

Verification Report

'Climate protection by small-scale biogas in Switzerland – Bundle II'



Monitoring Period	01.01.2018 – 31.12.2018 & 01.01.2019 – 31.12.2019
Emission reductions	4 440 tCO _{2,eq.} (Vintage 2018) 4 801 tCO _{2,eq.} (Vintage 2019)
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1. VERIFICATION OBJECTIVE AND DETAILS

The organization Ökostrom Schweiz has commissioned TÜV Rheinland to perform the verification of their emission reduction project 'Climate protection by small-scale biogas in Switzerland – Bundle II' for the 2 subsequent monitoring periods 01.01.2018 – 31.12.2018 and 01.01.2019 - 31.12.2019.

The project activity has been developed as a bundle of small scale biogas power plants in Switzerland, which utilize manure from animal farms in their vicinity, i.e. the project activity achieves methane recovery (per AMS-III.D) and in addition supply thermal energy that displaces fossil fuel uses (per AMS-I.C). Consequently, the project contributes to the global GHG emission reductions through methane recovery and heat energy production replacing fossil fuels and was verified to have generated total emission reductions of 9 241 tCO_{2e} respectively for the monitoring periods 01.01.2018 – 31.12.2018 and 01.01.2019 - 31.12.2019.

As per definition, verification is the periodic ex-post independent assessment by a validation/verification body of the GHG emission reductions and removals that have occurred as a result of the project activity during the monitoring period. Therefore, the main objective of this verification report is to assure that the reported GHG assertions are real and measurable, and truly represent the ones achieved by the project without any material misstatements or omissions. Key aspects of the verification, as per ISO 14064 are accuracy, completeness, consistency and transparency of reported data on utilized quantity of manure as well as generated heat energy, which substitutes for the one generated by fossil fuels.

This report summarises the findings resulting of the verification process of the described project activity for the indicated monitoring period, including the reported greenhouse gas emission reductions. The verification is based on the ISO 14064-2 criteria and is performed in line with the requirements of ISO 14064-3 for Verification of GHG assertions.

1.1. Project title

'Climate protection by small-scale biogas in Switzerland – Bundle II'

1.2. Date when the project began

The start date of the project activity is identified as 01.01.2016, i.e. the date when the project owner Ökostrom Schweiz identified and initiated the project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II' as a GHG avoidance project.

Further information on the single biogas plants, i.e. installation owner, start of operation and expected annual emission reductions is provided in Table 1.

Table 1: Details on the biogas installations

	Installation name	Installation Owner	Start operation of	Average expected ER (tCO ₂)
1	Gansner Biogas	Hansjörg Gansner	18.06.2012	146
2	BGA Bütschwil	Urs Dietrich	23.12.2013	336

3	BGA Jordi	Franz Jordi-Camenzin	01.10.2006	153
4	BGA Luder	Beat Luder-Mathys	20.03.2010	208
5	Biogas Spitzhof	Josef Kilchmann	24.01.2014	226
6	Halbmil Biogas	Reto Mani	12.06.2006	395
7	Hawisa	Urs Erni	25.08.2006	297
8	Winzeler	Winzeler Andres	20.02.2010	612
9	BGA Langackerhof	Josef Vögtli	01.10.2016	160
10	BGA Val Biogas	Max Stalder	01.01.2006	777
11	BGA Martin	Georges Martin	15.09.2007	204
12	BGA Josef Ott	Josef Ott	01.10.2009	69
13	Davos Biogas	Toni Hoffmann	24.11.2004	169
14	Schürch Bütikofen	Beat Schürch	22.10.2016	100

1.3.Verification Site Visit (date)

No verification site visit for the monitoring period in question has been conducted due to the strict travel restriction related to the worldwide COVID 19 pandemic.

1.4.Expected lifetime of the project

The lifetime of the project activity, as per Project Plan, is indicated to be 20 years. This assumption is based on the long-term experience of the project owner, Ökostrom Schweiz, the agricultural biogas expert association. In addition, the eligibility period for the Swiss renewable energy feed-in tariff for biomass and biogas technology is fixed to 20 years.

1.5.Type of greenhouse gas emission reduction or removal project

Methane (CH₄) recovery (per AMS-III.D) and in addition displacement of CO₂ from fossil fuel uses by supplying thermal energy (per AMS-I.C).

1.6.Verification of appropriateness of the methodology being used for the project

The approved CDM methodologies AMS-III.D v.21 and AMS-1.C v.21 have been used for the quantification of the GHG emission reductions generated by the project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II'. Therefore, the verification of the monitoring period in question is conducted in accordance with the before mentioned methodologies and the therein referenced methodological tools.

TÜV Rheinland approves that the scope of the project activity is covered by the scope of the corresponding methodology, namely:

- AMS - III.D. v.21 – “...project activities involving the replacement or modification of anaerobic animal manure management systems in livestock farms to achieve methane recovery and destruction by flaring/combustion or gainful use of the recovered methane. It also covers treatment of manure collected from several farms in a centralized plant.
- AMS - I.C. v.21 – “...renewable energy technologies that supply users i.e. residential, industrial or commercial facilities with thermal energy that displaces fossil fuel use. These units include technologies such as solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel.

In addition, the verification team confirms that the project activity is in conformity with the applicability criteria indicated by the selected approved CDM methodologies.

1.7. Legal land description of the project or the unique latitude and longitude

The project activity involves 14 small-scale biogas installations, which are located throughout the country of Switzerland. The exact geographic coordinates and the location of the installations are presented in Table 2, below. All provided coordinates have been confirmed by using Google Map. The locations of the several biogas plants were witnessed during the last on-site audit, which took place in March this year.

Table 2: Location and geographic coordinates of all installations involved in the project 'Climate protection by small-scale biogas in Switzerland – Bundle II'

	Installation name	Location	Longitude	Latitude
1	Gansner Biogas	8512 Graltshausen	47°35'55.45"N	9°10'49.41"E
2	BGA Bütschwil	3054 Schüpfen	47°1'17.83"N	7°22'18.73"E
3	BGA Jordi	5525 Fischbach-Göslikon	47°22'6.76"N	8°18'59.45"E
4	BGA Luder	3422 Kirchberg	47° 5'54.78"N	7°33'59.99"E
5	Biogas Spitzhof	6014 Luzern	47° 3'51.70"N	8°13'15.17"E
6	Halbmil Biogas	7000 Chur	46°53'10.52"N	9°32'25.30"E
7	Hawisa	6221 Rickenbach	47°12'3.15"N	8° 9'19.61"E
8	Winzeler	8240 Thayngen	47°44'37.21"N	8°42'18.11"E
9	BGA Langackerhof	4146 Hochwald	47°27'48.29"N	7°38'49.77"E
10	BGA Val Biogas	3930 Visp	46°17'54.97"N	7°51'0.27"E
11	BGA Martin	1070 Puidoux	46°29'35.78"N	6°47'12.65"E

12	BGA Josef Ott	6403 Küssnacht a. Rigi	47° 5'52.72"N	8°26'28.02"E
13	Davos Biogas	7260 Davos-Dorf	46°47'58.09"N	9°50'54.27"E
14	Schürch Bütikofen	3422 Kirchberg	47° 4'57.59"N	7°36'51.42"E

As per the applied methodologies AMS-III.D and AMS-I.C, the project boundary is the physical, geographical site of animal manure management systems, and the Combined Heat and Power (CHP) units that produce heat from the biogas production.

1.8. Ownership verification

The Ökostrom Schweiz is an association of over 150 agricultural biogas producers, with professional experience in climate change and energy. The association explored the opportunity and possibility to integrate biogas plants into a climate protection project. Therefore, the 14 previously mentioned biogas plants have been joined together by the project owner Ökostrom Schweiz to develop the project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II'. During the site visit in March this year, it was confirmed that the owners of the biogas plants are aware of the emission reduction project, acknowledge Ökostrom Schweiz as project owner and support them by following the monitoring requirements and providing the required monitoring information.

1.9. Reporting, monitoring, and verification details

The project owner anticipated to monitor the proposed project activity on an annual base, i.e. the data on processed manure and co-substrates, heat recovery as well as default parameters are reported by the owners of the biogas plants to the project owner annually. However, the verification of the generated emission reductions is planned to cover 2 vintages, which leads to updating the monitoring report and the underlying GHG calculations on a biannual base.

The monitoring procedure for the project activity follows the requirements stipulated in the applied approved CDM methodologies AMS-I.C & AMS-III.D. In the course of the verification process, it was positively verified that all biogas installations bundled in the project, took the respective actions to ensure accurate recording of the monitoring parameters. As part of the monitoring procedure, following data and information are annually reported and substantiated to the project owner, using a well-organized and unified questionnaire:

- Annual biogas production;
- Annual working hours of the CHP;
- Average annual CH4 content;
- Does the biogas installation substitute for heat energy generated by fossil fuels? And to what extent?
- Utilized farmyard manure for the respective period
 - Animal
 - Type of manure
 - Amount
 - Is the manure dissolved?
 - Dilution of the manure
- Amount and type of co-substrates

In addition, the project owner, Ökostrom Schweiz, is required to provide additional information on installed capacity, electricity production, complaints, etc.

In the course of the on-site visit, the biogas measuring devices were questioned. The installation managers indicated that the continues measurement of the yielded biogas is not of importance for them and thus these values are not measured.

The current verification report confirms the emission reductions realized by the project activity for the periods 01.01. – 31.12.2018 and 01.01. – 31.12.2019 and reported by the monitoring report “Climate protection by small-scale biogas in Switzerland GHG Report – Bundle II – in accordance with ISO 14064; Monitoring periods 2018 and 2019” v002, dated to 22.09.2020.

1.10. Level of assurance and verification summary

The level of assurance of the verification was agreed with the project owner at the beginning of the verification process as reasonable, with respect to material errors, omissions and misrepresentations.

The final verification of the second monitoring period, i.e. vintage year 2018 and 2019, is based on the final monitoring report Climate protection by small-scale biogas in Switzerland GHG Report – Bundle II – in accordance with ISO 14064; Monitoring periods 2018 and 2019” v002, dated to 22.09.2020, supporting documents disclosed to the auditor, own background research and investigations.

1.11. Roles and responsibilities

Entity	GES Energie GmbH
Address	Domstrasse 11 20095 Hamburg / Germany
Roles and responsibilities	Carbon consultant - Report author & developer of projects set up as climate protection projects
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Entity	Ökostrom Schweiz
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Roles and responsibilities	Project owner - Report contributor & owner of the certificates

Contact person	Dr. Victor Anspach
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Entity	TÜV Rheinland Energy GmbH
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Roles and responsibilities	Verification Body – Verification of the GHG Assertions against the ISO 14064
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2. VERIFICATION CRITERIA

Pursuant to ISO 14064, the verification body applied following approaches for the verification of the proposed project activity over the monitoring period:

- Computation: Re-performed calculations on randomly selected parts of the GHG spreadsheet used for the project emission reduction accounting to ensure calculations were performed correctly and methodologies were used as represented;
- Observation: Verification team observed the questioner forms for all installations participating in the project activity. Further original facility level data were provided for all selected sources and data points for comparison with the input data to the GHG spreadsheet;
- Interview: as part of the verification of the previous monitoring period, which was conducted in February 2020 interviews with plant managers who are responsible for the reporting, data management, information collection and reporting, equipment maintenance and sample collection;
- Inspection: Due to the current COVID-19 Pandemic, no site visit was conducted. Nevertheless, the project owner provided all primary data adopted for the calculation of the emission reductions to the verification body in order to observe and identify existing and reported sources of emissions; inspection of accounting data (e.g. invoice, receipts), measurement equipment types and their calibration records. Completed an extensive review of spreadsheets used for data processing and emission calculations,
- Analysis: comparison of the annual emission reductions to the expected average rates. Furthermore, plausibility checks regarding the reported working hours, the generated

heat- and electric- energy as well as the manure and co-substrate input were conducted.

- Assurance: confirm that there are no competing claims to the ownership of the project activity and the resulting emission reductions.

2.1. Scope

As per the selected verification standard ISO 14046-3 the scope of verification has been agreed at the beginning of the verification processes as following:

- Project boundary

The project boundaries are defined by the 14 bundle biogas plants, which are included in the project activity, see Table 2: Location and geographic coordinates of all installations involved in the project 'Climate protection by small-scale biogas in Switzerland – Bundle II'. For further information refer to *section 1.7 and Table 1: Details on the biogas installations*, where the estimated annual ERs, as per GHG project plan, for each biogas plant are indicated as well.

- GHG Project

The project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II' is an anaerobic wet fermentation with a grid connected combined heat and power plants (CHP). It involves 14 small scale agricultural biogas power plants in Switzerland, which recover methane from animal manure and generate heat and electricity.

- Quantification methodology

Following approved CDM methodologies were applied for the quantification of the emission reductions due to the proposed project activity:

- AMS-III.D v.21 - Small-scale Methodology: Methane recovery in animal manure management systems
- AMS-1.C v.21 - Small-scale Methodology: Thermal energy production with or without electricity.

- Baseline scenario

As per the selected approved CDM methodology AMS-III.D v.21, the baseline scenario is predefined as *“the situation where, in the absence of the project activity, animal manure is left to decay anaerobically within the project boundary and methane is emitted to the atmosphere.”*

As per the selected approved CDM methodology AMS-I.D v.21, the baseline scenario for electrical and/or thermal energy production, defined as option a) *“Electricity is imported from a grid and thermal energy is produced using fossil fuel;”* is considered as most reasonable one.

- Physical infrastructure, activities, technologies and processes of the GHG project

The project activity, as described in the previous section, involves processing of animal manure in small scale biogas plants; thus the respective amount of methane is recovered and utilized for heat and electricity generation. The involved biogas plants apply similar technology, i.e. the standard processes of biogas production in developed countries.

The applied technology is described in the project plan document and thoroughly discussed with the project owner and the individual biogas plants' owners in the course of the previous on-site audit.

- GHG sources, sinks and/or reservoirs
 - Methane emission reduction due to methane recovery in biogas plants
 - CO₂ emission reduction due to displacement of fossil fuels for electricity and heat production.
- Types of GHGs
 - CH₄
 - CO₂
- Verification period
 - 01.01.2018 – 31.12.2018 (Vintage 2018) and
 - 01.01.2019 – 31.12.2019 (Vintage 2019)

2.2. Materiality

The objective of the project verification is to provide assurance to Ökostrom Schweiz (client) and ultimately the buyer of the generated emission reductions that GHG assertions truly reflect the emission reductions achieved. A material discrepancy is, according to ISO 14064-3, characterized by the possibility that the intended user of the GHG assertions will be influenced by such a discrepancy.

However, no quantitative threshold is defined by the ISO 14064 standard which is why the threshold is defined as 5% of the overall GHG project emission reductions, which is in line with the materiality thresholds stipulated in the EU monitoring guidelines applied to facilities with CO₂ emission of less than 500,000 t CO_{2,eq}.

3. VERIFICATION PLAN

The project subscribes to ISO 14064-2 and the minimum verification criteria must include:

- Conformance with the requirements and principles of the standard,
- The data supporting the GHG calculations have sufficient controls to be considered fair and accurate and without material discrepancy;
- The GHG calculations supporting the GHG assertion are sufficiently accurate to be considered fair and accurate and without material discrepancy;
- The verification statement indicates reasonable level of assurance.

The main steps in the verification process are:

- Desk review - covering all provided documents, i.e. Project Plan, Monitoring Report for the monitoring period in question, ER calculation workbooks, records on heat generation, records on co-substrates and manure input, etc.
- Re-Calculation steps of the Excel workbook for calculation of Emission Reductions for the year 2018 and for the year 2019.
- Consistency checks by comparing the produced electricity and the amount of liquid and dry manure as well as co-substrates reported.
- Consistency check by comparing the methane content
- Quality check of all documentation

- Issuance of verification protocol including CAR/CL for discussion with the project developer
- Issuance of final verification report for the monitoring period 01.01.2018 – 31.12.2018 and the monitoring period 01.01.2019 – 31.12.2019.

As per the GHG CleanProject[®] Verification Guidance, following aspect shall be considered prior and in the course of the verification process and explicitly described in this part of the current verification report:

(i) Preliminary review

The very first step of the above-described verification process is the desk review, which in the wording of GHG CleanProject[®] stays for the preliminary review of the project activity. As already indicated, the crucial project documentations, i.e. the Project Plan, Monitoring Plan and the emission reduction calculation spreadsheets, have been reviewed by the verification team in order to ensure that there is a clear understanding of the project activity and that the selected verification team is competent.

Therefore, the verification team appointed to the verified project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II' confirms that the required steps of preliminary review, including assessment of project complexity, selection of appropriate verification team, request of additional project supportive documents and establishment of sampling plan have been accordingly undertaken. Furthermore, the verifier is clearly aware of and completely understands the requirements for registration stipulated by the GHG CleanProject[®] Registry.

(ii) Risk-based approach

In accordance with the ISO 14064-3 Standard and in line with the GHG CleanProjects[®] Registry requirements, the verification team undertook a comprehensive risk assessment, evaluating the potential risks of material misstatements, misinterpretation or data omissions. The risk-assessment covers all data /parameters, which are identified by the applied approved CDM methodologies (GHG quantification methodology) to be monitored over the monitoring period. The given methodologies, AMS-III.D v.21 and AMC-I.C v.21, specify the measurement procedure and the monitoring frequency of the monitored parameters. The risk assessment is summarized in the following table (Table 3)

Table 3: Risk assessment

Activity data/Potential risk	Inherent Risk ¹	Control Risk ²	Detection risk ³	Justification
Baseline emission – methane recovery: $BE_y = GWP_{CH_4} * D_{CH_4} * UF_b * \sum_{j,LT} MCF_j * B_{0,LT} * Q_{manure,j,LT,y} * SVS_{j,LT,y}$				
<i>MCF_j</i> - Annual methane conversion factor	low	low	low	Country specific MCF values are determined for the liquid cattle manure and adopted for the liquid pig manure as well. For all other animal manure types, the default values from the Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: vol 4 chapter 10, table 10 are used. Based on the climatic conditions the values for cool climate are used. ! The applied values are clearly presented in the ER calculation workbook, with the according data reference
<i>B_{0,LT}</i> - Maximum methane producing potential of the volatile solid generated for an animal type LT	low	low	low	As per AMS-III.D v.21, the default values from the Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: vol 4 chapter 10 table 10a-8, are used
<i>SVS_{j,LT,y}</i> - Specific volatile solid content of	Low	Low	Low / medium	The values are based on country specific data from the database generated by Ökostrom Schweiz and

¹ risk associated with the complexity of the project and tasks being performed;

² risk that the controls of the GHG project will not prevent or detect a material discrepancy

³ risk that the verifier will not detect any material discrepancy that has not been corrected by the controls of the GHG project.

Activity data/Potential risk	Inherent Risk ¹	Control Risk ²	Detection risk ³	Justification
animal manure from livestock type LT				validated by a 3rd party for data plausibility. ! The applied values are clearly presented in the ER calculation workbook, with the according data reference
$Q_{manure,j,LT,y}$ - Quantity of manure treated from livestock type (LT)	Low	Low	Low	<p>Since the Switzerland has established an official mandatory reporting for mass flow of animal manure, i.e. SwissBilanz - in case that the manure is not transferred outside the farm, and HoDuFlu - In case that the manure is transferred between livestock farms), the biogas installations are obliged to participate and trace all manure flows in and out, per animal type. Therefore, the amount of manure which is utilized in an installation is seen as Q_{manure}.</p> <p>This value is recorded in the HoduFlu as inflow to the installation and is monitored by the respective national authorities regularly. The HoduFlu records provide information on date of manure delivery, name of the farm, type and amount of manure, as well as other mass balance values.</p> <p>The Swissbilanz provide tables with detailed information on manure data assigning specific potential quantity of manure, depending on the animal type, age and managing system. Special factors are assigned in case that the animals are partially or totally accommodated on pasture. Therefore, the amount of manure generated by the own livestock farm is clearly recorded within the Swissbilanz</p>
Baseline emissions - displacement of fossil fuel used for thermal energy $BE_{thermal,CO_2} = (EG_{thermal,y} / \eta_{BL,thermal}) * EF_{FF,CO_2}$				

Activity data/Potential risk	Inherent Risk ¹	Control Risk ²	Detection risk ³	Justification
$EG_{thermal,y}$ - Net quantity of thermal energy supplied by the project activity	Low	Low	Low	the parameter is monitored continuously and the data is aggregated on an annual base. The utilized heat energy is measured by calibrated heat meters, which are also used for billing. Those data are recorded by the biogas plant owners. Nevertheless, only the portion of the utilized heat energy, which substitutes for the thermal energy generated by fossil fuels shall be used for the calculation of the baseline emission. In general, the displacement of the fossil fuel thermal energy is also clearly recorded.
$\eta_{BL,thermal}$ - Efficiency of the plant using fossil fuel	Low	Low	Low	For the purpose of conservativeness the parameter is apportioned to be 100%, whereby the general fossil fuel plant efficiency is about 95%
EF_{FF,CO_2} - CO2 emission factor of the fossil fuel	Low	Low	Low	IPCC default emission factor is used
Project emissions – methane recovery:				
physical leakage of biogas in the manure system	Low	Low	Low	As per AMS-III.D v.21, the physical leakage of biogas in the manure system is assigned to be 10% of the generated biogas. Upon the professional experience of the project developer and the verification team, the adopted ratio is considered to be reasonable.

(iii) Sampling plan

Based on the result of the risk-assessment (see Table 3) the overall risk of material misstatements, misinterpretation or data omissions is assessed to be low. The involved data are based either on well-known default values (IPCC, publically available national records) or on values, which originate from official national sources and invoice statements.

In the course of the preliminary review, it was determined that an onsite assessment for the monitoring period in question would not be necessary due to the fact that an onsite witness of 4 biogas plants was conducted already early this year (February 2020) as part of the

verification of the first monitoring period 01.01.2016 – 31.12.2017. In addition, due to the COVID 19 pandemic, strict travel restriction are in place and business trips are avoided, when possible.

The four biogas plants visited during the first monitoring period are:

- BGA Luder, operated by Mr. Beat Luder-maThys
- BGA Bütschwil, operated by Mr. Urs Biétrich
- BGA Jordi, operated by Mr. Franz Jordi-Camenzin
- Schürch Bütikofen, operated by Mr. Beat Schürch.

The emission reductions generated by those 4 biogas plants account for 18.69% and 19.76% of the total ERs of the project activity respectively for the vintage 2016 and 2017 and for 21.31% and 22.50%, respectively for the vintage 2018 and 2019.

Table 4: Assessment of the sample size for each monitoring parameter

Activity data/Potential risk	Monitoring frequency	Sample size
MCF_j - Annual methane conversion factor	annual	All relevant data for each year
$B_{0,LT}$ - Maximum methane producing potential of the volatile solid generated for an animal type LT	Upon availability of more recent default value for the parameter	All relevant data for each year
$SVS_{j,LT,y}$ - Specific volatile solid content of animal manure from livestock type LT	annual	All relevant data for each year
$Q_{manure,j,LT,y}$ - Quantity of manure treated from livestock type (LT)	The data are recorded continuously by the official mandatory reporting for mass flow of animal manure. Annual reporting	All cumulative entries of annual quantity of manure delivered to the biogas plant per livestock type for the 12 facilities was disclosed to the verification team. In addition, the annual query form for each project participant was provided to the verification team. i.e. 12 samples out of 24
$EG_{thermal,y}$ - Net quantity of thermal energy supplied by the project activity	Recorded continuously Reported annually	The Pronovo-bill for 2 installations for the year 2018 and 2019 was disclosed to the verification team. The annual estimation calculations and background, in form of excel-sheets for five further installations were

Activity data/Potential risk	Monitoring frequency	Sample size
		shared with the verification team. i.e 13 samples out of 24
$\eta_{BL,thermal}$ - Efficiency of the plant using fossil fuel	n.A	n.A
EF_{FF,CO_2} - CO2 emission factor of the fossil fuel	Upon availability of more recent default value for the parameter	All relevant data for each year
physical leakage of biogas in the manure system	Annual	n.a.

In addition to the primary data (Table 4) the annual row-data query forms, which are requested from the participating biogas installations by the PO Ökostrom Schweiz, have been provided to the verification team as scan.

Eventually, the verification team confirms that it has the complete understanding of the project approach and the specifics of the applied approved CDM methodologies. Furthermore, all monitoring parameters are proven to be monitored in accordance with the respective monitoring methodologies. All records are reliable and traceable to the primary data source.

(iv) Implementation of the project activity

Based on the monitoring report for the current (second) monitoring period “Climate protection by small-scale biogas in Switzerland GHG Report – Bundle II – in accordance with ISO 14064; Monitoring periods 2018 and 2019” v002, dated 22.09.2020 and the observation during the onsite audit for the previous (first) monitoring period, the Verifier can positively confirm that the biogas installations are operational and utilize mainly animal manure (> 50%) for the generation of electricity and thermal energy. There is no evidence or indication on a different project implementation.

Furthermore, the Verifier confirms that the project is operated and implemented as indicated in the GHG Project Plan “Climate protection by small-scale biogas in Switzerland – Bundle II – in accordance with ISO 14064” v01, dated 14.01.2020. The biogas plants of the project activity are in conformity to the Swiss legal regulations. The project proponent has consent to establish and operate from the competent authorities. The verifier was provided with documentary evidence to establish the project implementation by reviewing the online database for biogas installations.

(v) Accuracy of GHG Emission Reduction and Removal Calculations

The GHG emission reductions generated from the project activity are determined based on the CDM approved methodologies

- AMS-III.D: Methane recovery in animal manure management systems, v21 and
- AMS-I.C: Thermal energy for user with or without electricity, v21

As per the AMS-I.C & AMS-III.D, for the calculation of the GHG emission reductions and removals caused by the project activity, following parameters are required:

Monitored parameter 1: Net quantity of thermal energy supplied by the project activity – in the case of the project activity, the parameter is the amount of thermal energy which is delivered to an end user and thus represents the energy which in the absence of the project activity would have been generated by fossil fuels. Following AMS-I.C, the parameter is monitored continuously and the data is aggregated on an annual base. During the verification data was collected on all meters in order to check compliance with applicable legislation related to accuracy and calibration. Datasheets and calibration as well as additional information has been retrieved to review the general reliability of heat metering. The Verifier confirms that the quantity of thermal energy, which is delivered to the end-user is recorded and substantiated where applicable by the issued invoices. Additionally, some thermal energy is utilized internally, i.e. for heating the digestion tanks, drying of the substrates, etc. The consistence of reported data and invoice was randomly checked by the Verifier.

Monitored parameter 2: Quantity of manure treated from livestock type (LT) (Q_{manure}) – represent the amount of manure which is processed in the 14 biogas installations of the project. Therefore, it corresponds to the amount of manure that would have decayed anaerobically in the absence of the project activity.

Since the Switzerland has established a Web application for simple and harmonized management of manure flows (HoduFlu), the biogas installations are obliged to participate and trace all manure flows in and out, per animal type. Therefore, the amount of manure which is delivered to the installation is seen as Q_{manure} . This value is recorded in the HoduFlu as inflow to the installation and is monitored by the respective national authorities regularly. The HoduFlu records provide information on date of manure delivery, name of the farm, type and amount of manure, as well as other mass balance values.

For the calculation of the GHG emission reductions and removals of the project as per the applied methodologies AMS-I.C & AMS-III.D, a set of additional parameters is required. Those parameters and the source of the applied values are listed below:

- Efficiency of the plant using fossil fuel ($\eta_{\text{BL,thermal}}$) that would have been used in the absence of the PA – in order to be more conservative, the carbon consultant assigned this parameter to be 1 (i.e. efficiency of 100%), even though the general efficiency is about 95%.
- The CO₂ emission factor of the fossil fuel ($EF_{\text{FF,CO}_2}$) that would have been used in the baseline plant. IPCC default emission factors are used.
- Maximum methane producing potential of the volatile solid generated for an animal type LT ($B_{0,\text{LT}}$) – the default values from the Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: vol 4 chapter 10 table 10a-8, are used.
- Annual methane conversion factor (**MCF**) for the baseline animal manure management system j – country specific MCF values are determined for the liquid cattle manure and adopted for the liquid pig manure as well. For all other animal manure types, the default values from the Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: vol 4 chapter 10, table 10 are used. Based on the climatic conditions the values for cool climate are used.

- Specific volatile solid content of animal manure from livestock type LT (**SVS_{LT}**) is based on country specific data from the database generated by Ökostrom Schweiz and validated by a 3rd party for data plausibility
- Global warming potential (**GWP**) of CH₄, which in the IPCC Fifth Assessment Report 2014, chapter 8, table 8.7, was determined to be 28 for the time horizon of 100 years.
- CH₄ density (**D_{CH4}**) = 0.00067 t/m³ as per the AMS-III.D
- Model correction factor to account for model uncertainties (**UF_b**), which was assigned to be 0.94 as per the AMS-III.D

As suggested by the applied methodologies and described in the Monitoring Report for the monitoring period in question, the quantity of manure fed into the biogas installations as well as the amount of utilized heat energy have been directly recorded. Those records are managed by the biogas installations' managers. The Verifier observed the data flow and confirms that the reported quantity of manure and amount of thermal energy are accurate and the data are processed appropriately.

Furthermore, the process of calculation of emission reductions was thoroughly discussed during the site visit with the carbon consultant and the project owner. Therefore, the Verifier confirms that the main source of data for determining GHG emission reduction is the HoduFlu and SwissBilanz mass-flow protocol and the invoices for delivered heat energy. Eventually, the carbon consultant developed a monitoring workbook, displaying the GHG emission reduction calculations, which are discussed in the following sub-sections

(vi) Baseline emissions

The baseline of the project is pre-defined in AMS-III.D as

'The baseline scenario is the situation where, in the absence of the project activity, animal manure is left to decay anaerobically within the project boundary and methane is emitted to the atmosphere.'

Considering the fact that the quantity of manure utilized by each installation is directly recorded, the methodology suggest that the baseline emissions are determined as

$$BE_y = GWP_{CH_4} * D_{CH_4} * UF_b * \sum_{j,LT} MCF_j * B_{0,LT} * Q_{manure,j,LT,y} * SVS_{j,LT,y}$$

Applying the values for the not-monitored parameters as indicated in the previous sub-section (3.v) of the current report and the cumulative amount of manure per type utilized in the 14 installations, the baseline emissions due to methane recovery are determined as

$$BE_{AMS-III.D} = 4\,539 \text{ tCO}_{2,eq} \text{ - for the year 2018}$$

$$BE_{AMS-III.D} = 4\,935 \text{ tCO}_{2,eq} \text{ - for the year 2019}$$

Summing up to total baseline emissions of **BE_{AMS-III.D} = 9474 tCO_{2,eq}** for total monitoring period 01.01.2018 – 31.12.2019, calculated as per the AMS-III.D.

Furthermore considering the AMS-I.C, the simplified baseline is the fossil fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the displace fossil fuel.

Eights of the biogas installations bundled in the proposed project activity are claiming ERs for the generated thermal energy, namely Gansner Biogas, BGA Jordi, Halbmil Biogas, Hawisa, Winzler, BGA Val Biogas, BGA Martin and BGA Josef Ott. The other 6 installations generate and utilize heat, however the last does not substitute for fossil fuel usage, rather for electricity or wood.

Considering the selected baseline scenario, the AMS-I.D methodology suggests that the baseline emissions for heat produced using fossil fuels are calculated as

$$BE_{thermal,CO_2} = (EG_{thermal,y} / \eta_{BL,thermal}) * EF_{FF,CO_2}$$

Applying the values for the not-monitored parameters as indicated in in the previous subsection (3.v) of the current report and considering the amount of heat energy generate, the baseline emissions due to substitution of fossil fuels are determined as

$$BE_{thermal} = 355 \text{ tCO}_{2,eq} \text{ – for the year 2018}$$

$$BE_{thermal} = 358 \text{ tCO}_{2,eq} \text{ – for the year 2019}$$

Summing up to total baseline emissions of $BE_{AMS-I.C} = 713 \text{ tCO}_{2,eq}$ for the monitoring period in question, calculated as per the AMS-I.C. The total calculated baseline emissions for the current monitoring period are slightly less than the ones for the previous monitoring period.

(vii) Project Emissions

The project emissions of applied methodology AMS-III.D are define as

- Physical leakage of biogas in the manure management systems which includes production, collection and transport of biogas to the point of flaring/combustion or gainful use ($PE_{PL,y}$);
- Emissions from flaring or combustion of the gas stream ($PE_{flare,y}$);
- CO₂ emissions from use of fossil fuels or electricity for the operation of all the installed facilities ($PE_{power,y}$);
- CO₂ emissions from incremental transportation distances;
- Emissions from the storage of manure before being fed into the anaerobic digester ($PE_{storage,y}$).

And in methodology AMS-I.C as

- CO₂ emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the 'Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion';
- CO₂ emissions from electricity consumption by the project activity using the latest version of the 'Tool to calculate baseline, project and/or leakage emissions from electricity consumption';
- Any other significant emissions associated with project activity within the project boundary;
- For geothermal project activities, project participants shall account for the following emission sources, where applicable: fugitive emissions of carbon dioxide and methane due to release of non-condensable gases from produced steam; and carbon dioxide emissions resulting from combustion of fossil fuels related to the operation of the geothermal power plant

For the project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II', the carbon consultant discussed each of the 5 potential project emission source. The carbon consultant's opinion based on his professional experience in biogas installations is revealed and substantiated as well.

The project emissions, due to the physical leakage of biogas in the manure system, are estimated as 10% of the methane producing potential of the manure fed into the biogas installations, as suggested by the methodology AMS-III.D. In the course of the site visit, the topic of project emissions due to collection, transport and storage of the manure has been discussed with the biogas installations' managers, the PO representatives and the carbon consultant.

The installation managers highlighted that they are interested in utilizing only fresh manure. They pay special attention that the manure is delivered to the installations in short terms after being collected from the animal farms. Therefore, the biogas plants are delivered with manure from the near farms to reduce the transportation cost and time.

The use of fossil fuels for the transportation of co-substrates to the biogas plants was scrutinized as well. The addressed installation managers indicated that for the sake of cost-saving, they are interested in co-substrates with short transportation routes. Furthermore, the PO representative indicated that they coordinate most of the co-substrate flows, considering the distances and the installation demands. It was also mentioned that the energetic co-substrates are often subject to longer delivery routes.

As part of the audit, details on co-substrate transportation to 3 biogas plants for the vintage 2018 and 2019 was required, i.e. amount and origin of each co-substrate. Based on these data and on the assumption that the co-substrates are transported by diesel trucks, the verification team calculated the actual project emissions due to transportation of co-substrate (see Table 5 and Table 6).

Table 5: CO₂ emissions due to transportation of co-substrates to the 3 biogas installation in the monitoring period 01.01.2018 – 31.12.2018

Vintage 2018			
Installation	BE _{AMS IIIID} [tCO _{2,eq.}]	Estimated PE _{AMS IIIID} = 10% [tCO _{2,eq.}]	Calculated PE _{AMS IIIID} [tCO _{2,eq.}] (% of BE _{AMS IIIID})
Gansner Biogas	160	16	8.3 (≈ 5.2%)
Halbmil Biogas	332	33	5.18 (≈ 1.6%)
BGA Val Biogas	620	62	11.65 (≈ 1.9%)

Table 6: CO₂ emissions due to transportation of co-substrates to the 3 biogas installation in the monitoring period 01.01.2019 – 31.12.2019

Vintage 2019			
Installation	BE _{AMS IIIID} [tCO _{2,eq.}]	Estimated PE _{AMS IIIID} = 10% [tCO _{2,eq.}]	Calculated PE _{AMS IIIID} [tCO _{2,eq.}] (% of BE _{AMS IIIID})

Gansner Biogas	153	15	7.4 (≈ 4.8%)
Halbmil Biogas	323	32	6.45 (≈ 2.0%)
BGA Val Biogas	592	59	13.03 (≈ 2.2%)

Eventually, the verification team confirms that the assumption that the Project Emissions account for 10% of the emission reductions due to methane recovery is conservative and lead to overall project emissions of

$$PE = 454 \text{ tCO}_{2,eq} \text{ for year 2018}$$

$$PE = 492 \text{ tCO}_{2,eq} \text{ for year 2019,}$$

resulting in **PE = 946 tCO_{2,eq}** for the monitoring period 01.01.2018 – 31.12.2019.

(viii) Leakage

In line with applied methodology AMS-III.D and AMS-I.C, no leakage is to be considered for the project activity, i.e. **LE = 0 tCO_{2,eq}** for the monitoring period 01.01.2018 – 31.12.2019.

(ix) Overall GHG Emission Reductions and Removals

The overall GHG emission reduction generated by the project 'Climate protection by small-scale biogas in Switzerland – Bundle II' for the monitoring period 01.01. – 31.12.2018 and 01.01. – 31.12.2019 is given as the sum of the baseline emissions due to methane recovery from animal manure and due to generation of thermal energy that displaces fossil fuel use, minus the potential project emissions as discussed in section (vii) of this report, i.e.

$$ER = BE_{AMS-I.C} + BE_{AMS-III.D} - PE - LE$$

So that the achieved verified GHG emission reductions due to the project are:

$$ER = 4\,440 \text{ tCO}_{2,eq} \text{ for the monitoring period 01.01.2018 – 31.12.2018}$$

$$ER = 4\,801 \text{ tCO}_{2,eq} \text{ for the monitoring period 01.01.2019 – 31.12.2019}$$

$$ER = 9\,241 \text{ tCO}_{2,eq} \text{ for the entire monitoring period 01.01.2018 – 31.12.2019.}$$

In conclusion, all calculations made in the ER workbook for the monitoring period, which was provided by carbon consultant, have been verified through re-computation by the Verifier. The data used in the spreadsheet was tracked back to its origin at a sample rate with 0 errors and therefore no further samples were taken. The consistency of all values has been verified.

(x) Quality of Evidence to Determine GHG Emission Reductions and Removals

The monitoring procedure follows strictly the monitoring procedure as stipulated in the approved CDM methodology AMS- III.D and AMS – I.C. The baseline emission calculations are based on the direct data on quantity and type of manure fed into the referred biogas installations and the amount of thermal energy, which is generated by the installations and sold to external users.

The Verifier witnessed that those data are reported by the biogas plants' managers to the carbon consultant, who transferred the information to a workbook and eventually calculated the baseline- and project emissions for each installation and methodology as well as the total net GHG emission reductions generated by the project activity.

In order to ensure data accuracy and reliability, the values implied for the emission reduction calculation are compared to ones obtained from other unbiased source, such as the HoduFlu and SwissBilanz records and bills for thermal energy to the end users.

As already mentioned in the previous sections of the current report, the not-monitored parameters, such as maximum methane producing potential of the volatile solid, average dry matter content, specific volatile solids content, density of methane, global warming potential methane and the emission factor of fossil fuels (e.g. heating oil and Liquid Petroleum Gas) for the heating system, etc are traced to IPCC default values and to values from the database generated by Ökostrom Schweiz and validated by a 3rd party for data plausibility.

TÜV Rheinland Energy GmbH verifies that adequate monitoring mechanisms have been implemented for the monitoring period 01.01.2018 – 31.12.2019 of the project 'Climate protection by small-scale biogas in Switzerland – Bundle II'. The required parameters have been monitored on a regular basis, which is in line with the applied CDM methodologies.

3.1. Verification Records

The verification of the second monitoring period 01.01. - 31.12.2018 and 01.01. – 31.12.2019 of the project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II' is based on the following documents:

- Project Plan of the project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II' v001 dated 14.01.2020
20200114_ISO_Project_Plan_ÖS_Bundle II_2016-2017.pdf
- Monitoring Plan "Climate protection by small-scale biogas in Switzerland GHG Report – Bundle II – in accordance with ISO 14064; Monitoring periods 2018 and 2019" v001, dated 04.08.2020
20200818_ISO_GHG Report_ÖS_v001_Bundle II_Monitoring 2018-2019.pdf
- Final Monitoring Plan "Climate protection by small-scale biogas in Switzerland GHG Report – Bundle II – in accordance with ISO 14064; Monitoring periods 2018 and 2019" v002, dated 22.09.2020
20200922_ISO_GHG Report_ÖS_v002_Bundle II_Monitoring 2018-2019.pdf;
- ER calculation workbooks for vintage 2018 and vintage 2019 v001, dated 18.08.2020
20200818_Monitoringreport_ISO_v001_Bundle II_2018.xls and
20200818_Monitoringreport_ISO_v001_Bundle II_2019.xls;
- Revised ER calculation workbooks for vintage 2018 and vintage 2019 v002, dated 22.09.2020
20200922_Monitoringreport_ISO_v001_Bundle II_2018.xls and
20200922_Monitoringreport_ISO_v001_Bundle II_2019.xls;
- Primary data query filled out by each biogas installation bundled in the project for the vintage 2018 and vintage 2019
ISO_2018_Fragebogen_01 Gansner Biogas.xlsx
ISO_2019_Fragebogen_01 Gansner Biogas.xlsx

ISO_2018_Fragebogen_02 BGA Bütschwil.xlsx
ISO_2019_Fragebogen_02 BGA Bütschwil.xlsx
ISO_2018_Fragebogen_03 BGA Jordi Camenzind.xlsx
ISO_2019_Fragebogen_03 BGA Jordi Camenzind.xlsx
ISO_2018_Fragebogen_04 BGA Luder.xlsx
ISO_2019_Fragebogen_04 BGA Luder.xlsx
ISO_2018_Fragebogen_05 Biogas Spitzhof.xlsx
ISO_2019_Fragebogen_05 Biogas Spitzhof.xlsx
ISO_2018_Fragebogen_06 Halbmil Biogas GmbH.xlsx
ISO_2019_Fragebogen_06 Halbmil Biogas GmbH.xlsx
ISO_2018_Fragebogen_07 Hawisa GmbH.xlsx
ISO_2019_Fragebogen_07 Hawisa GmbH.xlsx
ISO_2018_Fragebogen_08 Winzeler.xlsx
ISO_2019_Fragebogen_08 Winzeler.xlsx
ISO_2018_Fragebogen_09 Langackerhof-Hochwald.xlsx
ISO_2019_Fragebogen_09 Langackerhof-Hochwald.xlsx
ISO_2018_Fragebogen_10 Val Biogas GmbH.xlsx
ISO_2019_Fragebogen_10 Val Biogas GmbH.xlsx
ISO_2018_Fragebogen_11 Martin Biogas Sàrl.xlsx
ISO_2019_Fragebogen_11 Martin Biogas Sàrl.xlsx
ISO_2018_Fragebogen_12_Ott Josef.xlsx
ISO_2019_Fragebogen_12_Ott Josef.xlsx
ISO_2018_Fragebogen_13 Davos Biogas GmbH.xlsx
ISO_2019_Fragebogen_13 Davos Biogas GmbH.xlsx
ISO_2018_Fragebogen_14 BGA Schürch.xlsx
ISO_2019_Fragebogen_14 BGA Schürch.xlsx

- Data on co-substrates delivery to the BGA Gansner for the year 2018 and 2019
01_CO-Substrate_2018.xlsx and
01_CO-Substrate_2019.xlsx
- Data on co-substrates delivery to the Halbmil biogas for the year 2018 and 2019
04_CO-Substrate_2018.xlsx
04_CO-Substrate_2019.xlsx
- Data on co-substrates delivery to the BGA Val Biogas for the year 2018 and 2019
09_CO-Substrate_2018.xlsx
09_CO-Substrate_2019.xlsx
- Pronovo – extract indicating the total heat fed in the network by Halbmil Biogas for the year 2018 and 2019
ID 4 Wärmenutzung Pronovo 2018.pdf
ID 4 Wärmenutzung Pronovo 2019.pdf
- Estimation of the displaced fossil fuels by heat generated by BGA Gansner for the year 2018 and 2019
ID 1 Aufteilung Wärmenutzung 2018.xlsx
ID 1 Aufteilung Wärmenutzung 2019.xlsx
- Estimation of the displaced fossil fuels by heat generated by BGA Val Biogas for the year 2018 and 2019
ID 9 Val Biogas GmbH_Wärmenutzung_2018_2019.xlsx

- Estimation of the displaced fossil fuels by heat generated by BGA Josef Ott for the year 2018 and 2019
ID 12 Wärmenutzung_2018_2019.xlsx
- Extract of the SwissBilanz and of the HODUFLU for the 14 biogas plants bundled in the project activity for the vintage year 2018 and 2019
04_HODUFLU 2018.pdf
07_HODUFLU 2018.pdf
ID 08_HODUFLU 2018.pdf
ID 08_HODUFLU 2019.pdf
ID 05_Hofdünger_2019.xls
ID 09_Hofdünger_2019.xls
ID 01_Hofdünger_2018.xls
ID 02_Hofdünger_2018.xls
ID 03_Hofdünger_2019.xls
ID 04_Hofdünger_2018.xls
ID 06_Hofdünger_2018.xls
ID 07_Hofdünger_2018.xls
ID 10_Hofdünger_2019.xls
ID 12_Hofdünger_2019.xls
ID 13_Hofdünger_2019.xls
ID 14_Hofdünger_2018.xls

The provided documents and additional information was used by the verification team to prove the correctness and consistency of the reported GHG emission reductions generated from the project activity during the monitoring period in question.

All obtained supportive document in terms of project documentation, measurement records, delivery records, pictures, calculation spreadsheets, etc. are accordingly organized and stored for at least 2 years.

3.2. Facts discovered after the verification

None

As per the selected approved methodologies AMS-III.D. v.21 and AMS-I.C. v.21, following parameters are subject to monitoring at each installation during the monitoring period:

- Net quantity of thermal energy supplied by the project (EG_{thermal})
- Volume of manure fed into digester (Q_{Manure});
- Project emissions from fossil fuel combustion (PE_{FF})
- Net quantity of biomass consumed (B_{Biomass})
- Fraction of time (FT);
- Mass of each co-ferment

The volume of manure fed into the digester, is directly incorporated in the formula given by the CDM methodology AMS-III.D for the determination of baseline emissions due to methane recovery from animal manure. Each of the 14 installations has reported the annual utilized volume of manure per type, and substantiated those values by the annual mass-balance sheet records from the official HoduFlu and the SwissBilanz, official mandatory reporting platform for mass flow of animal manure.

The amount of thermal energy, which displaces fossil fuel use, is monitored monthly and is generally based on the payment claims to the clients. It is important to mention that ERs are claimed only for the thermal energy which is utilized and substitutes for fossil fuels and not for the heat energy generated by the project activity. Unfortunately, due to process specification and climatic conditions, heat supply by the biogas installations does not perfectly match the local heat demand, so that generally excessive heat is released in summer, or the demand could not be covered in winter.

In course of the first audit, it was observed that the thermal energy generated by the four visited biogas plants is recorded by not-calibrated thermal energy metering devices. Furthermore, emission reductions for only a small amount of the generated and utilized thermal energy can be claimed, since the main source of heat in the past in the region was wood, i.e. biomass.

The monitoring results were primarily reviewed by checking and recalculating the excel workbook which aggregates all manure types and mass-flows. These values are then converted to an amount of methane based on specific methane yield factors, conversion factors and dilution calculation. All the input parameter sources of the latter calculation factors were reviewed for correctness.

4. VERIFICATION CONCLUSION

The verification team of TÜV Rheinland performed the verification for the project 'Climate protection by small-scale biogas in Switzerland – Bundle II' against the requirements as specified within the Voluntary Carbon Offset Standard ISO 14064-3, applying a materiality threshold of 5% and a reasonable level of assurance as postulated in ISO 14064-2, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The verification team concluded that the project activity as described in the final GHG Project Plan v.1 dated to 14.01.2020 and the final Monitoring Plan v.2 dated to 22.09.2020 for the monitoring period 01.01.2018 – 31.12.2019, meets all relevant requirements of the above-defined criteria. TÜV Rheinland therefore issues a positive verification opinion.

Verified GHG emission reductions and removals in the above verification period 01.01.2018 – 31.12.2018 and 01.01.2019 - 31.12.2019 are rounded up and summarized as following:

Year	BE _{AMS-III.D} + BE _{AMS-I.C} [tCO _{2,eq}]	PE [tCO _{2,eq}]	LE [tCO _{2,eq}]	Net GHG ER [tCO _{2,eq}]
Year 2018	4 539 + 355	454	0	4 440
Year 2019	4 935 + 358	492	0	4 801
Total				9 241

5. VERIFICATION STATEMENT

GHG CleanProject[®] Registry
178 Rexdale Blvd.
Toronto, ON
Canada M9W 1R3

09.11.2020

RE: Verification Statement for "Climate protection by small scale biogas in Switzerland" project under ISO 14064 standard, monitoring period 01.01.2018 – 31.12.2018 and 01.01.2019 – 31.12.2019

Genossenschaft Ökostrom Schweiz with registered office at Technoparkstrasse 2, 8406 Winterthur, the Switzerland, has engaged TÜV Rheinland Energy GmbH to review and verify the GHG Monitoring Plan for the monitoring period from 01.01.2018 until 31.12.2018 and from 01.01.2019 until 31.12.2019 for the project activity 'Climate protection by small-scale biogas in Switzerland – Bundle II' and all assertions related to the GHG project against the requirements as specified within the Voluntary Carbon Offset Standard ISO 14064-3, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The verification of the Emission Reductions generated from the project activity for the indicated period is conducted in accordance to the approved CDM methodology AMS - III.D. v.21 and AMS – I.C v.21 to a reasonable level of assurance by applying a materiality threshold of 5%. The project information has been verified and the Verification Report 21250326 'Verification report of the project 'Climate protection by small-scale biogas in Switzerland – Bundle II' v1.1 was issued on 09.11.2020. The Verification Report includes all relevant information and evidence acquired during the verification process.

Based on the review of the requested and disclosed substantiations, the validation team comes to the conclusion that the assertions are made in accordance with the requirements of the Voluntary Carbon Offset Standard ISO 14064-3 and are material correct and fairly represent the required parameters without material discrepancies.

The Emission Reductions claimed for the monitoring period in question (01.01.2018 – 31.12.2019) are verified to be 9 241 tCO_{2,eq}, i.e.

Vintage 2018: 4 440 tCO_{2,eq}

Vintage 2019: 4 801 tCO_{2,eq}.

Cologne, 09.11.2020



Denitsa Gaydarova-Itrib



Norbert Heidelmann

6. CONFLICT OF INTEREST REVIEW CHECKLIST

The verifier and the verification team ensure that they are truly independent from the project, project proponent, quantifier, and/or other agents related to the project. The verifier confirm that any actual or potential conflicts of interest with the project proponent and the intended users of the GHG information have been avoid. Guiding principles and verification activities from ISO 14064-3 are reproduced below, in a tabular format.

	Yes	No	Details
<p>Independence</p> <p>Remain independent of the activity being verified, and free from bias and conflict of interest.</p> <p>Maintain objectivity throughout the verification to ensure that the findings and conclusions will be based on objective evidence generated during the verification.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See internal accreditation documentation in line with ISO 14065
<p>Ethical conduct</p> <p>Demonstrate ethical conduct through trust, integrity, confidentiality and discretion throughout the verification process.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<p>Fair presentation</p> <p>Reflect truthfully and accurately verification activities, findings, conclusions and reports. Report significant obstacles encountered during the verification process, as well as unresolved, diverging opinions among verifiers, the responsible party and the client.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<p>Due professional care</p> <p>Exercise due professional care and judgment in accordance with the importance of the task performed and the confidence placed by clients and intended users. Have the necessary skills and competences to undertake the verification.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
