteristics that were in the mixture. A “mixture” can have any form where consignments would normally be in contact, such as in a container, processing or logistical facility or site (defined as a geographical location with precise boundaries within which products can be mixed)”.

(Question to interpretation: what is “logistical facility” in case of injecting biomethane into the natural gas network? Is it only the specific pipeline section where the injection occurred OR the balancing circle (“Bilanzkreis” in German) of the natural gas distribution system OR the whole natural gas system of a country (like in Germany) OR the whole European natural gas grid provided it is declared as one “logistical facility”)?

The Communication also states: “The balance in the system can be continuous in time, in which case a ‘deficit’, i.e. that at any point in time more sustainable material has been withdrawn than has been added, is required not to occur. Alternatively, the balance could be achieved over an appropriate period of time and regularly verified. In both cases it is necessary for appropriate arrangements to be in place to ensure that the balance is respected”.

COM (2010) 11

In February 2010, as required by Article 17(9) of the RED, the Commission published a Report on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling (the Biomass Report)⁶. The Commission decided not to introduce EU binding criteria but to adopt non-binding recommendations to Member States that had already introduced or planned to introduce national biomass sustainability requirements.

(Interpretation: in lack of mandatory sustainability requirements for the use of biogas/biomethane in electricity, heating&cooling, mass balancing must be applied only to those volumes of biomethane injected into the natural gas distribution system which will be used as transportation fuel (and as such fall under Directive 2009/28/EC).

SEC (2011) 129

The Commission Staff Working Document - SEC (2011) 129⁷ – reconfirmed that there is no viable alternative to the mass-balance system, which is “a key element of the sustainability scheme” and “does allow sustainable and other materials to be mixed...”. The Document encouraged the Member States to apply similar sustainability criteria and verification methods also with regard to biomass used for other (than transportation fuel) purposes, such as generating electricity, heating and cooling.

(Note: this Commission SWD does not address the special issues related to mass balancing of biomethane injected into the natural gas network.)

COM (2012) 271

The Communication from the Commission on Renewable Energy⁸ underlined the importance of sustainability criteria:

⁶ COM (2010) 11 Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling

⁷ SEC(2011)129 final Commission Staff Working Document
Report on the operation of the mass balance verification method for the biofuels and bioliquids sustainability scheme in accordance with Article 18(2) of Directive 2009/28/EC”

⁸ COM (2012) 271

“However, significant further use of biomass requires additional measures to ensure its sustainability. For this reason, the Commission will evaluate the effectiveness of current sustainability criteria by 2014 as required by the Renewable Energy Directive. In addition, the Commission will shortly produce reports and proposals to further develop the EU's sustainability framework.”

(Note: this Communication from the Commission does not address the special issues related to mass balancing of biomethane injected into the natural gas network.)

EP 2013/2135

In February 2014, in its resolution⁹ on the 2030 climate and energy framework, the European Parliament asked the Commission to propose sustainability criteria for solid and gaseous biomass, taking into account lifecycle greenhouse gas emissions in order to limit the inefficient use of biomass resources.

SWD (2014) 259

The Commission's services have produced the Staff Working Document SWD (2014) 259 final¹⁰ to review the state of play of the sustainability of solid and gaseous biomass for electricity, heating and cooling production in the EU.

The Commission concluded:

“Against this background, this Staff Working Document has analysed the key internal market and sustainability issues related to biomass for heat and power generation. As discussed in section 3 (of the SWD), currently a limited number of Member States have adopted broadly consistent sustainability schemes and no apparent internal market barriers have been identified, and therefore, at this stage, it is considered that the risk of market distortion caused by national sustainability regulations can be effectively managed through the existing EU tools on technical standards.”

(Question: it is not clear whether SWD (2014) 259 is a negative response from the Commission to EP 2013/2135 where the European Parliament asked the Commission to propose sustainability

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Renewable Energy: a major player in the European energy market

⁹ EP 2013/2135 (INI)

European Parliament resolution of 5 February 2014 on a 2030 framework for climate and energy policies

¹⁰SWD(2014) 259 final

Commission Staff Working Document State of play on the sustainability of solid and gaseous biomass used for electricity, heating and cooling in the EU

criteria for all solid and gaseous biomass applications OR the Commission keeps on working on the proposal regarding mandatory sustainability criteria).

Preliminary conclusions from the review:

- The ground-laying documents (RED, FQD) include upgraded biogas among the biofuels and – on this basis – mass balancing has to be applied for the sustainability verification also in relation to biomethane used as transportation fuel.
- Until now the EU has not introduced mandatory sustainability criteria for biomass (including biogas/biomethane) used for electricity generation and heating/cooling. Correspondingly: on the EU level the sustainability verification using the mass balance methodology is mandatory only for biomethane used as transportation fuel.
- The related EU documents do not acknowledge the fact that – due to the specific features of biogas/biomethane – the mass balancing methodology foreseen for liquid biofuels needs to be adopted for biomethane injected into the natural gas network.

5. Sustainability certification and mass-balancing in different biomethane applications

The EU Renewable Energy Directive (RED) lays down sustainability criteria for biofuels for transport and bioliquids used in other sectors but not for solid and gaseous biomass used for electricity, heating and cooling.

In February 2010, as required by Article 17(9) of the RED, the Commission published a Report on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling (the Biomass Report). The Commission decided not to introduce EU binding criteria but to adopt non-binding recommendations to Member States that had already introduced or planned to introduce national biomass sustainability requirements.

The Biomass Report contains the following recommendation by the Commission:

“The Commission recommends that Member States that either have or shall introduce, national sustainability schemes for solid and gaseous biomass used in electricity, heating and cooling, ensure that these in almost all respects are the same as those laid down in the Renewable Energy Directive. This would ensure greater consistency and avoid unwarranted discrimination in the use of raw materials.”

A special statement addressed the issue of small-scale biomass units:

“The biomass sector is fragmented and there are numerous small-scale users of biomass. It is recommended that sustainability schemes apply only to larger energy producers of 1 MW thermal or 1 MW electrical capacity or above.”

In 2013 the Commission drafted a Proposal for a Directive of the European Parliament and of the Council on sustainability criteria for solid and gaseous biomass used in electricity and/or heating and cooling and for biomethane injected into the natural gas network. In its draft Proposal the Commission suggested that “to maintain the integrity of the sustainability schemes, the same mass balance method that applies to biofuels sustainability criteria should be used to verify compliance with the biomass sustainability criteria”.

This Proposal has been shelved for the time being but the concept of applying the mass balance method for verifying compliance with sustainability criteria in case of biomethane injection into the natural gas network remains relevant and may become actually needed with the increase of the volumes.

Nevertheless, at this moment no mandatory mass balancing commitment is in force on EU level in relation to biomethane injected into the natural gas grid except for biomethane to be used as transportation fuel.

Following the recommendation by the Commission in the Biomass Report sustainability criteria and – correspondingly – mass balancing requirements have been introduced in some of the EU member states.

A review of Member States' implementation of the 2010 recommendations in SWD (2014) 259 found that only few Member States (Belgium, Italy, UK) have adopted greenhouse gas (GHG) saving criteria for biomass used in electricity/heating, which appear broadly in line with the Commission recommendations.

6. Mass-balancing with other energy sources/energy carriers

6.1 Cross-border natural gas movements

The mass-balancing administration – related to the verification of sustainability characteristics of renewable energy sources and biofuels – is different from the volume (energy) balancing processes of the network operators in the natural gas industry.

The balancing in the gas industry is related only to balancing volumes in transportation, while the mass-balancing for biomethane is related to tracking the sustainable and renewable (“green”, “bio”) quality from production through injection and forwarding till withdrawal and usage of the product.

The balancing in the gas industry begins with the injection and does not cover the origin and the production of biomethane. So, the balancing in the gas industry is aimed at:

- establishing physical equilibrium between the injected and taken-out volumes and
- enabling security of supply to all end users and
- balancing any outages or oversupplies within the respective gas balancing areas in each country.

The physical balancing in the natural gas transportation and distribution systems has a continuous character; the equilibrium must be achieved at every moment. On the other hand, in case of biomethane the equilibrium between the injected and withdrawn volumes (expressed in energy units) is to be established within a set time frame, which presently varies from country to country between three and twelve months.

For these reasons the required mass-balancing of biomethane cannot be achieved simply through the application of balancing methods used in natural gas transportation systems where balancing is usually done on daily level.

6.2 Liquid biofuels

The sustainability verification for liquid biofuels is carried out mostly by means of voluntary schemes recognised by the Commission. All EC-recognised voluntary schemes use a RED-compliant mass balance. To date, the Commission has recognised 19 schemes¹¹:

1. ISCC (International Sustainability and Carbon Certification)

¹¹ <https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/voluntary-schemes>

2. Bonsucro EU
3. RTRS EU RED (Round Table on Responsible Soy EU RED)
4. RSB EU RED (Roundtable of Sustainable Biofuels EU RED)
5. 2BSvs (Biomass Biofuels voluntary scheme)
6. RBSA (Abengoa RED Bioenergy Sustainability Assurance)
7. Greenergy (Greenergy Brazilian Bioethanol verification programme)
8. Ensus voluntary scheme under RED for Ensus bioethanol production
9. Red Tractor (Red Tractor Farm Assurance Combinable Crops & Sugar Beet Scheme)
10. SQC (Scottish Quality Farm Assured Combinable Crops (SQC) scheme)
11. REDCert
12. NTA 8080
13. RSPO RED (Roundtable on Sustainable Palm Oil RED)
14. Biograce GHG calculation tool
15. HVO Renewable Diesel Scheme for Verification of Compliance with the RED sustainability criteria for biofuels
16. Gafta Trade Assurance Scheme
17. KZR INIG System
18. Trade Assurance Scheme for Combinable Crops
19. Universal Feed Assurance Scheme.

Most of these EU recognised voluntary schemes handle liquid biofuel feedstocks (sugar cane, palm oil, soy oil etc.) and are not relevant for the raw material supplies for European biomethane production. It is possible with REDCert, NTA80808, ISCC.

All these schemes set rules for economic operators with regard to record keeping and documentation and procedures for identification of inputs and outputs. All require that the certified volume out is not greater than the certified volume at each step in the supply chain. All require that the mass balance is ensured at the level of a geographical site in the supply chain. However, the schemes also operate certain aspects of the mass balance in different ways. This can be due to a design choice that is defined by the European Commission, such as ensuring a balance in the mass balance system continuous in time or only requiring that the balance is ensured at discrete intervals in time (e.g. every three months). The differences can in part be explained by the different backgrounds and developments of the schemes, but also for some differences because the guidance from the Commission on the mass balance system in its Communication on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme (2010/C 160/01) does not define all details.

Most schemes require all actors in the chain of custody to be audited before they can start producing or trading certified material.

According to the Ecofys report¹², the common characteristics of mass balance systems are as follows:

- Products with different sustainability characteristics can be physically mixed, but are kept administratively segregated;
- Ensuring that for the volume of biofuels for which claims are made at the end of the supply chain, sufficient certified material has been added to the supply chain, taking into account relevant conversion factors;
- Physical product and sustainability information are coupled when they are traded between parties. There cannot be trade in sustainability information between parties without trading physical products between the same two parties (as is possible in a book and claim system);
- Each actor in the supply chain keeps track of the amount of product with certain sustainability characteristics it sources and sells, in which each company can never sell more certified products than it sourced (taking into account relevant conversion factors).

The way a mass balance system is defined further depends on how the following aspects are arranged:

- Scope of the mass balance system
- Mass balance with or without traceable transport
- Level at which the mass balance system is run
- Transfer of sustainability information between different feedstock derived products
- Aggregation of multiple consignments
- Timeframe over which the mass balance is run
- Proportionate feedstock reporting
- Validity of claims (banking and forward allocation).

As the Ecofys report stated: „For a mass balance system, a central registry significantly reduces the risk of double selling or claiming, since all certificates and owners of certificates are registered in a central database. This is currently not in place with the recognised schemes, although the need to avoid such risks is on the radar of the voluntary schemes and solutions such as central registries or working together between schemes more is being considered by a number of them.” We will take this into consideration when elaborating the solution for biomethane cross-border trade.

6.3 Renewable electricity certificates

The renewable electricity trading systems are database systems that allow merchandising “green” electricity. In Europe, the Renewable Energy Certification System RECS and the European Energy

¹² Ecofys report:

https://ec.europa.eu/energy/sites/ener/files/documents/2013_task_1_mass_balance_and_alternatives.pdf

Certification System are well known trading systems (RECS was originally founded as a non-profit organisation on a voluntary basis and served as a guideline for EECS, which was developed at a later stage as a mandatory scheme based on related EU directives and national legislations).

RECS - Renewable Energy Certificate System

RECS is a European trading system for energy issued from renewable sources based on energy certificates which are traded in the participating countries. A REC usually represents one megawatt-hour (MWh) of electricity generated from renewable energy resource. There is no further ecological quality in a REC, other than that it originates from a renewable source.

In 1999, a voluntary association of market players founded RECS. The aim was to harmonise the trading certificates market for electricity from renewable resources by providing a standard and thereby stimulating a pan-European market for renewable electricity. RECS had 200 members in 2007 in more than 24 European countries. It has established common rules to ensure the application of the same standards and processes throughout Europe for the trade of electricity from renewable energy sources. A RECS Certificate has a unique trading certificate number and specifies the name of the certificate's Issuing Body, the specification of the utility, the time of issue, the underlying technology, the installed capacity, and mentions any receipt of public subsidies.

EECS – The European Energy Certificate System

European Energy Certificate System EECS is a European trading system for energy based on energy certificates that are traded in the participating countries initiated and accepted by the European Commission.

EECS was established in 2005, largely based on RECS. As stated by the Association of Issuing Bodies (AIB), EECS builds an "integrated European framework for issuing, holding, transferring and otherwise processing, electronic records (EECS Certificates) certifying, in relation to specific quantities of energy output, attributes of its energy source or the method and quality of its production."

EECS now supports RECS certificates, Guarantees of Origin for electricity from renewable energy sources (RES-GO), Guarantees of Origin for electricity from cogeneration (CHP) and generic Guarantees of Origin, all handled in one coherent certificate system. All kinds of energy (fossil, nuclear, renewable) can be registered under the EECS; if all requirements are met, the production facility will be registered as renewable in the EECS database.

The system of green electricity certificates issued by AIB (EECS) is not a mass balance but a "book and claim" system. The difference is that in the "book and claim" system, the "green" quality is completely detached from the physical volumes - and that is why the green electricity certificates can be traded freely and independently from the physical product. On the contrary: in the mass balance system the sustainable ("green") quality should stay linked to the physical product (at least virtually

– as in the case of biomethane). This linkage means that the biomethane volume must be traded together with the intrinsic value - as long as meeting the mass-balancing requirement is mandatory.

7. Interrelation between mass balancing and sustainability certifications

7.1 General sustainability requirements

For ease of reference, it is recalled that the sustainability criteria for biofuels and bioliquids of the RED are as follows:

- Article 17(2) establishes minimum greenhouse gas saving values of 35%, rising to 50% on 1 January 2017 and to 60% from 1 January 2018 for biofuels and bioliquids produced in installations in which production started on or after 1 January 2017.
- According to Article 17(1) wastes and residues only need to fulfil the minimum greenhouse gas requirements, not the other criteria.
- Articles 17(3), 17(4) and 17(5) require that raw material should not come from high biodiversity value areas, from the conversion of high-carbon stock areas, or from undrained peatland, respectively.
- Article 17(6) requires that agricultural raw materials cultivated in the Community are obtained in accordance with specific agricultural regulations of the EU.
- Annex V contains the rules for calculating the GHG impact of biofuels, bioliquids and their fossil fuel comparators.

The 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) specifies those areas where meeting the sustainability criteria is mandatory:

”Member States are responsible for making sure that the sustainability criteria are met when biofuels/bioliquids:

- a) are counted towards their renewable energy targets under the Renewable Energy Directive;
- b) are used for compliance with renewable energy obligations;
- c) receive financial support for their consumption;
- d) are counted towards the target of the Fuel Quality Directive for reducing greenhouse gas emissions (biofuels only);
- e) receive investment and/or operating aid in accordance with the Community guidelines on State aid for environmental protection (biofuels only).”

7.2 Chain of custody

The method by which a connection is made between information or claims concerning raw materials or intermediate products and claims concerning final products is known as the chain of custody. For the purpose of demonstrating compliance with the sustainability requirements, economic operators are required to use a mass balance methodology with respect to chain of custody (Article 18(1)).

The Communication on voluntary schemes (2010/C 160/01) recommends that “[The mass balance is] the method by which a connection is made between information or claims concerning raw material or intermediate products and claims concerning final products is known as the chain of custody. The chain of custody would normally include all the stages from the feedstock production up until the release of the fuels for consumption.”

Note: it is not clear how to interpret the “release of the fuels for consumption” in case of biomethane injected into the natural gas grid. The reasonable interpretation is that biomethane is “released for consumption” at the moment of the injection – this would be the most practical, while biomethane cannot be tracked after being blended with natural gas in the pipeline. (This approach is in practice in Germany).

Background information:

In general, four different “chain of custody” approaches can be distinguished:

- *Identity preservation (or track-and- trace);*
- *Physical segregation (or bulk commodity);*
- *Mass balance; and*
- *Book and claim.*

The claims that can be made with the above indicated forms of chain of custody approaches differ significantly.

The identity preservation approach is not relevant to biogas/biomethane because of the nature of raw materials and intermediate products in the supply chain.

The physical segregation can be applied only for refuelling stations selling 100% certified biomethane produced from a single source.

In both the book and claim system and the mass balance system there is a guarantee that the final product physically contains the actual certified material. The major difference is that in the case of the mass balance there is a physical link with the supply chain, while under the book and claim approach the claim is limited to the statement that sufficient certified material has been produced somewhere.

In other words: under the book and claim system the link between the physical transaction (injection and withdrawal) and the related chain of contractual transactions does not exist. Withdrawal is not documented, the circle is not closed, and correspondingly the intrinsic (bio) value of biomethane cannot be transferred to the end-user together with the product itself. Nevertheless, the intrinsic value can still be traded independently from the product, even after the physical product has been consumed.

7.3 Proving compliance

Compliance with the sustainability criteria relating to greenhouse gas savings, land with high biodiversity value and land with high carbon stock can be proven in one of the following three ways:

- (1) using one of the voluntary schemes (addressing one or more of the sustainability criteria) which have been recognised by the European Commission¹³
- (2) In accordance with the terms of a bilateral or multilateral agreement concluded by the European Union with third countries and which the Commission has recognised for the purpose and
- (3) by Member States' national verification methods (economic operators provide the relevant national authority with data in accordance with the requirements laid down in the national system).

The consequences of not meeting the requirements of the sustainability scheme are contained in RED, detailing that biofuels and bioliquids which do not meet the criteria cannot be counted towards the EU's renewable energy targets or the targets of the Fuel Quality Directive (Directive 2009/30/EC) and national renewable energy obligations or benefit from financial support.

7.4 Sustainability verification for biomethane production in Germany

Nabisy, the governmental web application for sustainable biomass (Nachhaltige Biomasse System, Nabisy), operated by the Federal Office for Agriculture and Food (BLE), serves to prove the sustainability of bioliquids and/ or liquid or gaseous fuels from biomass, pursuant to EU Directive 2009/28/EC.

Voluntary certification schemes recognized by the European Commission (like REDCert, ISCC etc.) can also be used for verification of fulfilling the sustainability criteria at biomethane production, but the data provided by them will be relevant only after having been entered into the government controlled Nabisy system.

The procedures applied by REDCert contain the following with regard to biomethane:

“In the area of biomethane, a distinction is made among the following economic actors: farmers, first gathering points, biogas facilities (that can also simultaneously be first gathering points), biogas processing facilities and dealers (suppliers before and after the last interface).

The system principles valid for these market participants in the REDcert system are not replaced but supplemented by these requirements.”

In REDCert compliance with the sustainability requirements is checked in the following phases:

- *Production of sustainable biomass* - here, the requirements for the sustainable production of biomass pursuant to the Biofuels Sustainability Ordinance (Biokraft-NachV) apply to all

¹³ <https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/voluntary-schemes>

farmers who supply sustainable biomass to first gathering points in the REDcert system (system participants);

- *First gathering points* are operations that accept the harvested biomass from the farm for the first time. In the area of biomethane, this is often the biogas facility where the biomass is used for fermentation, but it also includes any other economic actor who accepts the biomass from the farmer on his own account for the purpose of resale and then passes it on to the biogas facility;
- *Biogas facilities* that produce raw biogas are conversion facilities and thus interfaces as defined in the biofuels related legislation (Biokraft-NachV).

The following additional requirements are specific to raw biogas production:

- a) in the event of silaging the silage losses that occur during substrate storage must be documented and included in balancing.
 - b) The substrates supplied in different consignments have different GHG values. The fact that biogas production is generally a multi-input process is a unique feature (as compared to liquid biofuels). Different substrates are fermented together but the GHG emissions must be registered separately for every substrate. Different substrates may be physically mixed with each other but the respective GHG values may not be merged or averaged. Correspondingly: different substrates processed during the mass balancing period must be treated separately both in the calculation of GHG emissions as well as in mass balancing and the methane quantity produced must be broken down by the substrates processed.
- The last interface in the area of biomethane is the **biogas processing facility** that processes the biogas to reach the required quality level for use as biofuel until it is fed into the natural gas network.

Note: The last interface issues sustainability certificates for the quantity of biomethane injected into the natural gas network.

The last interface is required not only to calculate the GHG emissions incurred in its own operations but also the GHG emissions savings of biomethane (as the final product) and to confirm that the sustainability requirements for the product brought to the market are satisfied.

As the last interface, the upgrading facility must issue sustainability certificates. These are to be provided as proof to the biofuel quota office (Nabisy) and/or to the chief customs office by the entity which introduces the product (biomethane) to the market.

7.5 Specifics of different biomethane applications

- a) In case that biomethane is delivered to the fuelling station directly (by means of dedicated pipelines or other means of dedicated transportation) and is not blended with natural gas (sold as 100% biomethane), mass balancing is required only in relation to its production; the chain of custody is simple and the administration is very similar to mass balancing for liquid biofuels sold pure (not blended with fossil gasoline/diesel).
- b) In case that biomethane is delivered to the refuelling station directly (by means of dedicated pipelines or other means of dedicated transportation) and is blended with natural gas at the refuelling station (sold as natural gas/biomethane blend), mass balancing is required only in relation to the production; the chain of custody is simple and the administration is very similar to mass balancing for liquid biofuels sold blended with fossil gasoline/diesel.
- c) The mass balancing methodology foreseen for liquid biofuels is not fully applicable in relation to biomethane injected into the natural gas grid. With regard to injected biomethane, the issue of mass balancing arises in two aspects:
 - in relation to the production of biogas – where raw materials with different qualities (GHG characteristics) are mixed,
 - at injection into the natural gas grid – where renewable methane is mixed with fossil methane.

SWD (2014) 259 hinted at difficulties observed with the application of the GHG methodology in biogas plants:

“Box 2.b) Mass balance approach. The GHG methodology set in the 2010 Biomass Report uses a mass balance approach, whereby physical mixing of certified and non-certified products is permitted but products are kept administratively segregated. The system ensures that for the volume of biomass for which sustainability claims are made at the end of the supply chain, sufficient certified material has been added to the supply chain, taking into account relevant conversion factors. However, a number of stakeholders have highlighted that this approach creates difficulties for the majority of existing biogas plants that typically use a mixture of locally-produced feedstock, ranging from animal manure, to food/feed energy crops (such as silage maize) and to residues from the agro-food industry. They claim that given the operational characteristics of biogas plants, a mass balance approach results in lower GHG saving performances compared to an alternative approach whereby the GHG emission default values are calculated for the entire mixture within a given biogas plant.”

The problems referred to above derive from COM 2010/C 160/01, where it is stipulated as follows:

“... if the characteristics include different figures on greenhouse gas emissions they remain separate; these figures cannot be averaged for the purpose of showing compliance with the sustainability requirements.”

A practical example: in harmony with COM 2010/C 160/01, the ISCC scheme and methodology for verification of sustainability (one of the schemes approved by the Commission) contains the following regulation regarding batches with different GHG values:

“Within the bookkeeping sustainable batches with different GHG values cannot be aggregated. If two or more incoming batches have different GHG input values, the highest GHG emission value (of the least performing batch) could also be used consistently for the entire input if other sustainability characteristics are identical, i.e. aggregation is allowed if all batches use the GHG value of the least performing batch.”

8. Mass-balancing in cross-border biomethane trade

Raw biogas is generally a locally used energy carrier, while it cannot be economically transported for long distances (definitely not cross-border). On the other hand, upgraded biogas (biomethane) can be blended with natural gas at any ratio and – as such – can be distributed all over Europe through the natural gas pipeline network.

The possibility for long-distance distribution enables production of biomethane in those regions of Europe where sustainable biomethane raw materials are available but there is no local market for the product (for any reason). The biomethane produced there should be transferred to those parts of the continent where the demand exceeds the volumes that can be produced locally on feasible terms.

Thus, the cross-border biomethane trade is needed to establish and maintain the supply-demand balance on regional and European levels. Furthermore, it will be one of key elements in the European Energy Union.

On the other hand: the costs of producing biomethane are generally higher than the present natural gas prices and – consequently – in addition to the physical value (identical to natural gas) also the intrinsic (“bio”, renewable, sustainable) value has to be realised on the market in order to enable sustainable production. This means that the system of cross-border biomethane trade should enable transferring the intrinsic value of biomethane to the consumer country.

In the domestic natural gas distribution networks the renewable gaseous biofuel (biomethane) could be tracked only over a very limited distance with the highly expensive C₁₃ method. In reality, we should assume that biomethane cannot be physically tracked after having been delivered to the natural gas grid - the methane molecules produced biologically cannot be differentiated from the methane molecules contained in natural gas. This is also the case with biomethane exports – the move of biomethane across the national borders cannot be tracked physically (unlike liquid biofuels that are transported by dedicated tankers and/or tank cars).

Mass-balancing is the method to trace virtually the chain of custody of biomethane distributed along the natural gas network of Europe. Correspondingly, a mass balance system needs to be developed which enables monetizing the intrinsic (“bio”) value of exported biomethane without explicitly tracking the physical cross-border movements – this is an important pre-condition for eliminating the hurdles on the way of free biomethane trade in Europe.

The European natural gas network is actually operated as closed mass balance system (see Chapter 3.1). As a matter of fact, in most countries and places injected and withdrawn natural gas volumes are balanced not in mass but through maintaining the energy balance, expressed in MJ or MWh.

9. Sustainability certification regarding production in the 6 participating countries

The review of the prevailing practice confirmed that the mass balance method is applied in all 6 participating countries in relation to sustainability verification of biofuels as stipulated in the relevant EU legislation (RED, FQD, COM 2010/C 160/01). In some countries (Germany, United Kingdom) the commitment for meeting the sustainability criteria is expanded to other (than transportation fuel) applications too.

It can be observed that most of the national governments have given a preference to member states' national verification methods through mandated government agencies. This means (according to the RED) that “economic operators provide the relevant national authority with data in accordance with the requirements laid down in the national system.”

Nevertheless, voluntary sustainability verification schemes - which have been recognised by the European Commission – are also used (see Chapter 8.2. about the voluntary schemes used with regard to liquid biofuels).

9.1 Austria

The production of biomass feedstock for biofuels has to be registered via AMA (Agrarmarkt Austria www.ama.at). The registration is regulated also in the document valid for the production of agricultural feedstock for biofuels (Landwirtschaftliche Ausgangsstoffe für Biokraftstoffe, 250/2010). The registration can be done electronically.¹⁴

The produced biofuel has to be registered via the Environment Agency Austria (Umweltbundesamt www.umweltbundesamt.at). The registration is regulated through the fuel regulation (Kraftstoffverordnung, 398/2012) and can be done electronically.¹⁵

In the Biomass Report 2010 the Commission recommended introducing sustainability criteria in relation to biomass used for generating electricity, heating/cooling – similarly to biofuels. So far, this recommendation has not been followed in Austria but the Government plans to introduce sustainability criteria into the Act on Electricity Generation from Renewable Sources (Ökostromgesetz, 75/2012) at the next time when this Act will be updated.

¹⁴ <http://www.ama.at/Portal.Node/ama/public?genetics.am=PCP&p.contentid=10007.131695>

¹⁵ http://www.umweltbundesamt.at/umweltsituation/verkehr/elna/elna_registrierung/

There is no biomethane specific sustainability criteria stipulated in Austria with respect to biomethane used as vehicle fuel. The Austrian fuels regulation (Kraftstoffverordnung, 398/2012) refers to the RED. Additionally, there is a separate regulation on agricultural feedstock for biofuels (Landwirtschaftliche Ausgangsstoffe für Biokraftstoffe, 250/2010) which also mostly refers to RED. Correspondingly, no biomethane production specific mass-balancing regulation has been introduced in the Austrian legislation. In accordance with the RED, the general rules valid for biomass used for the production of liquid biofuels are applied one-to-one in relation to biomethane used as vehicle fuel.

9.2 France

In France, at the moment, there is no separated counting of the raw material quality used for biomethane production. This must be due to the fact that biomethane is not yet counted as biofuel in France. In the present situation there are no fiscal incentives specifically supporting the production of biomethane for use as biofuel for vehicles (the prevailing scheme supports biomethane injection into the natural gas grid without specifying its final use).

Correspondingly, presently biomethane is not included into the French biofuel production report to the European Commission, while

- a) it is not handled administratively (in the spirit of RED and FQdD) as a biofuel and
- b) it doesn't represent much production (only 8 sites injecting at the moment).

GrDF is actively working on the integration of biomethane in the calculation of achieving RED biofuel targets and also on a certificate scheme for biomethane production.

9.3 Germany

With the Biomass Electricity Sustainability Ordinance (BioSt-NachV) and the Biofuels Sustainability Ordinance (Biokraft-NachV), the framework of the Renewable Energy Sources directive stipulated by the European Union for sustainability criteria for biofuels and liquid fuels is transposed into national law (Germany). The requirements stipulated in the Biofuels Sustainability Ordinance (Biokraft-NachV) apply to liquid and gaseous biofuels made from biomass. In Germany certain sustainability requirements are mandatory also for biomethane used for electricity generation but these differ from the sustainability criteria an operator needs to meet in the fuel sector.

Marketer of liquid or gaseous biomass in Germany can have them counted towards their quota obligation, or obtain tax relief, only if they can provide proof that the liquid or gaseous biomass meets the sustainability criteria laid down in EU Directive 2009/28/EC. The sustainability criteria for liquid

biomass used for electricity production must be met if operators wish to obtain payments pursuant to German Renewable Energies Act (EEG).

Pursuant to the Biofuel Sustainability Ordinance (Biokraft-NachV) and the Ordinance on Electricity Production from Sustainable Biomass (BioSt-NachV), data relevant for the German market must be entered in Nabisy.

Nabisy, the governmental web application for sustainable biomass (Nachhaltige Biomasse System, Nabisy), operated by the Federal Office for Agriculture and Food (BLE), serves to prove the sustainability of bioliquids and/ or liquid or gaseous fuels from biomass, pursuant to EU Directive 2009/28/EC.

The German main customs offices, the biofuel quota body, the German Emissions Trading Authority, network operators as well as the competent authorities of other member states of the European Union have direct access to the web application Nabisy. Nabisy also serves as a source for the Experiences and Evaluation Report regarding EU Directive 2009/28/EC, to be drafted annually for the German government and the EU Commission.

The requirements stipulated in the Biofuels Sustainability Ordinance (Biokraft-NachV) apply to liquid and gaseous biofuels made from biomass. As a result, proof of compliance with the sustainability criteria must also be furnished for biogas upgraded to biomethane - if it is to be used by the market participants to satisfy their biofuel quota requirement or for the purpose of tax relief.

In relation to biogas/biomethane production – similar to liquid biofuels – the sustainability requirements are raised first of all with regard to the raw materials. Here mass balancing is applied to handle the fact, that raw materials with different sustainability characteristics are processed together. In the production stage the mass balance methodology serves the sole purpose of verifying the sustainability of the product in the spirit of the RED (and the corresponding German legal regulations).

The verification of fulfilling the sustainability criteria is carried out through the Nabisy system.

Voluntary certification schemes (like REDCert, ISCC etc.) are also used but the data provided by them will be relevant only after having been entered to Nabisy.

The procedures applied by REDCert contain the following with regard to biomethane:

”In the area of biomethane, a distinction is made among the following economic actors: farmers, first gathering points, biogas facilities (that can also simultaneously be first gathering points), biogas processing facilities and dealers (suppliers before and after the last interface).

The system principles valid for these market participants in the REDcert system are not replaced but supplemented by these requirements.”

In REDCert compliance with the sustainability requirements is checked in the following phases:

- *Production of sustainable biomass* - here, the requirements for the sustainable production of biomass pursuant to the Biofuels Sustainability Ordinance (Biokraft-NachV) apply to all farmers who supply sustainable biomass to first gathering points in the REDcert system (system participants).
- *First gathering points* are operations that accept the harvested biomass from the farm for the first time. In the area of biomethane, this is often the biogas facility where the biomass is used for fermentation, but it also includes any other economic actor who accepts the biomass from the farmer on his own account for the purpose of resale and then passes it on to the biogas facility
- *Biogas facilities* that produce raw biogas are conversion facilities and thus interfaces as defined in the Biokraft-NachV.

The following additional requirements are specific to the area of biomethane:

- c) *in the event of silaging the silage losses that occur during substrate storage must be documented and included in balancing.*
- d) *The substrates supplied in different consignments have different GHG values. The fact that biogas production is generally a multi-input process is a unique feature (as compared to liquid biofuels). Different substrates are fermented together but the GHG emissions must be registered separately for every substrate. Different substrates may be physically mixed with each other but the respective GHG values may not be merged or averaged. Correspondingly: different substrates processed during the mass balancing period must be treated separately both in the calculation of GHG emissions as well as in mass balancing and the methane quantity produced must be broken down by the substrates processed.*
- The last interface in the area of biomethane is the **biogas processing facility** that processes the biogas to reach the required quality level for use as biofuel until it is fed into the natural gas network.

Note: The last interface issues sustainability certificates for the quantity of biomethane injected into the grid.

The last interface is required not only to calculate the GHG emissions incurred in its own operations but also the GHG emissions savings of biomethane (as the final product) and to confirm that the sustainability requirements for the product brought to the market are satisfied.

As the last interface, the upgrading facility must issue sustainability certificates. These are to be provided as proof to the biofuel quota office (Nabisy) and/or to the chief customs office by the entity which introduces the product (biomethane) to the market.

„Biomethane is considered as „on the market” when it is taken (withdrawn) from the natural gas network.

- In the REDcert system, registered suppliers are *dealers* who operate between and after the interfaces above.

The procedure of ISCC is very similar to the above summarised procedure of REDCert.

9.4 Hungary

The RED is transposed to the Hungarian National Law CXVII. 2010 and to the Government Decree 167/2011 (VII: 24.).

Regarding sustainability criteria in energy plant cultivation for biofuel production (e.g. maize silage for biogas), the Decree of Ministry of Rural Development 42/2010. (XII. 20.) is valid, which is based on the stipulations of Directive 2009/30/EU.

The National Food Chain Safety Office is responsible for monitoring the fulfilment of sustainability requirements by biofuel producers.

In 2010 (in the Biomass Report) the Commission recommended to introduce sustainability criteria in relation to biomass used for generating electricity, heating/cooling – similarly to biofuels. In response to this recommendation, the Hungarian government issued Decree 389/2007 (XII. 23.). Article 7. § (2) of this Decree mandates the certification of sustainability of the forest biomass (Forest Management Certificate by National Food Chain Safety Office, or Forest Stewardship Council).

The Hungarian Law XXIX. (2011) about the modification of the Electricity Law (LXXXVI. 2007) corresponds to Directive 2009/28/EU, regulates the issuance of „green” certificates, respectively Certificates of Origin by the Hungarian Energy Agency for confirming the volumes of electricity generated from renewable sources but does not make these Certificates of Origin conditional on meeting sustainability criteria in relation to the biomass used.

9.5 Italy

The sustainability verification provisions of the RED and FQD were transposed into Italian national legislation by the Legislative Decree 31 March 2011, n. 55 (published in Official Gazette February 7, 2012) and by DM 23 January 2012 establishing the "national system of certification of the sustainability of biofuels and bioliquids". This national certification system is composed of three main elements: two UNI TS and a technical regulation (RT) defined by ACCREDIA.

- UNI TS 11429 contains the rules for the qualification of economic operators in the production chain of biofuels and bioliquids.
- UNI TS 11441 regulates for mass balance system.
- RT 31 ACCREDIA "Requirements for accreditation of Bodies issuing certificates of conformity in respect of the National System of Certification of the sustainability of biofuels and bioliquids" (was published on March 27, 2012 and is available on the website: www.accredia.en).

Subsequently, the above regulations were extended to biomethane: on Dec. 5, 2013 the joint Decree of 3 ministries (Ministry of Economic Development, Ministry of Environment and Protection of Land and Sea and Ministry of Agriculture and Forestry) was published about the "incentive system for biomethane injected into the natural gas grid". The decree:

- defines the financial incentive for biomethane,
- provides for verifying the sustainability of biomethane used in transport,
- stipulates that, with regard to the incentive for the use of biodegradable fraction of municipal waste, downstream of waste collection, by-products, algae and materials of non-food origin and landfill gas a technical legislation (UNI / TS 11567) must be drawn up to complement the national system of certification of sustainability currently valid.

In accordance with the Decree of Dec. 5, 2013:

- the RT 31 Technical Rules were revised by Accredia and RT 31- Rev.01 was issued on November 26, 2013, containing the requirements for accreditation of Bodies issuing certificates of conformity in respect of the National System of Certification of the sustainability of biofuels and bioliquids, and
- UNI / TS 11567 was issued, which refers to the UNI / TS 11429 and 11441 continuing the basic approach, the scheme rules going to clarify and outline the specific legislation for the sector of biomethane.

This technical specification (UNI/TS 11567) defines the qualification scheme for all organizations, here called "economic operators", which operate in the supply chains of production of biomethane and its intermediate products in a sustainable manner, as defined by the European and national legislative framework, which guarantee traceability and transparency.

It applies in particular to the production chains of biomethane from:

- a) biogas from anaerobic digestion of agricultural crops, manure and waste / by-products;

- b) biogas from anaerobic digestion of the Organic Fraction of Municipal Solid Waste;
- c) biogas by anaerobic digestion of sludge;
- d) biogas from anaerobic digestion of waste sludge and other biowaste;
- e) landfill gas;
- f) biosyngas.

To ensure the health of the population, the optimal functioning of vehicles running on natural gas and to exclude the potential presence of harmful components in biomethane (such as carbon monoxide and siloxanes), the injection of biomethane into the natural gas networks is only permitted to biomethane produced from biogas resulting from the anaerobic digestion of organic products and by-products. This limitation excludes the injection into the natural gas grid of biomethane produced by thermochemical gasification of biomass, from landfill, sewage gas and from municipal waste.

The above limitation will remain valid until the date of entry into force of the European standards for the quality specifications of biomethane for automotive and for the injection of biomethane into the natural gas pipeline network, to be issued by CEN in implementation of the M / 475 CE (task Force 408).

The economic operator who applies the qualification scheme described in the technical specification guarantees that:

- sustainability criteria relating to land are still respected as it is possible to trace the product along the chain of custody;
- the allocation of the value of savings of CO₂ or emission value of CO₂ of individual batches of sustainability is issued in accordance with the criteria indicated in RED and FQD;
- every batch is traceable.

It also defines the requirements for the implementation of a traceability system that allows meeting the requirements and describes the requirements of the accounting management of the mass balance. It is applicable to both single organisations for the whole qualification of the chain of custody and can also be used for qualifying groups and more subjects at the same time in line with the legislation.

For the good management of the mass balance the operator must establish a system of traceability and operate so that the information about the sustainability characteristics and sizes of the consignments remain assigned to the mixture.

The mass balance must respect these parameters:

- to allow the raw materials with differing sustainability characteristics to be mixed,
- to make sure that the information about the sustainability characteristics and sizes of the consignments (indicated above) remain assigned to the mixture,

- to ensure that the sum of all consignments withdrawn is described as having the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture.

The technical specification also provides specific sustainability values and calculation methods to be used in the absence of indications other than the legislature and requires that the values and methods, however defined, should be managed by the organization (trader) in order to ensure compliance the principles defined by the European and national legislation, ensuring traceability and transparency.

Concerning the Italian incentive system of biomethane for transport, biomethane entered by the producer in the natural gas grid (or transported through tube trailer) and used for transport is encouraged by the release of certificates for consumption (CIC) of biofuels, for a period of 20 years from the date of entry into operation,. If the producer of biomethane doesn't have its own facility for the distribution of biomethane, in order to obtain the incentive, he has to sign a bilateral contract of supply with the person placing the biomethane in consumption. This contract indicates: (i) the portion of the incentive (CIC) to be paid to the producer, and (ii) the duration of the supply of biomethane, a copy of which is sent to the GSE to have the controls.

CIC, available to the beneficiary, are not valued economically by GSE but are traded, with obliged subject (fossil fuel producers). Bilateral contract means a contract for the supply of biomethane concluded between the producer and the person who uses it for the production of electricity or the person who places it in consumption in the transport.

For the purposes of certification of biomethane and the admission to the incentive, contracts should at least contain the following information:

- a) date of commencement and termination of supply,
- b) monthly amount of which is expected to supply.

In addition, for the purposes of recognition of CIC, it is necessary that the person applying for the issue of the CIC to GSE sends to GSE copy of the contract signed with the producer of biomethane (bilateral agreement) as well as copies of the supply contract signed with the distributor of natural gas.

To use the CIC for the fulfilment of the obligation under Decree 10 October 2014 and, therefore, their use, the subjects, above, will be qualified to work on the platform BIOCAR managed by the GSE, in which previously participate only suppliers of gasoline and diesel fuel. The portal BIOCAR is the web application available on the website of GSE through which users must transmit all data and documents necessary for the recognition of certificates of release for consumption (CIC).

For the release of CIC and to the recognition of any increases, the beneficiary is required to use the

application of BIOCAR: it integrates the information stated in the request for qualification of the production of biomethane and provides, through a special self-declaration, the quantities of biomethane produced and released into the market for motor vehicles in the year preceding the statement (between 1 and 31 January of each year).

The Technical Advisory Committee on biofuels, through GSE, reserves the right to use the information gained through the application to carry out random checks on the documentation also for sustainability, in support of the statements made. In this test phase, the Technical Advisory Committee on biofuels will go back to the economic operators further up the chain of supply of biomethane

9.6 United Kingdom

To receive incentives under the Renewables Obligation (RO), Contracts for Difference (CfD) and Renewable Heat Incentive (RHI), generators (RO/CfD) and participants (RHI) must comply with the “woodfuel” land criteria (i.e. with the Timber Standard).

In the UK the Renewable Heat Incentive (RHI) pays a tariff for every kWhth injected into the national gas grid. In this case, the following sustainability criteria apply:

- Biomass sustainability regulations within the RHI came into force on 5 February 2015, with the obligation on RHI participants to meet the sustainability requirements from 5 October 2015. Sustainability requirements apply to biomethane as well as biogas heat under the RHI.
- Failure to comply will lead to sanctions, including non-payment of tariffs and, in extreme circumstances, exclusion from the Scheme.
- Sustainability standards, which will need to be met for each consignment of non-waste biomass, consist of two criteria:
 - Greenhouse gas (GHG) lifecycle emissions target: biomass fuel used by RHI participants must meet a lifecycle greenhouse gas (GHG) emissions target of 34.8g CO₂ equivalent per MJ of heat, or 60% GHG savings against the EU fossil fuel average.
 - Land criteria, which restrict the use of biomass sourced from land with high biodiversity or high carbon stock value such as primary forest, peatland or wetland. For biogas/biomethane, demonstrating that feedstock came from pre-existing agricultural land should be sufficient.

Waste, or material wholly derived from waste (incl. animal manures and slurries), are exempt from sustainability standards.

Voluntary certification systems recognised by the European Commission (ISCC, RBSvs, NTA 8080, Abengoa, Ensus) are used to verifying the compliance with the sustainability requirements.

There are no biomethane specific sustainability criteria regulations in the UK for biomethane used as vehicle fuel (for gaseous biofuel). At present, the only rules are those that already apply to liquid biofuels in accordance with the RED.

10. Sustainability certification regarding transfer through the natural gas grid in the 6 participating countries

10.1 Austria

The national biomethane registry of Austria (Biomethan Register) follows the methodology of mass balancing in relation to biomethane injected into the natural gas grid and blended with natural gas in the system.

In accordance with Article 16 of RES, a national registry is operated with regard to renewable electricity, this is E-control. It is planned that, in the frame of the next update of the Act on Electricity Generation from Renewable Sources (Ökostromgesetz, 75/2012), the scope of activity of E-control will be expanded to include biomethane used for labelling in the gas industry. This would be an unnecessary addition of another biomethane registration body to the already existing three ones:

- AMA (Agrarmarkt Austria) for the used feedstock (if agricultural)
- UBA (Environment Agency) for the produced biofuel
- Biomethan Register Austria.

Instead of making the system more complicated, a one-stop approach would be more beneficial for the biomethane producers. The scope of responsibilities of the already existing biomethane registry should be enlarged to include all needed information:

- Used biomass feedstock, traceability and sustainability;
 - inclusion of confirmation documents from AMA (regarding agricultural feedstock),
 - inclusion of confirmation documents from UBA (regarding biowaste and agricultural by products as feedstock),
- GHG emission reduction;
- Exclusion of double counting;
- Forwarding information on withdrawal from the natural gas grid
 - to E Control if the biomethane is used for power generation,
 - to UBA if it is used for transport fuel;
- Cancelling the issued Guarantees of Origin upon the completion of the supply chain.

10.2 France

GrDF, operating the French biomethane registry, does biomethane mass balancing for the volumes injected into the natural gas grid – in the sense that the injected and withdrawn volumes are

balanced. This means that the injected volumes are documented/registered, the withdrawn volumes are documented/registered and the withdrawn volume cannot exceed the injected one (in a given time frame). Through issuing Guarantees of Origin by GrDF, the injected volumes are documented and registered, and the consumed biomethane is also registered. The system ensures that the quantity of energy from biomethane corresponds to supplied biomethane and the withdrawn volume of biomethane cannot exceed the injected one. As a matter of fact, energy balancing (and not mass balancing) is applied while the energy quantities and not the biomethane volumes are balanced.

10.3 Germany

In relation to biomethane injected into the natural gas grid on the territory of Germany, the mass balancing is required to handle the situation whereby renewable fuel (biomethane) is blended with fossil fuel (natural gas). In this case mass balancing is actually energy balancing: the system ensures that the total quantity of biomethane (expressed in energy terms) injected into the grid is balanced with the total quantity of biomethane withdrawn from the natural gas system. The application of mass balancing in this case is unrelated to sustainability verification (the same methodology is used for a different purpose).

10.4 Hungary

There is no biomethane specific sustainability criteria regulation in force in Hungary for biomethane used as vehicle fuel; the general rules related to liquid biofuels (RED)¹⁶ are applied also in relation to biomethane.

Due to lack of biomethane production (apart from a single small capacity installation), there is no experience with sustainability verification and mass balancing of biomethane in the country. Similarly, no national biomethane registry has been established in Hungary yet.

The National Renewable Energy Action Plan of the Hungarian Government foresees biomethane use as transportation fuel reaching 5 kto in 2020, but so far no government measures have been taken towards achieving this objective.

10.5 Italy

¹⁶ Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC

There is no experience and there are no set rules for transferring the sustainability characteristics in case of biomethane injection into the natural gas grid.

10.6 United Kingdom

In September 2014 the DfT/Low CVP set up a Task Force “to formulate and examine options for how the UK should set about meeting the 2020 RED renewable transport target and how low carbon fuels could help reduce transport greenhouse gas emissions in the UK economy to 2030 and beyond.” The final report of the Task Force was delivered to Ministers on 30 March 2015 - A number of recommendations have been made to increase the support for biomethane for transport and to remove barriers to deployment for HGVs and buses.

These Recommendations on Biomethane from of Low Carbon Vehicle Partnership Final Report – March 2105 include: “Resolve the legal issue around mass-balancing biomethane for transport through the gas grid.”



11. Challenges in securing mass-balancing in cross-border biomethane trade

11.1 Biogas raw materials with different GHG characteristics

Chapter 5 looked at mass (or energy) balancing as the method to secure the equilibrium between the injected and withdrawn volumes of biomethane blended with natural gas upon injection into the natural gas grid. We addressed the question of balancing physical volumes of biomethane without handling the fact, that different consignments of biomethane carry different sustainability characteristics (e.g. GHG emission reduction parameters).

As long as the task is limited to the transfer of certain quantity of biomethane (expressed in MJ or MWh), this looks relatively easy: the mass balance system boundaries should be simply expanded to include the whole European natural gas distribution network (see Chapter 11).

The issue gets much more complicated when we take into consideration that the necessity of mass balancing arises already at production of raw biogas – where raw materials with different qualities (GHG characteristics) are mixed.

In accordance with the prevailing EU regulations (most importantly with COM 2010/C 160/01): in case the raw materials processed for biogas production are characterised with different figures on greenhouse gas emissions, then these figures should remain separate, i.e. cannot be averaged for the purpose of showing compliance with the sustainability requirements.

The above mentioned separation could cause a very complicated situation in case of injecting the upgraded biogas (biomethane) into the natural gas grid: the total volume of biomethane produced in a given installation (and subsequently injected into the natural gas network) has to be split into as many separate consignments as the number of biogas raw materials with different GHG characteristics. For example: if the biogas plant processes 6 raw materials with different GHG characteristics in a given time period, for example in 1 month than there will be 6 consignments in that month. If the composition of raw materials would change every month, then the number of consignments with different GHG characteristics increased to 72 for that single installation.

It is not feasible to expect that the future European biomethane trading system can handle the above outlined situation for thousands of biomethane producing units in a cost effective and transparent manner, the administrative burden would be not acceptable for the operators.

Nevertheless, at this junction the request to change prevailing EU regulations with regard to sustainability verification of biomethane production would be premature. This issue can be raised in the future in the course of the planned revision of the Renewable Energy Directive.

11.2 Mass balance system boundaries

Due to the fact that tracking biomethane in the natural gas network is not possible, there is a need for determining the boundaries for the mass balance system. This has been done in Germany, where the interpretation assistance for mass-balancing of biomethane issued by the competent Ministry in Germany (BMU 1/2012), contains as follows: "The entire gas forwarding network (natural gas network) within the scope of the German Renewable Energy Sources Act is considered for the purpose of the mass balance of biomethane as a clearly identifiable unit with defined inlets and outlets".

Note: in practice the above mentioned German regulation is applied to biomethane injected into the natural gas network for subsequent generation of "renewable" electricity. The situation is not clear in Germany regarding biomethane withdrawn for use as biofuel.

Presently there are no Europe-wide rules for documenting mass-balancing with regard to cross-border transportation and trade of biomethane (blended with natural gas in the pipeline network). The mass-balancing of gaseous biofuel (biomethane) with regard to the RED has to be made possible for enabling cross-border trade of biomethane – otherwise the exported product cannot be treated and promoted as biofuel.

12. Proposed administrative solution

12.1 Annex to COM 2010/C 160/01

Although biomethane used for transport falls under the RED, FQD and COM 2010/C 160/01, these documents do not provide the necessary details for handling upgraded biogas injected into the European natural gas network. To regulate this question, a respective document issued by the European Commission is needed, while the issue cannot be resolved through national regulations.

As a potential solution, an Annex to COM 2010/C 160/01¹⁷ can be recommended, which would address the following biomethane related issues:

- Sustainability verification for biomethane injected into the European natural gas network,
- Cross-border transfer of volumes and mass balancing of biomethane in the European natural gas network,
- Definition of the European natural gas network.

12.1.1 Sustainability verification

The biogas/biomethane industry should provide for verification of meeting the sustainability criteria as regulated in the ground laying documents (RED, FQD, COM 2010/C 160/01). We do not wish to suggest any change in the verification of the sustainability claims (as practised in accordance with RED, FQD, COM 2010/C 160/01 for biomethane production).

With regard to cross-border trade, the question is how to transfer the sustainability verification issued in relation to biomethane produced in the country of production to the customer/consumer of this biomethane in another European country in trustworthy but still practical way.

First of all, there is a need for a clear regulation on when the verification of sustainability is completed/ended.

Article 2.2.3 of COM 2010/C 160/01 contains as follows:

“The method by which a connection is made between information or claims concerning raw materials or intermediate products and claims concerning final products is known as the chain of custody. The chain of custody would normally include all the stages from the feedstock production up until the release of the fuels for consumption.”

With regard to biomethane injected into the European natural gas grid, the principal question to be answered is how to interpret the “release of the fuels for consumption” for such case?

¹⁷ Communication from the Commission on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme, (COM 2010/C 160/01).

Due to the fact that in the natural gas network the injected biomethane cannot be tracked, the most practical interpretation is the following: “biomethane injected into the European natural gas grid is considered as having been released for consumption upon the properly documented injection into the natural gas network.”

The sustainability verification of biomethane must cover the full chain of custody (from raw material supplies till the end-user) as stipulated in the RED, FQD and other relevant EU documents. This is valid also for biomethane injected into the natural gas pipelines. Nevertheless, the use of the European natural gas network makes it necessary that the sustainability verification consist of two steps:

- the first part of the chain of custody – from raw material supplies through production/upgrading till grid injection – is to be covered by one of the established sustainability verification procedures (by national governmental agencies or typical voluntary schemes), exactly like in case of liquid biofuels,
- the second part of chain of custody – from the moment of grid injection till the withdrawal by the end-user – can be covered by a new voluntary scheme applying the mass balancing methodology in relation to biomethane blended with natural gas in the grid.

12.1.2. Cross-border transfer of volumes and mass balancing of biomethane in the European natural gas network

The injected biomethane gets blended with natural gas in the pipeline and mass balancing is the only accepted methodology to handle the situation when a renewable fuel (biomethane) is mixed with fossil fuel (natural gas).

In order to enable proper administration for mass balancing of injected biomethane it is necessary that the European Commission defines the natural gas network operated on the territory of the European Union as an integrated unit, i.e. as a single, closed logistical facility specifically with regard to mass-balancing of biomethane injected into the natural gas system.

The above mentioned definition of the European natural gas network is the first and most important step but it has to be accompanied with proper documentation for performing the mass balancing in the system. An independent, transparent documentation scheme is to be organised for mass balancing of biomethane within the European natural gas network.

The recommended approach to documentation is to establish a “non-typical” voluntary scheme recognized by the Commission (in accordance with COM 2010/C 160/01) for the special purpose of handling the mass balancing of biomethane distributed along the European natural gas network. This non-typical voluntary scheme is provisionally named as the “European Biomethane Certification Scheme” (EBCS) and the intended administrative solution is described in 7.2 and 7.3 above.

To avoid any misunderstanding: it goes strictly about solving an administrative – and not a political – issue and the administrative solution does not interfere with the rights of the EU Member States to decide on their own renewable energy support systems. By other words: the recognition of the European natural gas distribution network for an integrated, closed mass-balancing network with respect to cross-border biomethane transactions does not automatically imply that the so imported biomethane should be qualified for financial support in the receiving country – the decision will remain in the hands of the national governments.

12.1.3. Definition of the European natural gas network.

It is obvious that in the document which would declare the whole natural gas network operated on the territory of the European Union a closed network for the purpose of mass-balancing biomethane the definitions for „European natural gas network” has to be included.

For this purpose the “European natural gas network” can be defined in line with Directive 2009/73/EC¹⁸ as follows:

“Biomethane is considered as injected into the European natural gas network upon injection into either the transmission system (Article 2.3) or into the distribution system as defined in Directive 2009/73/EC Articles 2.3 and 2.5. Correspondingly, the fact of injection is to be confirmed by either a transmission system operator (as defined in Article 2.4.) or by a distribution system operator (as defined in Article 2.6). In the same way biomethane is considered as withdrawn from the European natural gas network upon withdrawal from either the transmission system (Article 2.3) or from the distribution system as defined in Directive 2009/73/EC Articles 2.3 and 2.5. Correspondingly, the fact of withdrawal is to be confirmed by either a transmission system operator (as defined in Article 2.4) or by a distribution system operator (as defined in Article 2.6). “

12.2 Documentation system for cross-border movements of biomethane

11.2.1 Objective

The objective is to establish a documentation system that enables the cross-border trade of biomethane (by means of the European natural gas network) with the exclusion of double sale and double counting.

¹⁸ Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC

12.2.2 Expectations towards the documentation system

The documentation system for cross-border trade of biomethane should be:

- in harmony with prevailing EU regulations Directive 2009/28/EC (RED) and Directive 2009/30/EC (Fuel Quality Directive);
- easy to join by Member States' government agencies and companies;
- not interfering with Member States' renewable energy policies and support systems;
- independent, transparent, practical and affordable for market participants, including the natural gas transportation organisations.

12.2.3 Three pillars

The following three pillars are essential for the documentation system:

- a) Sustainability verification covering the production completed prior to injection (see 11.1.1),
- b) European natural gas network treated as single logistical facility (see 11.1.2 and 11.1.3)
- c) Mass balancing in the European natural gas network.

The mass balancing of biomethane injected into the European natural gas network is to be carried out by a “non-typical” voluntary scheme recognized by the Commission (in accordance with COM 2010/C 160/01). This non-typical voluntary scheme is provisionally named as the “European Biomethane Certification Scheme” (EBCS) in this paper. The scheme should be established for the specific purpose of handling the mass balancing of biomethane distributed along the European natural gas network.

Note: Later, in a further development, this “non-typical” voluntary scheme could be developed into a central European biomethane registry.

EBCS is foreseen to be established to perform mass balancing of biomethane transported and distributed in blend with natural gas in the European natural gas network. This mass balancing serves the sole purpose of supporting cross-border trade of injected biomethane.

As mentioned above: the cross-border mass balancing of biomethane will be possible only upon the recognition by the Commission that the entire natural gas network operated on the territory of the European Union is considered as a single, closed logistical facility with regard to mass-balancing of biomethane injected into the system.

EBCS is foreseen as a tool for administration of cross-border mass balancing of biomethane injected into the European natural gas network while ensuring the exclusion of double sale and/or double counting.

EBCS will NOT

- act on domestic biomethane markets,

- issue European Guarantees of Origin,
- be involved in certification of sustainability of biomethane **production**,
- issue Certificates of Sustainability,
- be a trading platform of GoO's.

In practice EBCS will rely on the information provided by the national biomethane registries in the form of “European Biomethane Guarantee of Origin”. These GoO's will be issues for individual biomethane consignments by the national biomethane registries upon the following conditions:

- a) The consignment is declared for export and correspondingly the domestic Guarantee of Origin issued for the same consignment (if any) is cancelled (this equals to the fact that the related biomethane consignment has not been delivered to the domestic market and has not received financial support in the country of production);
- b) The fact of injection into the European natural gas network is confirmed by either a transmission system operator (as defined in Article 2.4. of Directive 2009/73/EC) or by a distribution system operator (as defined in Article 2.6. of Directive 2009/73/EC).
- c) The fact that the related biomethane consignment has been produced in accordance with the prevailing EU sustainability requirements is confirmed in form of a Certificate of Sustainability issued in accordance with Directive 2009/28/EC (RED), Directive 2009/30/EC (Fuel Quality Directive) and COM 2010/C 160/01: in practice this means that the party declaring the biomethane consignment for export must provide the copy of the respective Certificate of Sustainability to the national biomethane registry and the identification number of such certificate is recorded in the European Biomethane Guarantee of Origin;
- d) Any other regulatory requirements prevailing in the country of destination are fulfilled.

12.3 EBCS - “Non-typical” voluntary scheme

First of all, it must be specified for what other (than those handled by 'typical' schemes) sustainability issues the EBCS contains accurate data. The following formulation is proposed:

EBCS is foreseen to contain accurate data for mass-balancing of biomethane injected into - and withdrawn from - the European natural gas network. Such mass balancing is related exclusively to the transportation of the product (blended with natural gas) and does not concern the sustainability of the biomethane production (which must be verified independently from EBCS).

While organising EBCS, it is important to know that (according to Section 2.2. of COM 2010/C 160/01) the assessment by the Commission for recognition focuses on three key areas:

- Documentation management (operating an auditable system)

- Adequate standard of independent auditing (the verifiers must be external, independent and must have both generic and appropriate specific skills)
- Mass balance methodology.

Legal form

The "typical" voluntary schemes may have different legal forms. Both "typical" voluntary schemes engaged in verification of sustainability of biomethane production (REDCert and ISCC) are organised in form of GmbH (company with limited liability) and both are supported by a substantial number of stakeholders (see the attachments).

Regarding EBCS, the proposal is to set-up EBCS in the same form as EBA e.g. aisbl - Association internationale sans but lucratif (International Non-Profit Organization) under Belgian Law with seat in Brussels at REH.

Subject to the joint decision to be taken by organisations and companies joining EBCS, other legal form may also be possible.

Potential partners

- National biomethane registries (AT, CH, DE, DK, FI, FR, NL, UK)
- National biogas associations
- European natural gas industry associations
- Natural gas companies with biomethane activity
- EBA company members (AD and upgrading technology suppliers)
- Biomethane trading companies
- Recognised voluntary schemes involved in certification of sustainability of biomethane production.