JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum
Reference number	MN002
Monitoring period	19/09/2016 - 31/12/2016
Date of completion of the monitoring report	09/06/2018
Third-party entity (TPE)	Low Carbon Technology Center, Mongolia
Project participant contracting the TPE	Suuri Keikaku Co., Ltd, Japan
Date of completion of this report	28/06/2018

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, *Low Carbon Technology Center, Mongolia* (TPE's name) provides reasonable assurance that the emission reductions for *"Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum"* (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons> N/A

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
The project implementation against the registered PDD or any approved revised PDD	The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD.	☒
Calibration frequency and correction of measured values with related requirements	If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.	☒
Data and calculation of GHG emission reductions	The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology.	☒
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	☒
Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory:	Mr. ☐ Ms. ☒
Last name: Myatraaz	First name: Natsagbadam
Title: Director	
Specimen signature: [redacted]	Date: 28/06/2018

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☐ Ms. ☒	M.Natsag-badam	Low Carbon Technology Center	Team leader	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☒
Mr. ☒ Ms. ☐	P.Byamba-tsogt	Low Carbon Technology Center	Team member	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☒
Mr. ☒ Ms. ☐	S.Taivan	Low Carbon Technology Center	Technical reviewer	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☐
Mr. ☐ Ms. ☐	N/A	N/A	N/A	☐	N/A	☐

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

C. Means of verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

The Low Carbon Technology Center's Verification team has verified whether the project implementation and operation complied with the eligibility criteria of the applied methodology after the starting date of of the project operation, through the Document review and Follow up actions (on site visit and interview) with Evidences: Ref.01, Ref.02, Ref.04, Ref.05, Ref.19, Ref.20 and Ref.24 attached to this report.

The Project has been registered as a JCM project on 30 June, 2015, with applying the approved methodology MN_AM002 “Replacement and Installation of High-Efficient Heat only Boilers for Hot Water Supply Systems” under the scheme of Joint Crediting Mechanism between Mongolia and Japan. Project was implemented by Suuri Keikaku Co.,Ltd of Japan (hereinafter

called "the Japanese PP") and Anu Service Co.,Ltd of Mongolia (hereinafter called "the Mongolian PP"). The installation of high-efficiency Heat Only Boilers - EKOEFECT, pipe laying work, electrical construction and boiler building construction works were completed and the project operation has started in 27th September 2014.

The Eligibilty criterions of the applied methodology are:

Criterion1; Technology to be employed in this methodology is coal-fired heat only boiler(HOB) for hot water supply system.

Criterion 2; Capacity of the project HOB ranges from 0.10 MW to 1.00MW.

Criterion 3; The project activity involves the installation of new HOB and/or the replacement of the existing coal-fired HOB.

Criterion 4; The project HOB is equipped with an operation and maintenance manual.

Criterion 5; The catalog value of the boiler efficiency for the project HOB is 80% or higher.

Criterion 6;The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust collector.

The assessment results summarized as below:

1. The HOB EKOEFECT 600, which is installed and operated at the project site is a coal-fired heat only boiler for hot water supply system, thus it complies with Criterion #1, of the Applied methodology,

2. The capacity of the this HOB is 650kW,complies with Criterion #2,

3. As a result of project implementation,7 small, old, inefficient boilers have been replaced with two new high -efficient HOB, with a sufficient capacity, it complies with the Criterion #3,

4. The project HOB is equipped with an operation and maintenance manual prepared by Suuri Keikaku Co.,Ltd and translated into Mongolian language, complies with the Criterion #4,

5.Catalog value of Boiler efficiency of project HOB is 80-86%, complies with the Criterion # 5,

6. The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust collector, it complies with Criterion # 6 of the Applied methodology.

After the desk review, the on-site assessment was conducted on 21 June 2018.Verification team determined that the project HOBs are in place and are used for heating service till now.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed fully compliance of the project implementation and operation with the Eligibility criteria of the applied methodology "Replacement and Installation of high-efficient Heat Only Boiler for Hot Water Supply Systems" (MN_AM002), approved in 28 January 2015, under the scheme of JCM between Mongolia and Japan.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>

The Verification team assessed whether the project implementation complied with the registered PDD or any approved, revised PDD through Document review and Follow-up actions (on-site visit and interviews) with Evidences: Ref.02, Ref.04, Ref.05, Ref 06, Ref.16 and Ref.24 attached to this report

1.Physical features of the project were checked through the on-site visit in 21 June 2018 and two Heat only Boilers of EKOEFECT 600 type, with serial numbers of 2013/141 and 2013/142 were in place as per the registered PDD. The consumers of the Bornuur Soum center have been supplied with a heat energy produced by the Project HOBs, since September 2014,

The monitoring has conducted, as based on the actual measurement using heat meter or "Monitoring Option C" was performed, according to the registered PDD.

2. Measuring equipment of the parameters is the Heat meter. Verification team confirmed the existence of Heat meters- Multical 602C, with serial number of 69710727 and 69710728, which were installed at the monitoring points as described in the registered PDD.

3. Parameters to be monitored ex-post are the net heat quantity supplied by the project HOB during the monitoring period - PHp and total hours of project HOB operation during the monitoring period-HMPp.Verification team determined that the measuring of the heat quantity done by the heat meter continuously, recording of measured value (data) were 4 times per hour in the datalogger and data input in the computer's database. Total hours of project HOB operation was identified by the monitoring period. The monitoring option, measurements method and procedure were performed appropriately in line with the registered PDD.

4.Monitoring Structure of Project participants was identified through an interview with the Manager of the Project, with the Engineers of Anu Service Co.,Ltd and review on MoC submitted to the TPE in 25 June 2018 by the PP. The Monitoring structure is as below:

1) Mr. Tabata Toru- Project Manager
2) Mr. Kuwahara Fumihiko- Project Manager
3) Mr. T.Narankhuu- Senior engineer
4) Mrs. D.Gantsetseg-Civil engineer and QA/QC team officer

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were raised

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that the Project implementation was in accordance with the registered PDD during the monitoring period and no change was found from the registered PDD.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>

The Low Carbon Technology Center's Verification team assessed whether the calibration frequency and correction of measured values comply with the related requirements through Document review and Follow-up actions (on-site visit and interviews) with Evidences: Ref.08, Ref.09, Ref.10, Ref.11, Ref.12, Ref.15, Ref.16, Ref.17, Ref.18 and Ref.24

1.The parameter was measured by the Heat meter Multical-602C. Heat meters were installed by the Engineers of Anu Service Co.,Ltd, who have the permission for installation of heat meters. Verification team determined that the Heat meters were calibrated in 24 February 2015 by the Kamstrup A/S Laboratory of Denmark. This calibration is valid according to the “Letter for Recognition of initial calibration of the Heatmeter Multical 602C, 20 March 2015" issued by the Mongolian Agency for Standard and Metrology (MASM). The validity period of this verification is till the February of 2019, according to the "List of measuring instruments subject compulsory metrological control" by the Order #A/384_2014 of the Chairman of the MASM. The installation of the Heatmeters were verified by the State Authorized Entity -Ulaanbaatar Heating Network Company in August 2016.

2.The Verifiers assessed the measured values in the database of the Project Participant and determined that, the set of measured data were within acceptable range including heat energy, flow rate, hot water temperatures in the pipes and confirmed absence of missed data during the monitoring period, thus the correction of measured values was not required.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were identified.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team comfirmed that the calibration frequency of monitoring equipment complied with requirements of the "Law on Guarantee the Uniformity of Measurement" and related rules, also the team confirms that the correction of measured values was not required.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

Verification team assessed data and calculation of GHG emisssions reductions through

Document review and Follow-up actions (on-site visit and interviews) with Evidences: Ref.01, Ref.02, Ref.03, Ref.04, Ref.15, Ref.16 and Ref.24.

1.Monitoring period

The Low Carbon Technology Center's Verification team determined that, this monitoring period was from 19 September 2016 till 31 December 2016, the Kindergarten and other entities have been received a heat supply from 19 September 2016 and later. The period referred to this verification report is the part of 3rd heating season after start of the Project. It was confirmed with the evidences: Ref.02 and Ref.07.

2.Data assessment

The parameter “Heat energy” or the total heat quantity produced by project HOB is measured by the Heat meter as follow: the parameters measured in every 15 minutes and recorded in the data logger, built in the heat meter. This value is the sum of value of current measurement and the values of previous measurements, thus the Data logger calculates and records the total heat quantity produced by the HOB from the start of monitoring, to the moment of particular measurement. Then the data was transferred to the database of the computer of Anu Service Co., Ltd, as it showed in Ref.16. The received data were exported into Excel sheet and were stored, set of 24 hrs data has been transferred to the office of Suuri Keikaku Co.,Ltd in Tokyo, Japan, every day.

The data measured during the monitoring period was checked through review of database in PC of the Anu Service Co.,Ltd , Printed values of the HOBs, Logbook of HOB, interviews and on-site assessment. Measured and recorded values in datalogger of the Heat meter are: Meter's Number, Readout date&time, Heat quantity (GJ), Volume of water, Hour counter (hrs), Current flow temperature, Current return temperature, Electricity Power (MW) and the Current flow rate (m3/h).

Measured data has been transmitted to the office of Mongolian PP through the Wi-Fi internet. Data transmission was interrupted from 21 October 2016 till 06 February 2017, due to the fault in the existing internet connection device, thus the measured values of the heatmeter indicated on its display was monitored and reported to the QA/QC officer and noted in the Logbook of HOB everyday, by the fireman from 21 October to 31 Decxember. It is confirmed by evidence Ref.12.2 and Ref.15.

Verification team determined that, the measuring and recording of the monitored parameters was continuous, without interrupt by the heat meter's data logger equipped with a battery and no data missing and no abnormal values was found.

3.Calculation of GHG Emissions Reductions

Verification team verified the corresponding Monitoring Report sheet and calculation formulas of the GHG emission reductions of the applied methodology and determined that, they were used correctly. The ex-ante parameters used in the calculation were correct, without any errors and omissions and misrepresentations.

Ex-ante parameters used for calculation are:

RPC p=2.3 kW (Rated power consumption of the project HOB),

EF CO2, grid = 1.1030 tCO2/MWh(CO2 emission factor of the Grid electricity consumed by project HOB),

Default values used for calculation are:

EF CO2, coal = 0.0909 tCO/GJ (CO2 Emission factor of Coal used in HOB),

η = 0.533 (Boiler Efficiency of Reference HOB)

η = 0.610 (Boiler Efficiency of Project HOB)

4. Monitored values provided in the Monitoring report has been checked as listed below:

Parameters	Monitored values	Method to check values in the monitoring report with sources
HPp	2.284 GJ/p	Reported value was checked agaisnt the Monitored data and other means as below: 1. Assessment of the heat meter's data in the Database of the Project Participants, 2. Assessment of values reported in the "Monthly data sheet for 2016-2018", 3. Assessment of information of the "Logbook of HOB" and interview with the related persons and consumers, 4.Assessment of information in the previous Verification report
HMPp	4.972 hrs	Reported value was checked agaisnt the Monitored data and other means as below: 1. Assessment of the heat meter's data in the Database of the Project Participants, 2. Assessment of information of the Heating supply contracts, "Logbook of HOB", "Logbook of Consumer's opinion", and interview with the related persons and consumers about HOB operation
N/A	N/A	N/A

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed the fair representation of reported values of GHG emission reductions in the monitoring report and has no material errors.

C.5. Assessment of avoidance of double registration

<Means of verification>

Verification team checked whether the JCM project has not been registered under other international climate mitigation mechanisms through document review with Evidence Ref. 13 and website review.

Project participant was submitted the declaration letter for avoidance of double registration of the project in other international climate mitigation mechanisms in the Modalities of Communication Statement, to the Join Committee at the validation stage and another written confirmation to the TPE in 2016. Verification team cross-checked it through the review on websites of Clean Development Mechanism (CDM),Verified Carbon Standard Association (VCSA) and Gold Standard Foundation (GSF) and determined that no project with similar technology had registered in an international climate mitigation mechanisms, from Mongolia.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CAR 01- Project participant was requested to submit, up to date Written confirmation for avoidance of double registration of the project in other international climate mitigation mechanisms.

CAR 01 was closed up, bacause Anu Service Co.,Ltd has submitted the requested Confirmation Letter, with Ref.13.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that, the registered project has not registered under other international climate mitigation mechanisms.

C.6. Post registration changes

<Means of verification>

The Verifier assessed whether the Project has been changed from the registered PDD through Document review and Follow-up action (on-site visit and interviews) with Evidence: Ref.02, Ref.14 and Ref.24.

Verification team idenfied that the Project has not changed after it's registration through the review on PDD, written confirmation of the PP and on site assessment.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that the project had not been changed from the registered PDD and Methodology.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No FAR was raised during the previous verification of the project.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013			
2014			
2015			
2016	389	355	34 (for the Second half of 2016)
2017			
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027			
2028			
2029			
2030			
Total (tCO_2e)			34

F. List of interviewees and documents received

F.1. List of interviewees

Interviewed on 19 June 2018:

1. Mr.F.Kuwahara, Project Manager, Suuri-Keikaku Co,.Ltd,

Interviewed on 21 June 2018;

2. Mr.O.Purevsuren, Bornuur HOB Manager, Anu Service Co.,Ltd,
3. Ms.B.Bulganchimeg, Director of Hospital, Bor nuur soum,
4. Ms.D.Gantsetseg, Civil Engineer of Anu Service Co.,Ltd

F.2. List of documents received

1.	JCM Approved Methodology MN_AM002 "Replacement and Installation of High-Efficiency Heat only Boilers for Hot Water Supply Systems"
2.	PDD version 03.0, 27/06/2015 " Centraization of heat supply system by Installation of High-efficiency Heat only Boilers in Bornuur soum " MN002
3.	Monitoring Report Sheet: JCM_MN_AM002_ver01.0 MN002 Bornuur Soum YR2016 First Half
4.	Monitoring Report Sheet: JCM_MN_AM002_ver01.0 MN002 YR2016 Second Half
5.	Technical specification of HOB -EKOEFEKT 600
6.	JCM_MN_F_MoC_ver01.0_MN002,
7.	Heating service contract between Anu Service Co.,Ltd and Public organizations of Bornuur soum, Tuv aimag, 2016_2017
8.	Calibration Certificate of Heat meter -Multical 602C, 24/02/2015
9.	Letter of the MASM for recognition of producer's initial calibration of the Heat meter Multical 602C
10.	List of measuring instruments subject compulsory metrological control, Order # A/384, by Chairman of MASM,
11.	Standard MNS 6241:2011 "Heat meters. General requirements for the installation, commissioning, operational monitoring and maintenance "
12.1	Logbook of Consumer's opinion
12.2	Logbook of HOB
13.	Confirmation letter of avoidance of double registration in other climate mitigation mechanisms, Anu Service Co.,Ltd,
14.	Confirmation letter for non post registration changes of the project, Anu Service Co.,Ltd
15.	Monthly data sheet, 2016-2018
16.	Data sheet
17.	Report for installation of Heat meter, 25/06/2015
18.	Report for Inspection of Heat meter's installation in Bornuur soum
19.	Operation and Maintenance Manual of EKOEFECT [confidential]
Minutes of interviews	
20.	Minute of interview, Mr.F.Kuwahara, Project Manager, Suuri-Keikaku Co.,Ltd,
21.	Minute of interview, Mr.O.Purevsuren, Bornuur HOB Manager, Anu Service Co.,Ltd,
22.	Minute of interview, B.Bulganchimeg, Director of Hospital, Bornuur soum,
23.	Minute of interview, Ms.D.Gantsetseg, Civil Engineer of Anu Service Co.,Ltd

24. Report of On-site assessment at HOB of Bornuur sum, Tuv aimag,

Annex Certificates or curricula vitae of TPE's verification team members, technical experts and internal technical reviewers

Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.

Certificate of Appointment and CVs of Verification team members are attached to this report.

CERTIFICATE OF APPOINTMENT

Title of the Project: Centralization of Heat Supply System by Installation of High-Efficiency Heat only Boilers in Bornuur soum

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the verification of the JCM project.

Name of person:	**Assigned Roles:**
Ms. Natsagbadam Myatraaz	Team Leader
Mr. Byambatsogt Pashka	Team Member
Mr. Taivan Sukhee	Technical Reviewer

Date: June 19, 2018, Ulaanbaatar, Mongolia

[redacted]

NATSAGBADAM Myatraaz,
Director, Low Carbon Technology Center

CURRICULA VITAE OF THE VERIFICATION TEAM MEMBERS
"Confidential".

1. **Myatraaz NATSAGBADAM**

2. **Byambatsogt PASHKA**

3. **Sukhee TAIVAN**

JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum
Reference number	MN002
Monitoring period	01/01/2017 - 31/12/2017
Date of completion of the monitoring report	09/06/2018
Third-party entity (TPE)	Low Carbon Technology Center, Mongolia
Project participant contracting the TPE	Suuri Keikaku Co., Ltd, Japan
Date of completion of this report	28/06/2018

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, *Low Carbon Technology Center, Mongolia* (TPE's name) provides reasonable assurance that the emission reductions for *"Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum"* (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons> N/A

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
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Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory:	Mr. ☐ Ms. ☒
Last name: Myatraaz	First name: Natsagbadam
Title: Director	
Specimen signature: [redacted]	Date: 28/06/2018

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☐ Ms. ☒	M.Natsag-badam	Low Carbon Technology Center	Team leader	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☒
Mr. ☒ Ms. ☐	P.Byamba-tsogt	Low Carbon Technology Center	Team member	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☒
Mr. ☒ Ms. ☐	S.Taivan	Low Carbon Technology Center	Technical reviewer	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☐
Mr. ☐ Ms. ☐	N/A	N/A	N/A	☐	N/A	☐

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

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C. Means of verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

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The Project has been registered as a JCM project on 30 June, 2015, with applying the approved methodology MN_AM002 “Replacement and Installation of High-Efficiency Heat only Boilers for Hot Water Supply Systems” under the scheme of Joint Crediting Mechanism between Mongolia and Japan. Project was implemented by Suuri Keikaku Co.,Ltd of Japan (hereinafter

called "the Japanese PP") and Anu Service Co.,Ltd of Mongolia (hereinafter called "the Mongolian PP"). The installation of High-efficiency Heat only Boilers - EKOEFECT, pipe laying work, electrical construction and boiler building construction works were completed and the project operation has started in 27th September 2014.

The Eligibilty criterions of the applied methodology are:

Criterion1: Technology to be employed in this methodology is coal-fired heat only boiler (HOB) for hot water supply system.

Criterion 2: Capacity of the project HOB ranges from 0.10 MW to 1.00MW.

Criterion 3: The project activity involves the installation of new HOB and/or the replacement of the existing coal-fired HOB.

Criterion 4: The project HOB is equipped with an operation and maintenance manual.

Criterion 5: The catalog value of the boiler efficiency for the project HOB is 80% or higher.

Criterion 6:The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust collector.

The assessment results summarized as below:

1. The HOB EKOEFECT 600, which is installed and operated at the project site is the coal-fired heat only boiler for hot water supply system, thus it complies with Criterion #1, of the Applied methodology,
2. The capacity of the this HOB is 650kW,complies with Criterion #2,
3. As a result of project implementation,7 small, old, inefficient boilers have been replaced with two new high -efficient HOB, with a sufficient capacity, it complies with the Criterion #3,
4. The project HOB is equipped with an operation and maintenance manual prepared by Suuri Keikaku Co.,Ltd and translated into Mongolian language, complies with the Criterion #4,
5. Catalog value of the Boiler Efficiency of project HOB is 80-86%, complies with the Criterion # 5,
6. The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust collector, it complies with Criterion # 6 of the Applied methodology.

After the desk review, the on-site assessment was conducted on 21 June 2018.

Verification team determined that the project HOBs are in place and are used for heating service till now.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed fully compliance of the project implementation and operation with the Eligibility criteria of the applied methodology "Replacement and Installation of

High-efficient Heat only Boiler for Hot Water Supply Systems" (MN_AM002), approved in 28 January 2015, under the scheme of JCM between Mongolia and Japan.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>

The Verification team assessed whether the project implementation complied with the registered PDD or any approved, revised PDD through Document review and Follow-up actions (on-site visit and interviews) with Evidences: Ref.02, Ref.04, Ref.05, Ref 06, Ref.19 and Ref.24 attached to this report

1.Physical features of the project were checked through the on-site visit in 21 June 2018 and two Heat only Boilers of EKOEFECT 600 type, with serial numbers of 2013/141 and 2013/142 were in place as per the registered PDD. The Project HOBs have been operated since September 2014,

The monitoring has conducted, as based on the actual measurement using heat meter or "Monitoring Option C" was performed, according to the registered PDD.

2. Measuring equipment of the parameters is the Heat meter. The Heat meter consists of 1 flow sensor, 2 temperature sensors, calculation unit with display and datalogger, as described in the Monitoring Plan of registered PDD. Verification team confirmed the existence of Heat meters-Multical 602C, with serial number of 69710727 and 69710728, which were installed at the monitoring points as described in the registered PDD.

3. Parameters to be monitored ex-post are the net heat quantity supplied by the project HOB during the monitoring period - PHp and total hours of project HOB operation during the monitoring period-HMPp.Verification team determined that the measuring of the heat quantity done by the heat meter continuously, recording of measured value (data) were 4 times per hour in the datalogger and data input in the computer's database. Total hours of project HOB operation was identified by the monitoring period. The monitoring option, measurement's method and procedure were performed appropriately in line with the registered PDD.

4.Monitoring Structure of Project participants was identified through an interview with the Project Manager of Suuri Keikaku Co.,Ltd, Engineers of Anu Service Co.,Ltd and review on MoC submitted to the TPE by the PP on 25 June 2018. The Monitoring structure is as below:

1) Mr. Tabata Toru- Project Manager
2) Mr. Kuwahara Fumihiko- Project Manager
3) Mr. T.Narankhuu- Senior engineer
4) Mrs. D.Gantsetseg-Civil engineer and QA/QC team officer

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were raised

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that the Project implementation was in accordance with the registered PDD during the monitoring period and no change was found from the registered PDD.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>

Low Carbon Technology Center's Verification team assessed whether the calibration frequency and correction of measured values comply with the related requirements through Document review and Follow-up actions (on-site visit and interviews) with evidences: Ref.08, Ref.09, Ref.10, Ref.11, Ref.12, Ref.15, Ref.16, Ref.17, Ref.18 and Ref.24

1.The parameter was measured by the Heat meter Multical-602C. Heat meters were installed by the Engineers of Anu Service Co.,Ltd, who have the permission for installation of heat meters. Verification team determined that the Heat meters were calibrated in 24 February 2015 by the Kamstrup A/S Laboratory of Denmark. This calibration is valid according to the "Letter for Recognition of initial calibration of the Heatmeter Multical 602C", in 20 March 2015 issued by the Mongolian Agency for Standard and Metrology (MASM). The validity period of this verification is till the February of 2019, according to the "List of measuring instruments subject compulsory metrological control" by the Order #A/384_2014 of the Chairman of the MASM. The installations of the Heatmeters, were verified by the State Authorized Entity -Ulaanbaatar Heating Network Company in August 2016.

2.The Verifiers assessed the measured values in the database of the Project Participant and determined that, the set of measured data were within acceptable range including heat energy, flow rate, hot water temperatures in the pipes and confirmed absence of missed data during the monitoring period, thus the correction of measured values was not required.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were identified.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team comfirmed that the calibration frequency of monitoring equipment are in line with the Monitoring plan and complied with requirements of the "Law on Guarantee the Uniformity of Measurement" and related rules. Verification team confirms that, the correction of measured values was not required.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

Verification team assessed data and calculation of GHG emisssions reductions through Document review and Follow-up actions (on-site visit and interviews) with Evidences: Ref.01, Ref.02, Ref.03, Ref.04, Ref.15, Ref.16 and Ref.24.

1.Monitoring period

Verification team determined that, this monitoring period was from 01 January 2017 till 31 December 2017, the all heat consumers have been supplied during 2017, with summer outage from 15 May 2017 till 15 September 2017. It was confirmed with the evidences: Ref.04 and Ref.07.

2.Data assessment

The parameter “Heat energy” or the total heat quantity produced by project HOB is measured by the Heat meter as follow: the parameters measured in every 15 minutes and recorded in the data logger, built in the heat meter. This value is the sum of value of current measurement and the values of previous measurements, thus the Data logger calculates and records the total heat quantity produced by the HOB from the start of monitoring, to the moment of particular measurement. Then the data was transferred and exported into Excel sheet and were stored in the computer of Anu Service Co.,Ltd, set of 24 hrs data has been transferred to the office of Suuri Keikaku Co.,Ltd in Tokyo, Japan, every day.

The data measured during the monitoring period was checked through review of database of the Anu Service Co.,Ltd, Printed values of the HOB, Logbook of HOB, interviews and on-site assessment. Measured and recorded values in the datalogger of the Heat meter are: Meter's Number, Readout date&time, Heat quantity (GJ), Volume of water, Hour counter (hrs), Current flow temperature, Current return temperature, Electricity Power (MW) and the Current flow rate (m3/h). Measured data was transmitted to the office of Mongolian PP through the Wi-Fi internet.. Data transmission was unavailable from 01 January 2017 till 06 February 2017, due to the fault in the internet connection device and started to work normally, from 06 February 2017. The fireman has been monitored the measuring by display values of the heat meter and reported to the QA/QC officer regularly, during data transfer interruption.

Verification team determined that, the measuring and data recording of the monitored parameters was continuous, without interrupt by the heat meter's data logger equipped with a battery and no data missing and no abnormal values was found.

3.Calculation of GHG Emission Reductions

Verification team verified the corresponding Monitoring Report sheet and calculation formulas

of the GHG emission reductions of the applied methodology and determined that, they were used correctly. The measured values, default values and ex-ante parameters used in the calculation were correct, without any errors and omissions and misrepresentations.

Ex-ante parameters used for calculation are:

RPC p = 2.3 kW (Rated power consumption of the project HOB),

EF CO2, grid = 1.1030 tCO2/MWh(CO2 emission factor of the Grid electricity consumed by project HOB),

Default values used for calculation are:

EF CO2, coal = 0.0909 tCO/GJ (CO2 Emission factor of Coal used in HOB),

η = 0.533 (Boiler Efficiency of Reference HOB)

η = 0.610 (Boiler Efficiency of Project HOB)

4. Monitored values provided in the Monitoring report has been checked as listed below:

Parameters	Monitored values	Method to check values in the monitoring report with sources
HPp	6.171 GJ/p	Reported value was checked agaisnt the Monitored data and other means as below: 1. Assessment of the heat meter's data in the Database of the Project Participants - Anu Service Co.,Ltd and Suuri Keikaku Co., Ltd, 2. Assessment of values reported in the "Monthly data sheet for 2016-2018", 3. Assessment of information of the "Logbook of HOB" and interview with the related persons and consumers, 4.Assessment of information in the previous Verification report,
HMPp	11.616 hrs	Reported value was checked agaisnt the Monitored data and other means as below: 1. Assessment of the heat meter's data in the Database of the Project Participants, 2. Assessment of information of the Heating supply contracts, "Logbook of HOB" and interview with the related persons and consumers about HOB operation,
N/A	N/A	N/A

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed the fair representation of reported values of GHG emission reductions in the monitoring report and has no material errors.

C.5. Assessment of avoidance of double registration

<Means of verification>

Verification team checked whether the JCM project has not been registered under other international climate mitigation mechanisms through document review and website review with Evidence Ref. 13.

Project participant was submitted the declaration letter for avoidance of double registration of the project in other international climate mitigation mechanisms in the Modalities of Communication Statement, to the Join Committee at the validation stage and another written confirmation to the TPE. Verification team cross-checked it through the review on websites of Clean Development Mechanism (CDM),Verified Carbon Standard Association (VCSA) and Gold Standard Foundation (GSF) and determined that no project with similar technology had registered in an international climate mitigation mechanisms, from Mongolia.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CAR 01- Project participant was requested to submit, up to date Written confirmation for avoidance of double registration of the project in other international climate mitigation mechanisms.

CAR 01 was closed up, bacause Anu Service Co.,Ltd has submitted the requested Confirmation Letter, with Ref.13.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that, the registered project has not registered under other international climate mitigation mechanisms.

C.6. Post registration changes

<Means of verification>

The Verifier assessed whether the Project has been changed from the registered PDD through Document review and Follow-up action (on-site visit and interviews) with Evidence: Ref.02,

Ref.14 and Ref.24.

Verification team idenfied that the Project has not changed after it's registration through the review on PDD, written confirmation of the Project Participant and on-site assessment.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that the project had not been changed from the registered PDD and applied Approved Methodology.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No FAR was raised during the previous verification of the project.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013			
2014			
2015			
2016			
2017	1052	950	102
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027			
2028			
2029			
2030			
Total (tCO_2e)			102

F. List of interviewees and documents received

F.1. List of interviewees

Interviewed on 19 June 2018:

1. Mr.F.Kuwahara, Project Manager, Suuri-Keikaku Co.,Ltd,

Interviewed on 21 June 2018;

2. Mr.O.Purevsuren, Bornuur HOB Manager, Anu Service Co.,Ltd,
3. Ms.B.Bulganchimeg, Director of Hospital, Bornuur soum,
4. Ms.D.Gantsetseg, Engineer of Anu Service Co.,Ltd

F.2. List of documents received

1.	JCM Approved Methodology MN_AM002 "Replacement and Installation of High-Efficiency Heat Only Boilers for Hot Water Supply Systems"
2.	PDD version 03.0, 27/06/2015 " Centraization of heat supply system by installation of High-efficiency Heat Only Boilers in Bornuur soum " MN002
3.	Monitoring Report Sheet: JCM_MN_AM002_ver01.0 MN002 Bornuur Soum YR2016 Second Half
4.	Monitoring Report Sheet: JCM_MN_AM002_ver01.0 MN002 YR2017
5.	Technical specification of HOB -EKOEFEKT 600
6.	JCM_MN_F_MoC_ver01.0_MN002,
7.	Heating service contract between Anu Service Co.,Ltd and Public organizations of Bornuur soum, Tuv aimag, 2016_2017
8.	Calibration Certificate of Heat meter -Multical 602C, 24/02/2015
9.	Letter of the MASM for recognition of producer's initial calibration of the Heat meter Multical 602C
10.	List of measuring instruments subject compulsory metrological control, Order # A/384, by Chairman of MASM,
11.	Standard MNS 6241:2011 "Heat meters. General requirements for the installation, commissioning, operational monitoring and maintenance "
12.1	Logbook of Consumer's opinion
12.2	Logbook of HOB
13.	Confirmation letter of avoidance of double registration in other climate mitigation mechanisms, Anu Service Co.,Ltd, 26 June 2018
14.	Confirmation letter for no post registration changes of the project, Anu Service Co.,Ltd
15.	Monthly data sheet
16.	Data sheet
17.	Report for installation of Heat meter in Bornuur soum
18.	Report for Inspection of Heat meter's installation in Bornuur soum
19.	Operation and Maintenance Manual of EKOEFECT [confidential]
Minutes of interviews	
20.	Minute of interview, Mr.F.Kuwahara, Project Manager, Suuri-Keikaku Co.,Ltd,
21.	Minute of interview, Mr.O.Purevsuren, Bornuur HOB Manager, Anu Service Co.,Ltd,
22.	Minute of interview, B.Bulganchimeg, Director of Hospital, Bor nuur soum,
23.	Minute of interview, Ms.D.Gantsetseg, Civil Engineer of Anu Service Co.,Ltd
24.	Report of On-site assessment at HOB of Bornuur sum, Tuv aimag,

Annex Certificates or curricula vitae of TPE's verification team members, technical experts and internal technical reviewers

Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.

Certificate of Appointment and CVs of Verification team members are attached to this report.

CERTIFICATE OF APPOINTMENT

Title of the Project: Centralization of Heat Supply System by Installation of High-Efficiency Heat only Boilers in Bornuur soum

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the verification of the JCM project.

Name of person:	**Assigned Roles:**
Ms. Natsagbadam Myatraaz	Team Leader
Mr. Byambatsogt Pashka	Team Member
Mr. Taivan Sukhee	Technical Reviewer

Date: June 19, 2018, Ulaanbaatar, Mongolia

[redacted]

NATSAGBADAM Myatraaz,
Director, Low Carbon Technology Center

CURRICULA VITAE OF THE VERIFICATION TEAM MEMBERS

"Confidential".

1. Myatraaz NATSAGBADAM

Academic Background:

- [redacted]
- [redacted]

Work Experiences:

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

2. Byambatsogt PASHKA

Academic Background:

[redacted]

Work Experiences:

[redacted]

[redacted]

Project experience

[redacted]

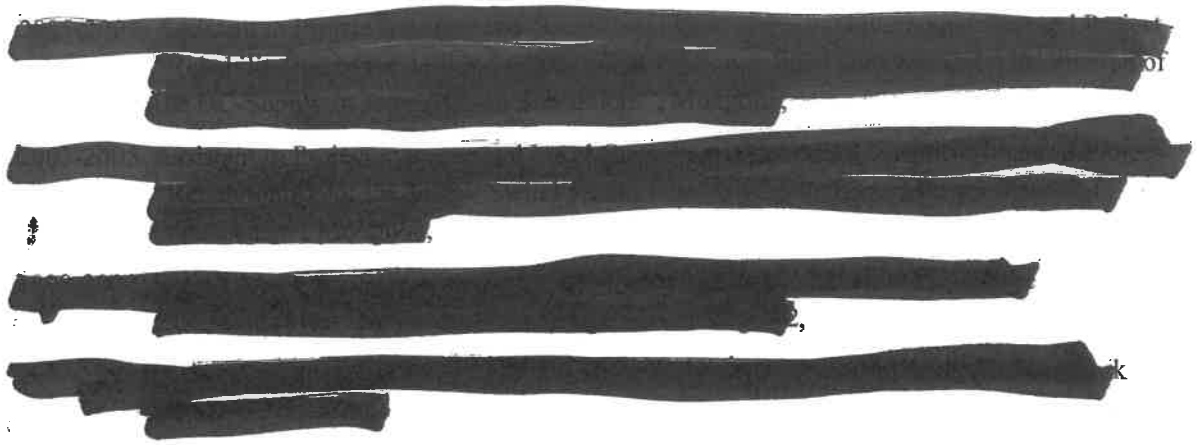
3. Sukhee TAIVAN

Academic Background:

[redacted]

Work Experiences:

[redacted]



JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum
Reference number	MN002
Monitoring period	01/01/2018 - 15/05/2018
Date of completion of the monitoring report	09/06/2018
Third-party entity (TPE)	Low Carbon Technology Center, Mongolia
Project participant contracting the TPE	Suuri Keikaku Co., Ltd, Japan
Date of completion of this report	28/06/2018

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, *Low Carbon Technology Center, Mongolia* (TPE's name) provides reasonable assurance that the emission reductions for *"Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum"* (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons> N/A

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
The project implementation against the registered PDD or any approved revised PDD	The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD.	☒
Calibration frequency and correction of measured values with related requirements	If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.	☒
Data and calculation of GHG emission reductions	The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology.	☒
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	☒
Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory:	Mr. ☐ Ms. ☒
Last name: Myatraaz	First name: Natsagbadam
Title: Director	
Specimen signature: [redacted]	Date: 28/06/2018

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☐ Ms. ☒	M.Natsag-badam	Low Carbon Technology Center	Team leader	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☒
Mr. ☒ Ms. ☐	P.Byamba-tsogt	Low Carbon Technology Center NGO	Team member	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☒
Mr. ☒ Ms. ☐	S.Taivan	Low Carbon Technology Center NGO	Technical reviewer	☒	Sectoral scopes for verification: 1, 2, 3, 4, 6, 8, 13, 14	☐
Mr. ☐ Ms. ☐	N/A	N/A	N/A	☐	N/A	☐

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

C. Means of verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

The Low Carbon Technology Center's Verification team has verfied whether the project implementation and operation complied with the eligibility criteria of the applied methodology after the starting date of of the project operation, through the Document review and Follow up actions (on site visit and interview) with Evidences: Ref.01, Ref.02, Ref.04, Ref.05, Ref.19, Ref.20 and Ref.24 attached to this report.

The Project has been registered as a JCM project on 30 June, 2015, with applying the approved methodology MN_AM002 “Replacement and Installation of High-Efficient Heat only Boilers for Hot Water Supply Systems” under the scheme of Joint Crediting Mechanism between Mongolia and Japan. Project was implemented by Suuri Keikaku Co.,Ltd of Japan (hereinafter

called "the Japanese PP") and Anu Service Co.,Ltd of Mongolia (hereinafter called "the Mongolian PP"). The installation of high-efficiency Heat only Boilers - EKOEFECT, pipe laying work, electrical construction and boiler building construction works were completed and the project operation has started in 27th September 2014.

The Eligibilty criterions of the applied methodology are:

Criterion1: Technology to be employed in this methodology is coal-fired heat only boiler (HOB) for hot water supply system.

Criterion 2: Capacity of the project HOB ranges from 0.10 MW to 1.00MW.

Criterion 3: The project activity involves the installation of new HOB and/or the replacement of the existing coal-fired HOB.

Criterion 4: The project HOB is equipped with an operation and maintenance manual.

Criterion 5: The catalog value of the boiler efficiency for the project HOB is 80% or higher.

Criterion 6:The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust collector.

The assessment results summarized as below:

1. The HOB EKOEFECT 600, which is installed and operated at the project site is the coal-fired heat only boiler for hot water supply system, thus it complies with Criterion #1, of the Applied methodology,
2. The capacity of the this HOB is 650kW,complies with Criterion #2,
3. As a result of project implementation,7 small, old, inefficient boilers have been replaced with two new high -efficient HOB, with a sufficient capacity, it complies with the Criterion #3,
4. The project HOB is equipped with an operation and maintenance manual prepared by Suuri Keikaku Co.,Ltd and translated into Mongolian language, complies with the Criterion #4,
5. Catalog value of the Boiler Efficiency of project HOB is 80-86%, complies with the Criterion # 5,
6. The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust collector, it complies with Criterion # 6 of the Applied methodology.

After the desk review, the on-site assessment was conducted on 21 June 2018.

Verification team determined that the project HOBs are in place and are used for heating service till now.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed fully compliance of the project implementation and operation with the Eligibility criteria of the applied methodology "Replacement and Installation of

high-efficient Heat only Boiler for Hot Water Supply Systems" (MN_AM002), approved in 28 January 2015, under the scheme of JCM between Mongolia and Japan.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>

The Verification team assessed whether the project implementation complied with the registered PDD or any approved, revised PDD through Document review and Follow-up actions (on-site visit and interviews) with Evidences: Ref.02, Ref.04, Ref.05, Ref 06, Ref.16 and Ref.24 attached to this report

1.Physical features of the project were checked through the on-site visit in 21 June 2018 and two Heat only Boilers of EKOEFECT 600 type, with serial numbers of 2013/141 and 2013/142 were in place as per the registered PDD. The Project HOBs have been operated since September 2014,

The monitoring has conducted, as based on the actual measurement using heat meter or "Monitoring Option C" was performed, according to the registered PDD.

2. Measuring equipment of the parameters is the Heat meter. The Heat meter consists of 1 flow sensor, 2 temperature sensors, calculation unit with display and datalogger, as described in the Monitoring Plan of registered PDD. Verification team confirmed the existence of Heat meters-Multical 602C, with serial number of 69710727 and 69710728, which were installed at the monitoring point as described in the registered PDD.

3. Parameters to be monitored ex-post are the net heat quantity supplied by the project HOB during the monitoring period - PHp and total hours of project HOB operation during the monitoring period-HMPp.Verification team determined that the measuring of the heat quantity done by the heat meter continuously, recording of measured value (data) were 4 times per hour in the datalogger and data input in the computer's database. Total hours of project HOB operation was identified by the monitoring period. The monitoring option, measurement's method and procedure were performed appropriately in line with the registered PDD.

4.Monitoring Structure of Project participants was identified through an interview with the Job Manager of the Project, with the Engineers of Anu Service.,Ltd and review on MoC submitted to the TPE in 20 Jule 2018 and the monitoring structure is as below:

1) Mr. Tabata Toru- Project Manager
2) Mr. Kuwahara Fumihiko-Project Manager
3) Mr. T.Narankhuu- Senior Engineer
4) Mrs. D.Gantsetseg-Civil Engineer and QA/QC team officer

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were raised

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that the Project implementation was in accordance with the registered PDD during the monitoring period and no change was found from the registered PDD.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>

Verification team assessed whether the calibration frequency and correction of measured values comply with the related requirements through Document review and Follow-up actions (on-site visit and interviews) with evidences: Ref.08, Ref.09, Ref.10, Ref.11, Ref.12, Ref.15, Ref.16, Ref.17, Ref.18 and Ref.24

1.The parameter was measured by the Heat meter Multical-602C. Heat meters were installed by the Engineers of Anu Service Co.,Ltd having the permission for installation of heat meters. Verification team determined that the Heat meters were calibrated in 24 February 2015 by the Kamstrup A/S Laboratory of Denmark. This calibration is valid as the calibration performed by Mongolian Agency for Standard and Metrology (MASM), as informed in the “Letter for Recognition of initial calibration of the Heatmeter Multical 602C, 20 March 2015" issued by the MASM. The validity period of this verification is till the February of 2019, according to the "List of measuring instruments subject compulsory metrological control" by the Order #A/384_2014 of the Chairman of the MASM. The installations of the Heatmeters, were verified by the State Authorized Entity -Ulaanbaatar Heating Network Company in August 2016.

2.The Verifiers assessed the measured values in the database of the Project Participant (Anu Service Co.,Ltd), and determined that, the set of measured data were within acceptable range including heat energy, flow rate, hot water temperatures in the pipes, outdoor and indoor temperatures and confirmed absence of missed data during the monitoring period, thus the correction of measured values was not required.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were identified.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team comfirmed that the calibration frequency of monitoring equipment are in line with the Monitoring plan and complied with related requirements of the "Law on Guarantee the Uniformity of Measurement" and also the team confirms that the correction of measured

values was not required.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

Verification team assessed data and calculation of GHG emisssions reductions through Document review and Follow-up actions (on-site visit and interviews) with Evidences: Ref.01, Ref.02, Ref.03, Ref.04, Ref.16 and Ref.24.

1.Monitoring period

Verification team determined that this monitoring period was from 01 January 2018 till 15 May 2018.

2.Data assessment

The parameter “Heat energy” or the total heat quantity produced by project HOB is measured by the Heat meter as following: the parameters measured in every 15 minutes and recorded in the data logger, built in the heat meter. This value is the sum of value of current measurement and the values of previous measurements, thus the Data logger calculates and records the total heat quantity produced by the HOB from the start of monitoring, to the moment of particular measurement. Then the data was transferred to the database of the computer of Anu Service Co., Ltd. The received data were exported into Excel sheet and were stored, set of 24 hrs data has been transferred to the office of Suuri keikaku Co.,Ltd in Tokyo, Japan, every day.

The data measured during the monitoring period was checked through review of the database of the Anu Service Co.,Ltd, Printed values of the HOBs, Logbook of HOB, interviews and on-site assessment. Measured and recorded values in the datalogger of the Heat meter are: Meter's number, Readout date&time, Heat quantity (GJ), Volume of water, Hour counter (hrs), Current flow temperature, Current return temperature, Electricity power (MW) and the Current flow rate (m3/h).

Verification team determined that, the measuring and data recording of the monitored parameters and the data transmisssion to the Project Participant's office was continuous, without interrupt by the heat meter's data logger equipped with a battery, during whole monitoring period and no data missing and no abnormal values was found.

3.Calculation of GHG Emission Reductions

Verification team verified the corresponding Monitoring Report sheet and calculation formulas of the GHG emission reductions of the applied methodology and determined that, they were used correctly. The ex-ante parameters used in the calculation were correct, without any errors and omissions and misrepresentations.

Ex-ante parameters used for calculation are:

RPC p = 2.3 kW (Rated power consumption of the project HOB),

EF CO2, grid = 1.1030 tCO2/MWh(CO2 emission factor of the Grid electricity consumed by project HOB),

Default values used for calculation are:

EF CO2, coal = 0.0909 tCO/GJ (CO2 Emission factor of Coal used in HOB),

η = 0.533 (Boiler Efficiency of Reference HOB)

η = 0.610 (Boiler Efficiency of Project HOB)

4. Monitored values provided in the Monitoring report has been checked as listed below:

Parameters	Monitored values	Method to check values in the monitoring report with sources
HPp	4.234 GJ/p	Reported value was checked agaisnt the Monitored data and other means as below: 1. Assessment of the heat meter's data in the Database of the Any Service Co.,Ltd and Suuri Keikaku Co., Ltd, 2. Comparison of the measured values indicated in the Heat meter's display, that were installed at hot water pipe of each HOB and at the main outgoing hot water pipe, 3. Assessment of information of the "Logbook of HOB" and interview with the related persons, consumers, 4.Assessment of information in the previous Verification report,
HMPp	6.518 hrs	Reported value was checked agaisnt the Monitored data and other means as below: 1. Assessment of the heat meter's data in the Database of the Any Service Co.,Ltd and Suuri Keikaku Co., Ltd,, 2. Assessment of information of the Heating supply contracts, "Logbook of HOB" and interview with the related persons and consumers about HOB operation,
N/A	N/A	N/A

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed the fair representation of reported values of GHG emission reductions in the monitoring report and has no material errors.

C.5. Assessment of avoidance of double registration

<Means of verification>

Verification team checked whether the JCM project has not been registered under other international climate mitigation mechanisms through document review and website review with Evidence Ref. 14.

Project participant was submitted the declaration letter for avoidance of double registration of the project in other international climate mitigation mechanisms in the Modalities of Communication Statement, to the Join Committee at the validation stage and another written confirmation to the TPE in 26 June 2018. Verification team cross-checked it through the review on websites of Clean Development Mechanism (CDM), Verified Carbon Standard Association (VCSA) and Gold Standard Foundation (GSF) and determined that no project with similar technology had registered in an international climate mitigation mechanisms, from Mongolia.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CAR 01- Project participant was requested to submit, up to date Written confirmation for avoidance of double registration of the project in other international climate mitigation mechanisms.

CAR 01 was closed up, bacause Anu Service Co.,Ltd has submitted the requested Confirmation Letter, with Ref.14.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that, the registered project has not registered under other international climate mitigation mechanisms.

C.6. Post registration changes

<Means of verification>

The Verifier assessed whether the Project has been changed from the registered PDD through Document review and Follow-up action (on-site visit and interviews) with Evidences: Ref.02, Ref.15 and Ref.24.

Verification team idenfied that the Project has not changed after it's registration through the review on PDD, written confirmation of the Project Participant and on-site assessment.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CAR 02- Project participant was requested to submit, up to date Written confirmation for that the project has not changed from the registered PDD.

CAR 02 was closed up, bacause Anu Service Co.,Ltd has submitted the requested Confirmation Letter, with Ref.15.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team confirmed that the project had not been changed from the registered PDD and applied Approved Methodology.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No FAR was raised during the previous verification of the project.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013			
2014			
2015			
2016			
2017			
2018	716	644	72 (for the First half of 2018)
2019			
2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027			
2028			
2029			
2030			
Total (tCO_2e)			75

F. List of interviewees and documents received

F.1. List of interviewees

Interviewed on 19 June 2018:

1. Mr.F.Kuwahara, Project Manager, Suuri-Keikaku Co,.Ltd,

Interviewed on 21 June 2018;

2. Mr.O.Purevsuren, Bornuur HOB Manager, Anu Service Co.,Ltd,
3. Ms.B.Bulganchimeg, Director of Hospital, Bor nuur soum,
4. Ms.D.Gantsetseg, Civil Engineer of Anu Service Co.,Ltd

F.2. List of documents received

1.	JCM Approved Methodology MN_AM002 "Replacement and Installation of High-Efficiency Heat Only Boilers for Hot Water Supply Systems"
2.	PDD version 03.0, 27/06/2015 " Centraization of heat supply system by Installation of high-efficiency Heat Only Boilers in Bor nuur soum " MN002
3.	Monitoring Report Sheet: JCM_MN_AM002_ver01.0 MN002 BornuurSoum YR2017
4.	Monitoring Report Sheet: JCM_MN_AM002_ver01.0 MN002_First half YR2018
5.	Technical specification of HOB -EKOEFEKT 600
6.	JCM_MN_F_MoC_ver01.0_MN002_ 20/06/2018
7.	Heating service contract between Anu Service Co.,Ltd and Public organizations of Bornuur soum, Tuv aimag, 2017_2018
8.	Calibration Certificate of Heat meter -Multical 602C, 24/02/2015
9.	Letter of the MASM for recognition of producer's initial calibration of the Heat meter Multical 602C
10.	List of measuring instruments subject compulsory metrological control, Order # A/384, by Chairman of MASM,
11.	Standard MNS 6241:2011 "Heat meters. General requirements for the installation, commissioning, operational monitoring and maintenance "
12.	Logbook of Consumer's opinion
13.	Logbook of HOB
14.	Confirmation letter of avoidance of double registration in other climate mitigation mechanisms, Anu Service Co.,Ltd,
15.	Confirmation letter for no post registration changes of the project, Anu Service Co.,Ltd
16.	Monthly data sheet, 2018
17.	Report for installation of Heat meter
18.	Report for Inspection of Heat meter's installation in Bornuur soum
19.	Operation and Maintenance Manual of EKOEFECT [confidential]
Minutes of interviews	
20.	Minute of interview, Mr.F.Kuwahara, Project Manager, Suuri-Keikaku Co,.Ltd,
21.	Minute of interview, Mr.O.Purevsuren, Bornuur HOB Manager, Anu Service Co.,Ltd,
22.	Minute of interview, B.Bulganchimeg, Director of Hospital, Bor nuur soum,
23.	Minute of interview, Ms.D.Gantsetseg, Civil Engineer of Anu Service Co.,Ltd

24.	Report of On-site assessment at HOB of Bor nuur sum, Tuv aimag,

Annex Certificates or curricula vitae of TPE's verification team members, technical experts and internal technical reviewers

Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.

Certificate of Appointment and CVs of Verification team members are attached to this report.

CERTIFICATE OF APPOINTMENT

Title of the Project: Centralization of Heat Supply System by Installation of High-Efficiency Heat only Boilers in Bornuur soum

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the verification of the JCM project.

Name of person:	**Assigned Roles:**
Ms. Natsagbadam Myatraaz	Team Leader
Mr. Byambatsogt Pashka	Team Member
Mr. Taivan Sukhee	Technical Reviewer

Date: June 19, 2018, Ulaanbaatar, Mongolia

[redacted]

NATSAGBADAM Myatraaz,
Director, Low Carbon Technology Center

CURRICULA VITAE OF THE VERIFICATION TEAM MEMBERS

"Confidential".

1. Myatraaz NATSAGBADAM

Academic Background:

- [redacted]
- [redacted]

Work Experiences:

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

2. Byambatsogt PASHKA

Academic Background:

[redacted]

Work Experiences:

[redacted]

[redacted]

Project experience

[redacted]

3. Sukhee TAIVAN

Academic Background:

[redacted]

Work Experiences:

[redacted]