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Enhancing Stakeholders Matchmaking to Promote Low Carbon Technology Transfer

-Findings from "On the ground" Projects-

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Background: Technology Transfer: Still a hot topics and urgent issue

- > Discussion about TT has been carried since early 90s, but it is still considered a hot topic and urgent issue to be tackled.
- >There is still no consensus on what to do?, how to do it?, and who can play what role?



Background: Numerous schemes are available, but fragmented and uncoordinated



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Joint Crediting Mechanism (JCM): Promising scheme to promote LCTT

- Facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Appropriately evaluating contributions from Japan to GHG emission reductions or removals in a quantitative manner, by applying measurement, reporting and verification (MRV) methodologies, and use them to achieve Japan's emission reduction target.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals, complementing the CDM.



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Scheme of the JCM



JCM: Partners Countries

Japan has held consultations for the JCM with developing countries since 2011 and has established the JCM with Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia and Chile.





Bangladesh Mar. 19, 2013 (Dhaka)



Ethiopia May 27, 2013 (Addis Ababa)



<u>Kenya</u> Jun. 12,2013 (Nairobi)



<u>Maldives</u> Jun. 29, 2013 (Okinawa)

Viet Nam Jul. 2, 2013 (Hanoi)



Lao PDR Aug. 7, 2013 (Vientiane)

推定的

Indonesia Aug. 26, 2013 (Jakarta)



Chile May 26, 2015 (Santiago)



<u>Costa Rica</u> Dec. 9, 2013 (Tokyo)



<u>Palau</u> Jan. 13, 2014 (Ngerulmud)



Cambodia Apr. 11, 2014 (Phnom Penh)

Mexico Jul. 25, 2014 (Mexico City)

3 JCM projects have been registered between Indonesia and Japan, 2 JCM projects have been registered between Mongolia and Japan, and 1 JCM project has been registered between Palau and Japan.

Saudi Arabia

May 13, 2015

JCM: Model projects are on the ground

Thailand: Mongolia: O Energy Saving at Convenience Stores with High Efficiency Air-O Upgrading and Installation of Centralized Control System of High-Efficiency Heat Conditioning and Refrigerated Showcase Only Boiler (HOB)* O Introduction of Solar PV System on Factory Rooftop Viet Nam: O Reducing GHG Emission at Textile Factory by Upgrading to Air-O Anaerobic Digestion of Organic Waste for Biogas Utilization at Market saving Loom (Samutprakarn) O Eco-driving with the Use of Digital Tachographs. OEnergy Saving for Semiconductor Factory with High Efficiency O Introduction of amorphous high efficiency transformers in power distribution systems Centrifugal Chiller and Compressor O Introduction of High Efficiency Air-conditioning in Hotel O Energy Saving in Lens Factory with Energy Efficient Air-Conditioners Bangladesh: O Energy Saving for Air Conditioning & Facility Cooling Cambodia: by High Efficiency Centrifugal Chiller (Suburbs of O Introduction of High Efficiency LED Lighting Utilizing Wireless Network Dhaka) Palau: O Installation of High Efficiency Loom at Weaving O Small-Scale Solar Power Plant for Commercial Facilities in Island States Project Factory O Small-Scale Solar Power Plants for Commercial Facilities Project II Introduction of PV-diesel Hybrid System at Fastening. O Solar PV System for Schools Project Manufacturing Plant Mexico: O Domo de San Pedro II Geothermal Power Generation Myanmar: O Energy Saving by Converting from Hg-Cell Process to Ion-exchange. O Introduction of Waste to Energy Plant in Membrane Process at Chlorine Production Plant Yangon City Kenva: Indonesia: O Solar Diesel Abatement Projects O Energy Saving for Air-ConditioniOng and Process Cooling at Textile Factory (in Batang city) O Energy Savings at Convenience Stores O Energy Efficient Refrigerants to Cold Chain Industry[®] O Energy Saving by Double Bundle-Type Heat Pump at Beverage Plant O Energy Saving for Air-Conditioning and Process Cooling at Textile Factory Maldives: Power Generation by Waste Heat Recovery in Cement Industry O Solar Power on Rooftop of School Building Project O Solar Power Hybrid System Installation to Existing Base Transceiver Stations in Off-grid. Smart Micro-Grid System for POISED Project in Addu Atoll Area O Energy Saving through Introduction of Regenerative Burners to the Aluminum Holding. Furnace of the Automotive Components Manufacturer Malavsia: O Energy Saving for Textile Factory Facility Cooling by High Efficiency Centrifugal Chiller O PV power generation and relevant monitoring system. O Introduction of high efficient Old Corrugated Cartons Process at Paper Factory. for the office building O Reducing GHG emission at textile factories by upgrading to air-saving loom O Installation of Cogeneration System in Hotel O Model project in FY 2013 (3 countries, 7 projects) C Energy Saving by Utilizing Waste Heat at Hotel O Model project in FY 2014 (7 countries, 15 projects) O Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller ADB project in FY 2014 (1 country, 1 project) O Energy Saving for Industrial Park with Smart LED Street Lighting System. O Model project in FY 2015 (7 countries, 18 projects) O Energy Saving for Office Building with High Efficiency Water Cooled Air-Conditioning Unit. Total 12 countries, 41 projects Introduction of High Efficiency Once-through Boiler System in Film Factory The underlined projects have been registered as the JCM projects (6 projects) %these projects account for 2 registered JCM projects respectively, as they're operating in different sites.

Lessons learnt from on the ground projects

Case study1: JCM Feasibility study in India (compressed air systems)





Installation of new receiver and new air compressors (not inverter type)

Adjusting pressure setting



Reduce air leakage through installing foot switch



Reconsider pipe size and design



Start the use of efficient air gun

- Benefits
 - Energy Saving: 20% -30%

Great potential has been identified; but could not be tapped using JCM in India

Sites	Proposals for hardware/equipements	Estimated Energy saving	Estimated emission	Estimated operation cost saving (Million	Initial cost (in Japan market)	Estimated Pay back period (Year)
	installation	(kWh/year)	reduction (Ton/year)	JPY/year)	(1000JPY)	
			\frown			
	Install Inverter A.C (NL-0)	308,160	302	3,513,024	7,000	2.0
	Install Inverter A.C (NL-1)	308,160	302	3,513,024	7,000	2.0
Mahindra Hinoday Co. Ltd	Install Inverter A.C (NL-2)	256,543	251	2,924,592	5,000	
	Install two stages A.C	391,500	384	4,463,100	30,000	6.7
	Install Booster	108,864	106	1,241,050	3,000	2.4
Ahmednagar	Install Inverter A.C	350,000	343	3,990,000	10,000	2.5
Forging Co. Ltd.	Install 2 stage A.C	130,500	128	1,487,700	10,000	6.7
Bombay Dyeing Co. Ltd.	Install Inverter A.C	60,830	56	693,462	3,000	4.3
Arvind Textile	Install Inverter A.C	660,200	647	7,526,280	12,000	1.ð
Co. Ltd.	Install high-efficiency drain trap	158,000	155	1,801,200	4500	2.5
Morarjee	Install Inverter A.C	660,200	647	7,526,280	12,000	1.6
Textile Co. Ltd.	Install Booster	109,000	107	1,242,600	1,400	1.1
Raymond UCO	Install Inverter A.C	660,200	647	7,526,280	12,000	1.6
textile	Install high-efficiency drain trap	63,200	62	720,480	1,800	2.5

Case study2: Model Project to demonstrate Electric Heat Pump (EHP) under SATREPS scheme

- Benefits
 - Reduction in fuel consumption of boiler and electricity consumption of chiller
 - Energy savings: 30%-40%



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Successful model project, but not enough for follow up and upscaling

Follow up activities to SATREPS project were extremely important to ensure the continues operation of the implemented projects.



Engaging more/new stakeholders for follow up and upscaling



Follow up regarding pilot projects

On site monitoring, evaluation and capacity building







Scaling Up and moving beyond SATREPS Project

	EHP	GHP		CA + FEMS		IF	
>FS/DS & capacity Building	3 sites (Dairy Industry)	5 sites (Food processing, Hotels)		lotels)	6 sites (Textile, Forging, Casting)		3 sites (Foundry)
	Local Gov.	Business associations		ESCO		Research Institutions	Funding Agencies
>Networking	MEDA	REA IAFI JFA		Enfragy Solution		IIF SSEF CFER	SIDBI/ISTSL JICA NEDO
	At IGES workshops		At Other workshops		;	Media Coverage	Working Papers
>Dissemination	Awareness workshop (Bangalore) Awareness workshop (Pune) CTCN workshop (Delhi) CTCN workshop (Bangkok)		ECCJ (Delhi) UNESCAP (Seoul) Shakti Dialogue (Delhi)		ni)	SAMEEEKSHA News letters and websites, etc.	-Submitted and presented at SSEC -Submitted and presented at IIF

-LCTT process should be wholly addressed rather than partially -Single scheme may not be sufficient to address the whole process



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Financial schemes are already available, but matching them with promising project is missing.



Summary

-The issue is not the availability of schemes, but rather the availability of promising projects/proposals.

-Technology transfer process should be addressed wholly rather than partially: (i) identification of needs and availability, (ii) matching and testing, and (iii) up scaling and diffusion.

-JCM scheme should be effectively utilized as complementary with other existing schemes.