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Ministry of the Environment

JCM's contribution to Mongolia

Workshop for understanding the JCM implementation under Article 6

29 June 2021

Office of Market Mechanisms,
Ministry of the Environment, Japan

Basic Concept of the JCM

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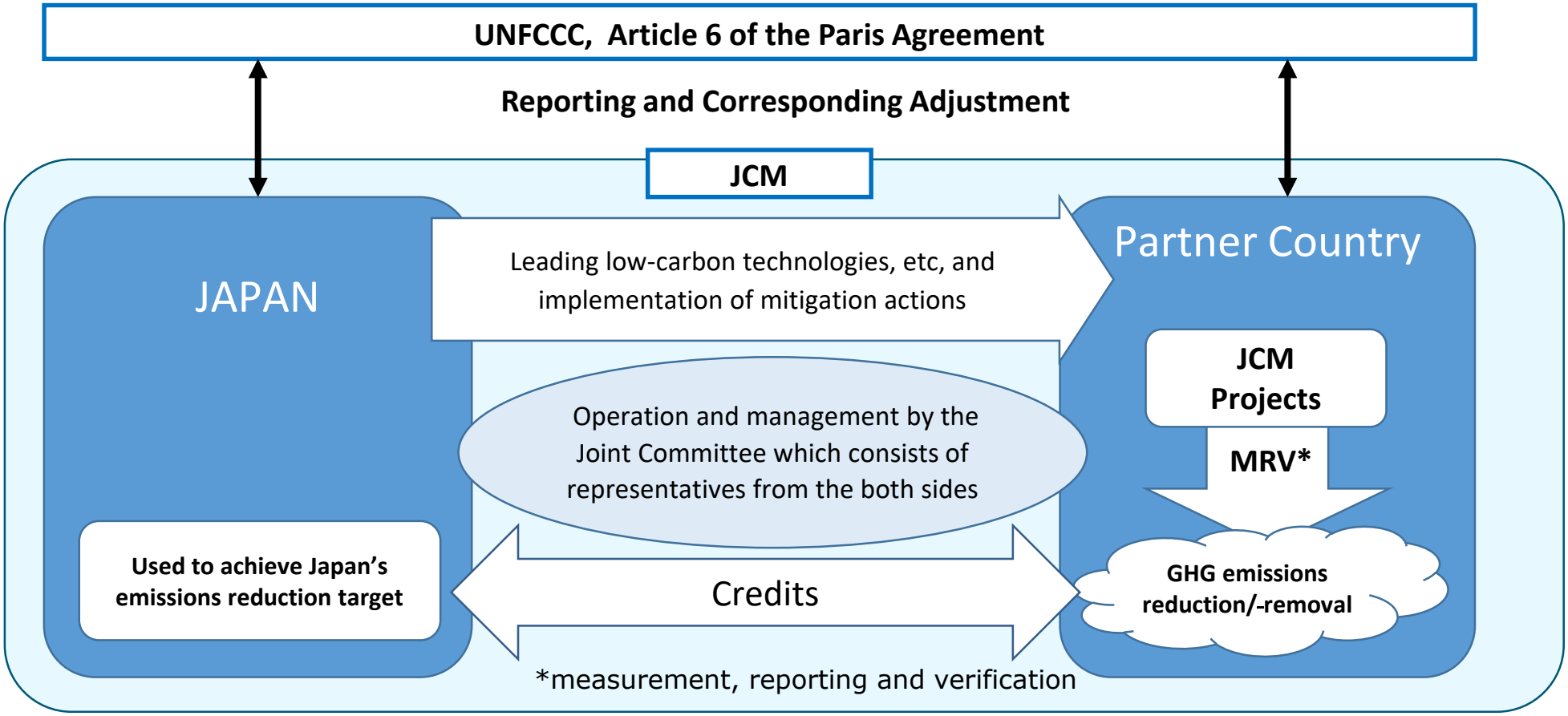
Government of Japan

- Facilitating diffusion of leading decarbonizing technologies ,etc and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Appropriately evaluating contributions from Japan to GHG emissions reduction or removal in a quantitative manner and use them to achieve Japan's emissions reduction target.
- Contributing to the ultimate objective of the UNFCCC and use of market mechanisms, including the JCM, is articulated under Article 6.



Contributions from Japan

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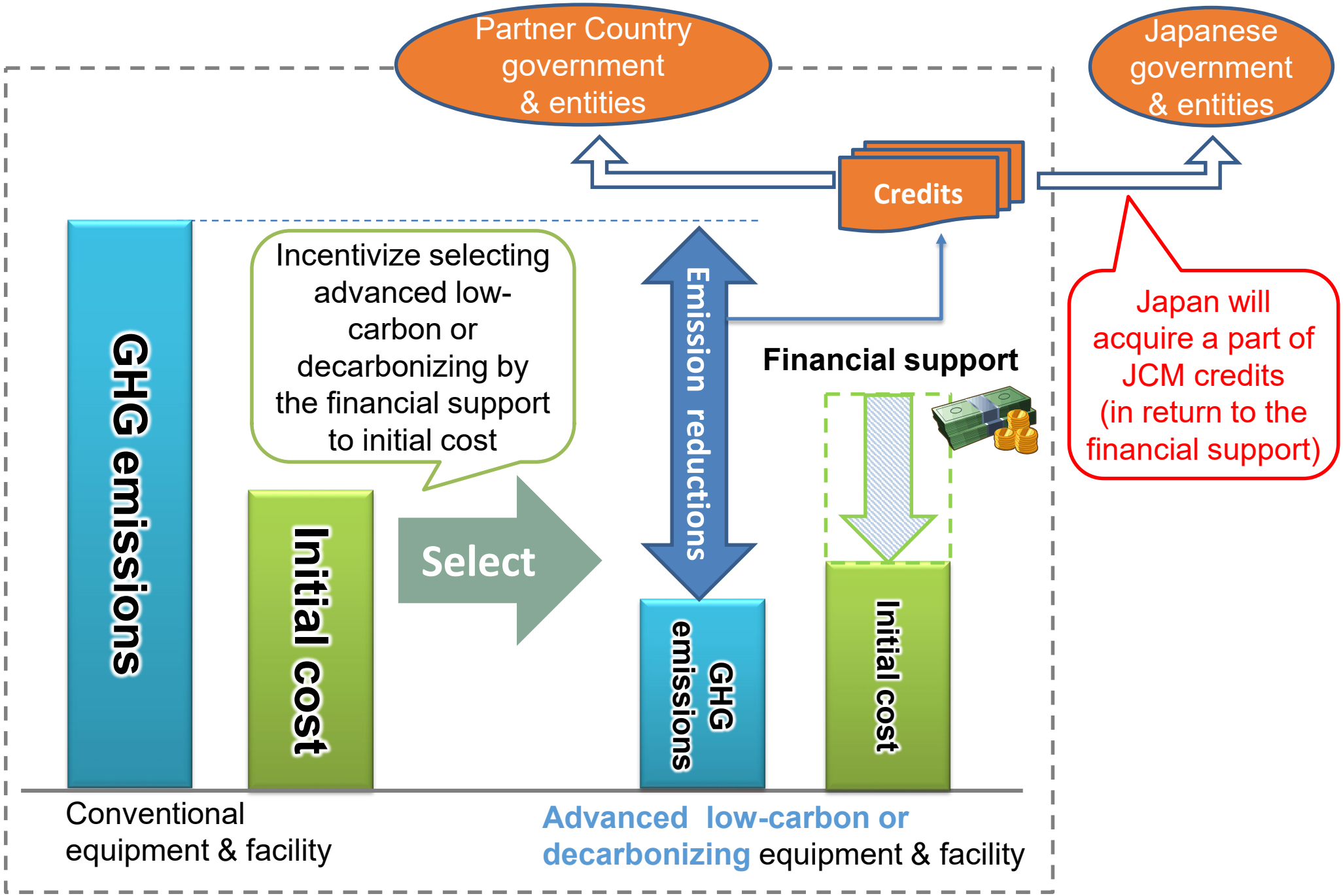

The Joint Crediting Mechanism (JCM)

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- Facilitating diffusion of leading decarbonizing technologies etc. through contributions from Japan and evaluating realized GHG emissions reduction or removal in a quantitative manner to use them for achieving Japan's emissions reduction target.
- Japan will address the high initial cost barrier of introducing advanced low-carbon technologies in the Partner countries (17 countries) through the JCM.

Waste heat recovery in Cement Industry, JFE engineering, Indonesia

CNG-Diesel Hybrid Public Bus, Hokusan Co., Ltd., Indonesia

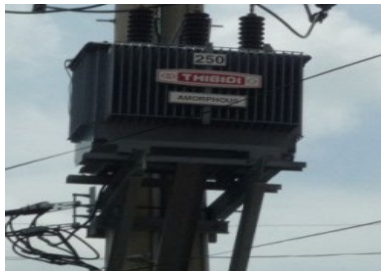
Energy saving at convenience stores, Panasonic, Indonesia

Hydro Power Plant, Chodai Co., Ltd., Philippines

Power Generation with Methane Gas Recovery System,NTT DATA,Mexico

Upgrading air-saving loom at textile factory, TORAY etc., Indonesia, Thai, Bangladesh

Regenerative Burners in industries, Toyotsu Machinery, Indonesia



Amorphous transformers in power distribution, Hitachi Materials, Vietnam

Co-generation system at factory, Toyota, Nippon Steel Engineering, Indonesia, Thai

High-efficiency air-conditioning system, Hitachi, Daikin, Vietnam

Solar power ,Farmdo Co., Ltd.,Mongolia

Waste to Energy Plant, JFE engineering, Myanmar

High-efficiency refrigerator, Mayekawa MFG, Indonesia

Floating Solar PV,TSB Co., Ltd.,Thai

LED street lighting system with wireless network control, MinebeaMitsumi, Cambodia

Project Map of JCM Financing Programme

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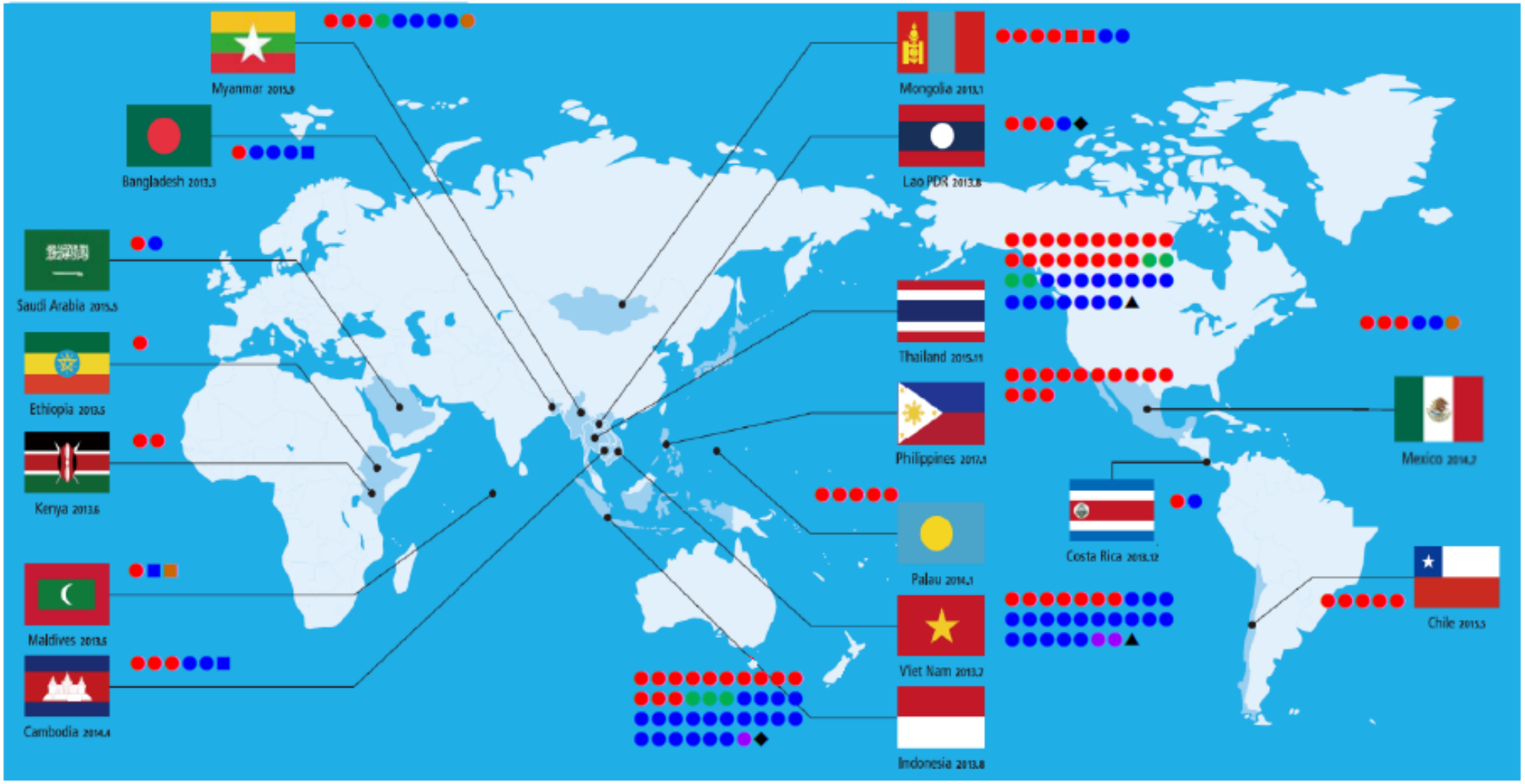


Total 176 projects / 17 countries
(● Model Project:167, ■ ADB:5, ◆ REDD+:2, ▲ F-gas:2)

- ● Renewable Energy
- ● Effective Use of Energy
- ● Energy Efficiency Improvement
- ● Transport
- ● Waste Handling and Disposal

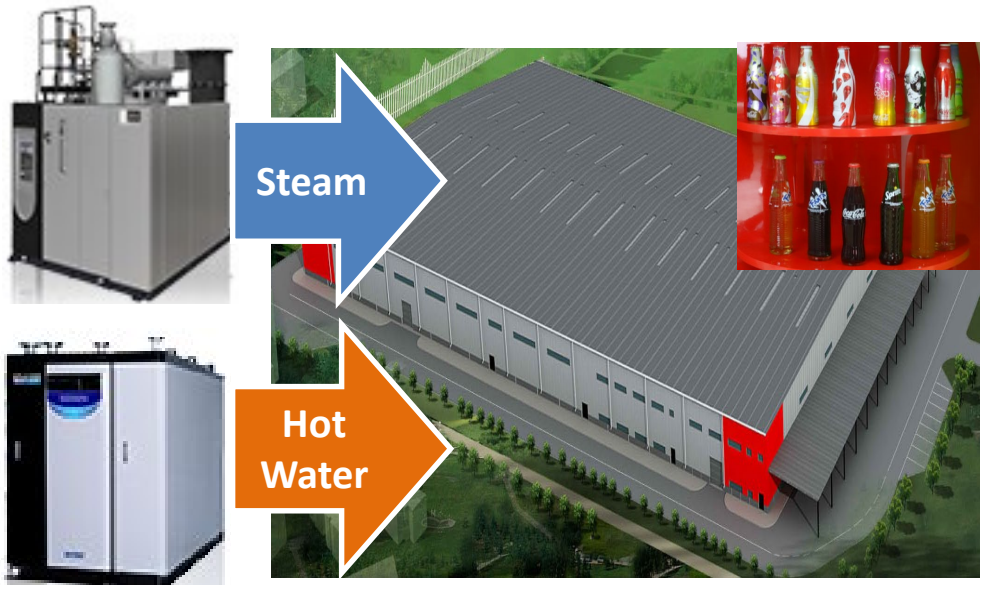
Fuel Conversion by Introduction of LPG Boilers to Beverage Factory

PP (Japan): Saisan Co., Ltd., PP (Mongolia): MCS International LLC, MCS Coca Cola LLC

Outline of GHG Mitigation Activity

LPG boilers are introduced for the purpose of mitigation of greenhouse gas (GHG) emissions as well as air pollution in Ulaanbaatar City.

By introducing the most efficient and newest model of LPG once-through boilers and vacuum type water heaters, the efficiency of the system is improved with less fuel consumption.



Expected GHG Emission Reductions

4,783 tCO_2/year

＝Reference CO_2 emissions (Ry)[tCO_2/y]
　－Project CO_2 emissions (Py) [tCO_2/y]
＝12,692 [tCO_2/y] – 6,911 [tCO_2/y]

Ry＝Reference fuel consumption (RQfy) [t/y]
　×Fuel emission factor (furf) [tCO_2/t] + Reference electricity consumption (RQey) [MWh/y] × Grid emission factor (gef) [tCO_2/MWh]
Py＝Project fuel consumption (PQfy) [t/y] ×Fuel emission factor (fupf) [tCO_2/t] +Project electricity consumption (PQey) [MWh/] × (gef) [tCO_2/MWh]

Sites of Project

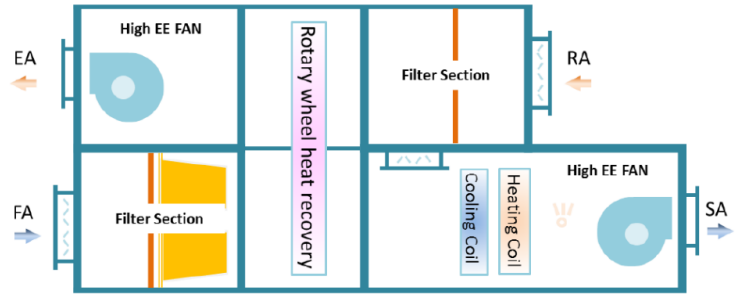
Japan Fund for the Joint Crediting Mechanism (JFJCM)　Host Country：Mongolia

Accessibility improvement project for health services

Executing Agency : Ministry of Energy Mongolia

Outline of GHG Emission Reduction Project

- This project is planned by ADB to introduce a energy efficient heating, ventilation and air conditioning (HVAC) system, high themal insulation windows and Roof top solar PV as a component under “Khan-uul district hospital and family health centers (FHC) in Ulaanbaatar”.
- The Khan-uul District Hospital will aim at “a green building” introducing 1) high thermal insulation, 2) Roof top solar PV, and 3) high efficient heating, ventilation and air conditioning (HVAC) systems to improve thermal efficiency.
- Three FHCs introduce a closed-loop ground source heat pump (GSPHs). The technology for utilizing ground source heat is currently scarce in Mongolia, but it will be an alternative to the heating system using coal.



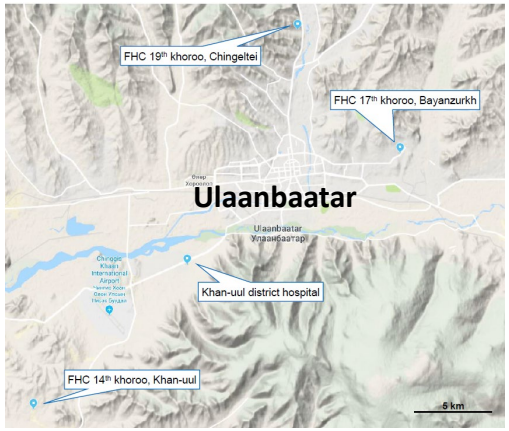
EA: exhaust air, EE: energy efficient, FA: fresh air, RA: return air, SA: supply air

Estimated GHG Emission Reductions

2,993 tCO_2/year

- GHG emissions in the reference scenario are the total of CO2 emissions when using a more conservative electric heater as an individual heating system in Ulaanbaatar city.
- The GHG emissions in the project scenario are the total CO2 emissions from hospital high-efficient heating, ventilation and air conditioning (HVAC) systems, highly insulated windows, Roof top solar PV and ground source heat pumps at 3 FHC.

Project Site



JCM Financing Programme by MOEJ

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	JCM Model Projects (including ECO Lease scheme)	ADB Trust Fund: Japan Fund for JCM (JFJCM)	JCM F-gas Recovery and Destruction Model Project
Overview	Support projects which reduce GHG emissions by utilizing leading decarbonizing technologies in developing countries.	Provide the financial incentives for the adoption of advanced low-carbon technologies which are superior in GHG emission reduction but expensive in ADB-financed projects	Support projects that recover and destroy of F-gas (GHG except for energy-related CO2, etc.) from used equipment instead of releasing to air, and reduce emissions
FY2021 Budget (USD)	approx. 83 million in total by FY2023	approx. 10 million	approx. 0.60 million
Type of support	Subsidy	Grant (Sovereign) / Interest Buy-down (Non-sovereign)	Subsidy
More info	• https://gec.jp/jcm/kobo/ • https://www.carbon-markets.go.jp/eng/jcmgp/index.html	https://www.adb.org/what-we-do/funds/japan-fund-for-joint-crediting-mechanism	Please contact us.

Need business partners? **JCM Global Match**: https://gec.jp/jcm/globalmatch/

JFJCM approved projects (All are sovereign projects)

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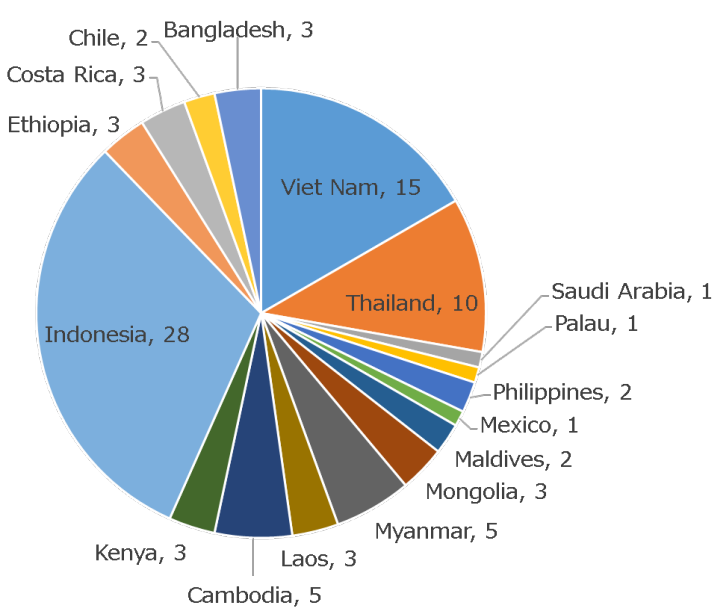
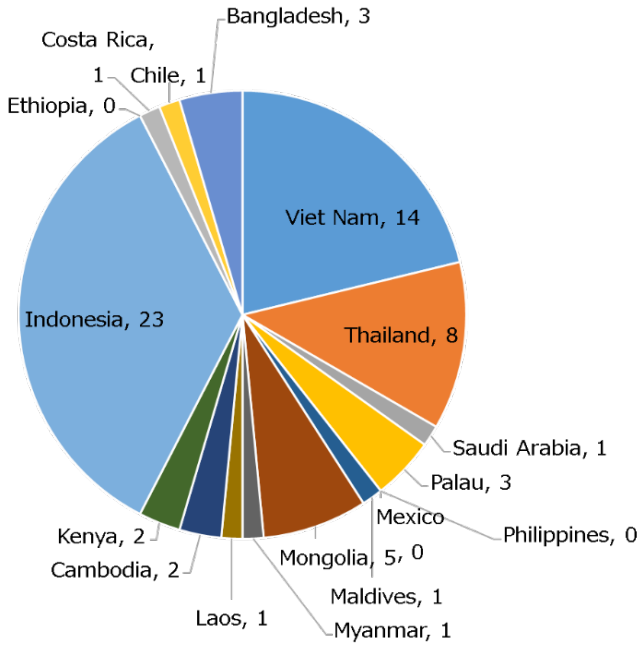
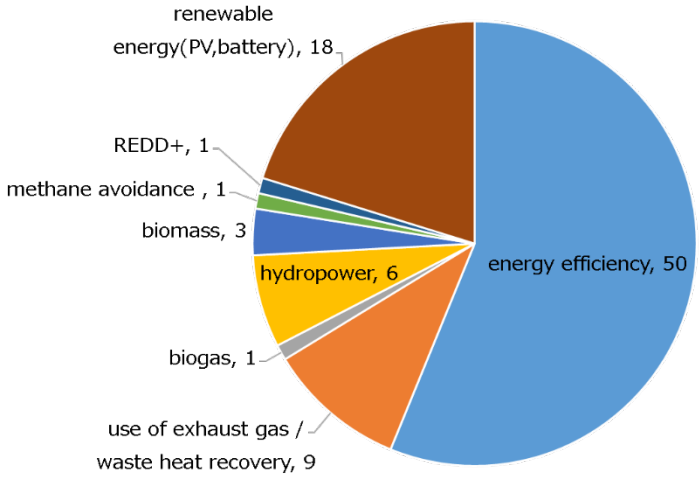
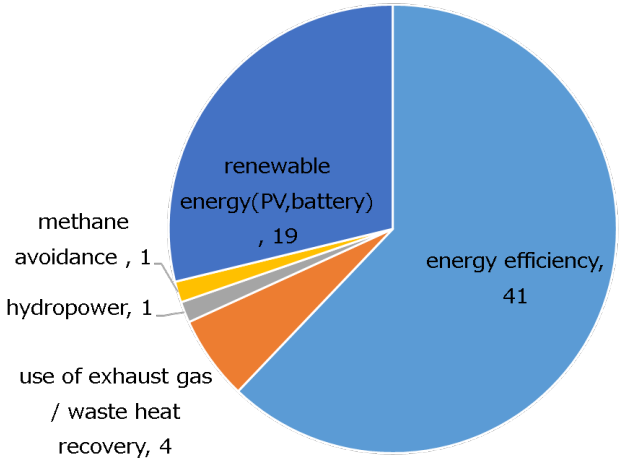
#	Project	Country	JFJCM grant	Approval	Technologies supported
1	Preparing Outer Islands for Sustainable Energy Development Project (POISED)	Maldives	$5 million	Mar 2015	Advanced battery system and energy management system (EMS)
2	Provincial Water Supply and Sanitation Project	Cambodia	$10 million	Dec 2017	Energy efficient wastewater treatment system
3	Southwest Transmission Grid Expansion Project	Bangladesh	$7 million	Jul 2018	Energy efficient transmission lines
4	Upscaling Renewable Energy Sector Project	Mongolia	$6 million	Sep 2018	Solar PV with advanced battery system and EMS
5	Improving Access to Health Services for Disadvantaged Groups Investment Program	Mongolia	$3.48 million	Oct 2019	Energy efficient HVAC, high insulation window, rooftop solar PV and ground source heat pump
6	Greater Male Waste to Energy Project	Maldives	$10 million	Aug 2020	Waste to energy plant (incineration)
			$41.48 million		

Reference: http://gec.jp/jcm/jp/event/2020Indonesia/S4-4-2_JFJCM_INO.pdf

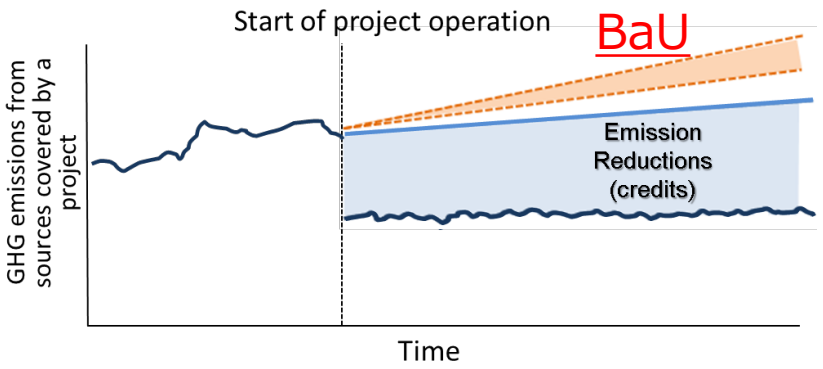
JCM methodologies & projects

	Approved methodologies（90 cases ）	Registered projects （66 cases）
by countries		
by project types		

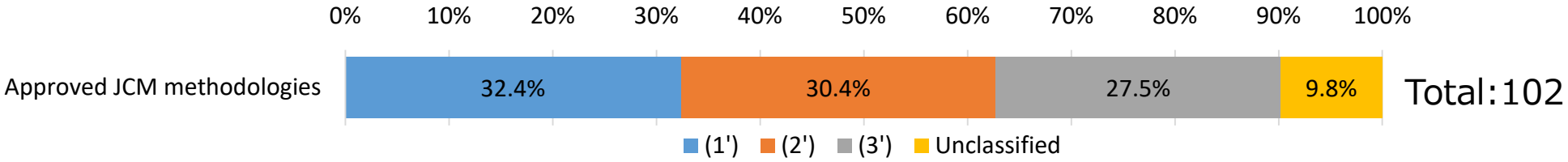
Baseline approaches in the JCM

- In the JCM, types of baseline approaches are not clearly defined, but baselines should be below BaU.
- Also, each approved methodology is developed compared with economically feasible and environmentally friendly technology, data with good carbon efficiency, and the currently feasible efficiency.

- In the JCM, emission reductions to be credited are defined as the difference between "reference emissions" and project emissions.
- The reference emissions are calculated below business-as-usual (BaU) emissions which represent plausible emissions in providing the same outputs or service level of the proposed JCM project in the partner country.
- This approach will ensure a net decrease and/or avoidance of GHG emissions.

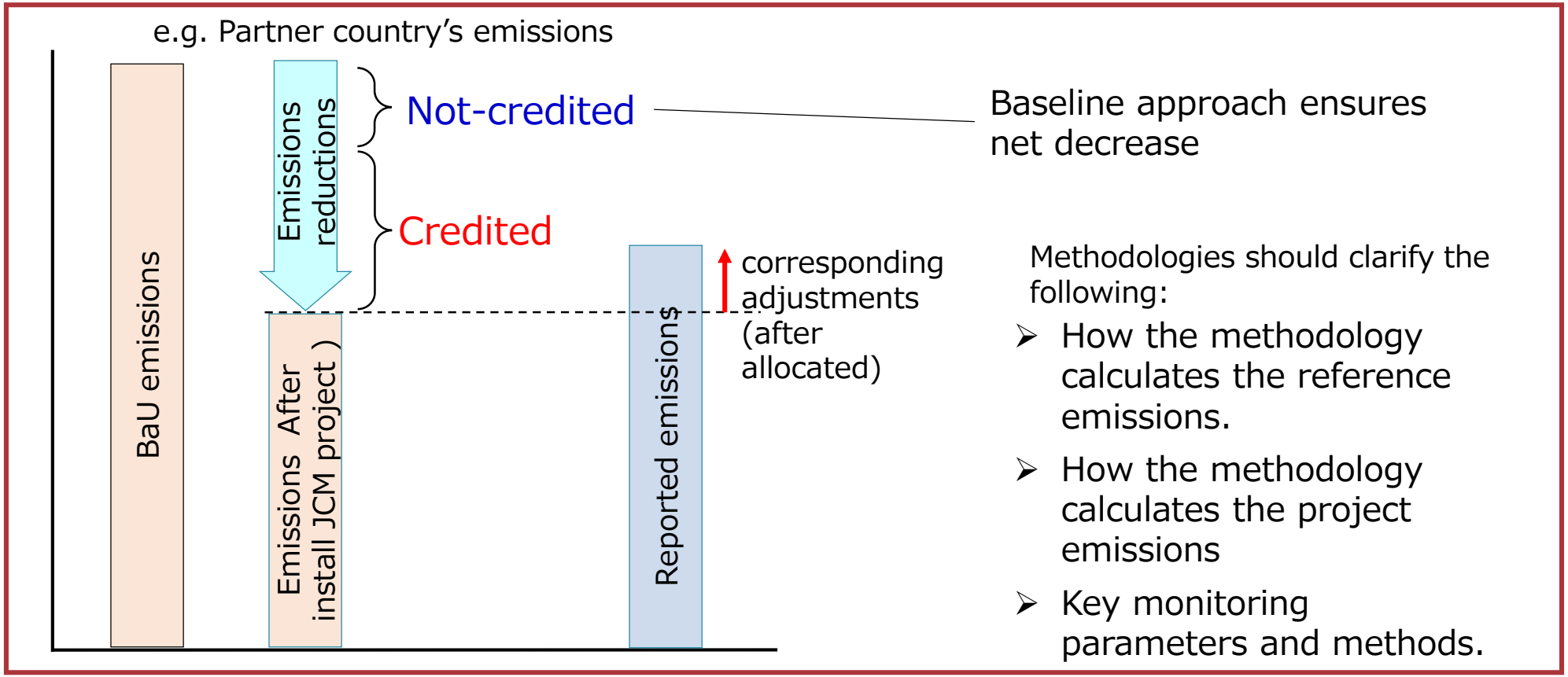


Types of baseline approaches	
(1')	Based on economically feasible and environmentally friendly technology. (Best available technology)
(2')	Based on data with good carbon efficiency from the latest past data of existing or similar equipment. (Performance)
(3')	Based on the target standard and the efficiency set to exceed the currently feasible efficiency (Bench mark)



Baseline approaches in the JCM-contribution

- In the JCM, it is important reference emissions are calculated to be below business-as-usual (BaU) emissions for ensuring environmental integrity.
- This will also contribute to the implementation of the partner country's NDC and long-term goals. (the figure below)

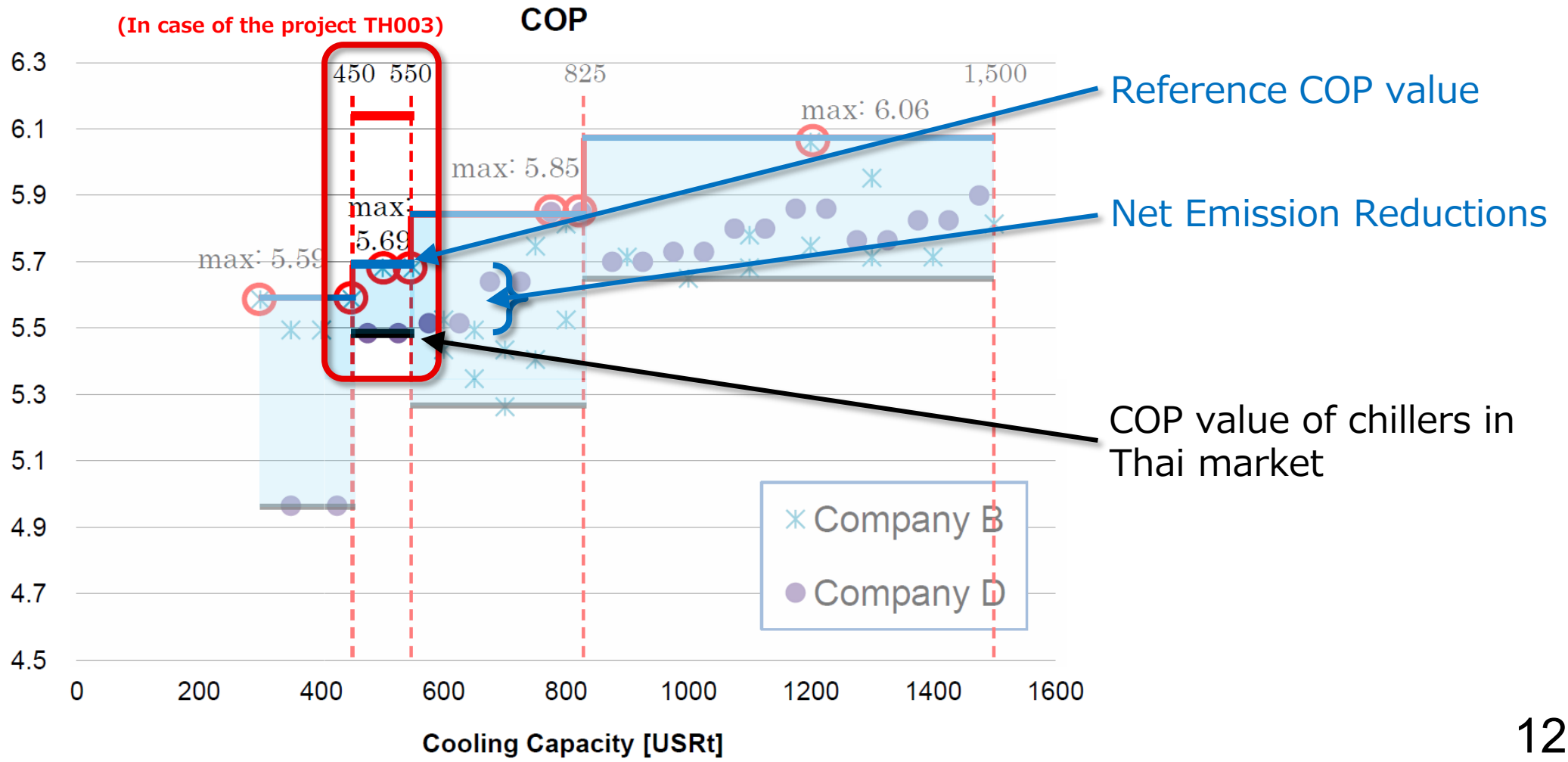


- It can be expected to facilitate diffusion of leading decarbonization technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of partner countries.

Example: High Efficient Chiller (Best available technology)

TH_AM003_ver01.0 “Energy Saving by Introduction of High Efficiency Inverter Type Centrifugal Chiller”

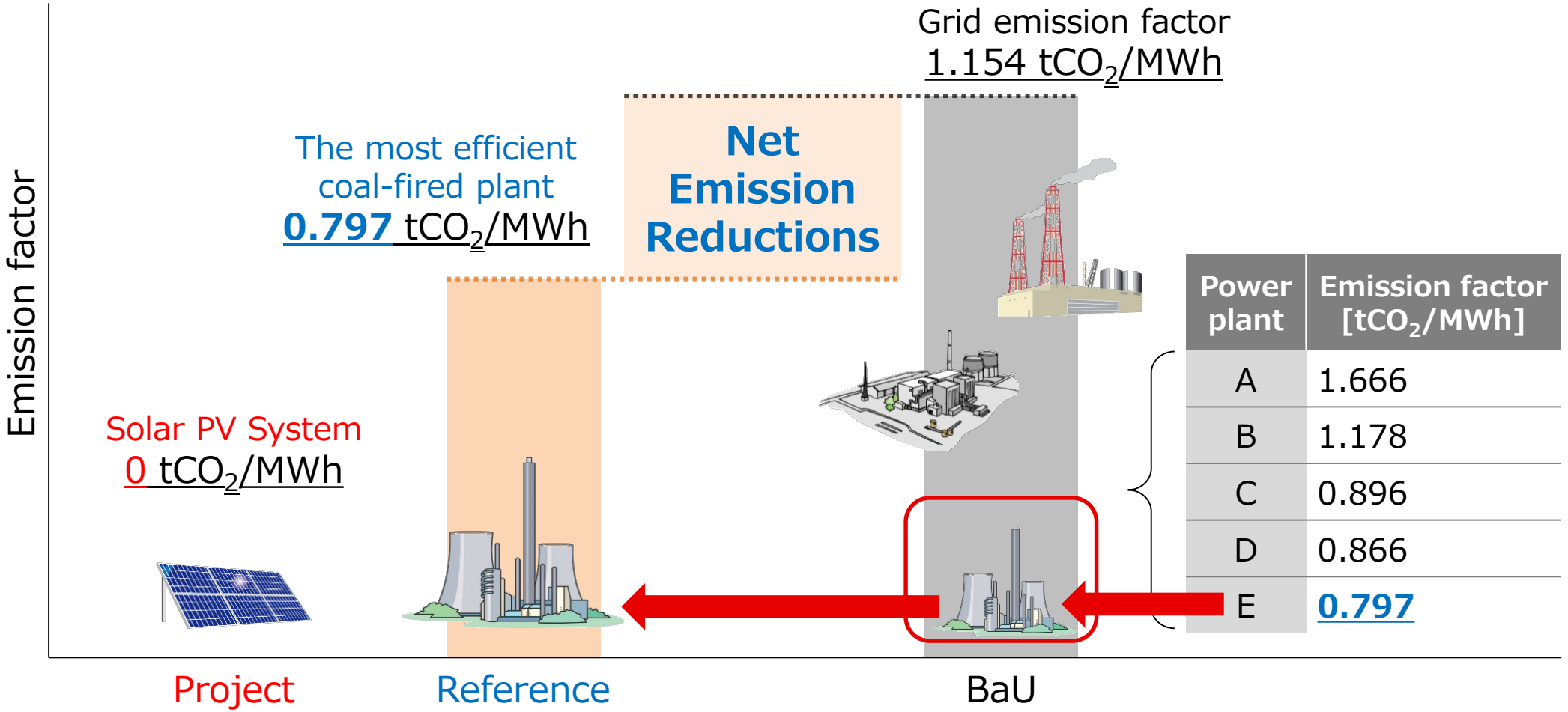
	Coefficient of performance (COP)	
BaU	5.5 - 5.69	(COP values of inverter type centrifugal chiller in Thai market)
Reference	**5.69**	(The most efficient COP value in Thai market)



Example: Methodology for Solar PV System (Performance)

MN_AM003_ver02.0 “Installation of Solar PV System”

	Emission factor for national grid
BaU	1.154 tCO_2/MWh (Grid emission factor published by Mongolian government)
Reference	**0.797** tCO_2/MWh (The most efficient coal-fired plant supplying power to the national grid)

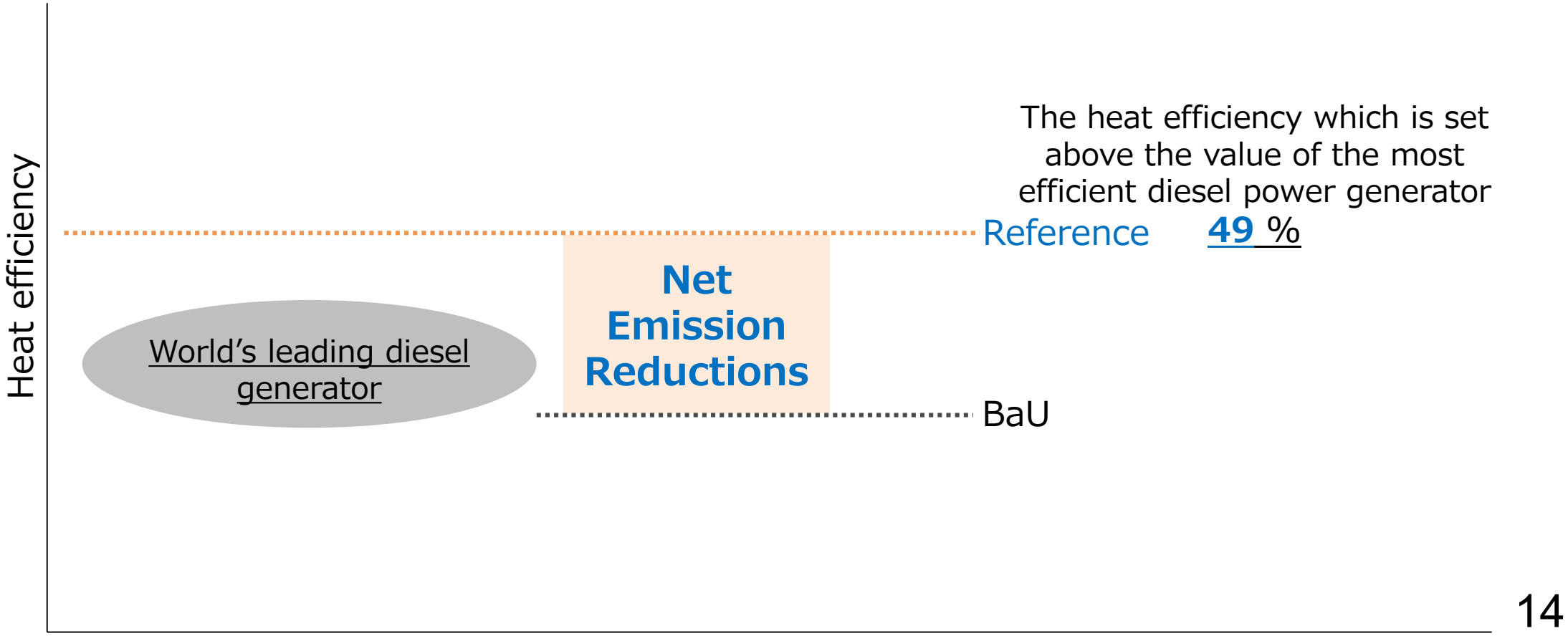


Power plant	Emission factor [tCO_2/MWh]
A	1.666
B	1.178
C	0.896
D	0.866
E	**0.797**

Example: Methodology for Solar PV System (Bench mark)

MN_AM003_ver02.0 “Installation of Solar PV System”

	Heat efficiency for calculating emission factor for internal grid (diesel generator)
BaU	Not specified
Reference	49% (The efficiency level which has not been achieved yet by the world’s leading diesel generator)

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