Japan Fund for the Joint Crediting Mechanism

Support for Geothermal Power Generation Project in Indonesia

Webinar on the Joint Crediting Mechanism (JCM) Implementation in Indonesia – Accelerating the Transition towards Decarbonization through the JCM –

26 July 2022

ADB's Climate Change Strategy

Strategy 2030 sets ADB's course on how best to respond to Asia and Pacific's changing needs

7 Operational Priorities

- Addressing remaining poverty and reducing inequalities
- Accelerating progress in gender equality
- Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability
- Making cities more livable
- Promoting rural development and food security
- Strengthening governance and institutional capacity
- Fostering regional cooperation and integration

➞ Committed to mobilizing **$100 billion in climate finance** cumulatively from 2019 to 2030; **75% of committed operations to** support climate change mitigation and adaptation by 2030 (October 2021)

In October 2021, ADB's new **Energy Policy** was approved that promotes a low-carbon transition across Asia and the Pacific

ADB's Carbon Market Program

Mobilizing carbon finance for incentivizing investments in low-carbon technologies

Future Carbon Fund

- $115 million Trust Fund to purchase post-2012 CERs
- Commenced operations in 2009
- Funding from 4 Sovereign and 2 private sector entities in Asia and Europe
- Providing $53.7 million worth of carbon finance to 33 GHG mitigation projects
- Purchased 8.76 million post-2012 CERs from projects hosted in 10 DMCs
- Supports 1.1GW renewable energy projects
- To be closed in 2023

Japan Fund for the Joint Crediting Mechanism

- 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
- **$95.80 million** contributed by the Government of Japan
- Supports six mitigation activities in **Indonesia, Maldives, Bangladesh,** and **Mongolia** allocating $41.48 million
- Supports two TAs: (i) regional capacity development on the JCM (closed) and (ii) project preparation for Disaster Resilient Clean Energy Financing in **Palau** allocating $3 million

Article 6 Support Facility

- Established in 2018
- Provides technical, capacity building, and policy development support to enhance DMC's preparedness to participate in new carbon markets envisaged 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**.

Technical Support Facility

- Established in 2006 and implemented through a series of 6 TA projects, with a cumulative amount of $13.20 million
- Funded by the governments of Austria, Finland, Japan, Luxembourg, Republic of Korea, Spain, and Switzerland
- Support DMCs in enhancing the financial viability of mitigation actions through carbon markets
- Provides technical and capacity building support for DMCs to pursue, international, bilateral and domestic carbon markets
- Currently promoting life cycle management of fluorocarbons in **Maldives, Mongolia, Philippines** and **Viet Nam**.

Climate Action Catalyst Fund

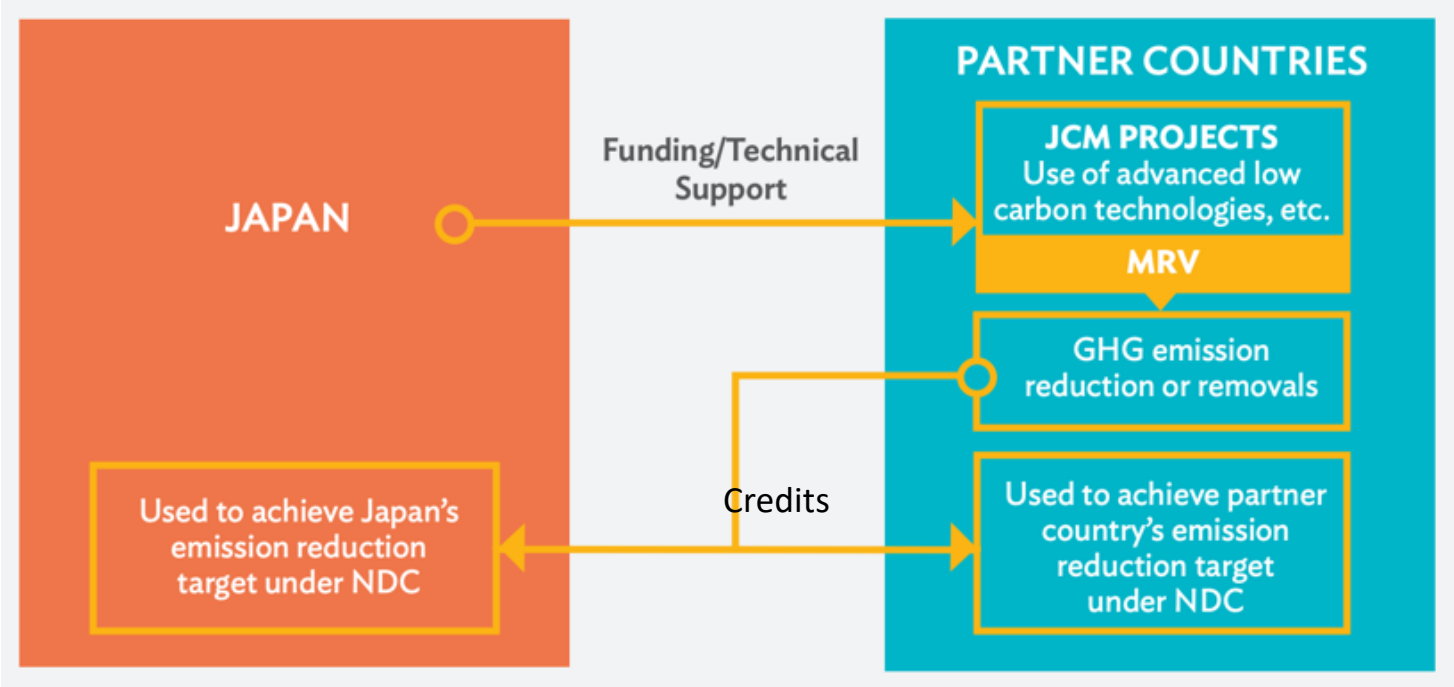
- **New carbon fund** to mobilize carbon finance to purchase carbon credits under Article 6 of the Paris Agreement
- **$100million plus** to support DMCs in achieving NDC commitments cost effectively and raising ambition over time
- Will support a diverse range of **transformative actions** including projects, programs, and scaled-up activities such as sectoral and policy interventions
- Swedish Energy Agency and the Foundation for Climate Protection and Carbon Offset (KliK), Switzerland have expressed interest to be initial financing partners

Japan Fund for the Joint Crediting Mechanism

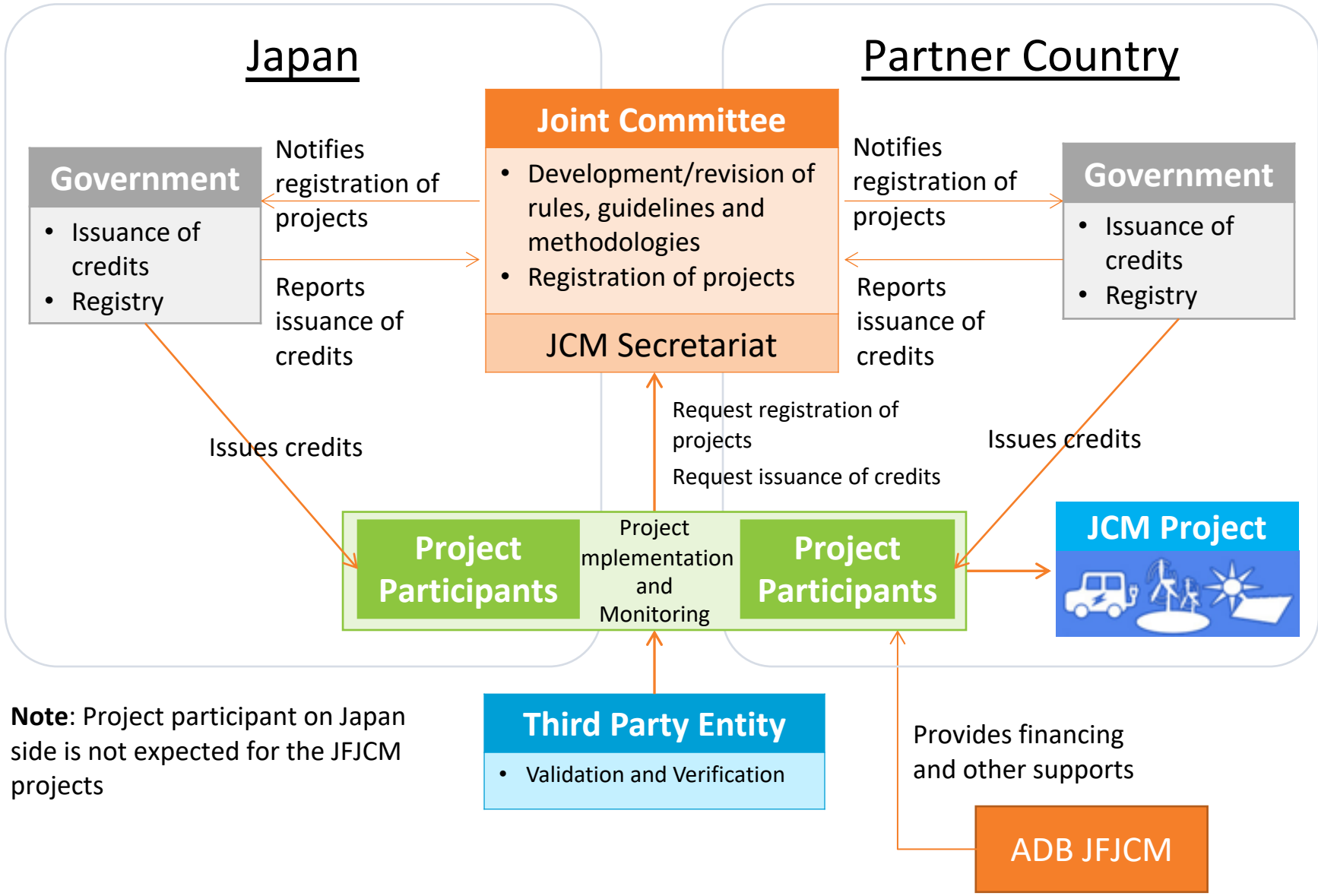
- Established in June 2014 as one of ADB's trust funds
- Contribution by Government of Japan: $95.80M (2014-2022)
- Provides financial incentives (grant) for adoption of advanced low-carbon technologies in ADB-financed projects that use the Joint Crediting Mechanism (JCM)*
- Both sovereign and nonsovereign projects are eligible

*Concept of the Joint Crediting Mechanism (JCM)

- Project-based bilateral offset crediting mechanism managed by Japan and partner countries
- Facilitates the diffusion of low-carbon technologies that lead to GHG emission reductions that are measurable, reportable & verifiable
- Contributes to sustainable development of partner countries
- Carbon credits from JCM projects will be shared among the countries and used to achieve their emission reduction targets



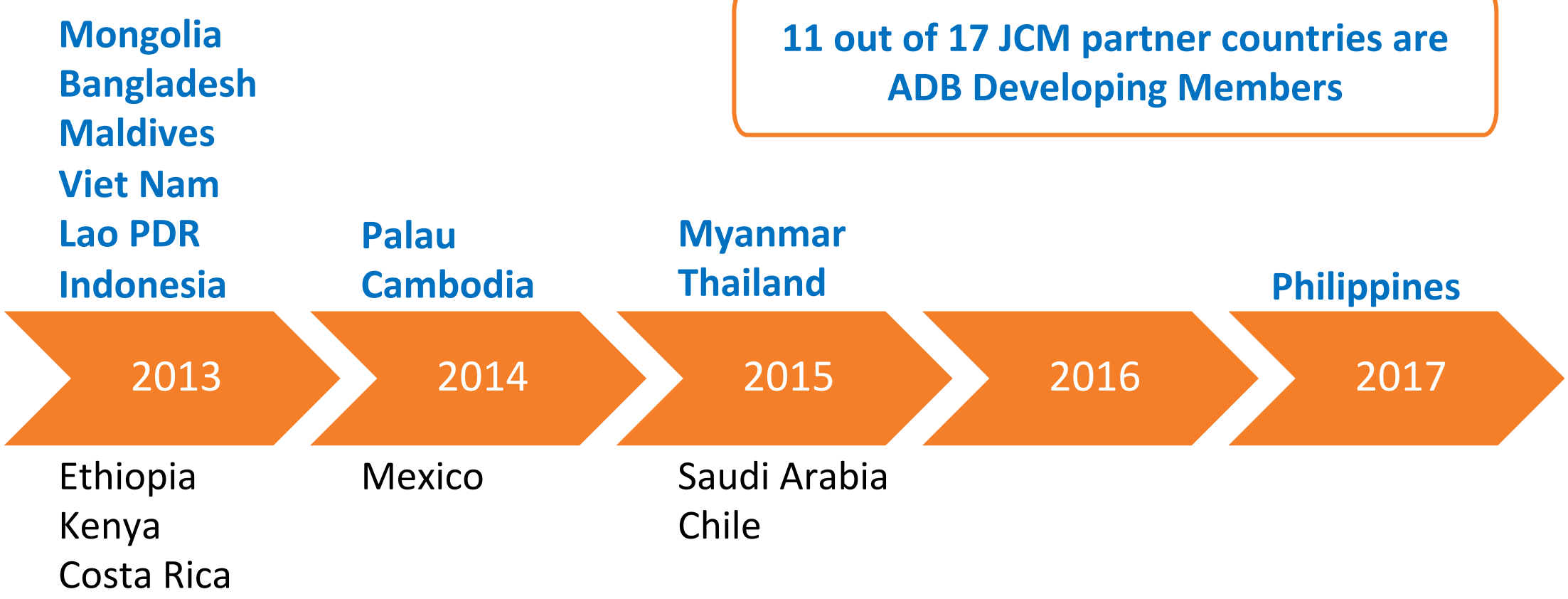
Roles of key entities in JCM projects



Note: Project participant on Japan side is not expected for the JFJCM projects

JFJCM eligible countries

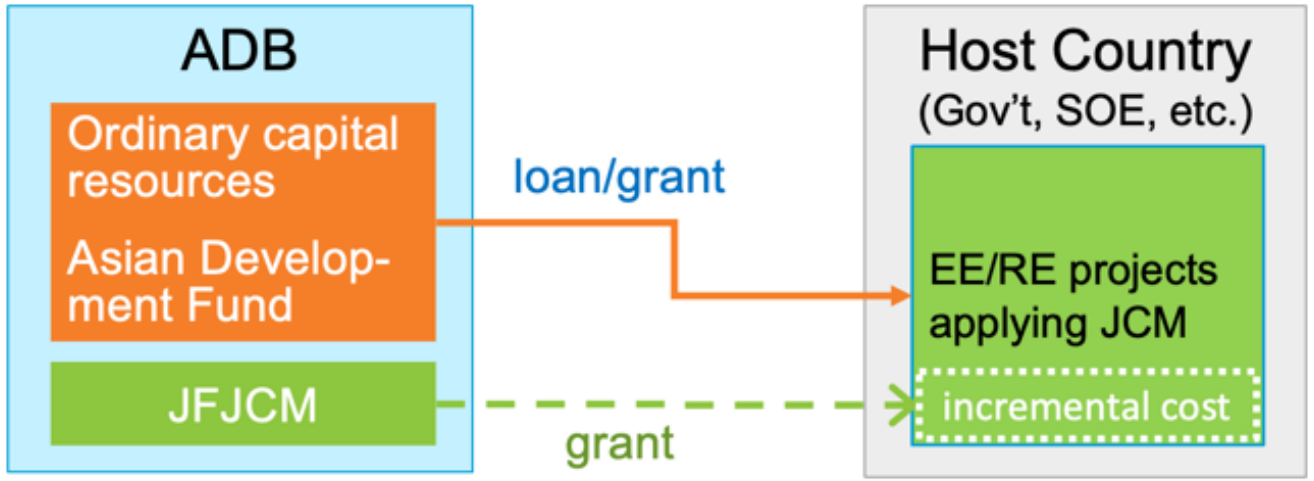
11 out of 17 JCM partner countries are ADB Developing Members



JFJCM Support Schemes

For Sovereign Project

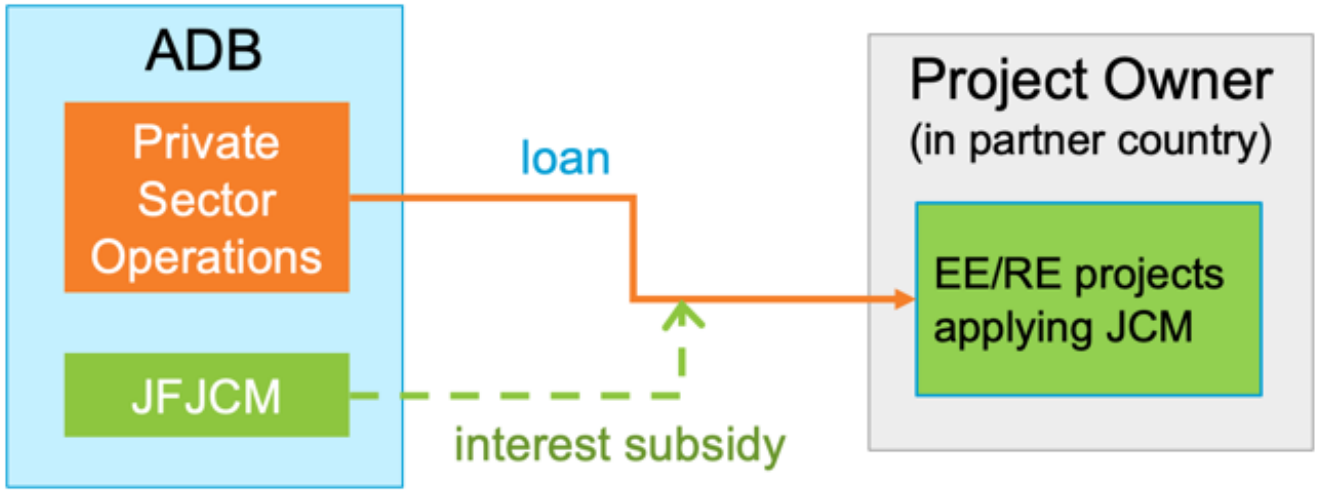
- JFJCM provides grant for incremental cost of advanced low-carbon technologies
- Maximum amount of grant:
  i. 10% of total project cost (capped to $10 million)
  ii. $5 million if the project cost < $50 million



For Nonsovereign project

- JFJCM provides grant as an interest subsidy to ADB's loan to energy efficiency / renewable energy projects applying the JCM
- The borrower will repay the loan with reduced interest, instead of receiving the grant itself.
- Maximum amount of interest subsidy:

  10% of total project cost (capped to $10 million)

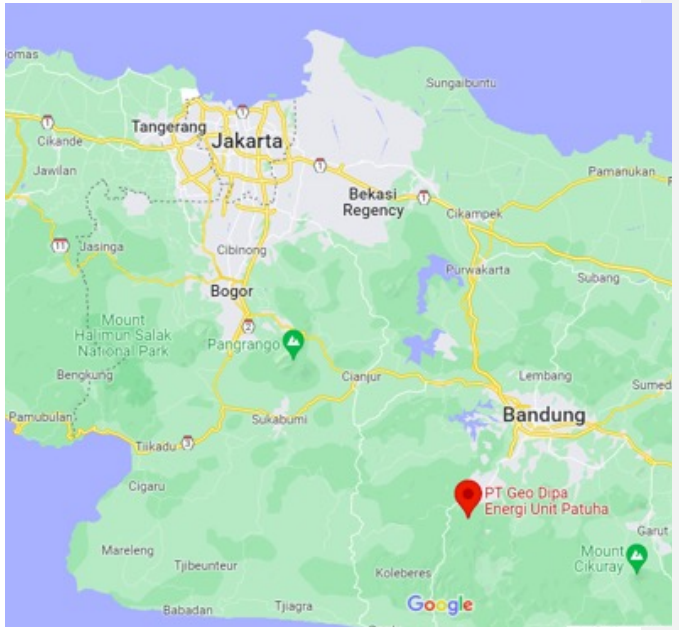


Approved JFJCM Projects

#	Project	ADB DMC	JFJCM grant ($ million)	ADB Approval	Technologies supported	Status
1	Preparing Outer Islands for Sustainable Energy Development Project (POISED)	Maldives	5	Mar 2015	Advanced battery and energy management system (EMS)	Battery and EMS have been installed and started operation.
2	Southwest Transmission Grid Expansion Project	Bangladesh	7	Jul 2018	Energy efficient transmission lines	Under construction. Operation expected to start in early 2023.
3	Upscaling Renewable Energy Sector Project	Mongolia	6	Sep 2018	Solar PV with advanced battery system and EMS	Under construction. Operation expected to start in late 2022.
4	Improving Access to Health Services for Disadvantaged Groups Investment Program	Mongolia	3.48	Oct 2019	Energy efficient HVAC, high insulation window, rooftop solar PV and ground source heat pump	Under preparation of procurement.
5	Greater Male Waste to Energy Project	Maldives	10	Aug 2020	Waste-to-energy plant (incineration)	Under design and construction. Operation expected to start in 2024-25.
6	**Geothermal Power Generation Project (Phase 1)**	**Indonesia**	10	Expected in Q3 2022	Geothermal power plant with advanced designs	ADB approval to be made in Q3 2022. Under preparation of bidding documents.
		Total	**41.48**			

Geothermal Power Generation Project: Basic Data

Title of Project	Geothermal Power Generation Project
Country	Indonesia
Sector	Energy - Renewable energy generation
Contribution from JFJCM	$10.0 million for Patuha Unit-2 plant
Non-JFJCM financing amount and sources	$469.2 million (ADB OCR $300 million, CTF $35 million, GDE $134.2 million), including $79.43 million for Patuha Unit-2 plant (ADB OCR $54.20 million, GDE $25.23 million)
Project Officer	Florian Kitt, Senior Energy Specialist Energy Division, Southeast Asia Department
Executing/ Implementing Agency	PT Geo Dipa Energi (GDE)



- **Patuha Geothermal Power Plant** is located around 30 km away from Bandung and 185 km from national capital city of Jakarta
- The concession area spreads on the Bandung District and Cianjur District and is approximately 350 km^2 (18 km from north to south and 20 km from east to west)

Project Area of Patuha Unit-2

Patuha Unit-2 Additional $10M from JFJCM for more efficient geothermal power plant

$79.43 million
For **Patuha Unit-2** plant
(ADB OCR $54.20 million, GDE $25.23 million)

1. Drilling of new wells for the production and reinjection of reservoir fluids
2. Construction of steam gathering and fluid reinjection systems connecting the wells and generating units
3. Construction of 55MW net output power plant and Patuha
4. Transmission interconnection systems between the plants and the grid

Outcome: *Reduction of approximately 5,284,000 tCO2e over 20 years (264,200 tCO2 annually on average)*

Additional $10.0 million from JFCM
For demonstration of the first-of-its-kind technologies for large scale geothermal power plant in **Patuha Unit-2** plant

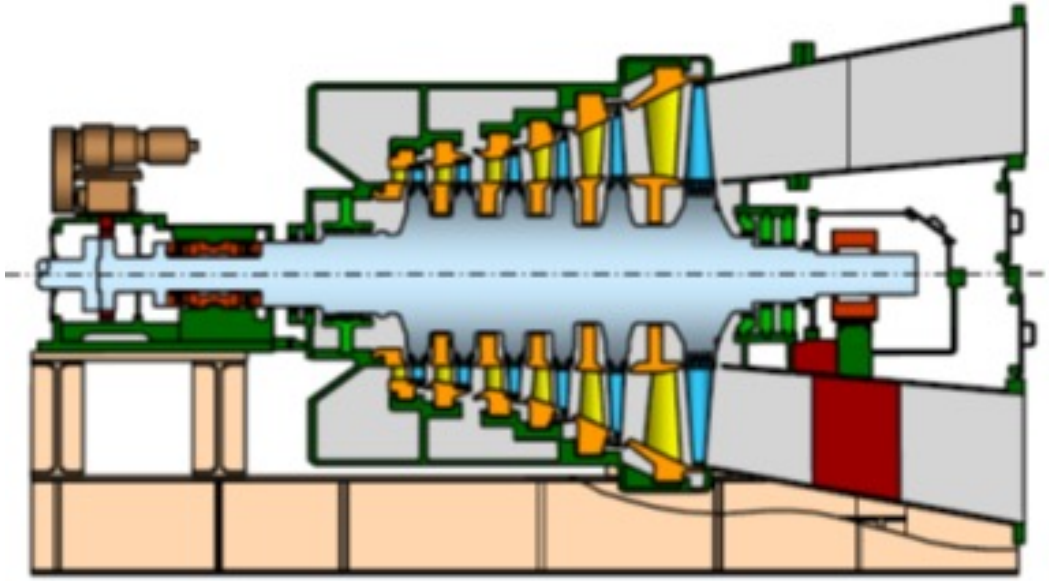
1. Improved plant efficiency to convert steam to electricity
2. Minimized degradation of plant performance
3. Improved reliability, reduced unplanned outage periods of geothermal power plant
4. Therefore, increasing renewable energy penetration into existing grid and GHG emissions will be further reduced

Outcome: *Reduction of approximately 5,476,000 tCO2e over 20 years (273,800 tCO2 annually on average)*

Advanced Low-Carbon Technologies supported by JFJCM for Patuha Unit-2

1. Steam turbine with advanced design

Advanced designs for steam turbine with lower condenser pressure to improve plant efficiency and lower steam consumption.

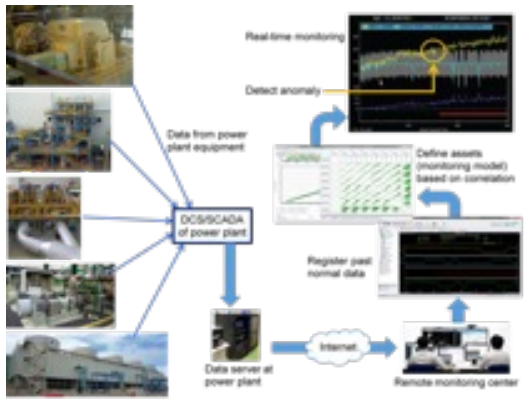


Axial exhaust turbine:

Axial exhaust turbine is one of such advanced designs where turbine exhaust steam flows to the condenser without changing flow direction.

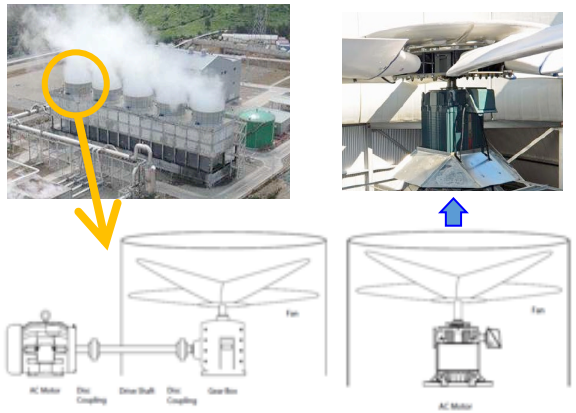
Advanced Low-Carbon Technologies supported by JFJCM for Patuha Unit-2 (Cont'd)

2. Anomaly predictive diagnosis using IoT & AI



enable response before equipment failure and reduce unplanned outage period of the power plant.

3. Direct drive motors for cooling tower fans

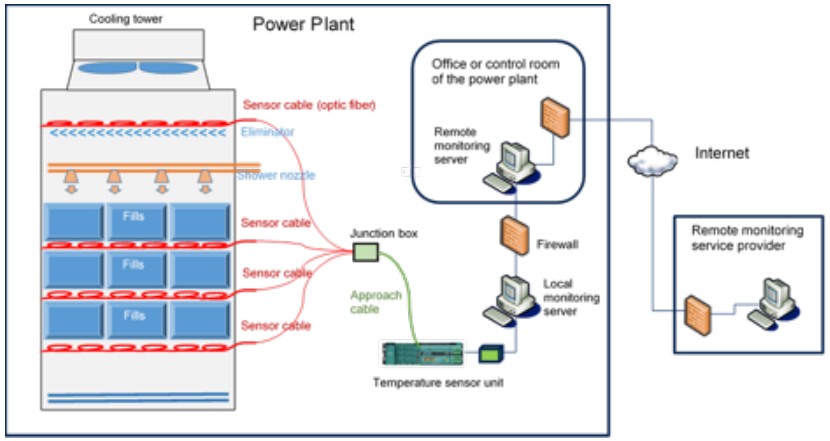


reduce parasitic load resulting in improved plant efficiency

4. Hybrid type cooling tower fill

reduces plant performance degradation as less likely to clog than other fill types

5. Monitoring of temperature distribution in cooling tower



optimization of operation and maintenance of the cooling tower contributing to minimizing performance degradation.

Ways Forward

- ADB strongly commits to continue assisting Indonesia and other member countries in addressing climate change with its increased ambition for climate finance.
- ADB is embedding climate change mitigation and adaptation measures in its infrastructure investments and supporting Indonesia's nationally determined contribution goals under the Paris Agreement.
- JFJCM is exploring more potential projects to help decarbonize Indonesian economy in various sectors, including energy, transport, waste management, water, and others.
- The private sector plays a key role in this regard. ADB will continue to play a major role in financing climate-related private sector projects in Indonesia, including support for greater use of cutting-edge clean, renewable, and energy efficient technologies.

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Thank you.