

# Low Carbon Energy Transition: A Multilateral Financing Institution's Perspective

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# Outline

Energy Sector Challenges and Opportunities

ADB Energy Policy 2021

Operations Focus

Status of lending operations

Operations Highlights

Final Remarks

# Key Challenges in Asia-Pacific Energy Sector

## Energy Access



- 350 million people in ADB DMCs remain without adequate supply of electricity
- 63 million people have no access to electricity\*
- 907 million people have no access to clean cooking\*
- 484 million of urban poor are at high risk due to lack of access to cooling



## Energy Security



- Electricity consumption per capita in Asia and Pacific increased by 168% from 2000 to 2021
- Global energy supplies are adversely affected by regional conflicts
- Global renewable energy investments need \$1.3 trillion annually by 2030
- Global around \$1 trillion needed annually for transmission and distribution investments
- Relatively high cost of capital



**7** AFFORDABLE AND  
CLEAN ENERGY



**13** CLIMATE  
ACTION



# Key Challenges in the Energy Sector

## Sector Reform and Governance



- Regressive and outdated sector governance and regulation
- Mistargeted subsidies and financial incentives persist
- Private sector participation needed to meet massive investment requirements



## Environmental Sustainability



- Most vulnerable region to climate change impacts
- 50% of global greenhouse gas emissions come from Asia-Pacific
- Energy-related CO2 emissions from the region increased by 142% from 2000 to 2021
- Coal accounted for 48% of total energy supply of the region in 2021
- 57% of the region's electricity was generated by coal in 2021
- Poor diversification of critical minerals and clean technology supply chains



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# Key Opportunities in the Energy Sector

## Energy Landscape

- Fast-falling cost of renewable energy vs. conventional energy
- Emerging new and innovative low-carbon energy technologies
- Maturing digital and smart technologies

## Global Commitments

- Global commitments to universal access and climate action
- Sustainable Development Goal 7: Universal Energy Access by 2030
- Paris Agreement: Nationally Determined Contributions (NDCs)

## ADB as the Climate Bank in Asia and the Pacific

- \$100 billion of cumulative climate finance by 2030 from ADB's own resources
- At least 75% of operations to support climate action for the period 2019 to 2030
- Recent revisions to CAF, additional lending headroom of \$10billion annually

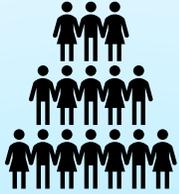
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# ADB's 2021 Energy Policy - Principles



## Principle 1. Securing Energy for a Prosperous and Inclusive Asia and the Pacific

Support efforts to bring **affordable, reliable, sustainable, and modern energy to all**, so as to eradicate extreme poverty and reduce social inequalities.



## Principle 2. Building a Sustainable and Resilient Energy Future

Provide support to its DMCs to tackle **climate change, enhance environmental sustainability, and build climate and disaster resilience.**



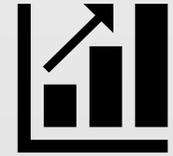
## Principle 3. Supporting Institutions, Private Sector Participation, and Good Governance

Support the **institutional development, financial sustainability, and good governance** of energy sector institutions and companies, as well as private sector participation.



## Principle 4. Promoting Regional Cooperation and Integration

Promote **regional energy cooperation and the integration of energy systems** to strengthen energy security and increase cross-border access to cleaner energy sources.



## Principle 5. Integrated Cross- Sector Operations to Maximum Development Impact

**Combine finance, knowledge, partnerships, and its country-focused approach** to deliver integrated solutions with comprehensive and magnified development impacts.

# Salient Policy Elements

Improving energy efficiency across energy supply and consumption chains

Accelerating the deployment of renewable energy

Pursuing strategic decarbonization and phase-out/phase-down of coal

Support deployment of innovative technologies, business and financing models, and leveraging private investments

Encourage phasing out fossil fuel subsidies and introduce social cost of carbon in economic viability analysis

Increasing the resilience of energy infrastructure

Only selective support for midstream gas projects and down stream gas and oil projects

No support for upstream oil and gas projects and no support for mid stream oil projects

Recognize the role of nuclear but no lending for investments

# Areas of Delivery

Decarbonization

Decreasing  
energy intensity

Digitalization

Decentralization

# Implementation Focus



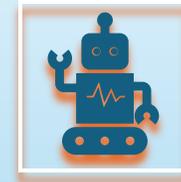
Confront climate change challenge by facilitating **low-carbon energy transition** through a common but differentiated approach and integrated energy planning



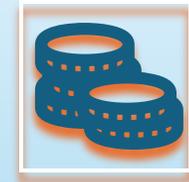
Support DMCs implement **just energy transition**, ETM in particular



Expand support for **advanced clean energy technologies, demand-side energy efficiency** including demand response and decentralized energy systems



Increase **digitalization, smart power systems** for increased clean energy deployment, real-time demand response and efficient power system management



Leverage **commercial financing** to accelerate the energy transition through One ADB approach, and innovative financing mechanisms and business models



# Operations Focus

# Energy Transition Activities

## Production

- Clean power generation
  - Solar, wind
- Production efficiency improvement
- Alternative fuels H2, bio-fuels
- Accelerated decommissioning of fossil fuel-based generation
- Improving generation dispatch regimes

## Transportation

- Power transmission and distribution efficiency improvement
- Flexible infrastructure for alternative cleaner fuel

## Utilization

### End-Use Energy Transition Initiatives (EETI)

- Efficiency improvement
  - combined heat and power
  - Improved metering
  - Building-Grid (B2G) ecosystem
- Alternative energy for transport and industries
  - Electricity, H2, biofuels
- Alternative technologies
  - Heat pumps
  - Solar heating
- Cross sectoral interventions to decarbonize
  - Agricultural power consumption
  - Water sector (efficient use)

# Energy Transition Activities

## Focus Areas

## Activities

1

Critical Minerals/Clean Energy Supply Chains

- One ADB Approach Paper
- Policy Analysis
- Project Pipeline Development (INO, UZB, IND)

2

Decarbonization of Industrial Sectors and Transport (Hard-to-Abate)

- Carbon Capture and Storage TA (INO and IND)
- Hard-to-abate RETA (Under Preparation) (IND, TKM, UZB, PHI)
- Marine Decarbonization (with Transport Sector)

3

Energy Transition Policy Analysis

- Energy Transition Readiness Assessment for All ADB DMCs
- Net-Zero Emissions Modeling in India (with ERDI)

4

Support on New Transition Technologies

- Offshore Wind Policy Analysis (IND)
- Ports and Supply Chain Development in South and Southeast Asia (with GWEC)

5

Facilitating Financing for the Energy Transition

- India Green Climate Facility (with GCF)
- FIL Loan – Green Fuels Development in India (with NABARD and SBI)

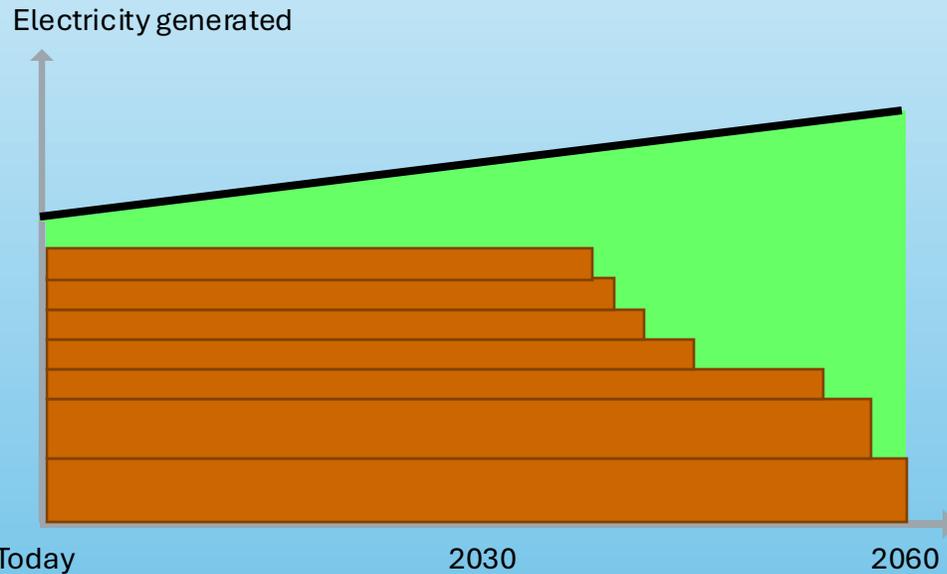
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Engagement with Global Partners

- WEF, AZEC, GWEC, EITI, SE4ALL, WEC, UNESCAP, IAEA, IEA, GEAPP

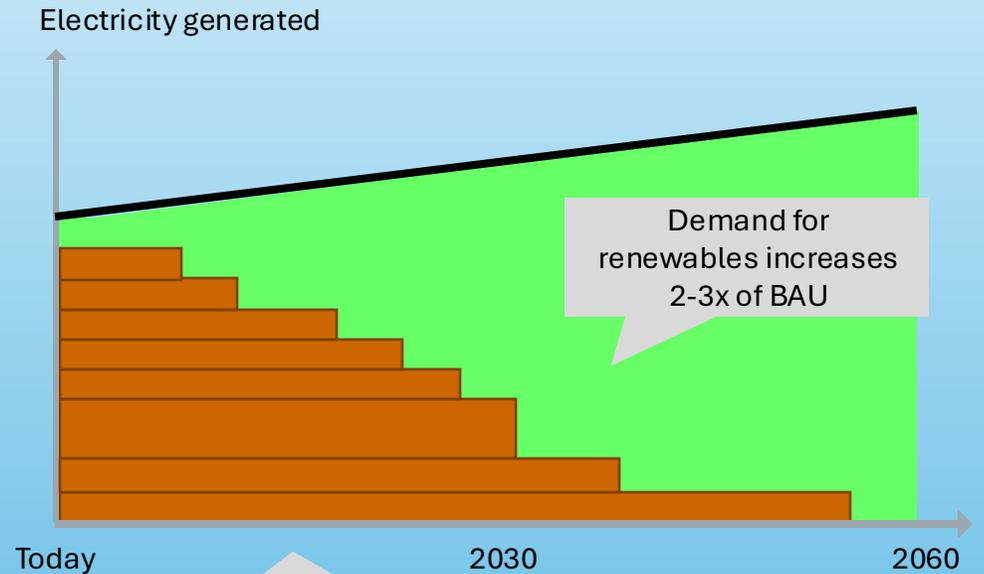
# Energy Transition Mechanism – Accelerated Decommissioning of Coal Power Plants

## Business as usual



- Total energy demand
- Coal-fired assets generation and retirement over time
- Renewable energy generation over time

## With the Energy Transition Mechanism



# Special Initiatives

## New Energy Sources

- Hydrogen, Methanol, Biofuels etc
- Offshore wind

## Hard-to-abate sectors

- Cement, Steel
- Long distance transport

## Energy Efficiency

## Clean technology manufacturing

- Critical Minerals

# Private Sector Development

- Engage in policy dialogue with DMC governments on areas of private sector engagement
- Proactively identify Sovereign + Non-sovereign interventions
- Work closely with OMDP to develop opportunities for PPP
  - Extensive coordination with OMDP on ETM in PHI and CAM (and Funding Vehicle)
  - Samoa coordinated work in – generation planning – T&D investment – PPP advisory – IPP financing

## Upstream

- Policy Reform
  - Cost-reflective tariff
  - State-owned enterprises (SOE) commercialization
  - Improving investment climate for private sector participation
- Policy Dialogue
  - Renewable energy generation
  - Specific transmission and distribution investments
  - Green mining principles and clean energy manufacturing

## Midstream

- Develop bankable contractual framework for renewable energy projects
- Screening, preparation, and tendering of renewable energy projects
- Innovative climate-finance instrument, financial products, and market development.

## Downstream

- Sovereign financing including credit enhancement to support renewable energy development.
- NSO financing, including mobilizing co-financing, to provide financing to solar, wind, and hydropower projects.

# Digital & High-Level Technology



Digital technologies for RE integration and energy efficiency

Grid management  
Smart meters



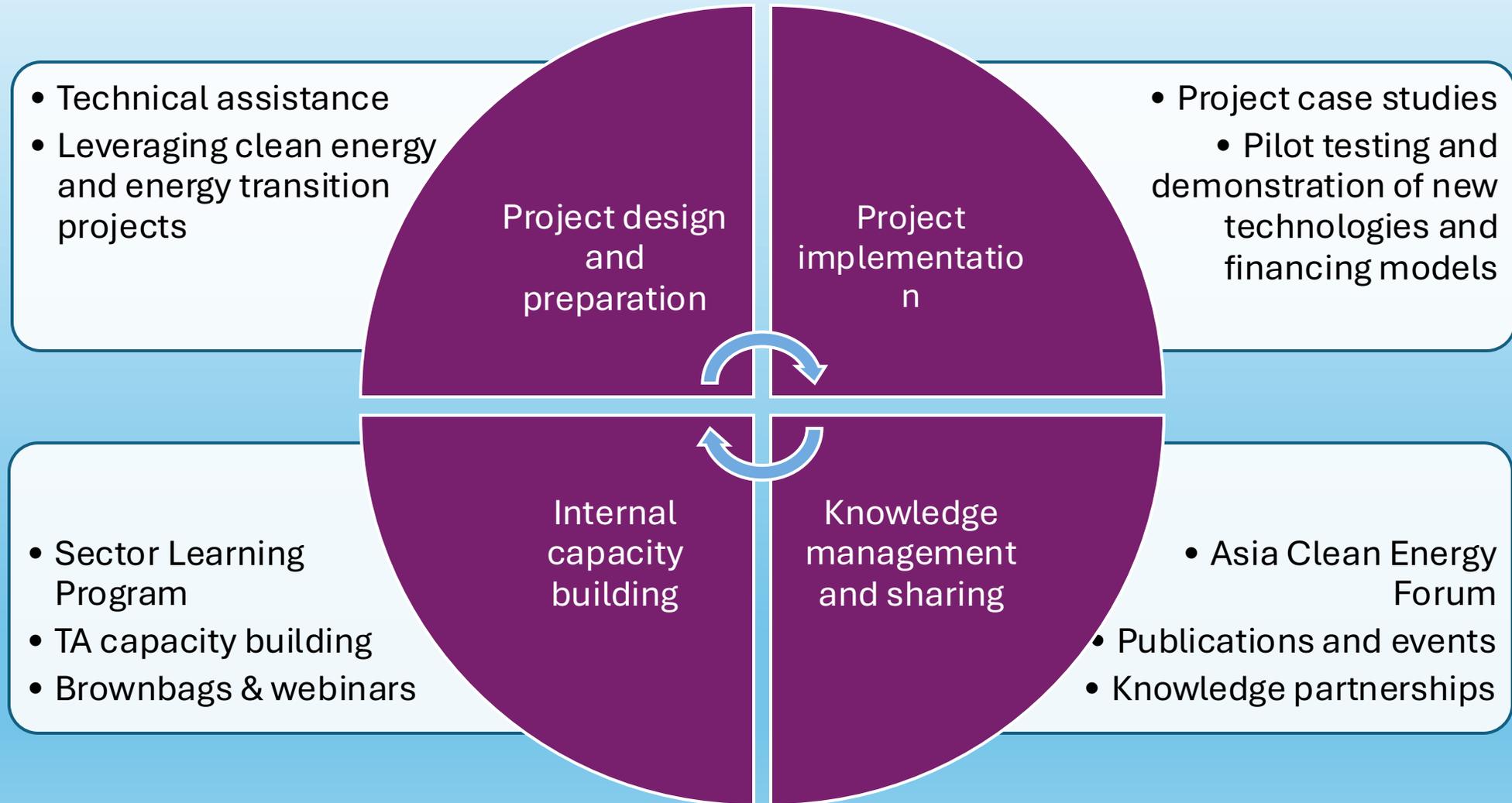
Adoption of technologies for:

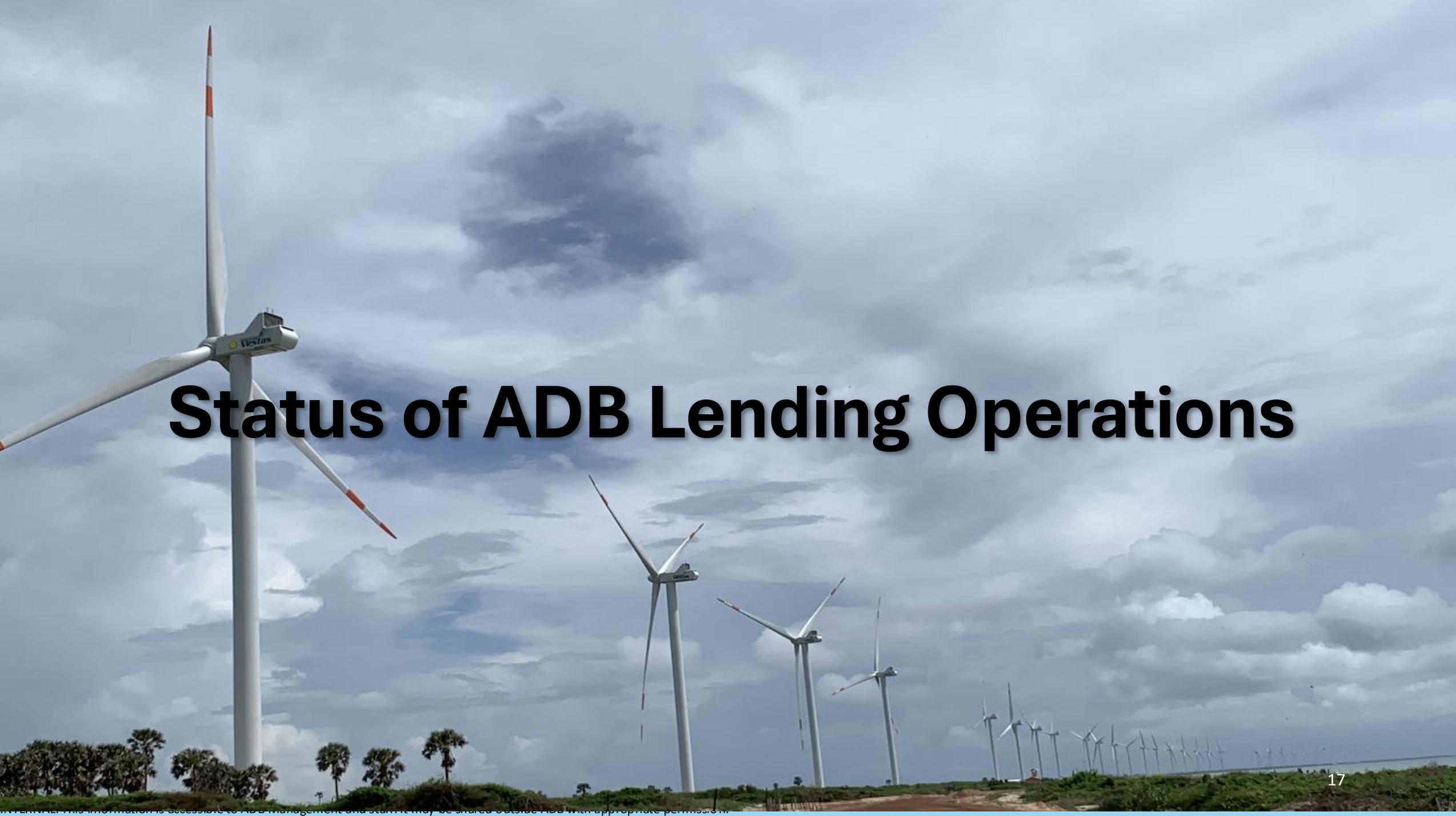
Advanced biofuels  
Geothermal systems  
Demonstrations of ocean energy  
Carbon capture, use, and storage



Pilot testing innovative technologies and business models

# Knowledge Framework in the Energy Sector

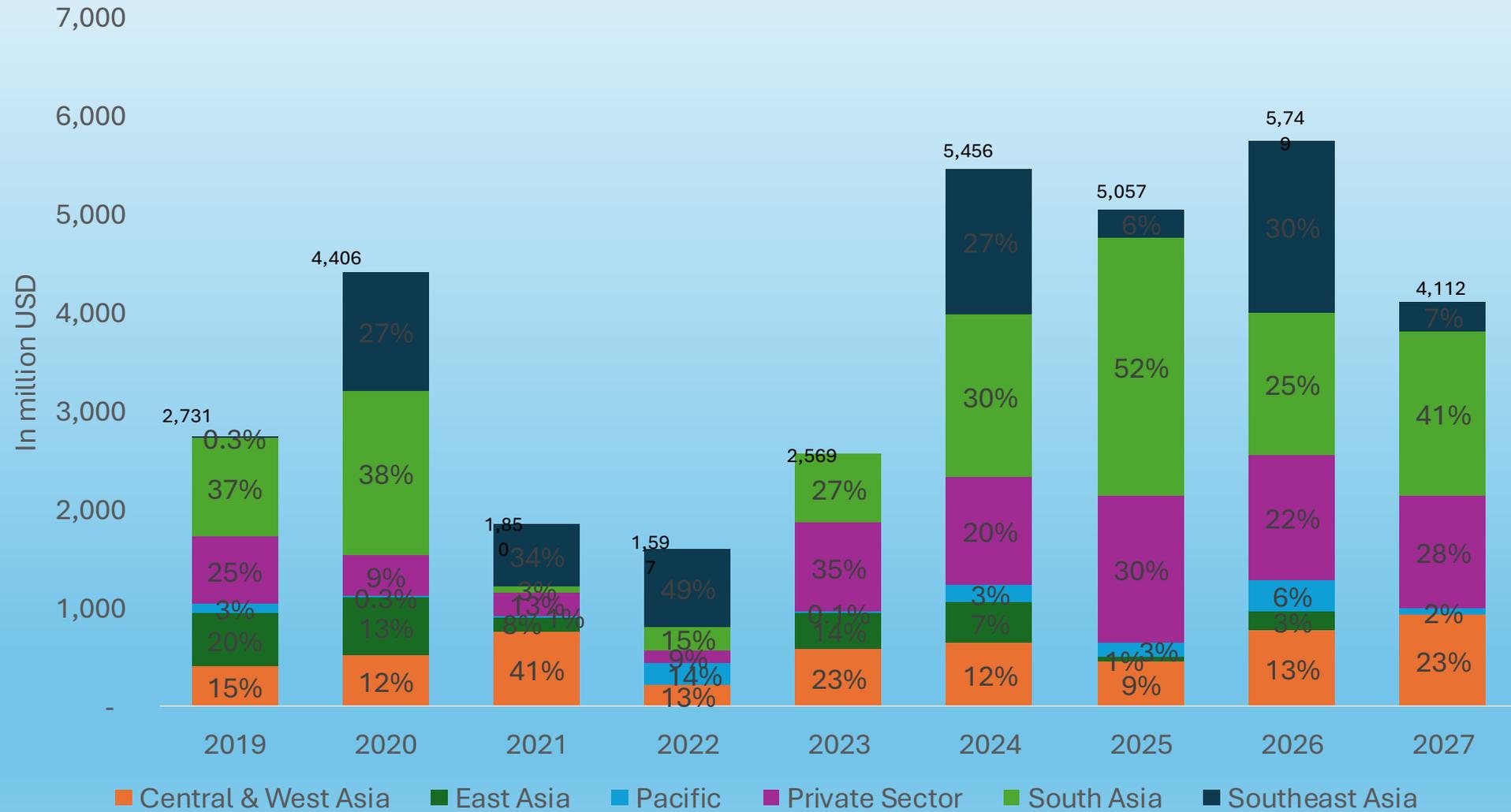


A large wind turbine is the central focus in the foreground, with its three blades extending outwards. The sky is filled with heavy, grey clouds, creating a dramatic and somewhat somber atmosphere. In the background, a long line of smaller wind turbines stretches across the horizon, suggesting a large-scale wind farm. The ground is a mix of green grass and brown earth.

# Status of ADB Lending Operations

# Energy Sector Commitments

(Actual 2019–2023, Indicative 2024-2027)

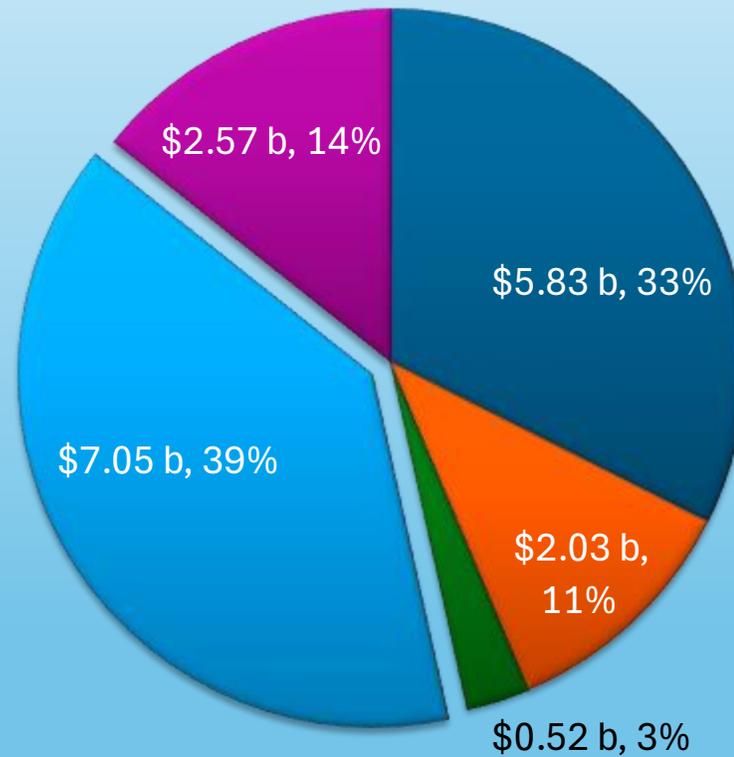


# Active Sovereign Lending Portfolio

(as of 30 June 2024)

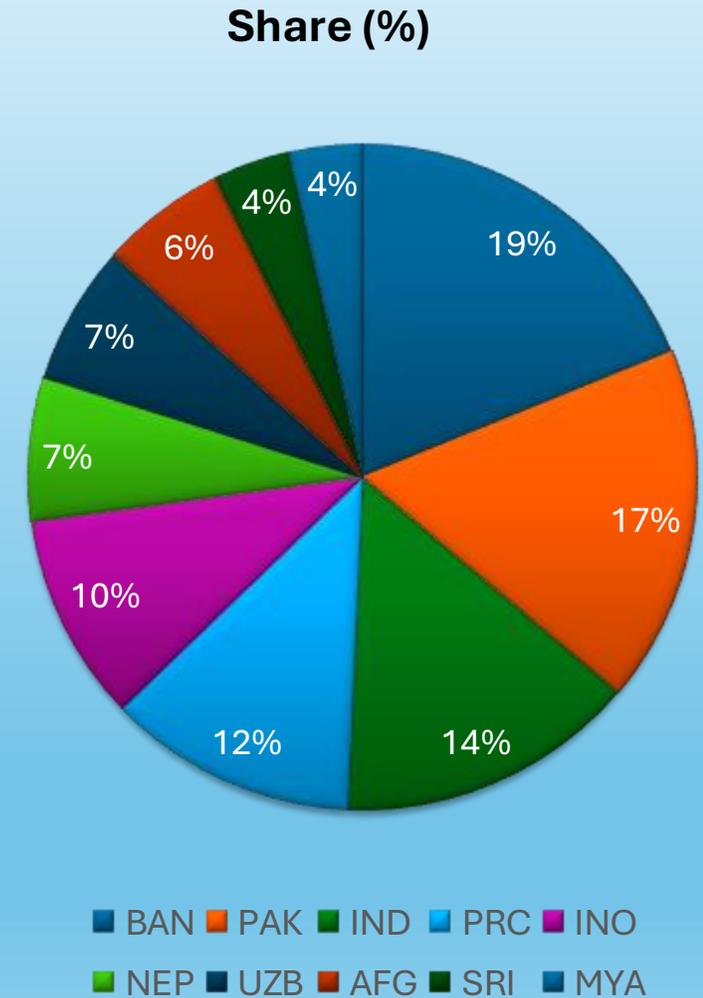
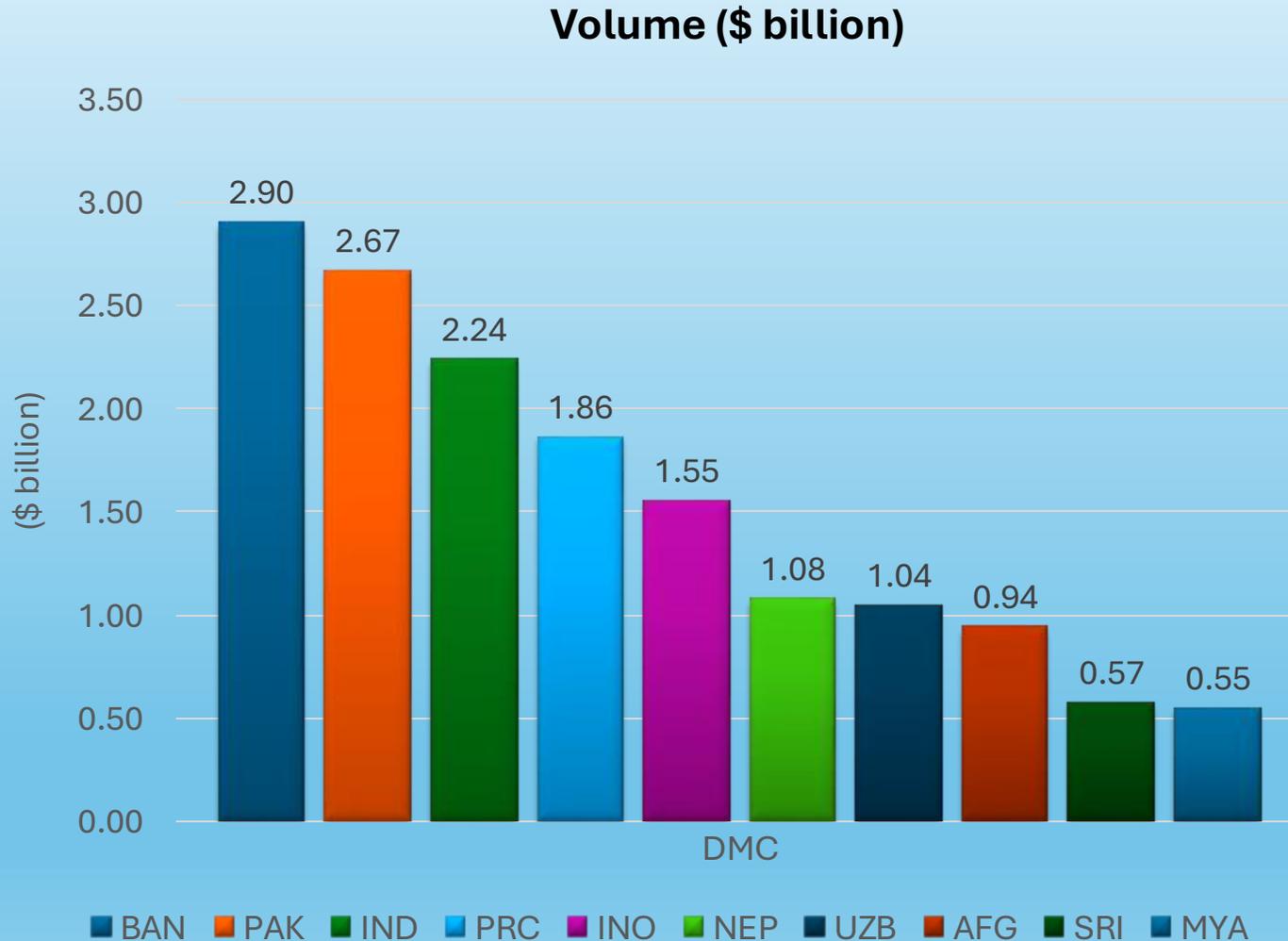
**Total: \$18.2 billion**

- Central West Asia
- East Asia
- Pacific
- South Asia
- Southeast Asia



# Top 10 DMCs by Current Portfolio (SOV)

(as of 30 June 2024)



# Clean Energy Financing Partnership Facility

**\$283.9 million** for  
240 projects in  
38 countries in  
Asia and the Pacific

## OUTCOMES

29.5 million  
tCO<sub>2</sub>/year  
emission  
reduction

12.5 TWh-  
equivalent  
energy  
savings/year

8.7 TWh  
renewable  
energy  
generation/  
year

3,672 MW  
installed  
renewable  
Energy  
capacity

## OUTPUTS

\$

\$10 billion clean energy  
investment leveraged from  
ADB, Private and Non-  
Private sectors



52 new clean energy  
technologies deployed



393,985 households  
provided with access to  
energy



# Operations Highlights

# MLD: Accelerating Sustainable System Development Using Renewable Energy

- Share of clean energy sources in the power generation mix to 43-50 % in 20 outer islands.
- Install grid-scale battery energy storage (44MWh) to attract private sector RE investments in generation
- Water- Energy- Food Nexus support through cross sectoral approach.
- Flow battery , Ocean Energy technologies and small wind introduced.



# PRC: Henan Tian Lun Safety Enhancement and Methane Leakage Reduction Project (\$80m-\$100m)

## Project Features

- Covers 1 million households in 10 cities/counties across 5 provinces in the PRC.
- Green loan financing safety enhancements and network rehabilitation of 3,000km of gas pipelines and installation of smart meters
- Improving energy network reliability and service delivery for end users.
- Gas pipeline rehabilitation at scale
  - Establishing a new benchmark for energy network rehabilitation
  - Documented methane emission reductions, supporting PRC climate priorities and NDC targets under the Paris Agreement.



# IND: Maharashtra Power Distribution Enhancement Program for Agriculture Solarization (\$975m, Gov \$1.04b, Private \$2.8b)

## Project Features

- The project is the *largest agriculture solarization program in the world*
  - Aims installation of 9 Giga-watts (GW) of decentralized solar projects.
- The electricity generated from which will be utilized for irrigation using agriculture pumps for over 250,000 farmers.
- The project will also support
  - 75 MWh pilot project for Battery Energy Storage System (BESS) for integrating renewable energy into the grid
  - skill development interventions to support innovative sustainable irrigation practices and agriculture-linked solar energy-based livelihoods options.



# SRI: Sampur 120 MW Solar Project (ADB \$54.1m AIIB \$54.1m)

## Project Features

- Construction and operation of a 120 MW solar power plant (phase 1= 50 MW, phase 2= 70 MW) and associated infrastructure in Sampur, Trincomalee District, northeastern Sri Lanka.
- Implementation Arrangement also establishes that the EPC Contractor will be selected through international competitive bid
  - expected to undertake comprehensive maintenance for 3 years
- NTPC, providing the corporate guarantee.



# INO: Cirebon Energy Transition Mechanism Pilot Project

## Project Features

ADB Loan upto \$125m A-loan; \$50m Concessional; \$52m B-loan; Grant from \$10m ETMPTF<sup>2</sup>; \$15m GEAPP<sup>3</sup> Energy Access and Transition Trust Fund

- The project is the first transaction under the Energy Transition Mechanism (ETM) of ADB
- Involves financing that enables early closure of the Cirebon-1 660MW coal fired power plant (CFPP) located in West Java Province, Indonesia.
- Operational life will be reduced by 6 years and 7 months from original PPA term.



# LAO: Monsoon Wind Power Project 600MW

## Project Features

- ADB OCR up to \$150m and grant \$10m
- First cross border wind project in ASEAN region
- Supplying Viet Nam
- First and the largest wind power plant in Laos PDR
- The project is estimated to contribute to the reduction of at least 748,867 tons of carbon dioxide equivalent of greenhouse gas emissions annually



# Cambodia National Solar Park \$40m +\$23m

## Project Background and Description

- EDC procured 100 MW of solar PV power in two phases.
  - Phase 1 had capacity of 60 MW
  - Phase 2 had a capacity of 40 MW.

## Impact

- Increase in Cambodia's generation capacity through local energy sources during a time when power cuts were frequent
- Tariff achieved at 3.9 c/kWh (phase 1) and 2.6 \$ c/kWh (phase 2) - the lowest in ASEAN for grid connected solar PV
- Low tariff became a benchmark for bilaterally negotiated deals in Cambodia
- Demonstrated that if properly tendered and structured, solar projects in Asia can be cost competitive with other technologies



# India Energy Efficiency Project (\$200m +\$13 m)

- **Established** an Energy Efficiency Revolving Fund, an **innovative finance mechanism** to expand and sustain investments in the energy efficiency market in India, build market diversification, and scale up existing technologies.
- **4.28 million energy efficient streetlights** have been installed.
- **64.43 million LED Bulbs distributed and installed**, 1.05 million ceiling fans distributed and Installed, 4.11 million tube lights distributed and installed.
- **Piloting of new technologies**- part of programme to develop new technologies and new markets for energy efficient products such as Superefficient Air conditioners, energy efficient motors, electric vehicles, and charging stations.



# Final Remarks

- International financing institutions like ADB will continue play a major role in the energy sector development
- Support for new and innovative technologies, approaches will take over from traditional areas
- Sovereign financing to be used to maximize leveraging private sector investments
- Energy access, energy security, sector governance and environmental sustainability continue to remain challenges
- Transmission and distribution investments will continue to dominate sovereign investments
- Annual lending expected to bounce back to pre-pandemic levels and expand to about \$6.5b
- Climate financing in energy sector expected to be maintained at high 70% of lending



**Thank You**  
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