MINISTRY OF ENVIRONMENT
AND TOURISM

Recent development of JCM projects and methodologies in Mongolia

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- Ongoing projects
- Challenges

- Background information on MRV process
- MRV process in Joint Crediting Mechanism
- Recent developments

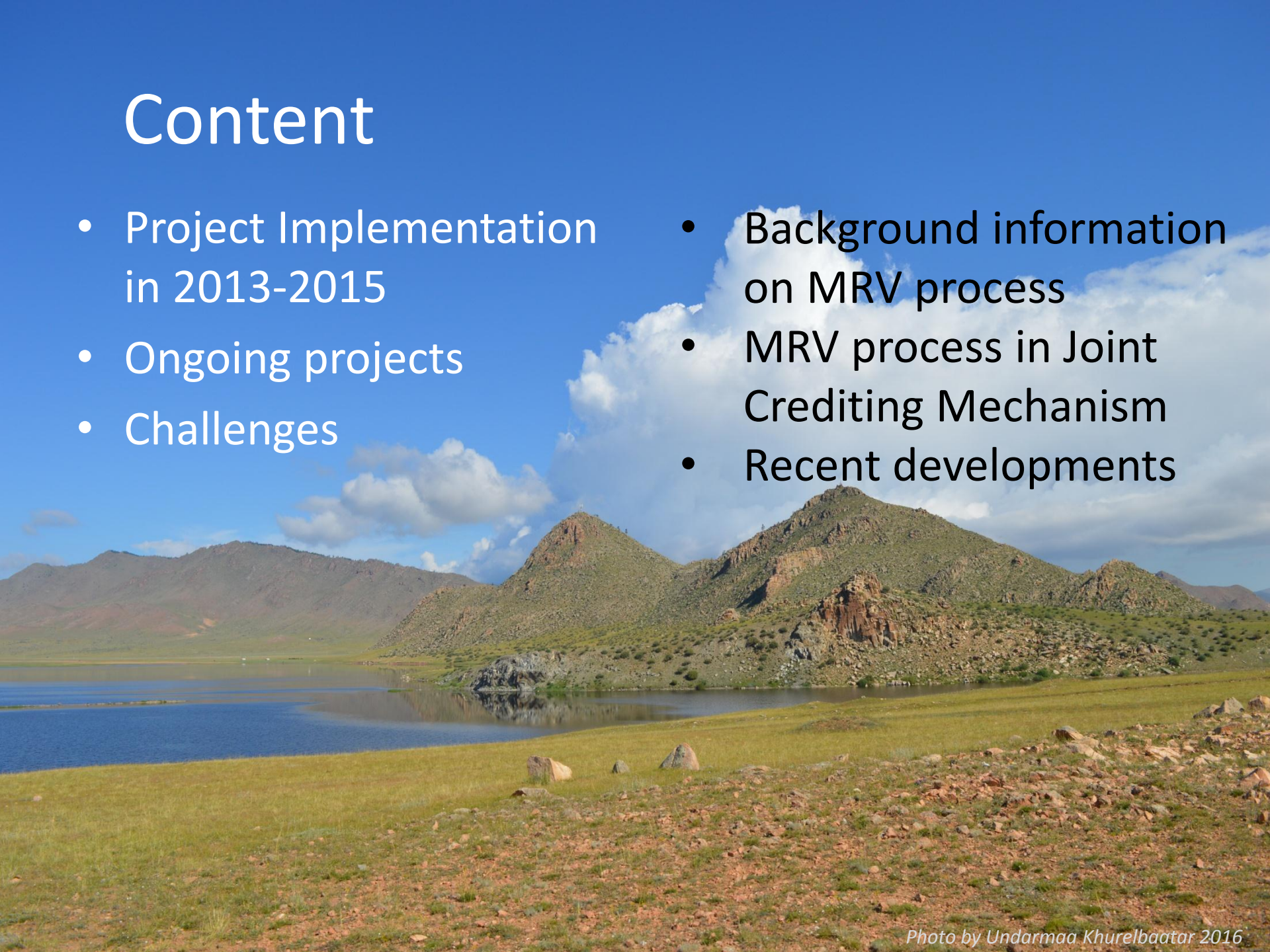
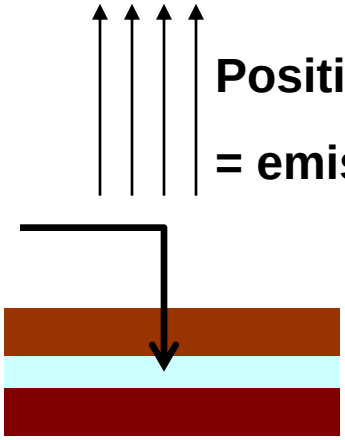


Photo by Undarmaa Khurelbaatar 2016

Methodology development

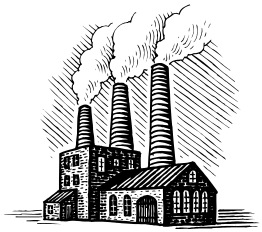
Green house gas projects

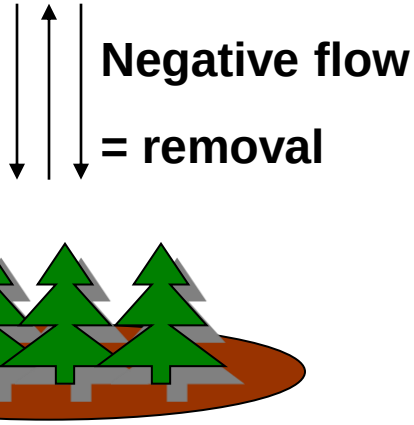
Atmosphere



Positive flow

= emission





Negative flow

= removal

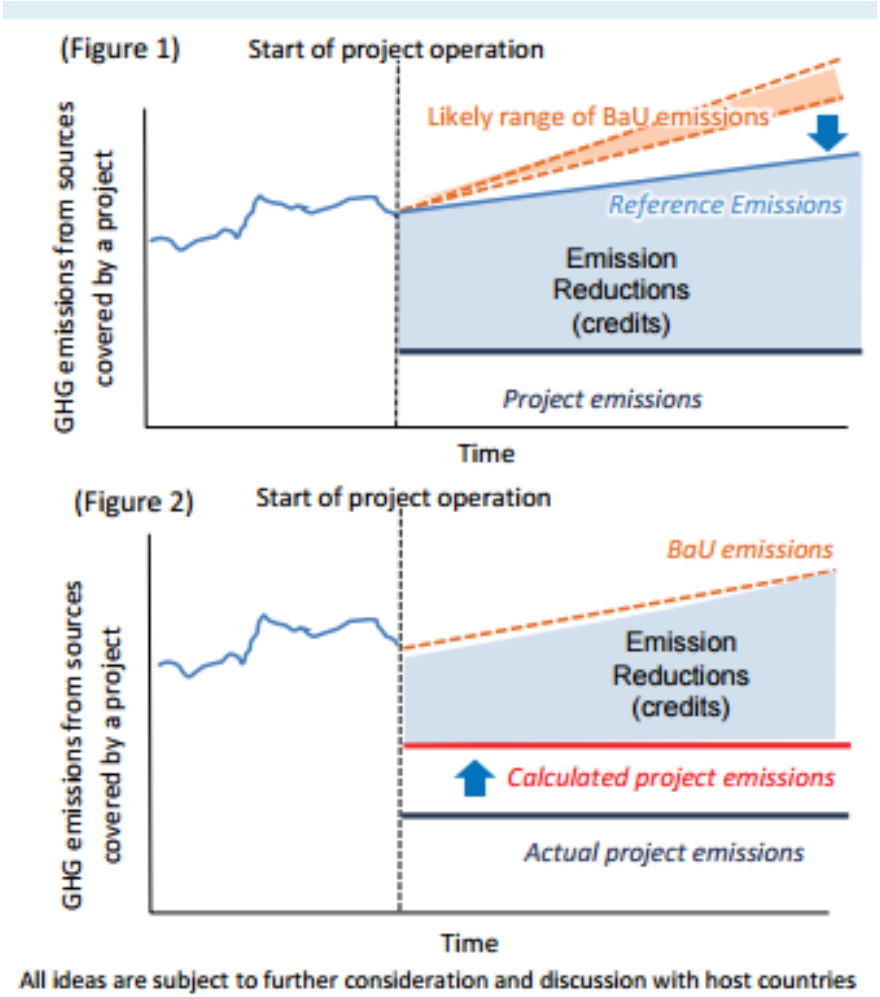
reservoir, sources

sources

sink, reservoir, sources

ISO14064-2, FigA.1

Basic Concept for Crediting under the JCM



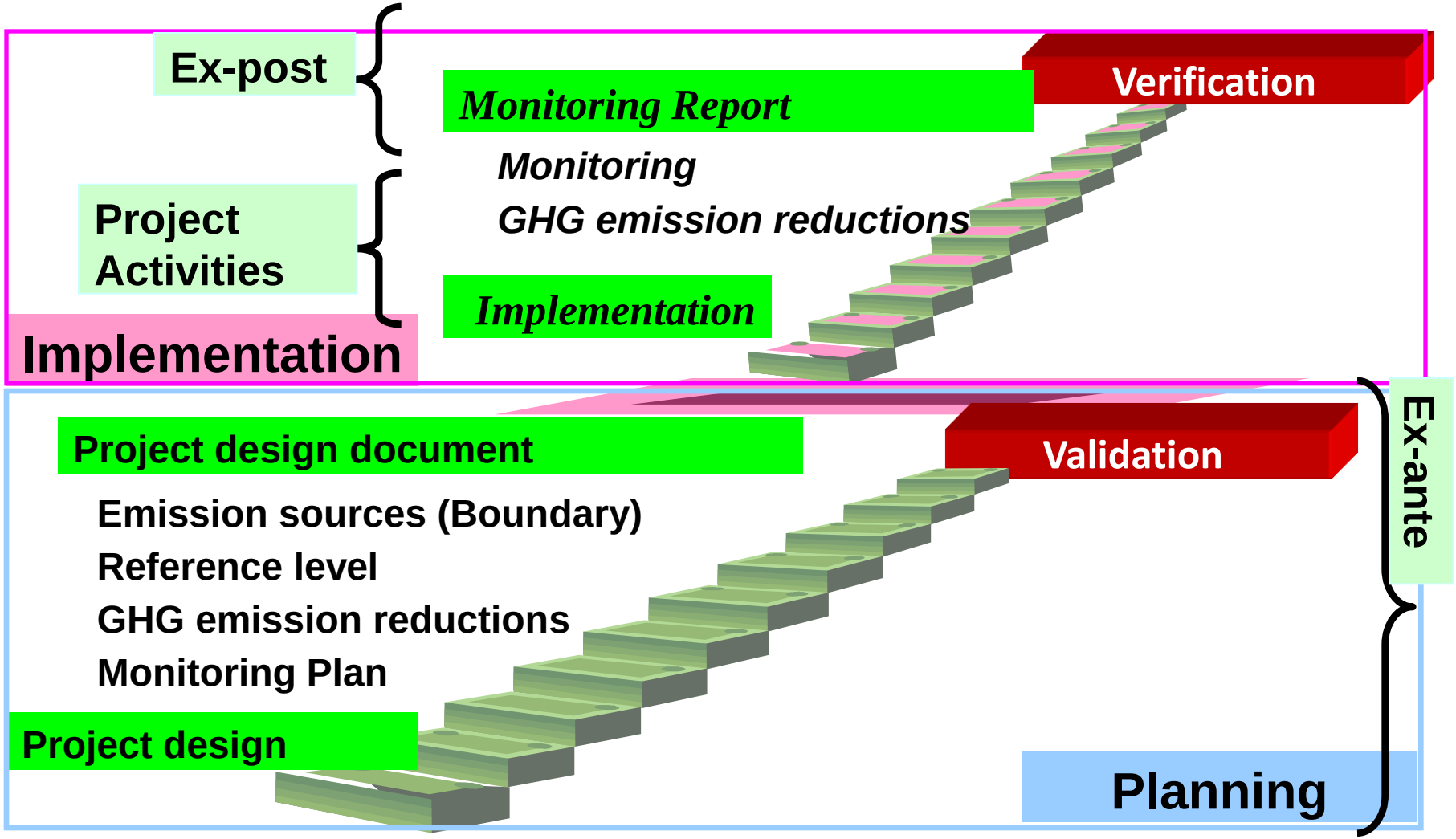
In the JCM, emission reductions to be credited are defined as the deference between "reference emissions" and project emissions. There are two conservative ways of calculation of emission reductions or removals in the JCM. Figure 1 shows an example of a conservative way of calculation of emission reductions. The reference emissions here are set below the likely range of business-as-usual (BAU) emissions – which represent plausible emissions in providing the same outputs or service level of the project under the mechanism – by, for instance, discounting certain percentage points from BaU emissions. In this case, emission reductions to be credited are calculated as the difference between the reference emissions and the project emissions.

In another example showed in Figure 2, project emissions are calculated larger than actual project emissions by applying conservative default values for parameters to calculate project emissions instead of monitoring actual values. In this case, emission reductions to be credited are calculated as the deference between the BaU emissions and the project emissions calculated in a simple and conservative manner.

Sectoral scopes

1. Energy industries (renewable - / non-renewable sources)
2. Energy distribution
3. Energy demand
4. Manufacturing industries
5. Chemical industry
6. Construction
7. Transport
8. Mining/Mineral production
9. Metal production
10. Fugitive emissions from fuels (solid, oil and gas)
11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
12. Solvents use
13. Waste handling and disposal
14. Afforestation and reforestation
15. Agriculture

Process of Green house gas projects



Source: ERM

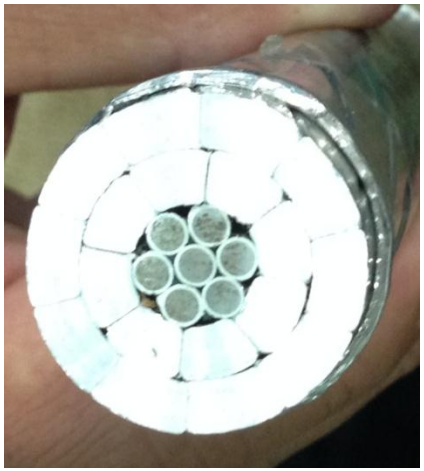
JCM Methodology

Key Features of the JCM methodology

- The JCM methodologies are designed in such a way that project participants can use them easily and verifiers can verify the data easily. Simplified
- In order to reduce monitoring burden, default values are widely used in a conservative manner.
- Eligibility criteria clearly defined in the methodology can reduce the risks of rejection of the projects proposed by project participants.

Approved Methodology

MN_AM001 (20 Feb, 2014)
Installation of energy-saving transmission lines in the Mongolian Grid“

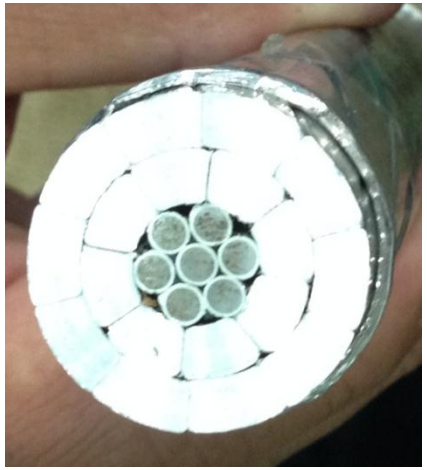


MN_AM002 (30 Jan, 2015)
Replacement and Installation of High-Efficient Heat Only Boilers (HOBs) for Hot Water Supply Systems

MN_AM003 (30 Sep, 2016)
Installation of Solar PV System

MN_AM001

Calculation of project emissions :
GHG emission due to transmission loss in LL-ACSR/SA, based on monitored transmission loss.
Monitoring parameters : Power sent from the point of origin/supply to the transmission line, power received at the point of receipt of the transmission line, emission factor of the grid, direct current resistance of the transmission line



MN_AM002

Calculation of project emissions :

The sources of project emissions are coal consumption and electricity consumption of project HOB. Project emissions are calculated by the net heat quantity supplied by the project HOB, boiler efficiency of the project HOB and CO2 emission factor of coal. In addition, project emissions due to auxiliary electricity consumption are included, on the basis of electricity consumption and CO2 emission factor of the grid.
Monitoring parameters : Net heat quantity supplied by the project HOB and total hours of the project HOB operation during the monitoring period

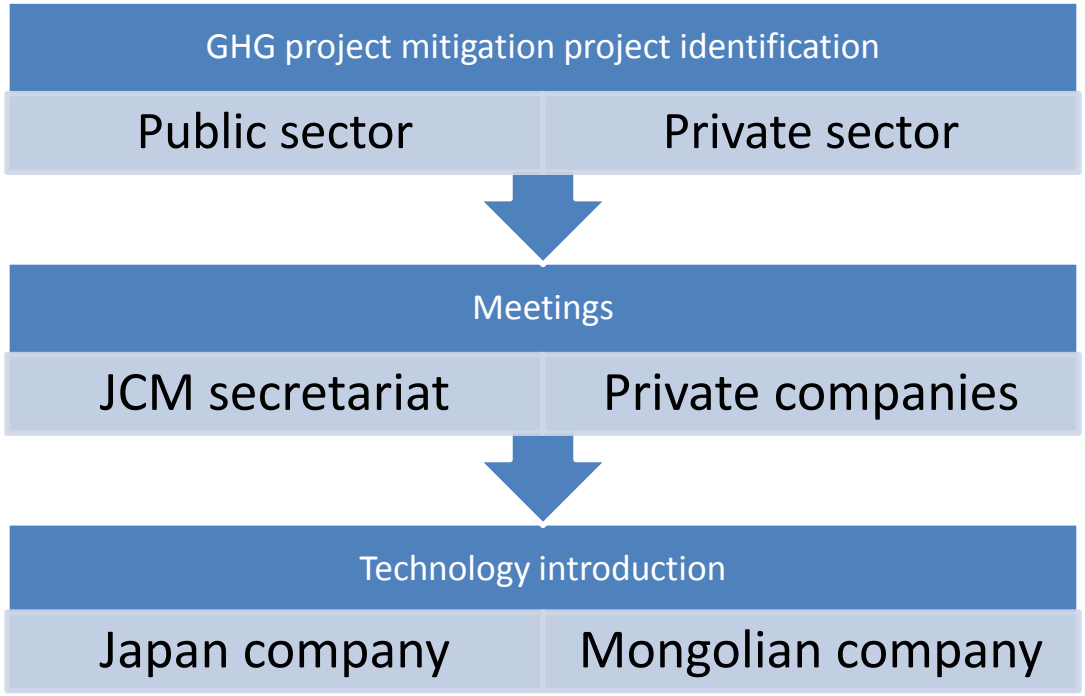
MN_AM003

Calculation of project emissions :
Project emissions are the emissions from the solar PV system(s), which are assumed to be zero.
Monitoring parameters : The quantity of the electricity generated by the project solar PV system(s).

Project development

Project identification

- Coordination with the stakeholders including JC members, relevant ministries, government agencies and private companies



Output:
Between 2013-2016, in total of 11 study projects were conducted and 2 methodologies were approved by the JC .
2 projects were officially registered under the JCM and Mongolia's very own local Third Party Entity was established successfully.
Currently the registered projects are credited under the JCM.

JCM PROJECTS in MONGOLIA (2013-2014)

Project type	Project title	Sector scope	Support
Model project	Upgrading and Installation of Centralized Control System of High-Efficiency Heat Only Boiler	Energy (EE)	MoEJ/GEC
Project Planning Study (PS)	10MW-scale Solar Power Plant and Rooftop Solar Power Generation System	Energy (RE)	MoEJ/GEC
Feasibility Study (FS)	Improvement of Thermal Insulation and Water Cleaning/Air Purge at Power Plant	Energy (EE)	MoEJ/GEC
	10MW-scale Solar Power Generation for Stable Power Supply	Energy (RE)	MoEJ/GEC
	Energy conservation at cement plant	Energy (EE)	MoEJ/GEC
	GHG emission reduction by introducing an energy-efficient complex in Ger area of Ulaanbaatar	Energy (EE)	METI/NEDO
	Research on developing projects on wind power generation	Energy (RE)	METI/NEDO
Demonstration and verification project	High efficiency and low loss power transmission and distribution system in Mongolia	Energy (EE)	METI/NEDO

JCM PROJECTS in MONGOLIA (2014-2015)

Project type	Project title	Sector scope	Supporter
JCM Project Planning Study (PS)	10MW-scale Solar Power Generation for Stable Power Supply - Taishir	Energy (RE)	MoEJ/GEC
Large Scale JCM Feasibility Study	Study for the development of JCM projects for comprehensive improvements in the power generation, transmission and distribution systems in Ulaanbaatar City and on the possibility of nationwide horizontal application of the same improvement model in Mongolia	Energy (EE)	MoEJ/GEC
	Feasibility study on a programme-type finance scheme for the JCM in Mongolia	-	MoEJ/IGES
JCM Feasibility Study (FS)	Efficiency Improvement of Combined Heat and Power Plant by Thermal Insulation	Energy (EE)	MoEJ/GEC
	Reduction of CO2 emission by utilizing fly ash as cement substitute in Mongol	Waste handling and disposal	METI/NEDO
	GHG reduction by methane fermentation of sewage sludge and food waste in Ulaanbaatar	Waste handling and disposal	MoEJ/Waste management and recycling department
FS and Demo project	Co-benefit project for Heat Only Boiler	Energy (EE)	MoEJ/International Cooperation Office/OECC

JCM PROJECTS in MONGOLIA (2015-2016)

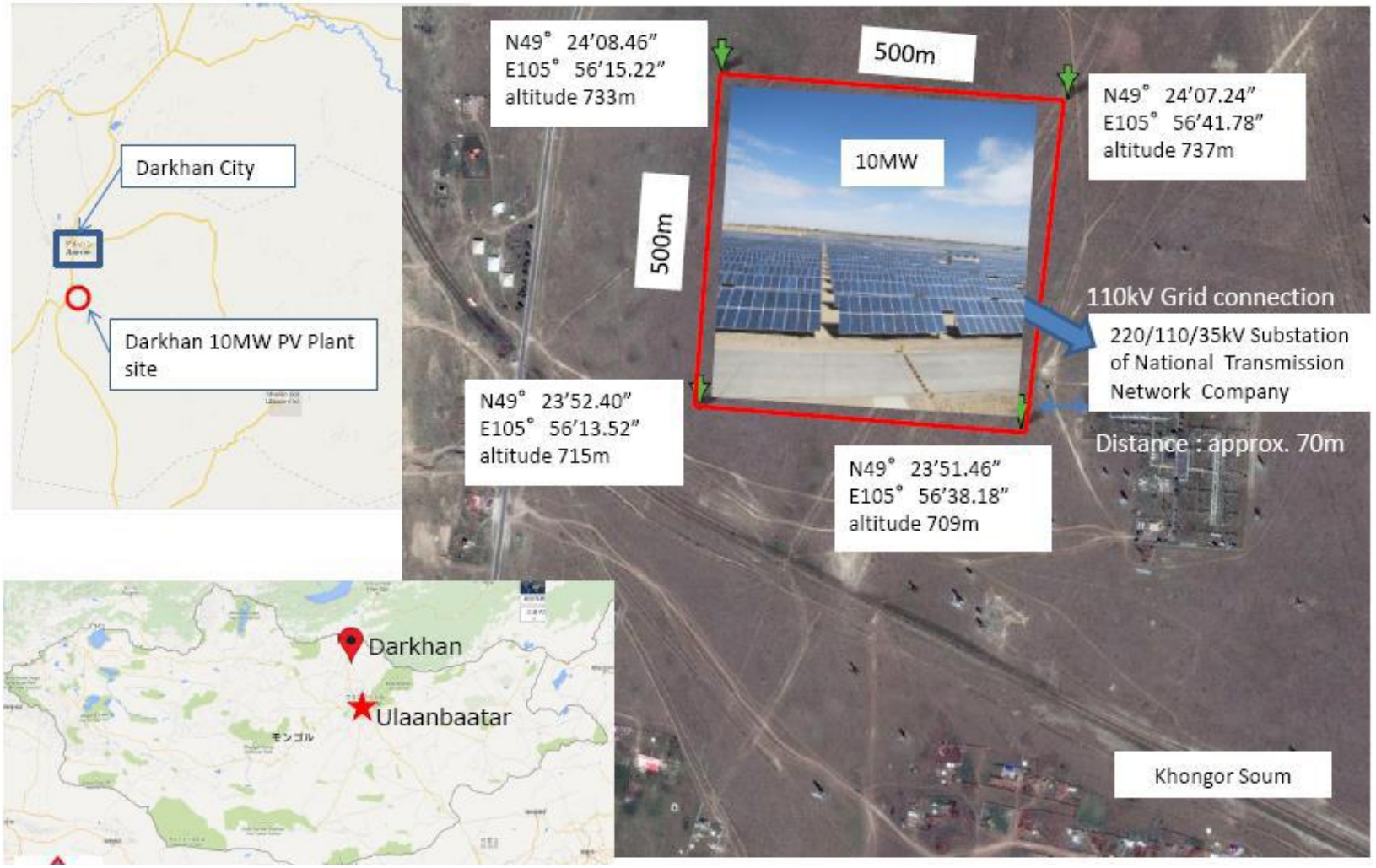
Project type	Project title	Sector scope	Support
Model project	10MW Solar Power Project in Darkhan City	Energy (EE)	MoEJ/GEC
Model project	Installation of 2.1MW Solar Power Plant for Power Supply in Ulaanbaatar Suburb	Energy (RE)	MoEJ/GEC
Feasibility Study (FS)	Distributed heat supply system using biomass and coal mixture combustion type boiler	Waste Management /Biomass Utilisation	MoEJ/GEC

JCM PROJECTS in MONGOLIA (2016-2017)

Project type	Project title	Sector scope	Support
Model project	Installation of 8.3 MW Solar Power Plant for Power Supply in Ulaanbaatar Suburb	Energy (RE)	MoEJ/GEC

Model projects

10mw Solar Photovoltaic Plant In Darkhan City



Project summary

	Darkhan Project
Capacity	10MWdc (~30 hectares)
Site/ Access	10 min drive from Darkhan City, beside Darkhan 220/110/35kV Substation 260km North of Ulaanbaatar city-Capital of Mongolia 3-4 hours by car from Ulaanbaatar city-Capital of Mongolia
Sharp Scope of Work	① Supply of equipments (PV modules, mounting structures, inverters, combiner boxes, etc.) ② System design ③ Technical Advice, Project Supervision (Test running etc.) and Commissioning PV plant
SPI Scope of Work	① Obtaining necessary permits, licenses (project development) ② PV plant installation and construction work
Shigemitsu Soji Scope of Work	・Project Financing ・Expected date of Commissioning is by December 2016
Timeframe	・Subsidy application completed on Jul 2016. ・Project completion by Dec 2016
Grid	110kV, Central Energy System (connected to Russia) PV plant will be connected into 220/110/35kV Substation which is 70m from PV plant site
PPA rate	Energy Regulatory Agency has approved Feed-in Tariff is USD 0.165/kWh, 25 years. Payment will be done in MNT, but will refer to the USD/MNT exchange rate at the time of the payment.

Project information

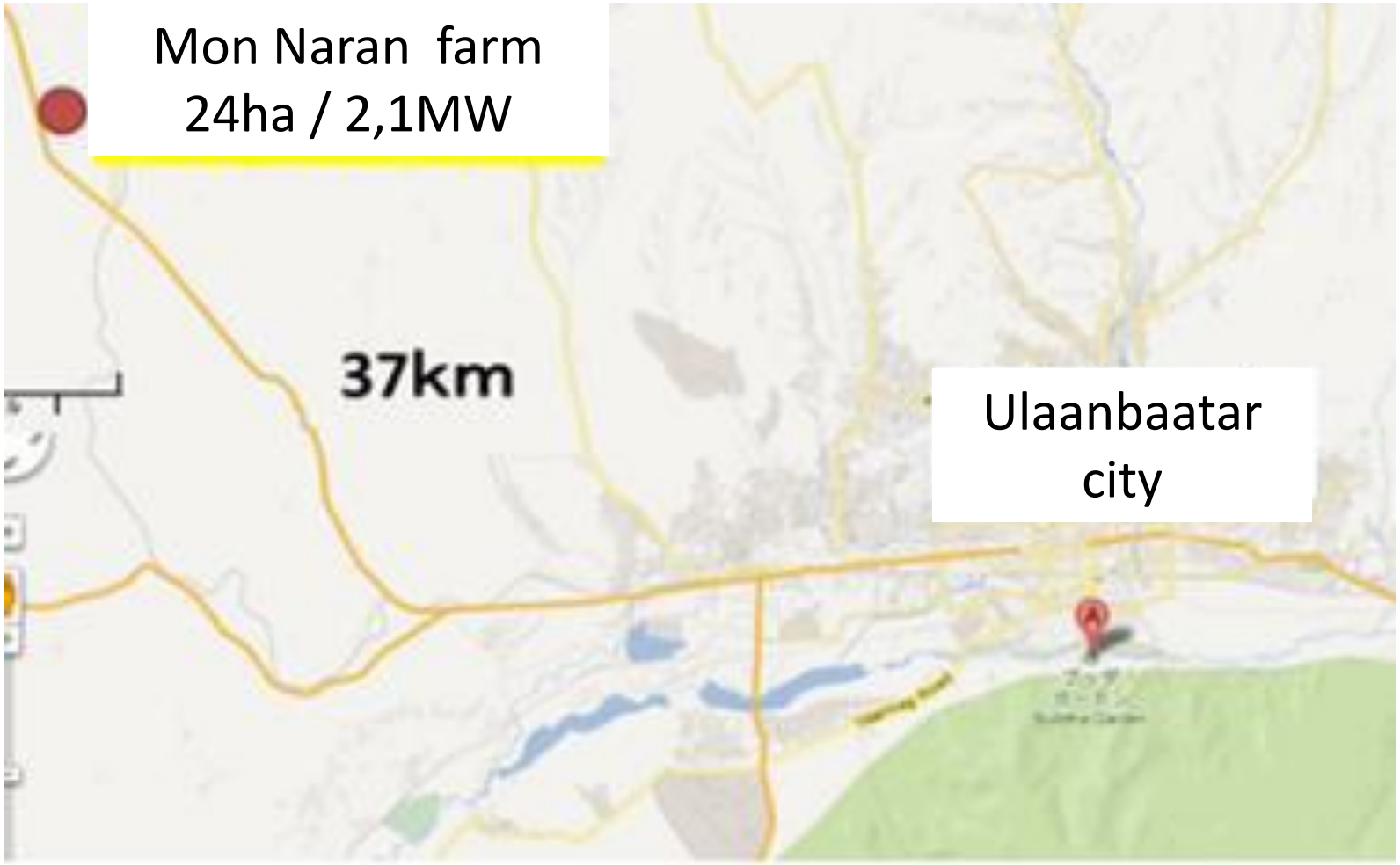
1. 1st Mega-scale-grid-connected PV plant in Mongolia and also 1st JCM applied PV project
2. The estimated amount of annual production is 14,367MWh/year
3. Estimated amount of Emission Reduction is:

14,746 tonCO2/year

4. Estimated payback time is ~ 9 years and project is feasible

Model projects

Installation of 2.1MW Solar Power Plant for Power Supply in Ulaanbaatar Suburb



Project summary

- Farmdo Co., Ltd.
- Everyday Farm LLC

  Roles of the entity in the project: Power generation business, operation management, maintenance and inspection, monitoring and reporting
- Bridge LLC

  Roles of the entity in the project: Acquisition of licensing, civil electrical work responsibility, cooperation request to the relevant organizations, coordination with related suppliers
- Rough estimation of expected GHG emissionreductions(unit: tCO2/year): 3,217[tCO2/year]

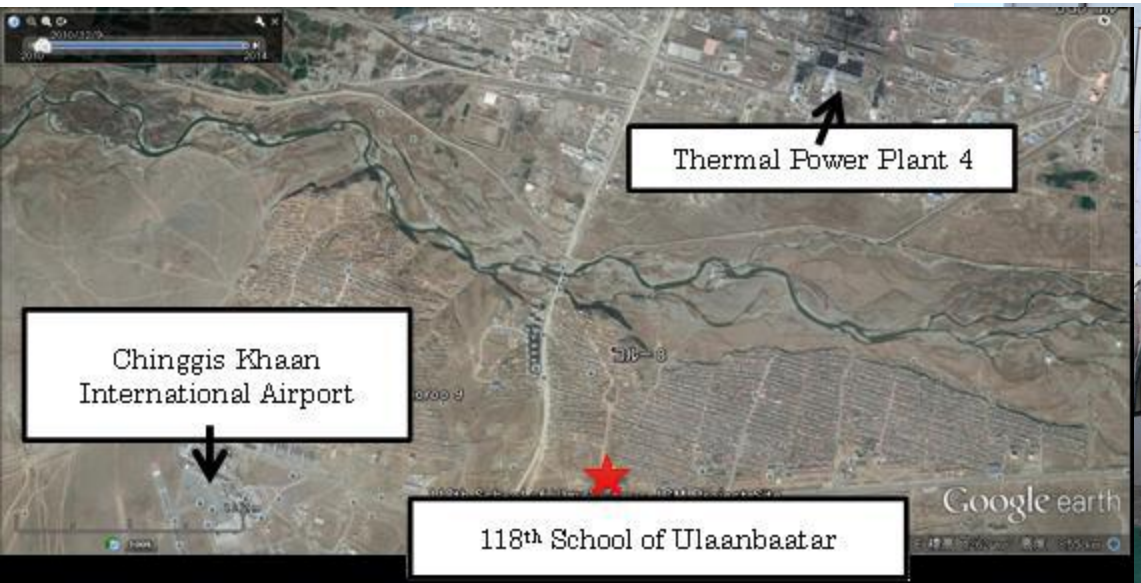
Registered projects

MN001 (30 Jun, 2015)
Installation of high-efficiency Heat Only Boilers in 118th School of Ulaanbaatar City Project

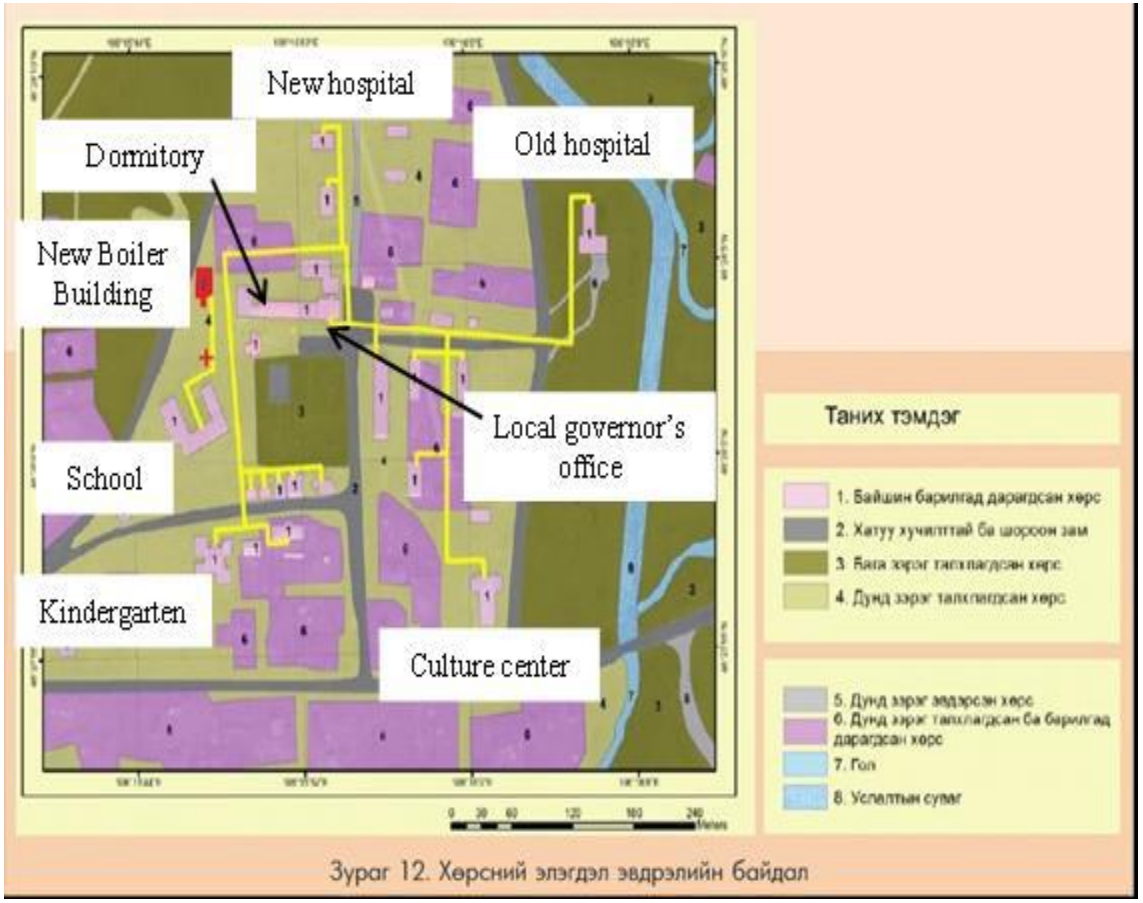
MN002 (30 Jun, 2015)
Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum Project

MN001 "Installation of high-efficiency Heat Only Boilers in 118th School of Ulaanbaatar City" Project

This JCM project aims the introduction of high-efficiency HOBs which are necessary to fulfill the demand of new heat facilities for the new school building and the kindergarten. Since the project area is located in Khan-Uul District of Ulaanbaatar City which is outside of the service area of the heat supply from the thermal power plants. Therefore, HOB is a necessary heating service for schools and kindergartens.



MN002 "Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum" Project



Зураг 12. Хөрсний элэгдэл эвдрэлийн байдал

The JCM project aims the replacement of the heating infrastructure. The project was to infrastructure the building in Bornuur soum of Tuv aimag in Mongolia, composed of the installation of Heat Only Boilers (HOBs) as well as pipe laying work, electrical construction, and boiler building construction.

The project altered the current heat supply system in Bornuur soum of individual building based heating, under which the low efficiency HOBs and stoves are used.

Photo by Undarmaa Khurelbaatar 2016

Designated Third Party Entities (TPEs)

Number	Name	Sectoral scopes for validation	Sectoral scopes for verification	Designated date	Comments
TPE-MN-014	ERM Certification and Verification Services Limited	1, 2, 3, 4, 5, 8, 9, 10, 13, 15	1, 2, 3, 4, 5, 8, 9, 10, 13, 15	26 Sep 15	
TPE-MN-013	National Renewable Energy Center	1, 2, 3	1, 2, 3	27 Apr 15	
TPE-MN-012	EPIC Sustainability Services Private Limited (EPIC)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15	05 Apr 15	
TPE-MN-011	TUV Rheinland (China) Ltd	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	09 Sep 14	
TPE-MN-010	KBS Certification Services Pvt. Ltd.	1, 3, 4, 5, 7, 12, 13, 15	1, 3, 4, 5, 7, 12, 13, 15	15 Jan 14	
TPE-MN-009	SGS United Kingdom Limited	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15	15 Jan 14	
TPE-MN-008	TÜV SÜD South Asia Private Limited	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	24 Dec 13	
TPE-MN-007	Lloyd's Register Quality Assurance Limited	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	05 Dec 13	
TPE-MN-006	Deloitte Tohmatsu Evaluation and Certification Organization Co., Ltd	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15	05 Dec 13	
TPE-MN-005	JACO CDM., LTD	1, 3, 13, 14	1, 3, 13, 14	16 Oct 13	**withdrawn**
TPE-MN-004	Japan Management Association	1, 2, 3, 4, 6, 8, 9, 14	1, 2, 3, 4, 6, 8, 9, 14	24 Sep 13	
TPE-MN-003	Japan Quality Assurance Organization	1, 3, 4, 5, 11, 13, 14	1, 3, 4, 5, 11, 13, 14	24 Sep 13	
TPE-MN-002	Japan Consulting Institute	1,2,4,5,9,10,13	1,2,4,5,9,10,13	24 Sep 13	**withdrawn**
TPE-MN-001	URS Verification Private Limited	1, 13	1, 13	24 Sep 13	

National TPE development

Capacity buildings are organized by MEGDT and IGES for potential TPE candidates in Mongolia

Instructor	Title	Date
Shigenari Yamamoto (JQA)	Seminar on “Required competences for self-implementation of JCM Validation/verification activities by Mongolian people “	28 Oct 2013
Kenta Usui (IGES)	Training on “Validation for JCM “	22 Jan 2014
Tsuyoshi Nakao (ERM)	Training on “Validation/verification for JCM”	3-5 Mar 2015
Tsuyoshi Nakao (ERM)	Training on “Validation/verification for JCM”	10-11 Nov 2015

Initial result

National Renewable Energy Center is accredited under ISO 14065 by an accreditation body (MASM) based on ISO14064-2. Accredited sector scopes are energy industries, energy distribution and energy demand.

Advantages

Cost, time, local circumstances knowledge etc.,

Cooperation with National Accreditation Body

*Mongolian Agency for Standardization and Metrology (MASM) is accreditation body of Mongolia.

1. Approval of GHG standards into Mongolian standard

Standard code	Standard title	Standard code of Mongolia
ISO 14064-1 :2006	Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals	MNS: ISO 14064-1: 2015 (translation revised
ISO 14064-2:2006	Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements	MNS: ISO 14064-2: 2015 (translation revised)
•*ISO 14064-3:2006*	Specification with guidance for the validation and verification of GHG assertions	MNS: ISO 14064-3: 2015
ISO 14065:2013 (second edition)	Requirements for GHG validation or verification bodies	MNS : ISO 14065:2013
ISO14066:2011 (complement of ISO14065)	Competence requirements for GHG validation teams and verification teams	MNS: ISO 14066: 2015

2. GHG training program for ISO14065 IGES Capacity building activities on MASM (Sep 2014; with Japan Accreditation Board –JAB)

3. First national entity is accredited under ISO 14065 by an accreditation body (MASM) based on ISO14064-2

Challenges to the project implementation

- Project planning (stakeholders)
- Sustainable cooperation of the stakeholders
- Institutional barriers (e.g. lack of information, inter-ministerial coordination etc)
- Prioritizing quick result (project developers)
- Technical barriers (e.g. methodology development, monitoring, validation and verification)


Thank you for your attention!
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