



JFJCM

Recent Development of Japan Fund for the Joint Crediting Mechanism (JFJCM)

Workshop for the JCM utilization to
introduce advanced decarbonizing
technology in the PALM countries

22 September 2021





Overview of Asian Development Bank

- Established in 1966
- 68 members, 49 regional members, 41 borrowing members
- 3,000+ employees globally
- Triple-A credit ratings (Moody's / S&P / Fitch)
- Commitments in 2020:

(\$ million)	Total ADB
Total ADB Operations*	31,594
Sovereign	26,826
Loan	25,749
Guarantee	-
Grants	1,077
Nonsovereign	1,406
Loan	1,151
Equity Investment	255
Guarantee	-
Others including Technical Assistance	3,363

* Does not include co-financing including trust funds
Source: ADB Annual Report 2020.





ADB's commitment to tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability: Strategy 2030



Addressing remaining poverty and reducing inequalities



Accelerating progress in gender equality

At least 75% of number of ADB committed operations by 2030



Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability

At least 75% of number of ADB committed operations by 2030, total of \$80 billion from ADB's own resources from 2019 to 2030



Making cities more livable



Promoting rural development and food security



Strengthening governance and institutional capacity



Fostering regional cooperation and integration

Key Approaches



Expanding private sector operations

1/3 of number of ADB committed operations by 2024



Catalyzing and mobilizing financial resources for development

\$1 in private sector operations financing matched by \$2.50 of cofinancing



Strengthening knowledge services





ADB's Carbon Market Program

Mobilizing carbon finance for incentivizing investments in low-carbon technologies

Future Carbon Fund	Japan Fund for the Joint Crediting Mechanism	Article 6 Support Facility	Technical Support Facility
<ul style="list-style-type: none">• Commenced in 2009• Provides financial and technical support for CDM projects by purchasing post-2012 CERs• \$115 million contributed by 4 governments and 2 private sector entities from Europe and Asia• Contracted 8.68 million CERs with an investment of \$53.0 million• Supports 33 CDM projects in 10 DMCs• Provides carbon finance support to 1.1 GW renewable energy projects	<ul style="list-style-type: none">• Commenced in June 2014• Provides grants for advanced low-carbon technologies in ADB-financed and administered projects utilizing the Joint Crediting Mechanism initiated by Japan• \$88.46 million contributed by the Government of Japan• Supports five mitigation activities in Maldives, Bangladesh and Mongolia	<ul style="list-style-type: none">• Established in 2018• Provides technical, capacity building, and policy development support to enhance DMC's preparedness to participate in new carbon markets under the framework of Article 6• \$5 million facility funded by ADB and the governments of Germany and Sweden• Supports Bhutan, Indonesia, Mongolia, Pakistan, Philippines, Thailand and Viet Nam.	<ul style="list-style-type: none">• Established in 2006• Implemented through a series of 6 Technical Assistance projects, with a total amount of \$13.25 million• Provides technical and capacity building support for enhancing mitigation actions through carbon markets• New TA on Promoting Life Cycle Management of Fluorocarbons will support DMCs in promoting proper management of fluorocarbons

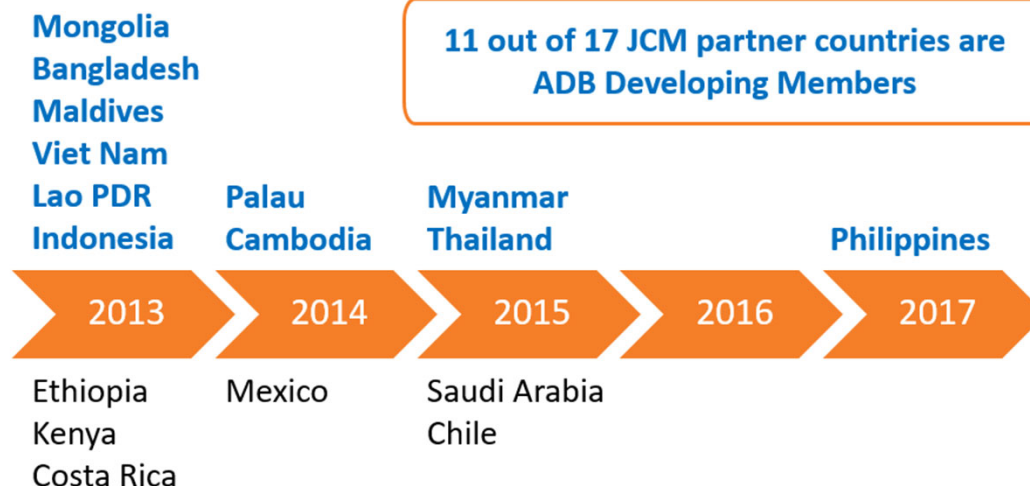
CDM: Clean Development Mechanism; CER: certified emission reduction; ETS: Emission Trading Systems



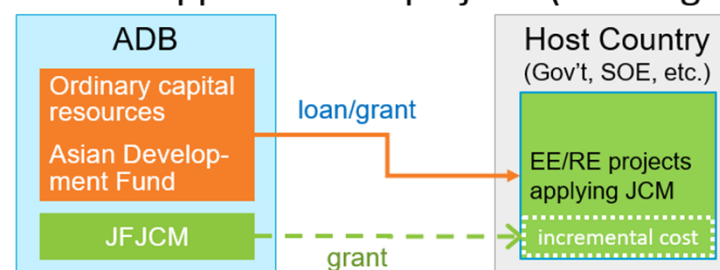
Japan Fund for the Joint Crediting Mechanism

- Established in June 2014 as one of ADB's trust funds
- Contribution by Government of Japan: **\$88.46M** (2014-2021)
- Provides **financial incentives (grant)** for adoption of **advanced low-carbon technologies** in **ADB-financed projects** that use the Joint Crediting Mechanism (JCM)*
- Both **sovereign** and **nonsovereign** projects are eligible

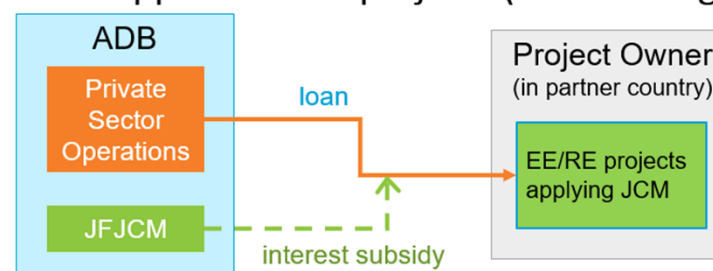
* JCM is a bilateral carbon market mechanism initiated by the Government of Japan.



JFJCM support to ADB projects (sovereign)



JFJCM support to ADB projects (nonsovereign)





JFJCM approved projects

#	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	Southwest Transmission Grid Expansion Project	Bangladesh	\$7 million	Jul 2018	Energy efficient transmission lines
3	Upscaling Renewable Energy Sector Project	Mongolia	\$6 million	Sep 2018	Solar PV with advanced battery system and EMS
4	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
5	Greater Male Waste to Energy Project	Maldives	\$10 million	Aug 2020	Waste to energy plant (incineration)
			\$31.48 million		





Case study 1: micro-grid technology in Maldives

Project name	Preparing Outer Islands for Sustainable Energy Development Project
JFJCM grant	\$5 million
Technology supported	Advanced battery system and energy management system
Description	<p>On top of 1.6 MW of solar PV installed under the project, battery storage and EMS supported by JFJCM will:</p> <ul style="list-style-type: none"> ➤ Smooth out the fluctuation of solar PV generation ➤ Optimize diesel generator operation ➤ Integrate large amounts of renewables to the grid
Location	Addu, Maldives
Emission reductions	1.3 thousand tCO ₂ /yr (estimate)

Signing ceremony for the contract on battery system and EMS



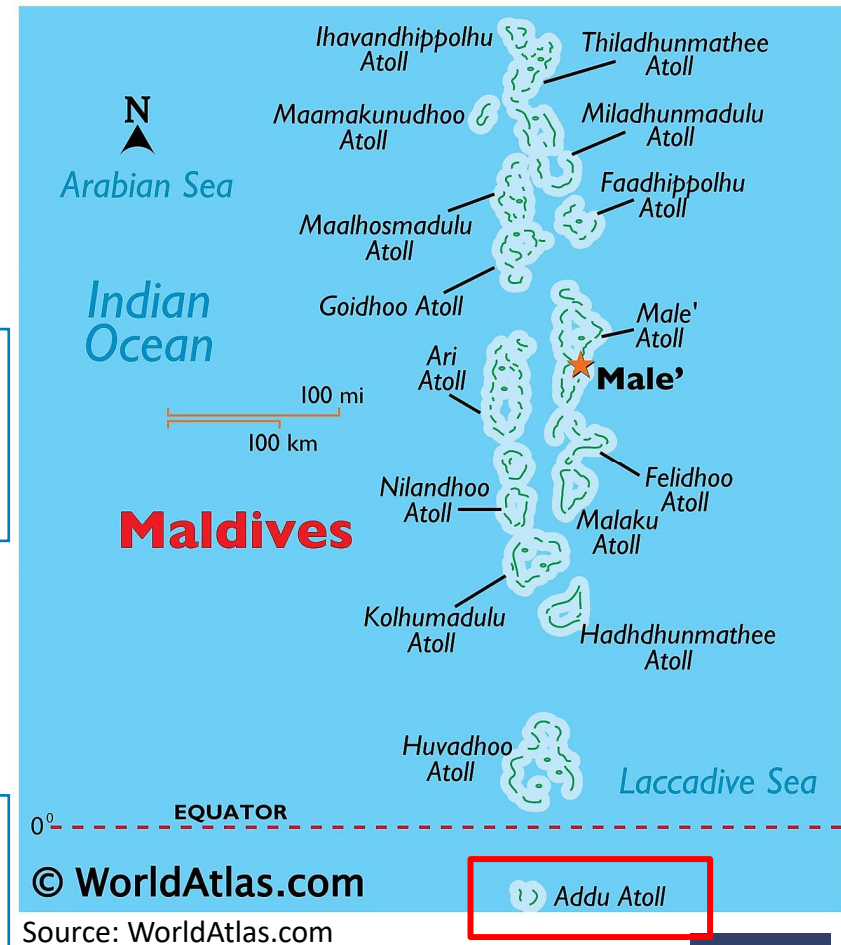
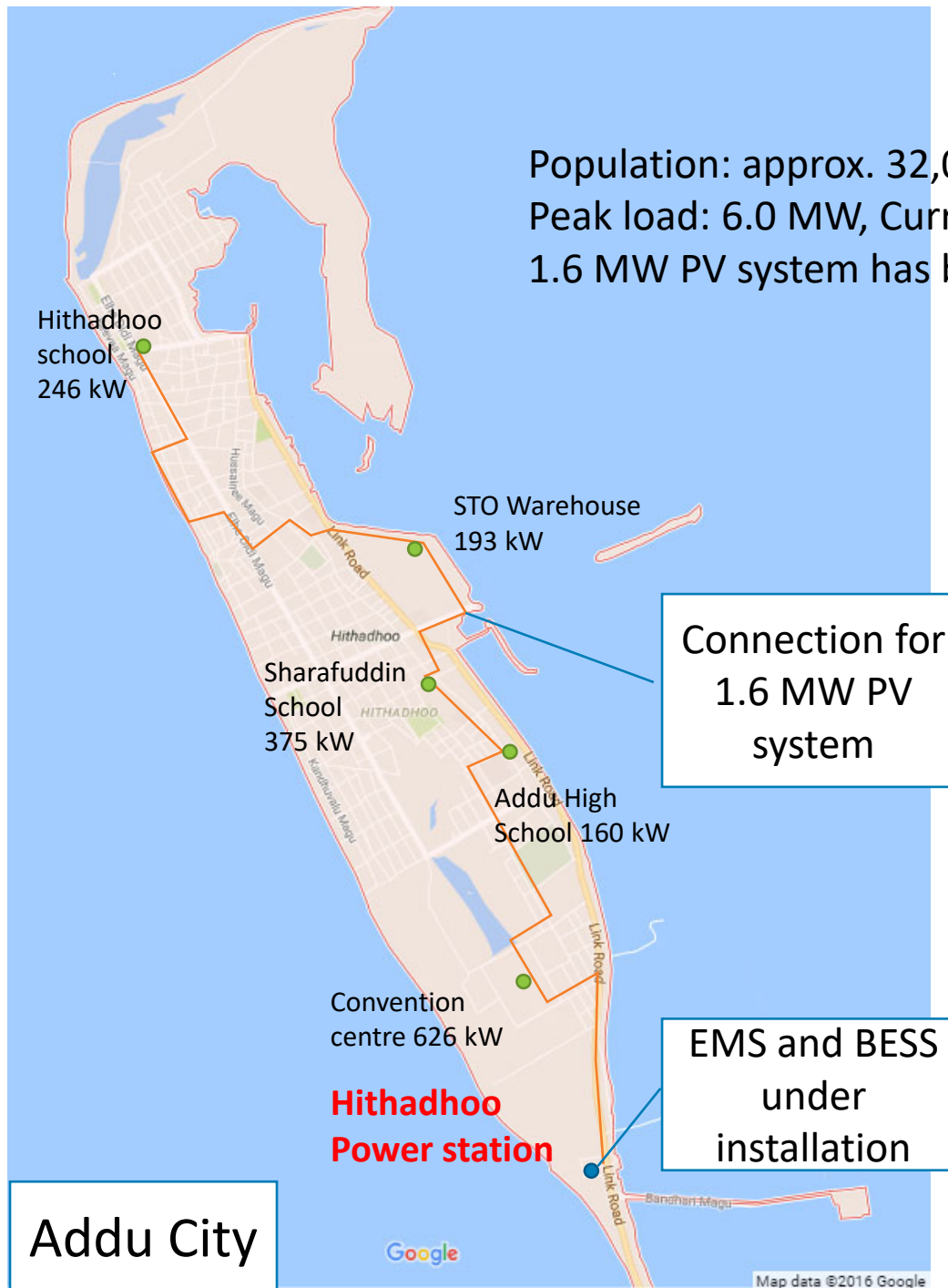
Project Site / Source: Ministry of Environment and Energy, Maldives



Locations of the Project

Population: approx. 32,000

Peak load: 6.0 MW, Current power supply: by 15 diesel generators
1.6 MW PV system has been installed (as of May 2019)





BESS and EMS Installation in Progress



BESS under installation



EMS under installation

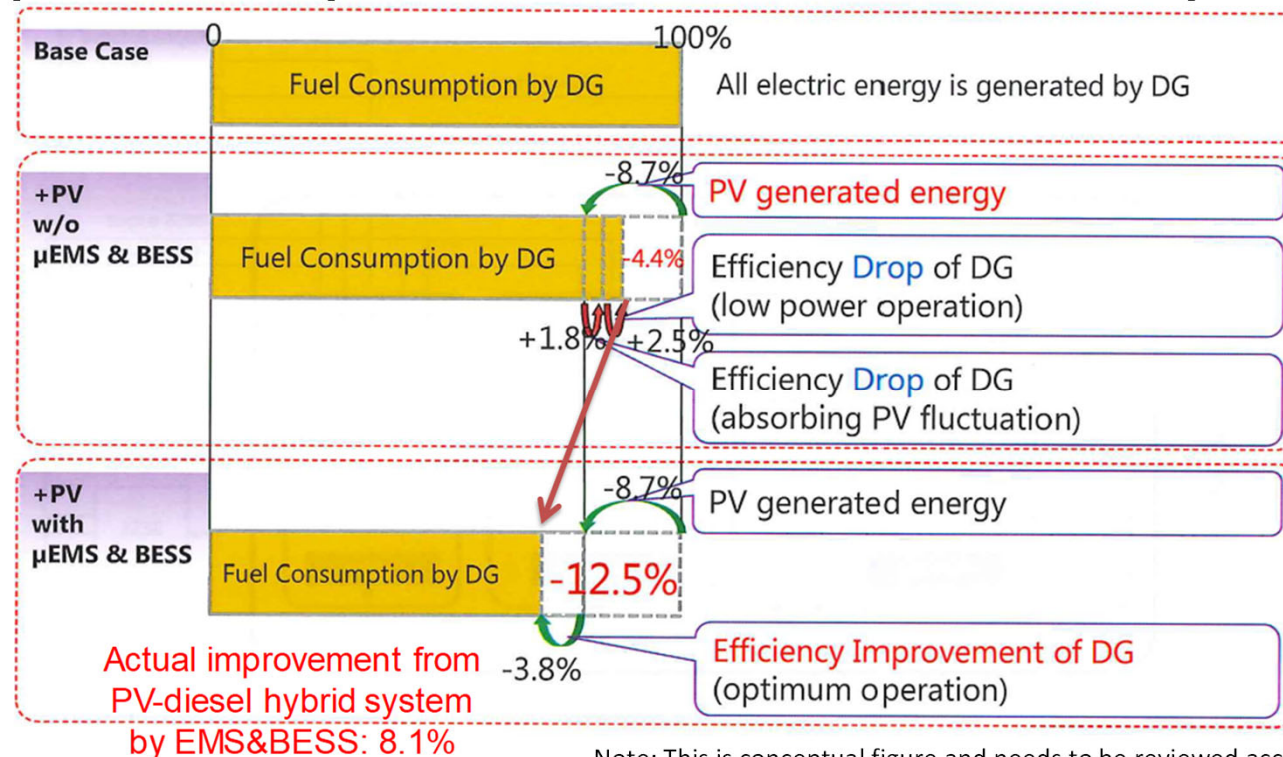


BESS and EMS
in Hithadhoo Power station





Expected impact of EMS-BESS with PV system



Note: This is conceptual figure and needs to be reviewed according to demand increase. Simulation is conducted in case of 1.7 MW PV system with 4.5 MW diesel grid.
Source: "Micro-grid System in the Addu Atoll", March 2014

- Advanced EMS & BESS will enable maximum use of solar energy as well as higher efficiency of existing diesel generators (DGs)
- **Without** the EMS & BESS, efficiency drop of DGs will be caused and solar PV will bring only 4.4 % reduction in fuel consumption by DGs.
- **With** the advanced EMS & BESS, efficiency of DGs will be improved, and **12.5 % reduction** will be achieved, which means that the PV system with the EMS & BESS is expected to reduce fuel consumption by DGs by about three times than the PV system without them.



Case study 2: Waste to Energy in Maldives

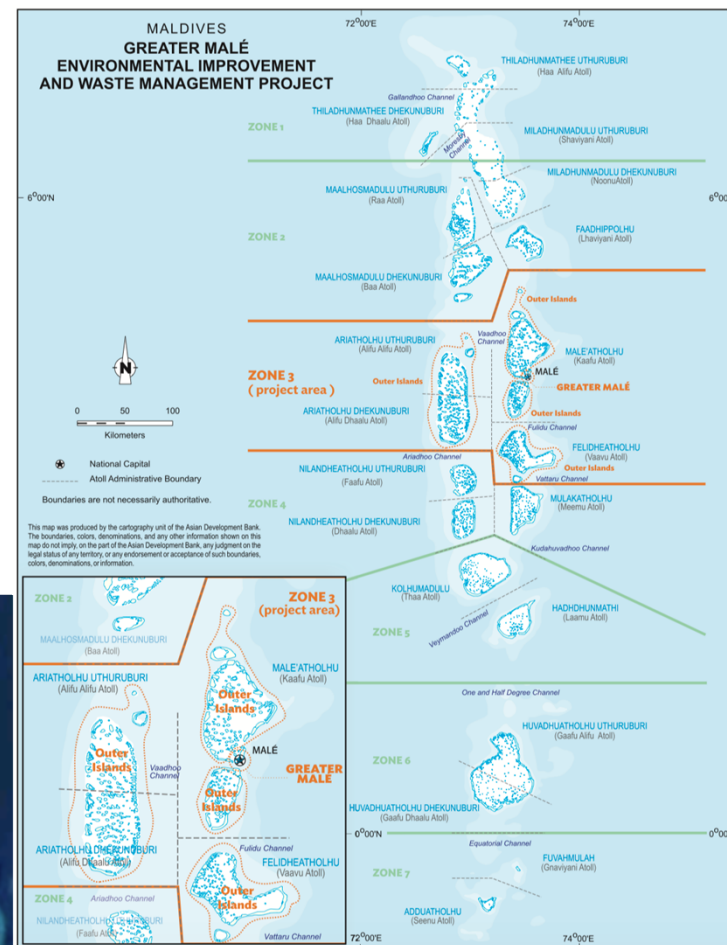
Project name	Greater Male Waste to Energy Project
Financing	\$151.13 million (including \$10 million from JFJCM)
Technology supported	Waste to energy plant (incineration)
Description	The project will establish an integrated regional solid waste management system in Greater Male consisting of collection, transfer, treatment using advanced waste-to-energy (WtE) technology, disposal, recycling, and dumpsite closure and remediation. The WtE facility can process 500 tons/day with up to 12 MW power generation and will be implemented through a design-build-operate (DBO) contract.
Location	Thilafushi, the Maldives
Emission reductions	40.4 thousand tCO ₂ /yr (estimate) *Average of emission reductions for 20 years





Location of the project

- Thilafushi: an industrial island, 6km away from the capital Male





Thilafushi Dumpsite





Output 1

Climate Resilient Regional
Waste Management Facility

Output 3

Capacity in sustainable waste
management strengthened +
awareness on 3R and WTE

Thilafushi 2025

Output 2

Thilafushi Dumpsite Remediated

Thilafushi 2019

ADB



Capacity Building by Japanese Local Government



Expert of Clean
Authority of Tokyo

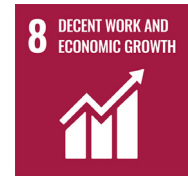




SDG Co-benefits

Projects supported by JFJCM will bring significant environmental, social and economic co-benefits.

- Both micro-grid and WtE projects will:
 - contribute to reduction of diesel oil use, resulting in **improved energy security** and trade balance of the Maldives as the country heavily depends on imported diesel for power generation;
 - create **income-generating opportunities**, including skilled labor.
- The micro-grid project will **improve local air quality** by reducing emissions of air pollutants such as SOx, NOx and particulate matter.
- The waste to energy project will also contribute to reduction of the municipal solid wastes that are directly disposed in the landfill site, resulting in:
 - **improved health of the surrounding residents** by minimizing the odor and smoke from spontaneous combustion;
 - **improved marine ecosystem** by minimizing the waste dumping to the ocean, including plastic wastes;
 - **expanded lifetime of the landfill site.**





Pre-feasibility study for hydrogen infrastructure in Maldives and Palau

Purposes of the survey	<ul style="list-style-type: none">➤ to identify the opportunities to introduce green hydrogen infrastructure in the Maldives and Palau, which are partner countries of the JCM;➤ to contribute to the decarbonization of these countries;➤ to assess if the identified opportunities can be developed as ADB-financed projects in future with possible support from JFJCM.
Survey period	Nov 2020 – Oct 2021
Amount	\$100,000 from JFJCM
Expected deliverables	<ul style="list-style-type: none">➤ Report on hydrogen technology, market and policy, highlighting good practice➤ Report on hydrogen demand and supply chain➤ Options for pilot-scale project on hydrogen, for energy production, marine transport and/or others





Conclusion

- JFJCM provides support for introduction of advanced low-carbon technologies, which can help PALM countries to accelerate its efforts towards decarbonization, and to achieve SDGs, by utilizing JCM under Article 6 of the Paris Agreement.
- JFJCM support can be used to demonstrate the effectiveness of the advanced technologies and to build local capacity, which can facilitate technology transfer and dissemination.
- JFJCM team continues to identify and develop new projects, including renewable energy, WtE, green hydrogen, energy efficiency, clean transport, and various other interventions.



JFJCM

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Thank you.

