RINA SERVICES
classification, certification, inspection & testing

Verification and certification report form for GS project activities

VERICATION AND CERTIFICATION REPORT	
Title of the project activity	Bolu Landfill Gas to Energy Project, Turkey
GS Reference number of the project activity	GS764
Version number of the verification and certification report	1.2
Completion date of the verification and certification report	05/09/2017
Monitoring period number and duration of this monitoring period	1st Period 01/11/2014 – 31/07/2016
Version number of monitoring report to which this report applies	Version 06 of 28/08/2017
Crediting period of the project activity corresponding to this monitoring period	12/08/2011 - 11/08/2018
Project participant(s)	CEV Marmara Enerji Uretim San. Ve Tic. Ltd. Sti. (Private Entity, Project Owner)
Host Party	Turkey
Sectoral scope(s), selected methodology(ies)	Sectoral scope 13: Waste Handling and Disposal AMS-III.G, Landfill Methane Recovery --- Version 6.0.0
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	43,311
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	28,149
Name of DOE	RINA Services S.p.A. (RINA)
Name, position and signature of the approver of the verification and certification report	Laura Severino – Sector Manager Sustainability, Environment & Climate Change

SECTION A. Executive summary

Purpose and general description of the project

The purpose of the project activity is the generation of the electricity by using the LFG from the landfill. It involves the installation of gas engines, gas extraction system, flaring system. The total capacity of the project activity is 1.1 MW as confirmed through the temporary acceptance protocol /20/. The electricity produced is delivered to the Turkish national grid (TEIAS). The emission reductions are estimated to be 125,388 tCO_2e.

The project activity aims to reduce the greenhouse gas emissions in Turkey by replacing fossil fuel power generation and contribute to the development of the waste energy sector in Turkey, as well as aims to support the local economy by creating local employment and providing equipment locally.

Location

The project is located at Yukarisolu Village, Center District within boundaries of Bolu Province.

Scope of verification

Verification is the periodic independent review and ex-post determination by a DOE of the monitored reductions in GHG emissions that have occurred as a result of the registered GS project activity during a defined monitoring period. Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified. The objective of this verification is to verify and certify emission reductions reported for the Gaziantep Landfill Gas to Energy Project, Turkey for the period 01/11/2014 – 31/07/2016.

The scope of the verification is to verify that:

- The project activity has been implemented and operated in accordance with the registered PDD or any approved revised PDD;
- The monitoring plan, including compliance with any guidance provided by the Board regarding deviations from the provisions of a registered plan and/or methodology;
- The data and calculation of GHG emission reductions have been assessed to correctly support the emission reductions being claimed.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified.

Verification process

Verification is conducted using RINA procedures in line with the GS requirements and requirements specified in the CDM Validation and Verification Standard available at the time of the verification starts, and applying standard auditing techniques. RINA asses and determines that the implementation and operation of the project activity, and steps taken to report emission reductions comply with the GS criteria. The verification assessment involved a document review of relevant documentation and the on-site visit.

Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

Conclusion

RINA commissioned by CEV Marmara Enerji Uretim San. Ve Tic. Ltd. Sti. is performing the verification of the emission reductions reported for the project activity Bolu Landfill Gas to Energy Project, Turkey, GS Registration Reference No. 764 for the monitoring period 01/11/2014 – 31/07/2016, with regard to the relevant GS requirements and principles for project activities. The project was validated by TUVRheinland (validation report N° 21214441, version 04 of 11/07/2012).

The GHG emission reductions are calculated on the basis of the approved methodology AMS-III.G, Landfill Methane Recovery --- Version 6.0.0 and the monitoring plan included in the registered PDD version 04 of 11/07/2012. In our opinion the GHG emission reductions reported for the project in the monitoring report version 06 of 28/08/2017 are fairly stated.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader, Verifier, Technical Expert TA 13.1	IR	Kiratli	Tugce	RINA Turkey	✓	✓	✓	✓

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	LIU	Huifeng	RINA China
2	Approver	IR	Severino	Laura	RINA Head Office

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	The qualification and capability of the human resource	*L*	Personnel qualified to monitor the project activity. Procedure available.	Interview personnel during the onsite visit
2	Raw data collection, transfer and storage process	*M*	Energy data and biomass consumption is automatically measure and transferred manually to the spreadsheet. Some parameters are manually registered and transferred to the CERs spreadsheet. Errors in the data transference have direct impact in the CERs calculation	Check all the inputs for monitored parameters.
3	Measuring and recording method	*L*	Data is measured and recorded automatically (energy and biomass consumption). Data for project emissions are manually registered	Check all the inputs for monitored parameters.
4	Calibration records for monitoring equipment	*L*	Calibration is conducted	Check calibration certificates available for the energy meters and scales
5	Metering records	*L*	Energy data is measured by sealed meters	Check all the inputs for monitored parameters.

C.2. Consideration of materiality in conducting the verification

The project activity happens at a single site and export to grid from the plant is monitored and recorded using calibrated energy meter and 100% data is available for verification. The data which directly affect emission reduction calculations being net electricity generation is monitored and measured by calibrated electricity meters, 100% verifiable. Hence, in line with paragraph 410 and section 11.2.3 of the CDM Validation and Verification standard /6/ no significant reporting risks to the materiality of the verification were envisaged while planning for the verification and were not identified during the verification process. During the course of the verification, the team reviewed the whole data set of monthly records for net electricity and cross-check against invoices raised. The data reported in the monitoring report are consistent with the monthly records, and the emission reductions are correctly calculated. In conclusion, the verification team confirms the data set to be free from material error.

SECTION D. Means of verification

D.1. Desk review

The monitoring report version 06 of 28/08/2017 and previous versions /3/, the emission reduction calculations provided in the form of a spreadsheet “Bolu ER calculation v3 03072017” version 03, on 03/07/2017 /9/, the approved baseline and monitoring methodology AMS-III.G version 6.0 of 14/03/2008 /7/ and all the documentation provided to support the monitoring period /1 – 32/, was assessed as part of the verification. In addition, the Project Design Document (PDD) version 04 of 11/07/2012 /1/, in particular as regards the baseline estimations and the monitoring plan, the Passport, version 06 of 23/10/2012 /2/ and the validation report revision 04 of 11/07/2012 /8/ for the project, were reviewed. The list of all documents reviewed are referenced during the verification is available in Appendix 3 below.

D.2. On-site inspection

Duration of on-site inspection: 08/11/2016				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Implementation and operation of the proposed project activity. Checked the monitoring equipment, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report and data plant	Yukarisolu Village of Center District, Bolu Province	08/11/2016	Tugce Kiratli
2	Reviewed the information flows for generating, aggregating and reporting the monitoring parameters	Yukarisolu Village of Center District, Bolu Province	08/11/2016	Tugce Kiratli
3	Checked calibration performance, reviewed calculations and assumptions made in determining the GHG data and emission reductions	Yukarisolu Village of Center District, Bolu Province	08/11/2016	Tugce Kiratli
4	Checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Yukarisolu Village of Center District, Bolu Province	08/11/2016	Tugce Kiratli
5	Cross-checked between information provided in the monitoring report and data evidence, including the Gold Standard parameters	Yukarisolu Village of Center District, Bolu Province	08/11/2016	Tugce Kiratli

D.3. Interviews

No.	**Interviewee**			**Date**	**Subject**	**Team member**
	Last name	**First name**	**Affiliation**			
1.	AKYUREK	OMER	Oak Danismanlik	08/11/2016	Carbon Consultant	Tugce Kiratli
2	SENTURK	BURAK	CEV Enerji	08/11/2016	Project Development Manager	Tugce Kiratli
3.	SARMAZ	OZKAN	CEV Enerji	08/11/2016	Plant Manager	Tugce Kiratli
4	ELMACI	ISMAIL	Yukarisoku Village	22/03/2017	The Mukhtar	Tugce Kiratli

D.4. Sampling approach

Not applicable.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	**No. of CR**	**No. of CAR**	**No. of FAR**
Compliance of the monitoring report with the monitoring report form			
Compliance of the project implementation with the registered PDD	1		
Post-registration changes	1		
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline			
Compliance of monitoring activities with the registered monitoring plan			
Compliance with the calibration frequency requirements for measuring instruments	1		
Assessment of data and calculation of emission reductions or net removals	1	1	
Others (please specify)			
Total	4	1	

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	The monitoring report version 01 /3/ submitted by the PP has been the basis for starting the verification process. RINA confirms that the Monitoring report is based on the currently valid MR template /10/.
Findings	**NA**
Conclusion	RINA verified that the monitoring report was completed in accordance with the CDM-MR-FORM - Monitoring report form, including its Attachment: Instructions for filling out the monitoring report form, version 5.1 /10/.

E.2. Remaining forward action requests from validation and/or previous verification

Based on the review of the Gold Standard Foundation /30/, and validation report /8/, no FAR was raised during the validation period.

E.3. Compliance of the project implementation with the registered project design document

Means of verification	The Monitoring Report for the project activity "Bolu Landfill Gas to Energy Project, Turkey", in "Turkey", version 04 of 02/03/2017 submitted by the CEV Marmara Enerji Uretim San. Ve Tic. Ltd. Sti. has been the basis for the verification process.
Findings	**CR 1:** Please check the issues given below: - The GS reference number of the project activity is not in line with GS feedback document. - In the cover page of the monitoring report, the project participant's title is correct. Please check. - The FARs could not be monitored since GS feedback document is not provided to the verification team. - It is not stated in Section A.3 of the monitoring report that the project participant is private or public entity. - Please check the tool versions and the names given in Section A.4 of the monitoring report. They are not in line with the registered PDD. - The end date of the crediting period given in Section A.5 is not in line with the start date of the crediting period. - Please fill the Appendix 1 for the project participant and also for the consultant. - During on site visit, no interview was performed since no one is available. Please share the contact details of the stakeholders. - The GS reference number of the project activity is now in line with GS feedback document. - In the cover page of the monitoring report, the project participant's title is now corrected. - The FARs could now be monitored after GS feedback document is provided to the verification team. - It is now stated in Section A.3 of the monitoring report that the project participant is private entity. - The tool version given in Section A.4 of the monitoring report is now in line with the registered PDD. - The end date of the crediting period given in Section A.5 is now in line with the start date of the crediting period. - The Appendix 1 is now filled for the project participant and also for the consultant. - The contact details of the stakeholders are now provided to the verification team. **Hence, CR 1 is closed.**
Conclusion	RINA confirms that the above MR is based on the currently valid MR template /10/ and is completed in accordance with the applicable guidance document /10/. The project is fully implemented according to the description presented in the PDD, which is discussed above. The verifier confirms, through physical inspection at site that all features of the GS project activity including the equipment's, data collecting

	systems and storage have been implemented in accordance with the registered PDD. The project activity is completely operational and the same has been confirmed on-site.

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

Not applicable

E.4.2. Corrections

According to the registered PDD, only the ex-ante approach is discussed. Therefore, ex-post approach is also defined in the monitoring report since ex-ante is related with the FOD model. In addition, during the validation period, the PDD development is presented as Mavi Consultant. After the validation, Mavi is no longer available. Therefore, it is removed.

E.4.3. Changes to the start date of the crediting period

CR 2: There is no change in start date of the crediting period. However, in the calculation April 2012 is the first available data. In addition, in section B.2.3 of the monitoring report, it is stated that 01/10/2011 is the earliest data available at the time of monitoring report development. Please clarify.

"It is true that the first data on the LFG destruction is April 2012 however please note that the first data on electricity generation is within October 2011. This ambiguity is due from faulty measurements (or non measurment) during the first years of operation. This issue has been resolved during the operation period. The PP adopts crediting start period as registered under the PDD and no revision has been made."

The explanation is found acceptable. In addition, since there is no change in the crediting period start date, there is no need to take any action.

Hence, CR 2 is closed.

E.4.4. Inclusion of a monitoring plan to a registered project activity

Two new monitoring parameters are added to the plan.

- $EC_{PJ,j,y}$: Is the amount of electricity generated in an on-site fossil fuel fired power plant or consumed from the grid as a result of the project activity, measured using an electricity meter (MWh/year)
- $TDL_{j,y}$: Average technical transmission and distribution losses for providing electricity for source j, in year y.

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

Two parameters are defined in the registered PDD. However, these two parameters ($LFG_{collected,y}$ and $LFG_{electricity,y}$) are mentioned as same. Therefore, in the monitoring report these two parameters are defined as $LFG_{electricity,y}$. Since there is no activity of flare during this monitoring period, there has been no monitoring activity of parameters related with flaring of landfill gas. According to the methodology, it is stated that "No separate monitoring of temperature is necessary when using a flow meter that automatically measure temperature and pressure, expressing LFG volumes in normalized cubic meters". As the measuring device convert the flow direct to normal conditions, no separate parameter is presented in the monitoring plan.

E.4.6. Changes to the project design of a registered project activity

Not applicable

E.4.7. Types of changes specific to afforestation and reforestation project activities

Not applicable

E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	The project applies the approved methodologies AMS-III.G "Landfill Methane Recovery" version 6.0 of 14/03/2008 /7/. The following tools are also applicable to the project activity: "Tool to determine methane emissions avoided from disposal of waste at a solid

	waste disposal site", version 04.0.0 of 02/08/2008 /11/; "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", version 01.0 of 16/05/2008 /12/, "Tool to calculate the emission factor for an electricity system", version 02.0.0 of 16/10/2009 /13/.
Findings	**N/A**
Conclusion	The monitoring plan in the registered PDD /1/ is in accordance with the monitoring methodology AMS-III.G "Landfill Methane Recovery" version 6.0 of 14/03/2008 /7/.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification

The parameters were available at the validation stage, which do not need to monitor during the crediting period, as per the registered PDD:

DATA/PARAMETER	Source of data	Reported value for the project period	Assessment/ Observation
GWP_{CH4} Global Warming Potential of Methane	IPCC	25 tCO_2e/tCH_4	As per the IPCC the value 25 is fixed for the second commitment period. It shall be updated according to any future COP/MOP decision.
$CEF_{elec,BL}$ Emission factor for the production of electricity	Registered PDD /1/	0.559 tCO_2/MWh	According to the registered PDD /1/, the combined emission factor has been determined using the ex-ante option and so it is not requested to monitor and recalculate it during the first crediting period.
D_{CH4} Density of methane	AMS-III.G version 11.0 /7/	0.0007168 tCH_4/m^3CH_4	The value considered is according with the approved methodology AMS-III.G /7/ and it is fixed at standard temperature 0°C and pressure 1.013 bar.

Findings	N/A
Conclusion	Data and parameters fixed ex-ante are in accordance with the registered PDD /1/

E.6.2. Data and parameters monitored

Means of verification

The following parameters are monitored in accordance with the registered PDD /1/. All the values are confirmed as per the raw data provided from the measurement device.

LFG_{elec} (m^3): Quantity of methane destroyed by generation of electricity	The parameter is measured continuously by flow meters in line with the registered monitoring plan. The value of the parameter is calculated as 1,340,948.45 m^3 during this monitoring period. During the monitoring period the following instrument has been used: – Sierra Steelmass 640s sn 141379 The accuracy of the flow meter is 2% as confirmed during on site visit. The data are stored automatically at the server for 2 years.
$w_{CH4,y}$ (%): Methane fraction in landfill gas in	The methane fraction in the LFG is monitored continuously with a gas analyzer. The value of the parameter is calculated as 30.0% for 2014, 43.4% for

		2015 and 42.0% for 2016 during this monitoring period. During the monitoring period the following instrument has been used: – Emerson X-stream sn XMC02102854726 The accuracy of the gas analyser is 1% as confirmed during on site visit. The data are stored automatically at the server.
	EL_{LFG} (MWh): Net amount of electricity generated using LFG	The amount of generated electricity is measured continuously by electricity meters in line with the registered monitoring plan. The value of the parameter is presented as 7,423.7 MWh. During the monitoring period the following instrument has been used: – Landis GYR E550 sn 97744683 The accuracy of the flow meter is 0.5s as confirmed during on site visit. The data are stored automatically at the server.
	EC_{PJ} (MWh): Quantity of electricity consumed by the project activity	The quantity of consumed electricity is measured continuously by electricity meters in line with the registered monitoring plan. The value of the parameter is presented as 43.7 MWh. During the monitoring period the following instrument has been used: – Landis GYR E550 sn 97744683 The accuracy of the flow meter is 0.5s as confirmed during on site visit. The data are stored automatically at the server.
	TDL_k (%): Average technical transmission and distribution losses	The default value is fixed as 20% for the crediting period. The value is used for calculation of project emission.
	AF (%): Regulatory requirements relating landfill gas projects	Since there is no change in the legislative structure that forces old landfill sites to utilize landfill gas and no change to article 27 of the relevant regulation "Control of Solid Waste Regulation", AF has been considered as 0.
	Operation of the energy plant (hours):	It is measured continuously by counting devices of each power generation unit.The total value is presented as; GM1 | 19794
Findings	**NA**	
Conclusion	RINA's opinion that the monitoring of the project activity has been carried out in accordance with the monitoring plan in the revised PDD.	

E.6.3. Implementation of sampling plan

Means of verification	N/A
Findings	N/A
Conclusion	N/A

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The following parameters are monitored in accordance with the registered PDD /1/. In accordance with the applicable legislation a calibration is interval of every 10 years. No calibration was needed during this period. The calibration frequency is in accordance with the monitoring plan.	
	LFG_{elec} (m^3): Quantity of methane destroyed by generation of electricity	During the monitoring period the following instrument has been used: – Sierra Steelmass 640s sn 141379 The device is calibrated on 06/01/2011 as confirmed through the calibration report /22/.
	$w_{CH4,y}$ (%): Methane	During the monitoring period the following instrument

	fraction in landfill gas in	has been used: – Emerson X-stream sn XMC02102854726 The device is calibrated on 03/02/2011 as confirmed through the calibration report /25/.
	EL_{LFG} (MWh): Net amount of electricity generated using LFG	During the monitoring period the following instrument has been used: – Landis GYR E550 sn 97744683 The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/.
	EC_{PJ} (MWh): Quantity of electricity consumed by the project activity	During the monitoring period the following instrument has been used: – Landis GYR E550 sn 97744683 The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/.
	TDL_k (%): Average technical transmission and distribution losses	The default value is fixed as 20% for the crediting period. The value is used for calculation of project emission.
	AF (%): Regulatory requirements relating landfill gas projects	No measurement device is used.
	Operation of the energy plant (hours):	It is measured continuously by counting devices of each power generation unit. No calibration is required.
Findings	**CR 3:** **LFG_{elec} (m^3):** During the monitoring period the following instrument has been used: "Sierra Steelmass 640s sn 141379". The device is calibrated on 11/01/2011 as confirmed through the calibration report /22/. However, the calibration date given in the monitoring report is not in line with the calibration certificate. In addition, the serial no seen on site visit is not in line with the calibration certificate. Please clarify. **$w_{CH4,y}$ (%):**During the monitoring period the following instrument has been used: "Emerson X-stream sn XMC02102854726". The device is calibrated on 03/02/2011 as confirmed through the calibration report /25/. However, the serial no of the gas analyzer given in the monitoring report is not in line with the seen during on site visit. Please clarify. **EL_{LFG} (MWh):** During the monitoring period the following instrument has been used: "Landis GYR E550 sn 97744683". The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/. However, the calibration date is not given correctly in the monitoring report. Please check. **EC_{PJ} (MWh):** During the monitoring period the following instrument has been used: "Landis GYR E550 sn 97744683". The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/. However, the calibration date is not given correctly in the monitoring report. Please check. **LFG_{elec} (m^3):** The serial no of the measurement devices is given correctly as confirmed during on site visit. The calibration date is given as 06/01/2011 and it is now in line with the provided supporting document. **$w_{CH4,y}$ (%):** The serial no of the gas analyzer given in the monitoring report is now in line with the seen during on site visit. **EL_{LFG} (MWh):** The calibration date is now given correctly in the monitoring report. **EC_{PJ} (MWh):** During the monitoring period the following instrument has been used: "Landis GYR E550 sn 97744683". The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/. The calibration date is now given correctly in the monitoring report.	

	Hence, CR 3 is closed.
Conclusion	The verifier confirms that the calibration confirms the proper functioning of the monitoring equipment and is valid for the whole verification monitoring period. According to clause 373 (b), and 402 of VVS version 09.0, verification team has checked calibration records to confirm that the frequency of calibration is carried out as specified in the registered monitoring plan (clause 387, 390, and 394of VVS, version 09.0).

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	**Baseline Emissions:** According to methodology AMS-III.G, Landfill Methane Recovery --- Version 6.0.0, ACM0001 version 11 /14/ is referred for the calculations, the baseline emissions have been calculated based on the following formula: $BE_y = (MD_{project,y} – MD_{BL,y}) * GWP_{CH4} + EL_{LFG,y} * CEF_{elec,y}$ Where: $MD_{project,y}$ = amount of methane that would have been destroyed/combusted during the year y in tonnes of methane (tCH_4) in project scenario $MD_{BL,y}$ = amount of methane that would have been destroyed/combusted during the year y, in absence of the project due to regulatory and/or contractual requirement, in tonnes of methane GWP_{CH4} = Global warming potential value for methane (for the first commitment period is 21 tCO_2e/tCH_4 and for the second commitment period is 25 tCO_2e/tCH_4) $EL_{LFG,y}$ = net quantity of electricity produced using LFG which in the absence of the project activity would have been produced by power plants connected to the grid during a year $CEF_{elec,y}$ = CO_2 emissions intensity of the baseline source of electricity displaced in tCO_2e/MWh
Findings	**N/A**
Conclusion	RINA verified that the baseline emissions were calculated in accordance with the registered PDD and methodology ACM0001 “Consolidated Baseline and Monitoring Methodology for Landfill Gas Project Activities” version 11 of 28/05/2009 /14/.

E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	**Project Emissions:** According to methodology ACM0001 version 11 /14/, the project emissions have been calculated based on the following formula: $PE_y = PE_{electricity,y}$ Where: $PE_{electricity,y}$= Emission from consumption of electricity due to the project activity in year y (tCO_2e/yr). The project emissions from consumption of electricity by the project activity $PE_{electricity,y}$ shall be calculated using the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”. When applying the tool, electricity sources j in the tool corresponds to the sources of electricity consumed due to the project activity. $PE_{electricity,y}$ is calculated as follows: $PE_{electricity,y} = \sum EC_{PJ,y} * EF_{EL,j,y} * (1+TDL_{j,y}) =$ Where: $PE_{electricity,y}$ = Project emissions from electricity consumption in year y

	(tCO_2e/year) $EC_{PJ,y}$ = Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/year) $EF_{EL,j,y}$ = Emission factor for electricity generation for source j in year y (tCO2e/MWh) $TDL_{j,y}$ = Average technical transmission and distribution losses for providing electricity to source j in year y
Findings	**NA**
Conclusion	RINA verified that the project emissions were calculated in accordance with the registered PDD and methodology AMS-III.G /7/ and ACM0001 /14/.

E.8.3. Calculation of leakage GHG emissions

Means of verification	**Leakage Emissions:** According to methodology ACM0001 /14/, no leakage effects need to be accounted. The project activity does not involve off-site transportation of waste materials.
Findings	**N/A**
Conclusion	Leakage was considered as zero in accordance with the applied methodology /14/.

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	According to the applied methodology "ACM0001", "Consolidated Baseline and Monitoring Methodology for Landfill Gas Project Activities" /14/, the emission reductions have been calculated based on the following formula: ERy = BEy – PEy – Ly Where: BEy = Baseline emissions in year y (tCO_2e/yr) PEy = Project emissions in year y (tCO_2e/yr) Ly = Leakage emissions in year y (tCO_2e/yr)
Findings	**NA**
Conclusion	The emission reduction calculations provided in the spreadsheet /9/ have been verified to be correct and in line with the registered PDD /1/ and applied methodologies /14/.

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The actual emission reductions from the project for the monitoring period as reported in the monitoring report version 06 of 28/08/2017 /3/ is equivalent to 28,149. The estimated emission reductions for the monitoring period as reported in the monitoring report version 06 of 28/08/2017 /3/ is equivalent to 43,311 tCO2e.
Findings	**NA**
Conclusion	Verified during the onsite visit the reported emission reductions are lower than the estimated emission reduction in the registered PDD.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	It is defined in the monitoring report that the ex-ante estimation of the emission reductions and the actual achieved emission reductions show a significant difference.
Findings	**CR 4:** The difference between estimated and actual emission reduction is not discussed with the values and also percentage. Please give a clear definition for the difference. The difference between actual and estimated is now defined as 65%. **Hence, CR 4 is closed.**
Conclusion	Verified during the onsite visit the reported emission reductions are lower than the estimated emission reduction in the registered PDD.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The emission reductions from the project for the monitoring period as reported in the monitoring report /3/ is equivalent to 28,149 tCO_{2e}.
Findings	**NA**
Conclusion	The emission reductions calculation provided in the spreadsheet have been verified to be correct and in line with the registered PDD.

E.8.8. Assessment of the sustainability parameters

Means of verification

The assessment of the monitored parameters is described in the tables below:

Data variable	**Source of Data**	**Reported value for the project period**
Air Quality: SO_2, NO_x and VOCs emissions H_2S emissions	Electricity Generation and Calculation TEIAS statistics	- 39.4 t SO_2 - 12.2 t NO_x - 26,282.5 m^3 VOC - 2,785.08 kg H_2S
Assessment		
SO2 emissions: The parameter is monitored continuously by calculation. The value is calculated as 39.4 t for this monitoring period. *NOx emissions:* The parameter is monitored continuously by calculation. The value is calculated as 12.2 t for this monitoring period. However, the estimation of baseline situation of parameter is not in line with the registered PDD. *Reduction of VOC:* The parameter is monitored continuously by calculation. The value is calculated as 26,282.5 m^3 VOC for this monitoring period. *H_2S emissions:* The parameter is monitored continuously by calculation. The value is calculated as 2,785.08 kg H_2S for this monitoring period.		

Data variable	**Source of Data**	**Reported value for the project period**
Water Quality and Quantity Reduction of discharged cooling water in baseline Leachate Management	Calculating with the net electricity generation Leachate Management Records	- 174,458 m^3 cooling water - Leachate management record
Assessment		
Reduction of discharged cooling water in baseline: The parameter is monitored continuously by calculation with the net electricity generation. The total value for this monitoring period is given as 274,833.44 m^3. *Leachate Management:* The parameter is monitored annually by leachate management records as confirmed through the leachate management record /32/.		

Data variable	**Source of Data**	**Reported value for the project period**
Soil Condition Waste Terrace	Assessment of effective covering of waste	Municipality is the responsible of spilling and covering of garbage
Assessment		
Waste Terrace: The parameter is monitored continuously by assessment of effective covering of waste. During on site-visit it is confirmed that after the enough garbage has been poured, the closing process is carried out. This process is entirely the responsibility of the municipality.		

Data variable	Source of Data	Reported value for the project period
Quality of Employment Safe and Health working conditions	Checking safety material, tasks of personnel.	The health and safety precautions and instruments are seen during on site visit.
Assessment		
Safe and Health working conditions: The parameter is monitored continuously by checking safety material, tasks of personnel. During on site-visit, the occupational health and safety equipment are seen.		

Data variable	Source of Data	Reported value for the project period
Quantitative Employment and Income Generation Number of Employees	• Residence Certificates • Registration Document	9 employees are hired.
Assessment		
Number of Employees: This parameter is monitored continuously by checking the social security and residence records. According to the Recruitment Declarations /21/ /22/. 9 employees are hired during this monitoring period.		

Data variable	Source of Data	Reported value for the project period
Balance of Payments and Investment	Electricity Generation and Calculation	133,493 USD
Assessment		
Value of imported natural gas avoided: This parameter is monitored continuously by through comparing electricity generated by Bolu Landfill and natural gas that would be used to produce the same amount of electricity according to baseline scenario. The value is calculated as 133,493 USD.		

Findings

CAR 1:

Air Quality:

NOx emissions: The parameter is monitored continuously by calculation. The value is calculated as 19. 2 t for this monitoring period. However, the estimation of baseline situation of parameter is not in line with the registered PDD.

Reduction of VOC: The parameter is monitored continuously by calculation. However, the percentage given as non-methane VOC and presented in the MR is not in line with the one given in the calculation excel sheet. In addition, according to the changes please recalculate the value.

H_2S emissions: The parameter is monitored continuously by calculation. However, the estimation of baseline situation of parameter is not in line with the registered PDD. In addition, the given value 1,015 tons is presented as 1,051 tons in the calculation excel sheet. Please correct.

Water Quality and Quantity:

Leachate Management: The parameter is monitored annually by leachate management records. However, the supporting document is not provided to the verification team.

Quantitative Employment and Income Generation:

Number of Employees: This parameter is monitored continuously by checking the social security and residence records. According to the Recruitment Declarations /21/ /22/. 9 employees are hired during this monitoring period. However, 8 is presented in the monitoring report. Please clarify.

	Technology Transfer and Technological Self-reliance: This parameter is not discussed although it is presented in the registered GS Passport. **Air Quality:** *NOx emissions:* The estimation of baseline situation of parameter is now in line with the registered PDD. *Reduction of VOC:* The percentage given as non-methane VOC and presented in the MR is now in line with the one given in the calculation excel sheet. *H_2S emissions:* The estimation of baseline situation of parameter is now in line with the registered PDD. In addition, the given value 1,015 tons is presented correctly in the calculation excel sheet. **Water Quality and Quantity:** *Leachate Management:* During on site visit Gaziantep Landfill's supporting documents are seen. The document is provided same for Bolu Landfill Project. **Quantitative Employment and Income Generation:** *Number of Employees:* Now it is stated in the MR that 9 employees are hired during this monitoring period. **Technology Transfer and Technological Self-reliance:** This parameter is seemed as a monitoring parameter ("Technical trainings to Project personnel" and "Capacity building and awareness raising activities") in the PDD version 06 of 20121023. **Hence, CAR 1 is closed.**
Conclusion	RINA verified that the GS indicators described in the monitoring report are accurate and real. Data to cross check the monitored parameters are available at the office of the company. Also the registers of the sustainability indicators were available during the onsite inspection.

SECTION F. Internal quality control

The draft final verification report before being submitted to the client will be/is subjected to an independent technical review to confirm that all validation activities has been completed according to the pertinent RINA's procedures. The technical review will be/is performed by a technical reviewer(s) qualified in accordance with the RINA's qualification procedure.

SECTION G. Verification opinion

RINA Services Spa (RINA) has performed verification of the emission reductions reported for the project activity "Bolu Landfill Gas to Energy Project, Turkey", Turkey, GS Registration Reference No. 764 for the period 01/11/2014 – 31/07/2016, with regard to the relevant GS requirements and principles. The project participants are responsible for the preparation for the collection of data in accordance with the monitoring plan and the reporting emission reductions from the project. It is RINA's responsibility to express an independent verification opinion on the reported emission reductions from the project and does not express any opinion on the selected baseline scenario or on the validated and registered PDD. Based on documented evidences and corroborated by an on-site assessment RINA can confirm that: (i) the project has been implemented and operated as per the registered PDD; (ii) the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable GS requirements and principles; (iii) the monitoring is in place as per the applied baseline and monitoring methodology; (iv) the monitoring complies with the registered monitoring plan; (v) the monitoring plan in the registered PDD is as per the applied baseline and monitoring methodology.

SECTION H. Certification statement

It is RINA's opinion that the GHG emission reductions stated in the monitoring report version 06 of 28/08/2017 for the project activity "Bolu Landfill Gas to Energy Project, Turkey" in Turkey, for the period 01/11/2014 – 31/07/2016 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology AMS-III.G, Landfill Methane Recovery --- Version 6.0.0. Hence RINA is able to certify that the emission reductions from the project during the monitoring period 01/11/2014 - 11/08/2018 amount to 28,149 tCO2e.

2014: 1,215 tCO2e.
2015: 15,496 tCO2e.
2016: 11,438 tCO2e.

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH_4	Methane
CL	Clarification Request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GS	Gold Standard
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

RINA SERVICES
classification, certification, inspection & testing

CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
*QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES**

Si attesta che il sig./sig.ra: / *We declare that Mr/Mrs/Ms:* **Tugce Kiratli**

è qualificato come: / *is qualified as:* **TEC, VAL, VER, TL, ITRP LOCAL EXPERT**

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE *TECHNICAL AREAS*	DESCRIZIONE DELL'AREA TECNICA *TECHNICAL AREA DESCRIPTION*	SCOPO SETTORIALE *SECTORAL SCOPE*
1.2	Renewables	1
13.1	Solid waste and wastewater	13

REVISIONE *REVISION*	DATA *DATE*	MOTIVAZIONI PER LA REVISIONE *REASON FOR THE REVISION*
0	19/07/2016	First issue with new template
1	09/06/2017	Added qualification as ITRP and Local Expert

Responsabile di schema
Scheme Leader
Laura Severino

*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

TEC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/riconosciuto da
RINA Services S.p.A. is accredited /recognized by

UNFCCC	quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM *as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects*
VCSA	per condurre la Validazione e la Verifica di Progetti VCS *to carry out Validation and Verification of VCS Projects*
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS *to carry out Validation and Verification of GS Projects*
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS *to carry out Validation and Verification of SCS Reports*
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR *to carry out Validation and Verification of ACR projects*
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB *to carry out Validation and Verification of co-benefit CCB projects*

GHG_QUAL_CERT_EN_07_16 Voluntary(Certificate) Page 1 of 1

RINA SERVICES
classification, certification, inspection & testing

CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
*QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES**

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Hui Feng Liu

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, ITRP

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE *TECHNICAL AREAS*	DESCRIZIONE DELL'AREA TECNICA *TECHNICAL AREA DESCRIPTION*	SCOPO SETTORIALE *SECTORAL SCOPE*
1.1	Thermal energy generation	1
1.2	Renewables	1
8.1	Mining and mineral processes	8
9.2	Iron, steel and Ferro alloy production	9
13.1	Solid waste and wastewater	13

REVISIONE *REVISION*	DATA *DATE*	MOTIVAZIONI PER LA REVISIONE *REASON FOR THE REVISION*
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)

Responsabile di schema
Scheme Leader
Rita Valoroso

*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

TEC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Indipendent technical reviewer

RINA Services S.p.A. è accreditato/riconosciuto da
RINA Services S.p.A. is accredited /recognized by

UNFCCC	quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM *as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects*
VCSA	per condurre la Validazione e la Verifica di Progetti VCS *to carry out Validation and Verification of VCS Projects*
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS *to carry out Validation and Verification of GS Projects*
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS *to carry out Validation and Verification of SCS Reports*
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR *to carry out Validation and Verification of ACR projects*
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB *to carry out Validation and Verification of co-benefit CCB projects*

Appendix 3. Documents reviewed or referenced

No	Author	Title	References to the document	Provider
1	Oak Danismanlik	GS-PDD for "Bolu Landfill Gas to Energy Project, Turkey" in Turkey	version 04 of 11/07/2012	Project participant
2	Oak Danismanlik	Gold Standard Passport for Project Activity "Bolu Landfill Gas to Energy Project, Turkey" in Turkey	version 06 of 23/10/2012	Project participant
3	Oak Danismanlik	Monitoring Report for "Bolu Landfill Gas to Energy Project, Turkey" in Turkey Monitoring Report for "Bolu Landfill Gas to Energy Project, Turkey" in Turkey Monitoring Report for "Bolu Landfill Gas to Energy Project, Turkey" in Turkey Monitoring Report for "Bolu Landfill Gas to Energy Project, Turkey" in Turkey	version 01 of 12/10/2016 version 02 of 06/01/2017 version 03 of 24/01/2017 version 03 of 02/03/2017	Project participant
4	Gold Standard Foundation	Gold Standard Requirements	version 2.2 of 01/07/2012	Publicly available
5	Gold Standard Foundation	Gold Standard Toolkit	version 2.2 of 01/07/2012	Publicly available
6	CDM Executive Board	Clean Development Mechanism Validation and Verification Standard	version 09.0 of 20/02/2015	Publicly available
7	CDM Executive Board	Baseline and monitoring methodology "AMS-III.G", "Landfill Methane Recovery"	version 6.0 of 14/03/2008	Publicly available
8	TUVRheinland	Validation Report for "Bolu Landfill Gas to Energy Project, Turkey" No. 21214441	version 04 of 11/07/2012	Publicly available
9	Oak Danismanlik	Emission Reduction Calculation Spreadsheet "Bolu ER calculation v1.xlsx" Emission Reduction Calculation Spreadsheet " Bolu ER calculation v2 06012017.xlsx"	version 01 submitted on 20/10/2016 version 02 of 06/01/2017	Project participant
10	CDM Executive Board	Guideline for Completing the Monitoring Report Form	version 05.1 of 04/05/2015	Publicly available
11	CDM Executive Board	Methodological Tool "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site"	version 04.0.0 of 02/08/2008	Publicly available
12	CDM Executive Board	Methodological Tool "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"	version 01.0 of 16/05/2008	Publicly available
13	CDM Executive Board	Methodological Tool "Tool to calculate the emission factor for an electricity system"	version 02.0.0 of 16/10/2009	Publicly available
14	CDM Executive Board	Baseline and monitoring methodology " ACM0001", "Consolidated Baseline and Monitoring Methodology for Landfill Gas Project Activities"	version 11.0 of 28/05/2009	Publicly available
15	Energy Market Regulatory Authority	Communiqué for Measurement Devices used in the Electricity Market	date of 22/03/2003	Publicly available
16	The Ministry of Trade and Industry	Regulation of Metering and Testing of Metering Systems	date of 24/07/1994	Publicly available
17	Market Financial Settlement Center (EPIAS)	Monthly Electricity Records within the Monitoring Period	from 01/10/2011 – 31/07/2016	Project participant

18	Social Insurance Institution	Recruitment Declaration for 9 Employees	submitted on 20/10/2016	Project participant
19	Social Insurance Institution	Declaration of Employment for 9 Employees	submitted on 09/2016	Project participant
20	Ministry of Energy and Natural Resources	Temporary Acceptance Protocol (1 engine)	of 12/08/2011	Project participant
21	Bolu Municipality and Cev Marmara Enerji	Agreement Including the Definition of Waste (not including Hazardous Waste)	of 09/02/2009	Project participant
22	Sierra	Calibration Certificate of Flow Meter	of 11/01/2011	Project participant
23	Sierra	Instruction Manual	submitted on 20/10/2016	Project participant
24	Rosemount Analytical	Inspection Test Procedure O_2/CH_4 Analyzer	submitted on 20/10/2016	Project participant
25	Emerson Process Management GmbH&Co.	Calibration Certificate of Gas Analyzer	of 11/01/2011	Project participant
26	X-Stream Enhanced XEXF	Product Data Sheet (Emerson)	of 09/2015	Project participant
27	Provincial Health Directorate	First Aid Training Certificate	of 07-08/05/2016	Project participant
28	CEV Marmara Enerji	Daily Operation Report for Bolu Energy Plant	of 31/07/2016	Project participant
29	TEIAS	First Index Protocol	of 12/09/2011	Project participant
30	Gold Standard Foundation	GS 8-week Registration Review Period Feedback Document	of 10/2012	Project participant
31	Sierra	Calibration Certificate for Serial No. 141379	of 27/05/2011	Project participant
32	Bolu Muncipality	Correspondance About Leachate Management	of 31/01/2017	Project participant

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verification

FAR ID		**Section no.**		**Date:**
Description of FAR				
Project participant response				**Date:**
Documentation provided by project participant				
DOE assessment				**Date:**

Table 2. CR from this verification

CR ID	1	**Section no.**	E.3	**Date:** 23/12/2016
Description of CR				

Please check the issues given below:

- The GS reference number of the project activity is not in line with GS feedback document.
- In the cover page of the monitoring report, the project participant's title is correct. Please check.
- The FARs could not be monitored since GS feedback document is not provided to the verification team.
- It is not stated in Section A.3 of the monitoring report that the project participant is private or public entity.
- Please check the tool versions and the names given in Section A.4 of the monitoring report. They are not in line with the registered PDD.
- The end date of the crediting period given in Section A.5 is not in line with the start date of the crediting period.
- Please fill the Appendix 1 for the project participant and also for the consultant.
- During on site visit, no interview was performed since no one is available. Please share the contact details of the stakeholders.

Project participant response	**Date:** 06/01/2017

- *The GS ID is corrected as 764 under the MR.*
- *The title has been corrected. MR has been revised accordingly.*
- *This issue has been asked to GS, which the DOE has been also included to CC. issue will be resolved based on GS respond.*
- *The PP is a private entity. The MR is revised accordingly.*
- *Tool versions are now in line with the PDD.*
- *The crediting period end date is revised accordingly.*
- *The MR has been revised accordingly.*
- *The contact details of muchtar has been shared with the DOE.*

Documentation provided by project participant

Revised MR

DOE assessment	**Date:** 24/01/2017

- The GS reference number of the project activity is now in line with GS feedback document.
- In the cover page of the monitoring report, the project participant's title is now corrected.
- The FARs could not be monitored since GS feedback document is still not provided to the verification team.
- It is now stated in Section A.3 of the monitoring report that the project participant is private entity.
- The tool version given in Section A.4 of the monitoring report is now in line with the registered PDD.
- The end date of the crediting period given in Section A.5 is still not in line with the start date of the crediting period.
- The Appendix 1 is now filled for the project participant and also for the consultant.
- The contact details of the stakeholders are not provided to the verification team.

Hence, CR 1 is not closed.

Project participant response	**Date:** 30/01/2017

- The PP has requested the document from GS once again.
- The crediting period end date is now corrected as 11.08.2018
- The contact detail of the muchtar of Yukarıköse Mahallesi is 0546 7926144.

DOE assessment	**Date:** 22/02/2017

- The FARs could now be monitored since GS feedback document is now provided to the verification team. According to the GS Feedback Document a FAR is raised.

  FAR#1: verifying DOE shall check the official communications occurred between the PP and both national and local authorities and report accordingly in the verification report. However, no discussion is given in the monitoring report according to this situation.
- The end date of the crediting period given in Section A.5 is now in line with the start date of the crediting period.
- The contact details of the stakeholders are now provided to the verification team.

Hence, CR 1 is not closed.

Project participant response	**Date:** 02/03/2017

Actions taken by PP: The PP was unable to provide communication between the PP and local authorities since, the management of the process was conducted by a consultant which is no longer a participant to the project. However, the PP would like not note that it is not a major issue due to the fact that; A) there is no such party as "official authority", since the project is participating under VERs and B) it is not legally possible to start operation without acceptance of local authorities, therefore local authorities are communicated already as a requirement of the legal and permit processes already. This explanation has been included to the MR.
DOE assessment **Date:** 11/03/2017
The given explanation is found acceptable. In addition, according to GS's e-mail, no FAR is raised during on validation process. **Hence, CR 1 is closed.**

CR ID	2	**Section no.**	E.4.3	**Date:** 23/12/2016
Description of CR				
There is no change in start date of the crediting period. However, in the calculation April 2012 is the first available data. In addition, in section B.2.3 of the monitoring report, it is stated that 01/10/2011 is the earliest data available at the time of monitoring report development. Please clarify.				
Project participant response				**Date:** 06/01/2017
It is true that the first data on the LFG destruction is April 2012 however please note that the first data on electricity generation is within October 2011. This ambiguity is due from faulty measurements (or non measurment) during the first years of operation. This issue has been resolved during the operation period. The PP adopts crediting start period as registered under the PDD and no revision has been made.				
Documentation provided by project participant				
DOE assessment				**Date:** 23/01/2017
The explanation is found acceptable. In addition, since there is no change in the crediting period start date, there is no need to take any action. **Hence, CR 2 is closed.**				

CR ID	3	**Section no.**	E.7	**Date:** 23/12/2016
Description of CR				
LFG_{elec} (m^3): During the monitoring period the following instrument has been used: "Sierra Steelmass 640s sn 141379". The device is calibrated on 11/01/2011 as confirmed through the calibration report /22/. However, the calibration date given in the monitoring report is not in line with the calibration certificate. In addition, the serial no seen on site visit is not in line with the calibration certificate. Please clarify. **$w_{CH4,y}$ (%):**During the monitoring period the following instrument has been used: "Emerson X-stream sn XMC02102854726". The device is calibrated on 03/02/2011 as confirmed through the calibration report /25/. However, the serial no of the gas analyzer given in the monitoring report is not in line with the seen during on site visit. Please clarify. **EL_{LFG} (MWh):** During the monitoring period the following instrument has been used: "Landis GYR E550 sn 97744683". The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/. However, the calibration date is not given correctly in the monitoring report. Please check. **EC_{PJ} (MWh):** During the monitoring period the following instrument has been used: "Landis GYR E550 sn 97744683". The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/. However, the calibration date is not given correctly in the monitoring report. Please check.				
Project participant response				**Date:** 06/01/2017
LFG_{elec} (m^3): Issues has been corrected under the revised MR. **$w_{CH4,y}$ (%):**Issues has been corrected under the revised MR. **EL_{LFG} (MWh:** Issues has been corrected under the revised MR. **EC_{PJ} (MWh):** Issues has been corrected under the revised MR.				
Documentation provided by project participant				
Revised MR				
DOE assessment				**Date:** 24/01/2017

LFG_{elec} (m^3): The serial no of the measurement devices is given correctly as confirmed during on site visit. However, in the provided calibration certificate, the given serial no is not in line with the one seen on site visit. Please clarify. **$w_{CH4,y}$ (%):** The serial no of the gas analyzer given in the monitoring report is now in line with the seen during on site visit. **EL_{LFG} (MWh):** The calibration date is now given correctly in the monitoring report. **EC_{PJ} (MWh):** During the monitoring period the following instrument has been used: "Landis GYR E550 sn 97744683". The device is calibrated on 12/09/2011 as confirmed through the first index protocol /29/. However, the calibration date is not given correctly in the monitoring report. Please check. **Hence, CR 3 is not closed.**
Project participant response **Date:** 30/01/2017
- The calibration date is revised as 06.01.2011. A picture of the equipment plate together with the calibration document is shared with the DOE. - The calibration date is now revised.
DOE assessment **Date:** 22/02/2017
LFG_{elec} (m^3): The calibration date is still given as 11/01/2011 and it is not in line with the provided supporting document. **EC_{PJ} (MWh):** The calibration date is now given correctly in the monitoring report. **Hence, CR 3 is not closed.**
Project participant response **Date:** 02/03/2017
The calibration date is now revised as 06.01.2011 under the MR.
DOE assessment **Date:** 11/03/2017
LFG_{elec} (m^3): The calibration date is given as 06/01/2011 and it is now in line with the provided supporting document. **Hence, CR 3 is closed.**

CR ID	4	**Section no.**	E.8.6	**Date:** 23/12/2016
Description of CR				
The difference between estimated and actual emission reduction is not discussed with the values and also percentage. Please give a clear definition for the difference.				
Project participant response **Date:** 06/01/2017				
The MR has been revised accordingly.				
Documentation provided by project participant				
Revised MR				
DOE assessment **Date:** 23/01/2017				
The difference between actual and estimated is defined as 35%. However, this value is the percentage of the actual emissions to estimated emissions. The difference between them should be presented as 65%. **Hence, CR 4 is not closed.**				
Project participant response **Date: 25/01/2017**				
The figure is now corrected as 65%				
DOE assessment **Date:** 22/02/2017				
The difference between actual and estimated is now defined as 65%. **Hence, CR 4 is closed.**				

Table 3. CAR from this verification

CAR ID	1	**Section no.**	E.8.8	**Date:** 23/12/2016
Description of CAR				

Air Quality:

NOx emissions: The parameter is monitored continuously by calculation. The value is calculated as 19. 2 t for this monitoring period. However, the estimation of baseline situation of parameter is not in line with the registered PDD.

Reduction of VOC: The parameter is monitored continuously by calculation. However, the percentage given as non-methane VOC and presented in the MR is not in line with the one given in the calculation excel sheet. In addition, according to the changes please recalculate the value.

H_2S emissions: The parameter is monitored continuously by calculation. However, the estimation of baseline situation of parameter is not in line with the registered PDD. In addition, the given value 1,015 tons is presented as 1,051 tons in the calculation excel sheet. Please correct.

Water Quality and Quantity:

Leachate Management: The parameter is monitored annually by leachate management records. However, the supporting document is not provided to the verification team.

Quantitative Employment and Income Generation:

Number of Employees: This parameter is monitored continuously by checking the social security and residence records. According to the Recruitment Declarations /21/ /22/. 9 employees are hired during this monitoring period. However, 8 is presented in the monitoring report. Please clarify.

Technology Transfer and Technological Self-reliance: This parameter is not discussed although it is presented in the registered GS Passport.

Project participant response	**Date:** 06/01/2017

NOx emissions*: MR has been revised accordingly.*
Reduction of VOC*: MR has been revised accordingly.*
H_2S emissions*: MR has been revised accordingly.*
Leachate Management: *During the verification site visit, contracts with the municipality and other supportive documents were shown.*
Number of Employees*: MR has been revised accordingly.*
Technology Transfer and Technological Self-reliance: The parameter **"***technology transfer", is not a part of the monitoring plan under the registered Passport and therefore is not included to the Monitoring Plan under the monitoring report.*

Documentation provided by project participant
Revised MR and calculation excel sheet.

DOE assessment	**Date:** 24/01/2017

Air Quality:

NOx emissions: The estimation of baseline situation of parameter is now in line with the registered PDD.

Reduction of VOC: The percentage given as non-methane VOC and presented in the MR is now in line with the one given in the calculation excel sheet.

H_2S emissions: The estimation of baseline situation of parameter is now in line with the registered PDD. In addition, the given value 1,015 tons is presented correctly in the calculation excel sheet.

Water Quality and Quantity:

Leachate Management: During on site visit Gaziantep Landfill's supporting documents are seen. Please provide the same for Bolu Landfill Project.

Quantitative Employment and Income Generation:

Number of Employees: Now it is stated in the MR that 9 employees are hired during this monitoring period. However, in the list of employees there are still 8 employees

Technology Transfer and Technological Self-reliance: This parameter is seemed as a monitoring parameter ("Technical trainings to Project personnel" and "Capacity building and awareness raising activities") in the PDD version 06 of 20121023.
Hence, CAR 1 is not closed.

Project participant response	**Date: 25/01/2017**

Leachate management:The treatment of the leachate is within the responsibility of the municipality. An official statement from the municipality has been obtained and shared with the DOE. **Number of employees:** Environmental Engineer Mr. Yusuf Acar has been added to the list. Technology transfer and technological self-reliance: The statements under the PDD are not related with "technology transfer and technological self-reliance but rather related with trainings and capacity building on occupational health and security issues, which are already covered through monitoring parameter SD.4 quality of employment.
DOE assessment **Date:** 22/02/2017
Water Quality and Quantity: *Leachate Management:* The necessary supporting document is now provided for Bolu Landfill Project. **Quantitative Employment and Income Generation:** *Number of Employees:* Now it is stated in the list that 9 employees are hired during this monitoring period. **Technology Transfer and Technological Self-reliance:** Even if it means the same thing, each indicator stated in the passport must be shown in the monitoring report together with the selected parameters. In the scoring table this indicator is presented as "+". Please include this indicator since it is the only verification performed for the entire crediting period. **Hence, CAR 1 is not closed.**
Project participant response **Date: 02/03/2017**
Technology Transfer and Technological Self-reliance: The MR has been revised accordingly.
DOE assessment **Date:** 11/03/2017
Technology Transfer and Technological Self-reliance: The parameter is now added to the monitoring plan. **Hence, CAR 1 is closed.**

Table 4. FAR from this verification

FAR ID		**Section No.**		**Date:**
Description of FAR				
Project participant response				**Date:**
Documentation provided by project participant				
DOE assessment				**Date:**

Document information

Version	*Date*	*Description*
01.0	10/06/2016	Initial publication.