

ISCC 201-3 GUIDANCE FOR THE CERTIFICATION OF BIOGAS AND BIOMETHANE

Version 3.1



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1 Introduction

Compared to other biofuel production pathways, biogas and biomethane show some peculiarities. In a biogas plant, liquid and solid biomass is digested in a fermenter and biogas is produced. Biogas also occurs in landfill operations from the decomposition of waste. Biogas is a mixture of different gases. In a second processing step, biogas is processed into biomethane which can be used as a biofuel. The processing, supply chain management, transport and GHG calculation differ in comparison to liquid biofuels.

Introduction to biomethane

This document provides additional guidelines for the certification of biogas and biomethane supply chains.

The binding requirements apply to all elements of the value chain: landfill operations, farms/plantations, first gathering points, warehouses, suppliers, transport, biogas plants (which may also be first gathering points, as the case may be) and biomethane plants.

Applicability

To prove the implementation of these requirements, the companies involved agree to comply with the regulations of recognised certification systems such as certification system.

2 Scope and Normative References

This document comprises additional requirements for all elements of the value chain for the production of biogas and biomethane. The specific criteria described complement the system basics described in ISCC document 201 and generally apply to all relevant elements of the value chain. As a basic principle, all relevant ISCC documents are valid for the scope.

Certification requirements

3 Basics

Landfill operations are points of origin where biogas (landfill gas) occurs from the decomposition of waste. Farms/plantations cultivate crops (e.g. maize) that can be used as a substrate for biogas production. In addition, manure or other waste and residues occurring can also be used as substrates for biogas production. Waste and residue occur at a point of origin. Biogas plants are processing units which produce (raw) biogas from substrates (biomass). Biomethane plants process (raw) biogas into biomethane. The processed biomethane has the quality of natural gas and is thus ready-to-use fuel. Usually, but not necessarily, both operations are conducted at the same site. When biogas plants and biomethane plants are located at the same site and belong to the same legal entity, a single certification referring to both operations is sufficient. When biogas plants and biomethane plants are not at the same site, individual certification is required.

Definitions

3.1 Supply Chain Elements

Typical supply chain elements include:

- 1 Landfill operations
- 2 Farms / Plantations
- 3 Point of origin
- 4 Biogas plants
- 5 Biomethane plants
- 6 Traders/warehouses

The following figure describes typical supply chains for biogas/biomethane plants.

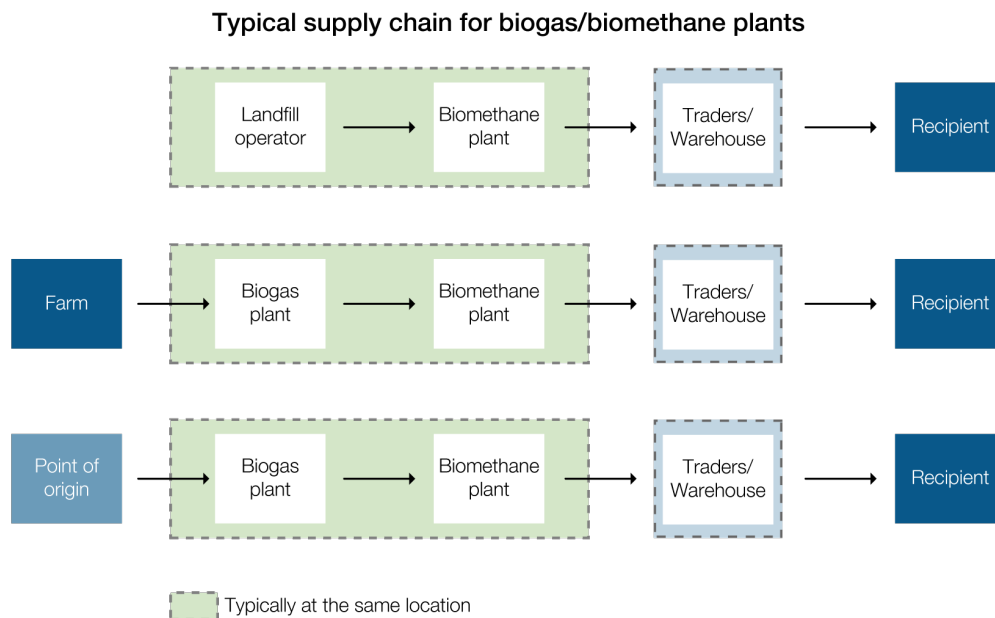


Figure 1: Supply chain elements

The natural gas grid can be used to transport the biomethane from the biomethane plant to a recipient. Recipients are all users of biomethane that further process, store, transfer or consume the gas. The gas grid is considered a transport entity. Certification of the grid is not required.

3.2 Calculation of GHG Emissions

If an individual calculation of GHG emissions is required for biogas plants, they must have a gas-tight digestate storage tank and a dosing unit with a weighing system.

The substrate quantities documented in the operations journal and the assigned GHG values must be taken into account for the calculation. The total biogas and/or biomethane yield will be allocated to the individual substrates. An exact allocation of substrate quantity and gas yield is not

*Supply chain of
biogas and
biomethane*

*Typical supply
chain for biogas/
biomethane*

Natural gas grid

*Gas-tight
storage tank*

*Data basis &
methodology*

possible. Methane yields (in m³ per ton of fresh mass) can be found for instance in the German Biomass Ordinance (BiomasseV) or in scientific documents (e.g. KTBL values “Typical values for agriculture”).

Emissions occurring during the storage of the digestate must be considered for the GHG calculation as well. An allocation of the emissions to the digestate is not possible.

Emissions during storage

At the biomethane plant, diffuse methane emissions from the fermentation process must be taken into account when calculating GHG emissions. Methane emissions of 1% of the biomethane quantity produced are assumed. Lower values must be proven by corresponding measurements.

Diffuse methane emissions

3.3 Transport of Biomethane via the Gas Grid

The mass balancing of biomass in the ISCC system is described in detail in ISCC document 203 “Traceability and Chain of Custody“. In addition, the following requirements must be taken into account for the certification of biomethane plants.

Further reference

The natural gas grid can be used for the transport of biomethane. Transport is not subject to certification under ISCC, as the grid is considered a transport entity. However, the gas grid must enable the determination of the quantity and quality of the biomethane fed into and taken out of the grid. Furthermore, the economic operator feeding the biomethane into the grid and the economic operator taking the biomethane out of the grid must be physically connected via the grid. Both economic operators must be certified.

Requirements for gas grids

The quantity of biomethane fed into and taken out of the grid must be recorded and documented stating the properties of the biomethane (units: m³ or kWh). At the end of the respective balancing period, the quantity of biomethane taken out of the natural gas grid shall not exceed the quantity of biomethane fed into the grid. The quantities which are fed into and taken out of the gas grid must be controlled and verified by the competent national or public authorities (e.g. main customs offices). The balancing period shall not exceed three months.

Documentation and verification of biomethane injection and extraction

4 Certification of Supply Chain Elements

The following figure provides an overview of the certification requirements for the different elements of the supply chain.

Certification requirements

Identification of supply chain element and relevant certification requirement for the certification of biogas / biomethane plants

	Farm/ plantation	Point of origin	Landfill operation	Biogas plant	Biomethane plant	Trader/ warehouse
Certification approach	Fill in self-declaration. Auditing based on sampling	Fill in self-declaration. Auditing based on sampling	Audit (same location as biomethane plant)	Audit	Audit	Audit (for all units storing sustainable biomethane)
Audit requirement	Sustainability requirements (ISCC Principles 1-6)	ISCC waste and residue process	Traceability/ mass balance	Traceability/ mass balance	Traceability/ mass balance	Traceability/ mass balance
GHG calculation	GHG emissions for the cultivation of agricultural and forestry products	GHG emissions starting at the point where the waste and residue occurs	GHG emissions starting at the point where the landfill gas occurs	GHG emissions for processing	GHG emissions for processing	Not relevant

Figure 2: Certification requirements for biogas and biomethane plants

1 Farms/plantations

Farms/plantations are companies which either own or have leased one or multiple fields. Farms/plantations supply biomass to the first gathering point, which, in this case is usually the biogas plant. Under group certification farms/plantations must be audited based on a sample. Farms/plantations must fill in a self-declaration/self-assessment and provide a signed version to the biogas plant (first gathering point).

Audit requirements

The farm/plantation must provide relevant data required for the calculation of GHG emissions and disclose them to their customers. At present, there are no standard values and no NUTS2 values for the cultivation of substrates (e.g. maize silage) that are used for the production of biogas either. The farm must collect the relevant data or calculate GHG emissions individually. ISCC document 205 “Greenhouse Gas Emissions” describes the relevant data and the calculation methodology.

GHG calculation

The requirements regarding the sustainable production of biomass are described in detail in ISCC document 202 “Sustainability Requirements”.

Sustainability requirements

2 Point of origin

Points of origin are all companies where waste and residues occur. Points of origin supply wastes and residues to a collecting point. Points of origin may be audited based on a sample. A point of origin must fill in a self-declaration and provide a signed version to the collecting point. At the point of origin, waste or residue has zero GHG

Audit requirements

emissions. The GHG calculation for waste and residue material starts with the collection of the material.

The requirements regarding sustainable biofuels that are produced from waste and residues are described in detail in ISCC document 201-1 “Waste and Residues”. The classification of a material as a waste or residue and eligibility to meet biofuel quota obligations depend on national regulations.

Specific requirements for waste and residues

3 Landfill operations

Solid municipal waste and other kinds of waste are discarded during landfill operations. Biogas (landfill gas) occurs as a result of the decomposition of the waste at the landfill. The biogas can be captured and used as a feedstock for biofuel production, if the biogas is further processed into biomethane. A landfill operation is considered a point of origin for waste material.

Definition of landfill operations

A biomethane plant processes biogas into biomethane and is typically at the same location as the landfill operation where the biogas occurs. If the landfill gas operation is at the same location as the biomethane plant and belongs to the same legal entity it must be certified to fulfil the requirements for points of origin and for processing units. In this case, a self-declaration from the landfill operation is not required. Audit requirements are focused on traceability and mass balance. The GHG emissions calculation starts at the landfill gas operation, the process step when the biogas occurs and is collected.

Audit requirements

The requirements for the certification of waste and residue-based liquid and gaseous biofuels are described in detail in ISCC document 201-1 “Waste and Residues”. For some countries, only the biomass portion (biodegradable portion) of the waste at the landfill is eligible for biofuel production. The classification as a renewable (bio) fuel and the eligibility to meet biofuel quota obligations depend on national regulations.

Specific requirements for wastes/residues

4 Biogas plants

Biogas plants receive agricultural products and/or waste and residues. These raw materials are used as substrates that are digested in the fermenter of a biogas plant. Biogas plants are processing units that produce (raw) biogas from these substrates (biomass). Biogas plants are likely to act as first gathering points for sustainable biomass (substrates) and/or as collecting points for waste and residue material respectively. In the context of the ISCC system, first gathering points are companies purchasing biomass required for the production of biofuels from companies or sites that produce or harvest this biomass in order to trade with this raw material. A collecting point in the context of ISCC is a company

Definition of biogas plants

receiving waste or processing residues used for the production of biofuel from the points of origin (economic operators or private households where waste and residue is generated).

Audit requirements

During the certification of a biogas plant, the weight, origin (address of the farm, point of origin), dry substance content and value of GHG emissions stated by the production site must be documented for the incoming biomass (substrates). The self-declarations/self-assessments issued by farms/plantations or points of origin and the delivery contracts for biomass (substrates) must be kept as proof of the biomass.

Documentation of substrates

The substrate quantities introduced into the biogas plant and/or the fermenter must be documented using an operations journal and/or work diary. The information on the origin of the substrate, the dry substance content as well as the assigned GHG value must also be documented in this operations journal. Recording must be carried out as exactly as possible. It must be verified at least once per month that the substrate quantities supplied correspond to those used in the fermenter of the biogas plant. Silage losses occurring during the storage of the substrate must be documented and explained.

Documentation of the biogas yields

Moreover, the yield of the entire plant must be documented in the operations diary. The yield must be measured at the biogas plant using standardised equipment.

Biogas plants are processing units and first gathering points. Biogas plants must be audited with respect to traceability and mass balance.

5 Biomethane plants

Biomethane plants receive biogas and process biomethane. Biomethane plants are processing units and must be audited with respect to traceability and mass balance.

Definition of biomethane plants

Biomethane plants must measure their energy consumption and take into account the methane slip for the GHG calculation. To do so, it is sufficient to measure the actual methane slip, provide the manufacturer warranty or refer to scientifically accepted standard values. Plants that employ a procedure using pressure must retreat their exhaust air thermally.

Methane slip

If the biomethane plant is at the same location as the biogas plant or at the landfill operation, the yield of the entire plant must be documented in an operations journal. The yield must be measured using standardised equipment or measured continuously by the biomethane plant. The biomethane gas quantity produced and the substrate quantity used must be compared after three months at the latest. The energy content of the biomethane produced must be calculated based on the non-condensing heating value.

Documentation of biomethane yields

6 Traders/warehouses

Traders/warehouses storing sustainable biogas/biomethane will be audited regarding traceability and mass balance.

5 Generation of Sustainability Declarations by the Final Processing Unit

The biomethane plant as the final processing unit must issue a Sustainability Declaration to authorities for the biomethane fed into the natural gas grid. In the field of biomethane production, the “immediate” transmission of the Sustainability Declaration to the competent authority is not possible in all cases, since the settlement between the commercial partners is carried out using the energy content of the biomethane (in kWh) and not in m³ or kg. The energy content cannot be transmitted “immediately” since it is determined analytically and is generally only available a few weeks after the end of the month. Thus, the Sustainability Declarations should be issued at this point in time. The amounts declared on the Sustainability Declarations must match the amounts fed into and taken out of the gas grid (as verified by the competent authorities).

All elements of the supply chain that produce, consume or further process biomethane must fill in the ISCC “Statement on single setting-off of environmental attributes”. The filled in document should be available for auditing.

Reporting to authorities

ISCC “Statement on single setting-off of environmental attributes”