

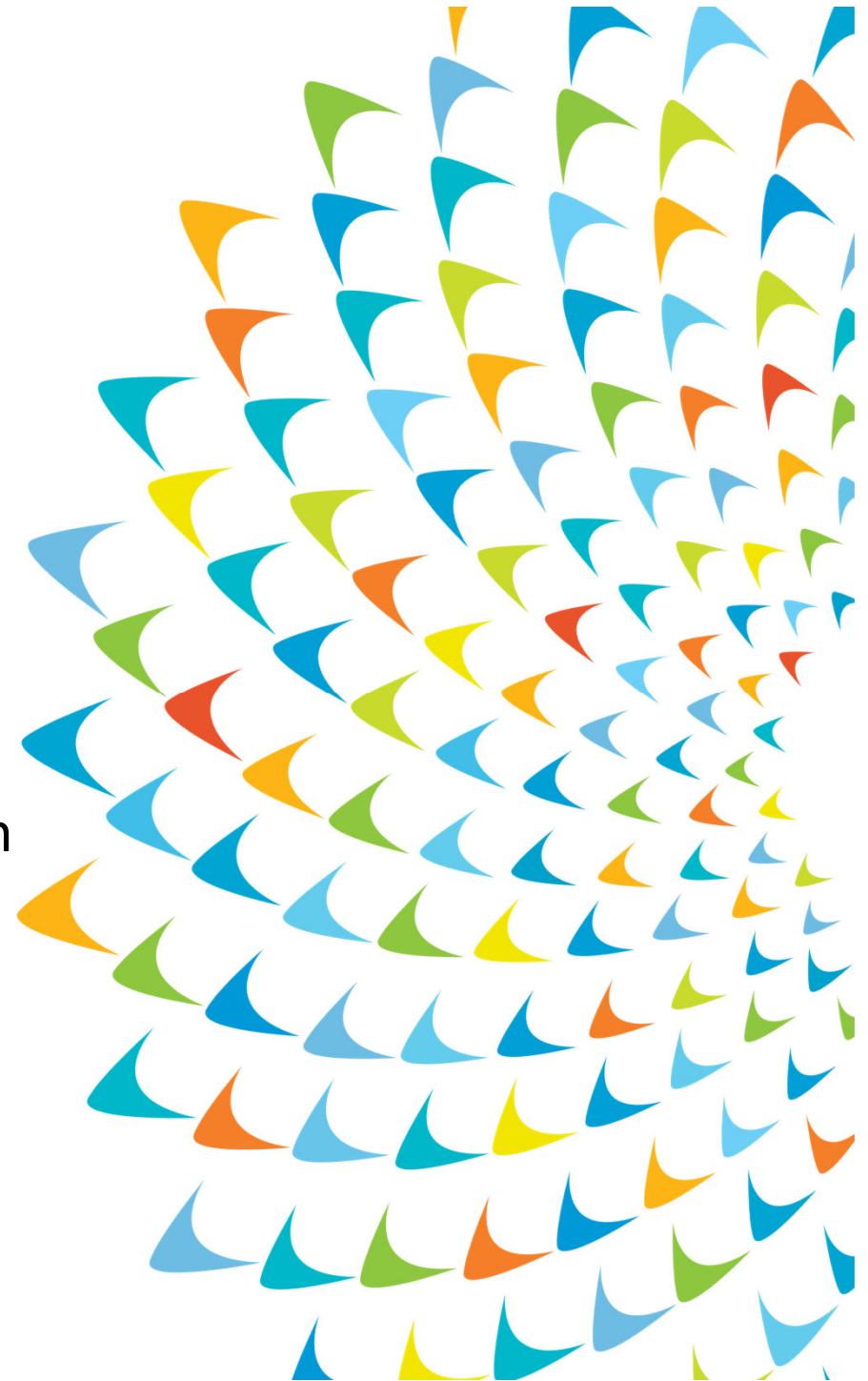


**JFJCM**

# Recent Development of Japan Fund for the Joint Crediting Mechanism

Webinar on the JCM Implementation  
in Republic of Maldives  
- Innovation for Carbon Neutrality  
through the JCM -

28 February 2022





# 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
<b>Total ADB Operations*</b>	<b>31,594</b>
<b>Sovereign</b>	<b>26,826</b>
Loan	25,749
Guarantee	-
Grants	1,077
<b>Nonsovereign</b>	<b>1,406</b>
Loan	1,151
Equity Investment	255
Guarantee	-
<b>Others including Technical Assistance</b>	<b>3,363</b>

\* 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 \$100 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"><li>• Commenced in 2009</li><li>• Provides financial and technical support for CDM projects by purchasing post-2012 CERs</li><li>• <b>\$115 million</b> contributed by 4 governments and 2 private sector entities from Europe and Asia</li><li>• Contracted <b>8.68 million CERs</b> with an investment of \$53.0 million</li><li>• Supports <b>33 CDM projects in 10 DMCs</b></li><li>• Provides carbon finance support to 1.1 GW renewable energy projects</li></ul>	<ul style="list-style-type: none"><li>• Commenced in June 2014</li><li>• Provides grants for advanced low-carbon technologies in ADB-financed and administered projects utilizing the Joint Crediting Mechanism initiated by Japan</li><li>• <b>\$88.46 million</b> contributed by the Government of Japan</li><li>• Supports five mitigation activities in <b>Maldives, Bangladesh and Mongolia</b></li></ul>	<ul style="list-style-type: none"><li>• Established in 2018</li><li>• 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</li><li>• <b>\$5 million</b> facility funded by ADB and the governments of Germany and Sweden</li><li>• Supports <b>Bhutan, Indonesia, Mongolia, Pakistan, Philippines, Thailand and Viet Nam.</b></li></ul>	<ul style="list-style-type: none"><li>• Established in <b>2006</b></li><li>• Implemented through a series of <b>6 Technical Assistance projects</b>, with a total amount of <b>\$13.25 million</b></li><li>• Provides technical and capacity building support for enhancing mitigation actions through carbon markets</li><li>• New TA on <b>Promoting Life Cycle Management of Fluorocarbons</b> will support DMCs in promoting proper management of fluorocarbons</li></ul>

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.

Mongolia  
Bangladesh  
Maldives  
Viet Nam  
Lao PDR  
Indonesia

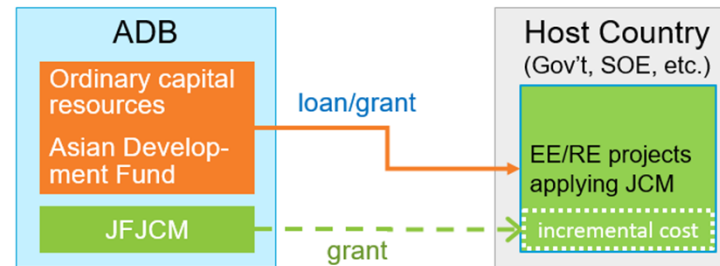
11 out of 17 JCM partner countries are ADB Developing Members

Palau  
Cambodia  
Myanmar  
Thailand

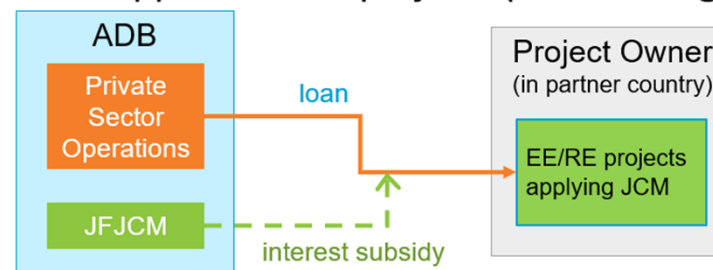
Philippines



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	On top of 1.6 MW of solar PV installed under the project, battery storage and EMS supported by JFJCM will: <ul style="list-style-type: none"><li>➤ Smooth out the fluctuation of solar PV generation</li><li>➤ Optimize diesel generator operation</li><li>➤ Integrate large amounts of renewables to the grid</li></ul>
Location	Addu, Maldives
Emission reductions	1.3 thousand tCO <sub>2</sub> /yr (estimate)

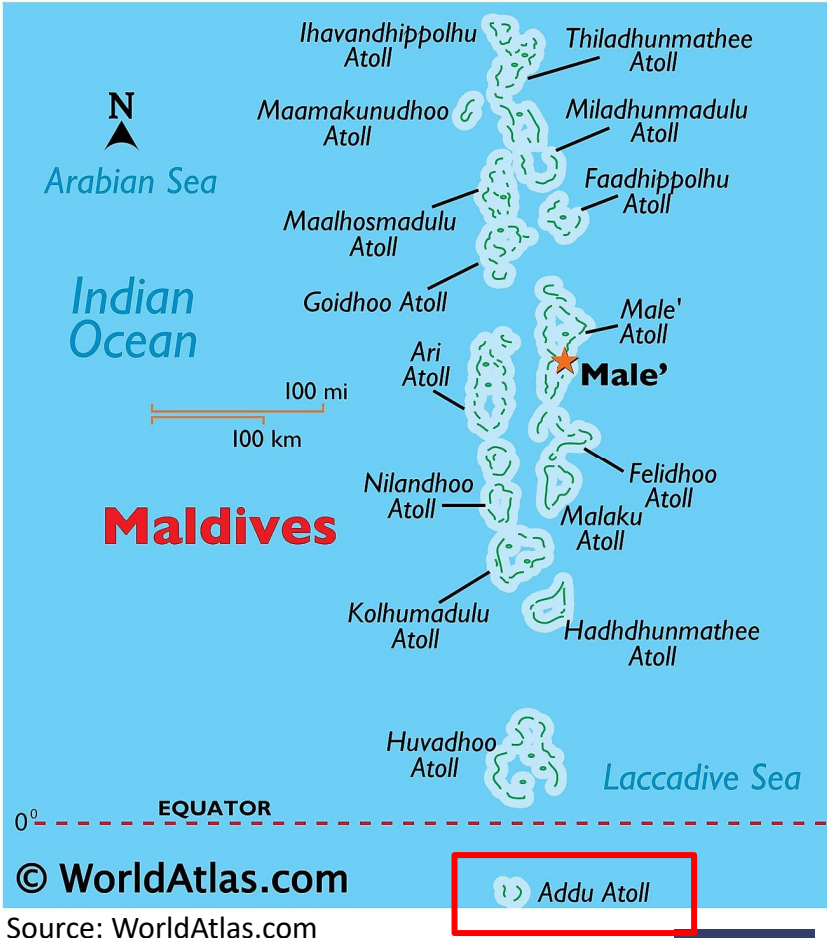
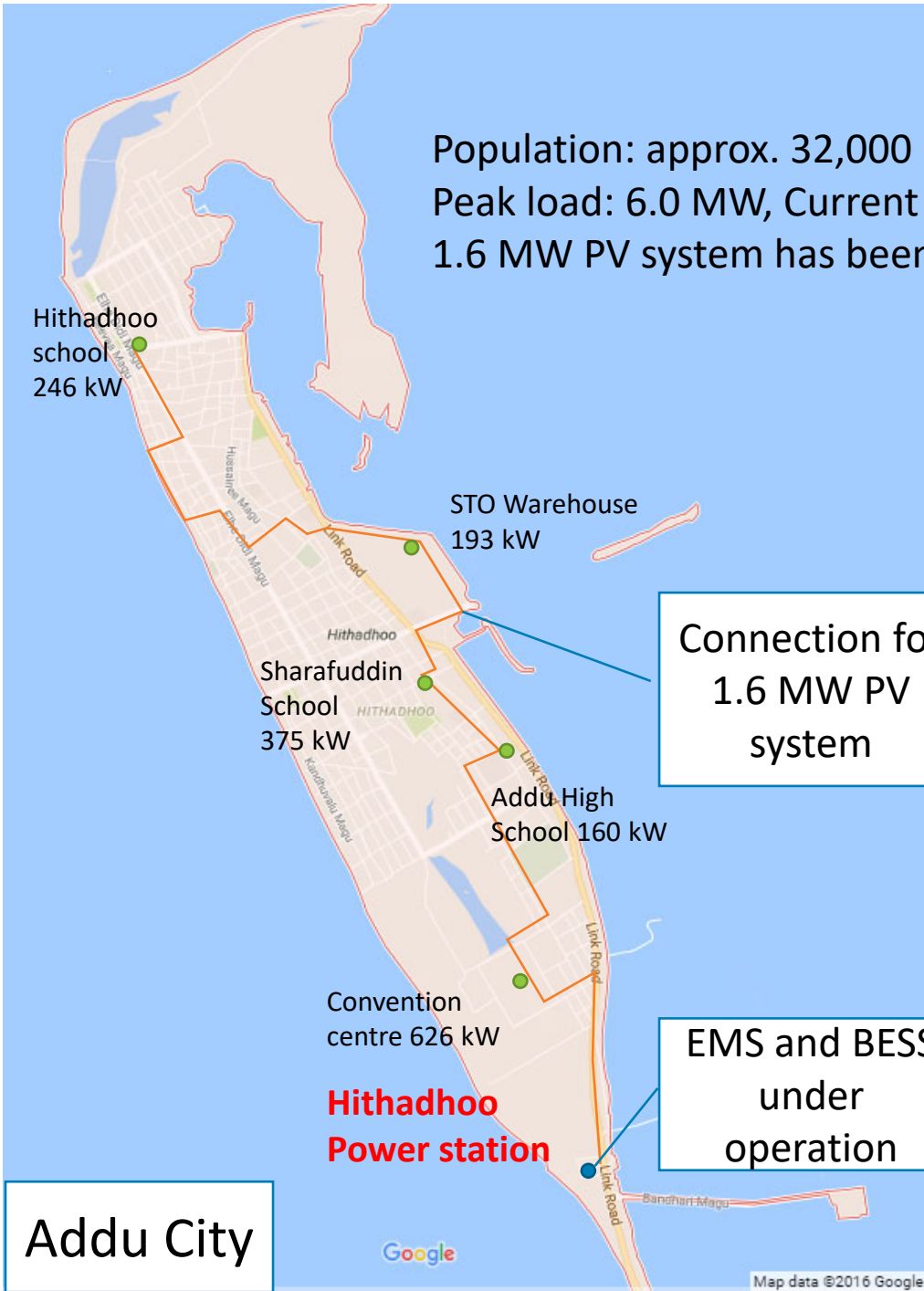
Signing ceremony for the contract on battery system and EMS



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 under operation



BESS under operation



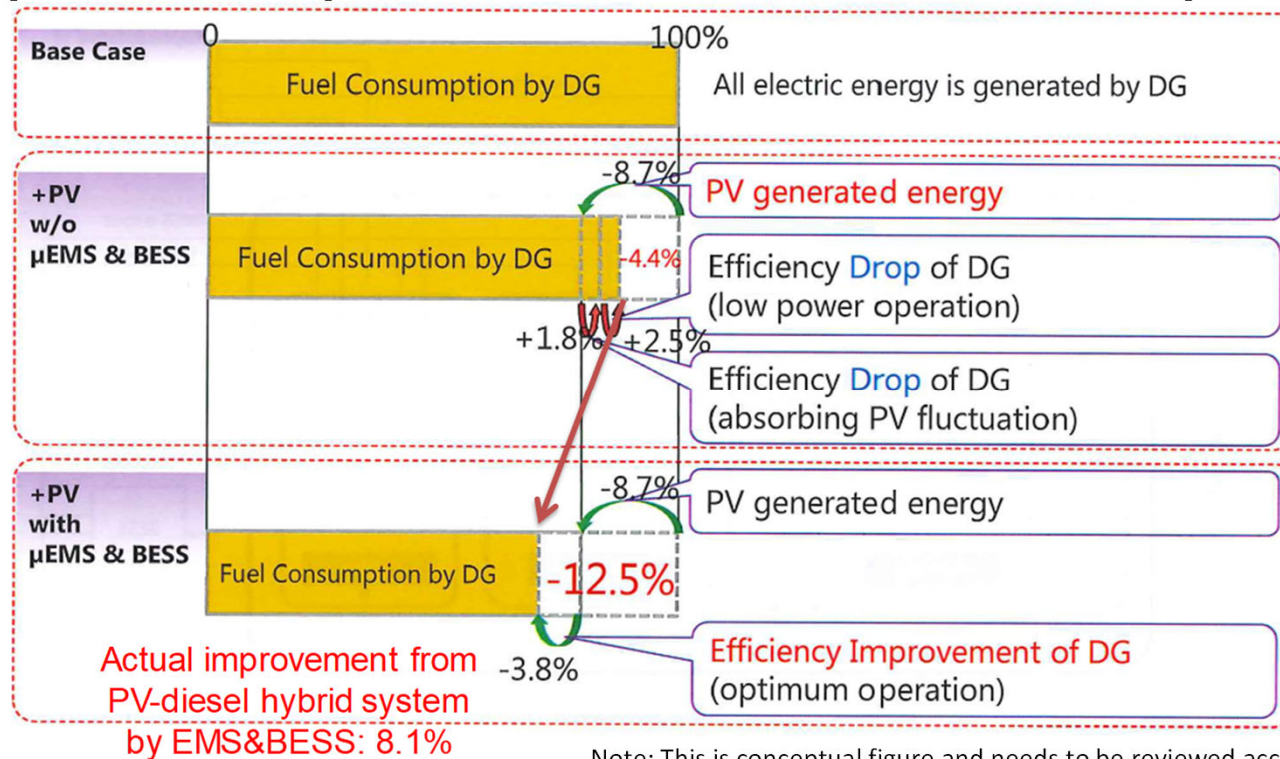
EMS training



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 enables 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.

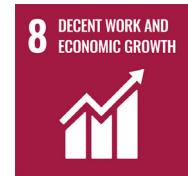


## SDG Co-benefits

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

The POISED project will:

- increase energy supply and grid stability and **reduce the cost of energy for consumers**
- 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.
- **improve local air quality** by reducing emissions of air pollutants such as SO<sub>x</sub>, NO<sub>x</sub> and particulate matter.







# Pre-feasibility study for hydrogen infrastructure in Maldives and Palau

<b>Purposes of the survey</b>	<ul style="list-style-type: none"><li>➤ to identify the opportunities to introduce green hydrogen infrastructure in the Maldives and Palau, which are partner countries of the JCM;</li><li>➤ to contribute to the decarbonization of these countries;</li><li>➤ to assess if the identified opportunities can be developed as ADB-financed projects in future with possible support from JFJCM.</li></ul>
<b>Survey period</b>	Nov 2020 – Apr 2022
<b>Amount</b>	\$100,000 from JFJCM
<b>Expected deliverables</b>	<ul style="list-style-type: none"><li>➤ Report on hydrogen technology, market and policy, highlighting good practice</li><li>➤ Report on hydrogen demand and supply chain</li><li>➤ Options for pilot-scale project on hydrogen, for energy production, marine transport and/or others</li></ul>



## Conclusion

- JFJCM provides support for introduction of advanced low-carbon technologies, which can help Maldives to accelerate its efforts towards **carbon neutrality** and to achieve **SDGs**, by utilizing the 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**.
- To increase penetration of renewable energy in Maldives, **advanced battery storage system would play bigger roles** not only in improving energy efficiency of diesel generators but also **in enabling more renewable energy by time shifting**.
- JFJCM team continues to identify and develop new projects, including renewable energy, green hydrogen, energy efficiency, clean transport, and various other interventions.





**JFJCM**

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**Thank you.**

