



Green Gas Grids Project Working Group on Biomethane Trade Discussion Paper # 2.

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1. GreenGasGrids is a 3-year European project funded by the Intelligent Energy for Europe (IEE) programme with the aim to boost the biomethane market. The project will run until mid 2014 and is co-ordinated by the German Energy Agency Dena. The project's consortium consists of 13 European partners, including national energy agencies, scientific institutions as well as industry associations involved in biomethane, natural gas, and renewable energy.

Within the Green Gas Grids project the goal of the Biomethane Trade Working Group is to contribute to a Road Map towards a Europe-wide biomethane trade scheme and to a proposal for organizing the European biomethane market.

The purpose of this Discussion Paper is to summarize the work which has been performed within the Trade Working Group in the first phase of the GreenGasGrids (GGG) project, to formulate the questions which have to be reviewed and answered by the GGG partners as the project moves forward.

2. **The activity within the Working Group** in the first phase was focused on:
 - a) Collecting information on biomethane registering, labelling and certification practices in Europe.
 - b) Studying the experience of European green electricity certification and trade.
 - c) Analysing the key constraining factors on the way of cross-border biomethane trade.

It was found that currently biomethane is being produced in 14 European countries (AT, CH, DE, DK, ES, FI, FR, HU, IS, LU, NL, NR, SE, UK) and is being injected to the natural gas grid in 10 out of them (AT, CH, DE, ES, FI, FR, LU, NL, NR, UK).

There are only a few examples of physical cross border biomethane trade (from Germany to Switzerland, Sweden, and to The Netherlands as well as from the UK to The Netherlands) – these transactions are carried out under bilateral agreements between the participating companies without involvement of government authorized certification organizations.

Several biomethane certification, registration and labelling systems have been started in different European countries in the recent years. Nevertheless, only one biomethane labelling scheme has been established so far: "Naturemade biomethane" in Switzerland.

(Note: The Nordic Ecolabel (SWAN) is a voluntary ecolabelling scheme that evaluates a product's impact on the environment throughout the whole lifecycle. The purpose of the Ecolabel is to contribute to sustainable consumption and production, The Nordic Ecolabel system covers 63 product groups, under the scheme several retail fuel stations are selling Swan labelled biomethane in Sweden. This is not a dedicated, biomethane specific labelling system like "Naturemade biomethane" in Switzerland, it has much weaker requirements and does not include an independent audit (except in case of complaints).

Most of the biomethane registration activity in Europe is focused on tracking the production and trade and issuing different forms of documents (Certificates of Origin and others).

In the context of this Discussion Paper we need to clearly differentiate between trade-able certificates (documents having their own inherent market value, which can be sold, purchased, traded independently from the product itself, like the EECS green electricity certificates) from documents which (whether named certificate or not) serve as a proof of origin or other quality for a product but do not have its own market value and cannot be traded independently from the physical product they are connected with. So further in this Discussion Paper we will call "Certificate" only the trade-able documents (whether printed or electronic - like the certificates of the EECS).

Under this interpretation no Biomethane Certificate issuing and trading system has been established in Europe so far. The Biomethane Carbon Credit Trading Platform in the UK is the first attempt of this kind but it is not yet operational. Biomethane registries have been established in Austria (Biomethan Register), Denmark (Energinet), Germany (Biogasregister), Netherlands (Vertogas), Switzerland (VSG) and United Kingdom (Green Gas Certification Scheme).

To clearly differentiate between independently trade-able *Certificates* and the documents issued by the Registries we will call the latter "Guarantee of Origin" in the context of this Discussion Paper. How far these "Guarantees of Origin" cover different features of biomethane (renewable origin, sustainability, parameters of producing technology, etc.) depend on the individual regulations and approaches in every country.

Some of the registries (like DK, AT, CH) have a formal political mandate from their governments, others have been organised by cooperation of key market participants and stakeholders.

Basically all these registries have a tracking, data-bank character. The common purpose of these registries is to provide an independent, objective system for registering the volumes (and certain qualities) of biomethane fed

into the natural gas grid, the facts of taking the gas out from the grid and the full contractual chain until its final use.

(Note: in these systems documents are being issued which confirm/certify volumes and qualities and these documents are sometimes also called certificates ("Zertifikat" in German). Nevertheless, we do not consider these documents as "Certificates" in the context of this paper.)

The registries have a very important function of creating market confidence and enabling a chain of transactions without the parties involved directly knowing each other. For example: the producer of biomethane may not get in touch with the end-user of the product at all. The system grants the necessary confidence to the participants, all parties participating in the system can rely on the information provided. This is strengthened by the fact, that the independent auditing is integrated into the system.

The common important feature of these biomethane registries is that they operate within the natural gas network of the given country and do not extend over national borders.

(Note: the first step is taken to establish a cross-border connection between two biomethane registries: dena/Biogasregister (DE) – Vertogas (NL). In essence this would mean accepting each other's documents and issuing the relevant document in the receiving country.)

The existing biomethane registries should be seen as the most suitable nuclei for a future Europe-wide biomethane trade system, but there is a long way to go from the national registration to free cross-border biomethane trade and ultimately to free trade with independent *Certificates* detached from the physical flow.

3. Conclusions from the work performed in the first phase

The Trade Working Group has identified several existing constrains which have to be addressed before moving forward. The most important among these factors are:

a) Mass-balancing requirement

In accordance with the relevant EU legislation all biofuels are subjected to a mass-balancing procedure if the volumes are to be booked against the biofuel quota commitment. When talking about biomethane a mass balance has to be understood as an energy balance (expressed in MJ or MWh). At this moment this does not relate to biomethane used for generating electricity or for heating/cooling purposes but does directly relate to biomethane used as vehicle fuel. Nevertheless, we should reckon with extending the mass balancing requirement to all applications in not too distant future (Germany, for example, has already implemented mass-balancing requirements also for electricity and heat in 2012).

Mandatory auditing is integrated part of the mass-balancing procedure. Energy-balancing can be done only by means of registries (data banks) which register and document the complete process from production till end-use.

Note: the existing biomethane registries consider the national natural gas grid as one closed accounting balance (Bilanzkreis). The dilemma can be described as follows: those volumes of biomethane which bypass the mass-balancing (through - for example - EECs like Biomethane *Certificate* trade) would not qualify for support (in form of feed-in tariffs (FIT), tax benefits etc.). In other words: we can organise trade with Biomethane Certificates but it would be of nobody's avail if the biomethane volume so purchased does not get the support benefits in the country of final use.

b) Sustainability requirement

The compliance with the sustainability requirements of the EU (and national) legislations calls for another confirmation-certification. That is why the future tradable biomethane certificate has to carry this information also. Presently biomethane producers need two type of certification: one is a kind of Guarantee of Origin, the other one is a kind of Guarantee of Sustainability, dealing with sustainability. On the bright side, sustainability for biofuels is the one requirement all European countries already have in common. It is therefore a good starting point on the way to standardised biomethane products tradable all over Europe.

Note: NL Agency has produced an excellent report on biomass certification schemes. They have analysed 18 existing schemes and concluded that 5 of them are most suitable for application. From the viewpoint of biomethane certification they considered the RENcert system to be the most relevant. This was introduced in 2010 to reflect the requirements of the Renewable Energy Declaration (RED) with regard to sustainability criteria (biodiversity, GHG, environment, social). The German Federal Government Agency for Agriculture and Food (BLE) is the accreditation body under this scheme. The Report and the Factsheet on RENcert is available on the website of NL Agency at the following link: (<http://www.agentschapnl.nl/en/content/report-selecting-biomass-certification-system-and-eight-factsheets>)

c) National character of support systems

First of all, a free European market is needed for (cross-border) international trade. Contrary to this, the markets seem to be strictly national in the sense of support granted to domestic production only. Take the example of Germany: only biomethane produced on German territory is qualified for green electricity FIT and only biomethane produced in Germany can get tax and other benefits if used as vehicle fuel. Furthermore, most nations have implemented different requirements which need to be fulfilled in order to be qualified for subsidies. It is therefore difficult to establish common biomethane quality criteria which cover all countries involved. For the time being, international trade will therefore be made up of individual products tailor-made for the country of final use.

d) Difficulties in registering cross border physical flow

As a matter of fact, biomethane flow cannot be tracked in the pipeline systems, the transmission system operators can register and confirm only the balance of the natural gas+biomethane transactions of a company over a given period of time. Such registration/confirmation gets even much more complicated if the country(ies) of production have no common border with the country(ies) of end-use.

e) Market size

The volume of biomethane trade today is small but growing the number of companies interested in international biomethane trade is not high enough for financing the establishment of an electronic trading system. Due to the diverse government policies and level of political support in the various countries, it is rather ambitious to quantify the future market development now.

f) Conclusions

Based upon the work carried out in the first phase of the GGG project the partners have agreed to take a principal decision on selecting between two alternatives for paving the way to biomethane trade:

- a) Biomethane *Certificate* route: this could be realised through close cooperation with the Association of Issuing Bodies (AIB) working within the EECS framework; the EECS system could be expanded to cover biomethane through creating a biomethane specific Association of Issuing Bodies;
- b) Biomethane *Guarantee of Origin* route: Cooperation and harmonisation among national biomethane registries issuing those *Guarantees of Origin*.

Theoretically it would be possible to expand the EECS system to cover biomethane through creating a biomethane specific Association of Issuing Bodies (AIB) within the EECS framework (see Attachment No. 1.).

Nevertheless, in view of the above outlined constraints (most importantly the mass-balancing requirement) a system with tradable *Certificates* - which are handled, marketed and traded detached and independently from the product - would have no practical use at prevailing circumstances. From that reason the creation of a Europe-wide Biomethane *Certificate* Trade System (of issuing, registration, handling and cancelling trade-able biomethane certificates) is premature and not recommended at the time being. This may remain an ultimate, long-term objective but the GGG project should focus on what is required by the (present and future) biomethane market and what is realistically achievable in medium term.

Based upon the work carried out within the GGG project the GGG partners concluded that the creation of a European-wide Biomethane Certificate Trade System (of issuing, registration, handling and cancelling independent trade-able biomethane certificates) is not feasible in short and medium term and decided not to proceed with this alternative at this stage.

The second, subsequent principal decision was taken regarding the selection of one of the two following routes:

- a) System of bilateral and multilateral agreements among the national registries OR
 - b) Establishment of one central European biomethane registry (through combining the resources of the national registries).
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Based upon the work carried out within the GGG project the GGG partners agreed to encourage the establishment of national biomethane registries in every participating country and to strongly support the wide cooperation and harmonisation among the national biomethane registries. Further the partners concluded that the establishment of a central European Biomethane Registry is not the right way to move forward at this stage.

Following the above formulated principal decisions the GGG partners turned their attention to the role of the national biomethane registries in the process of creating a Europe-wide biomethane trade scheme and ways of integrating the national biomethane registries into the further work of the Trade Working Group.

4. Initiative to involve the biomethane registries

As a matter of fact, the national registries do carry a national character while their key task is to correspond to the prevailing regulations in their home country. On the other hand, it would be desirable, that the Registries mutually accept the *Guarantees of Origin* (and other related documents) issued by each other.

It has been recognised that a functional system of comprehensive information transfer between the national biomethane registries is essential for facilitating future cross-border biomethane trade within the European gas grid.

The harmonisation of procedures, the coordination and wide collaboration is a precondition to ensure efficient transfer of information among the Partners. For this purpose the national registries cooperating in the creation of the European biomethane trading scheme should agree on a set of criteria/attributes all of them apply in the same way. Alternatively the registries could agree on a classification of criteria/attributes establishing classes with different level of requirements.

In close cooperation with the German association biogasrat+ a workshop-type meeting was organised in December 2012 in Berlin with the participation of the representatives of all existing national biomethane registries (together with the representatives of some national registries under formation). At this meeting of experts the representatives of the national registries – with support of the involved GGG partners – discussed the key issues for harmonisation and cooperation with the aim of creating conditions for mutual acceptance of Guarantees of Origin among themselves (either on bilateral or multilateral basis).

The following topics were addressed at the Berlin workshop:

- Readiness of national registries for harmonisation and cooperation,
- Compatibility of individual registries - common criteria/attributes to be accepted and applied by all participating registries,
- Criteria/attributes to be fulfilled by imported biomethane in order to be qualified for support in individual countries – cooperation among the respective registries in documenting/confirming the compliance with those criteria in the country of production,
- Common/harmonised approach to certification of sustainability,
- Documentation of cross-border biomethane movements - involvement of transmission system operators in the cooperation among the registries.

The representatives of the national biomethane registries attending the Berlin workshop welcomed the cooperation initiative and agreed to work together aiming at highest achievable compatibility of their biomethane registry activities. The importance of all national registries joining the collaboration was underlined by all participants.

5. Suggested next steps – short/medium term

A step-by step approach has been discussed and accepted on the related workshops within the GGG project. This would consist of the following activities and stages:

Establishment of national biomethane registries

The GGG project aims to encourage and facilitate the establishment of national biomethane registries first of all in every GGG participating country and further also in other EU member states which are not participating in the GGG project.

It is advisable that the national biomethane registries are mandated by the national government and are recognised in their own country as the exclusive cooperation partners of the national biomethane registries acting in other countries.

In this regard the Trade Working Group intends to continue the process of collecting and disseminating information about the existing biomethane registries (principles and ways of operation, practical experiences, etc.).

Cooperation among the national biomethane registries

The communication among the biomethane registries and the GGG partners lead to the conclusion that it is advisable to agree on a text of a Letter of Intent which would cover the key principal issues of cooperation and would be signed by all established biomethane registries. The Letter of Intent would then automatically set the basic rules for other - still to be established - registries which would join the cooperation later.

Upon signing the Letter of Intent by the national biomethane registries the GGG partners will provide all necessary assistance within their own country to the national biomethane registry in performing the cooperation as envisaged.

6. Strategic questions – long term

The establishment of a national biomethane registry possibly in all European countries producing biomethane and the broad cooperation and coordination among them will be the first important steps towards creating the conditions for a free cross-border biomethane trade in Europe.

A crucial pre-condition for eliminating the hurdles on the way to free biomethane trade is to recognise the European natural gas network as one single balancing unit (Bilanzkreis), i.e. to accept that the mass-balancing requirement is fulfilled as soon as the respective volume of biomethane has been taken out of the European natural gas network (and this transaction has been properly certified).

The production of biomethane would increase at substantially higher rates if feed-in-tariffs for biomethane grid injection were introduced in every EU Member State (like it is practised France and United Kingdom).

The cross-border biomethane trade will broadly develop only if imported biomethane will be treated the same way as the biomethane produced domestically. Any support provided in a Member State to locally produced biomethane (FIT, tax benefit, etc.) should be provided to biomethane imported from another EU Member State in the same way and extent - always under the condition that the imported biomethane carries all necessary attributes and this is confirmed by the mandated national registry in accordance with the rules agreed among the registries.

The national registries should jointly develop a common, transparent electronic platform for registering and transferring all related information among themselves. This will require investment both for hardware and software. Such electronic platform would serve all-European interests and – as such – should get financing from EU funds as long as the European cross-border biomethane trade does not reach the magnitude where the system could be financed from the turnover.

Appendix 1.

Experience of European green electricity certification and trade

While working on a road map towards the creation of a European Biomethane Trading Scheme it is advisable to look at the experience of solving the similar task in relation to renewable electricity in Europe. The physical distribution systems for electricity and natural gas have a lot of common features and the task of creating a Europe-wide trading system is also quite similar.

To increase the market share of renewable electricity, renewables are promoted by governments through government incentives to motivate a growing number of consumers to switch to renewable electricity. Declaration, tracking, labelling and trading systems are important tools for assisting electricity producers and consumers to achieve goals for renewables. These systems provide reliable information on the source of electricity (declaration), on its flow (tracking), on other characteristics of the electricity (labelling), and allow it to be traded (trading).

Declaration system

A declaration system declares the electricity mix (by energy sources) to the end consumer.

Tracking systems

Tracking systems declare and track the origin of each kWh of electricity and the corresponding energy source. One example of a tracking system is the Guarantees of Origin (GoO) system: GoO were introduced by two European Directives: for RES-E, the GoO is defined in Directive 2001/77/EC, Art. 5, and for high efficiency cogeneration in Directive 2004/8/EC, Art. 5. These GoO shall enable producers of electricity from renewable energy sources or from high efficiency cogeneration to demonstrate that their electricity is produced from the respective sources or

technologies within the meaning of the directives. The GoO as defined by these directives are issued on request only and therefore will most likely cover only part of the respective markets. Because the directives do not specify the instruments of the GoO in much detail, the implementation of GoO in Member States and their potential application shows significant variations.

Aiming at the harmonisation of all those variations and discrepancies the EU has two different systems that provide Guarantee of Origin: Renewable Energy Certificate System (RECS) and European Energy Certificate System (EECS). The fact that there are two systems is due to the historical development of RECS. 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 EU directives and national legislation.

Labelling system

Labelling systems reflect the quality aspects (incl. ecological and social standards) of renewable electricity production. Guarantees of Origin only define the renewable origin and do not assess - for example - the ecological quality.

Renewable electricity labels usually provide clear guidance based on transparent and comprehensive multi-criteria approach to sustainability.

Trading systems

Trading systems are database systems which allow merchandising electricity. In Europe, the Renewable Energy Certification System RECS and the European Energy Certification System are well known trading systems.

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 which 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 into one coherent certificate system. As all kinds of energy (fossil, nuclear, renewable) can be registered under the EECS, a Renewable Energy Declaration (RED) is needed. If all requirements are met, the production facility will be registered as renewable in the EECS database.

The trading certificates issued for green energy represent all the attributes for a specific unit of energy. Transferral of the trading certificate from one owner (the producer) to another (the reseller) to a third (the consumer), transfers the attributes too. The final owner (normally the consumer) hence knows, based on the trading certificate, the origin of the electricity. As soon as this specific unit of electricity is consumed, the trading certificate is transferred to a redemption account. It should be possible to avoid double accounting with this mechanism.

The GGG WP3 Working Group 3 has looked at the experience of the green electricity market and has come to the following main observations:

- The labelling system did not prove to be applicable on a broad European basis. The EUGENE project which was aimed at establishing a Europe-wide renewable electricity label was abandoned early 2009 (after five years of work). The main reason for discontinuing the project was that the established labels had already tailored their products to the national electricity markets and the harmonisation of them was not possible.
 - The failure of the EUGENE project suggests that the parties interested in a Europe-wide biomethane scheme should act quickly before too many (partially contradicting to each other) national regulations appear.
 - Both the Renewable Energy Certification System (RECS) which later served as the base for the European Energy Certification System (EECS) have proven to be successful and could serve as examples for organizing the biomethane trade.
 - Systems based on mandatory (EU Directives + national laws) regulations have a better chance for broad acceptance and long-term success (EECS vs. RECS).
 - The bodies issuing the certificates should have appointment/authorisation by their national governments.
 - It is necessary that the best recognised national institutions join the system, whose authority, neutrality and professionalism is unquestionable.
 - The system should be two-tier: basic rules and regulations valid for every participating country + operating units following *also* the local rules and regulations.
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- The system should start with a group of interested countries and stay open for other countries entering later.