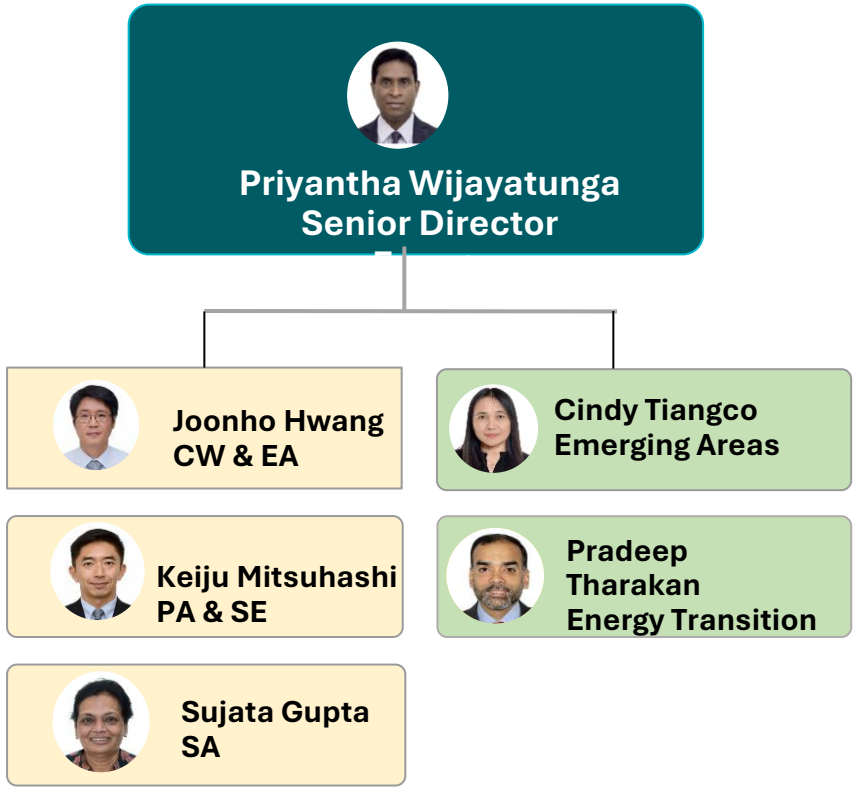
Adnan Tareen
Principal Energy Specialist

Energy Sector
Sectors Department 1
ADB

Energy Sector Organogram



- ***3 regional teams:***
  - East, Central and West Asia (13 DMCs)
  - Southeast Asia and Pacifica Area (8+ 14 DMCs)
  - South Asia (6 DMCs)
- ***2 practice teams:***
  - Emerging Areas (EA)
  - Energy Transition (ET)

Energy Sector

- **VISION**
  - An inclusive, just, and affordable low-carbon energy transition in Asia and the Pacific

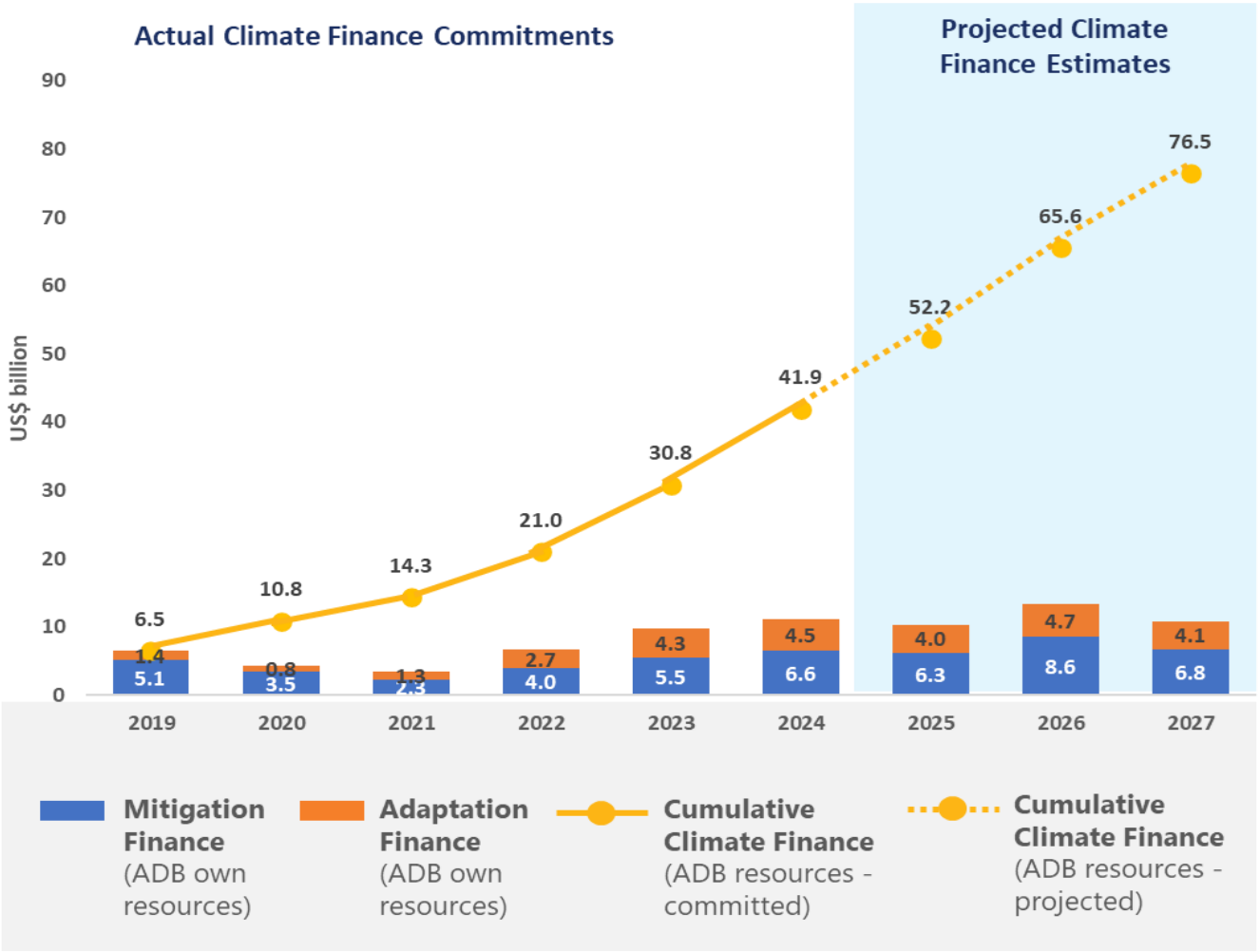
- **MISSION**
  - Endeavor for optimizing energy security of ADB DMCs that is sustainable and resilient, with greater private sector participation and good governance along with emphasis on regional energy cooperation and integration, and integrated cross-sector operation to maximize development impact

ADB Energy Policy 2021

Energy Landscape	Global Commitments	ADB's Commitment
Profound changes in Asia and the Pacific: • **Falling cost** of renewable energy vs. conventional energy • Emerging new and innovative **low-carbon energy technologies**	Global commitments to universal access and climate action: • Sustainable Development Goal 7: **Universal Energy Access by 2030** • Paris Agreement: **Nationally Determined Contributions** (NDCs)	• **$100 billion of cumulative climate finance from 2019 to 2030** • **100% Paris Agreement alignment** on sovereign operations from **July 2023**

- Optimizing energy security of ADB DMCs that is sustainable and resilient
- Prioritizing decarbonization of energy supply and demand through EE and RE via digitalization, intelligentization, and innovation
- Emphasizing energy governance, regional cooperation and integration, and private sector participation
- Promoting integrated cross-sector operations to maximize development impact
- Supporting critical minerals to manufacturing value chains for clean energy technologies
- Nuclear power

ADB Climate Finance Commitments (2017–2024) & Projections (2025-2027)



Overall, ADB is on track to reach $100 billion by 2030

$41.9

cumulative finance for climate action (2019-2024)

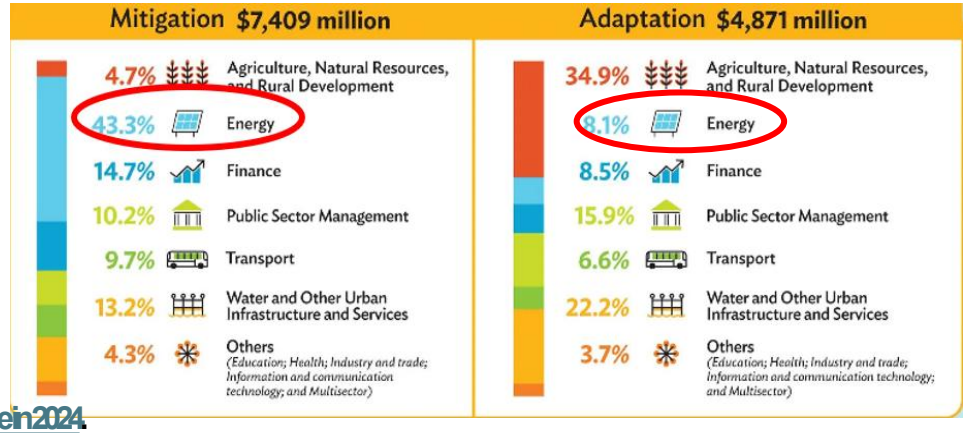
Note: Amount for 2025 to 2027 are from WPBF 2025-2027.

ADB's Energy Sector Commitment and Climate Finance in 2024

Commitments by Sector, 2020–2024 ($ million)

Sector	2020	2021	2022	2023	2024
Agriculture, Natural Resources, and Rural Development	1,281	1,490	2,218	3,228	2,637
Education	1,066	975	799	1,389	543
Energy	4,292	1,837	1,446	2,227	3,829
Finance	4,601	4,116	5,686	3,611	5,886
Health	3,512	5,882	823	2,275	1,145
Industry and Trade	2,215	716	238	661	98
Information and Communication Technology	32	55	86	94	71
Multisector	12	10	11	6	21
Public Sector Management	9,561	2,294	3,725	3,354	3,220
Transport	3,147	3,396	4,344	4,779	3,506
Water and Other Urban Infrastructure and Services	1,862	1,989	1,098	1,919	3,348
TOTAL	**31,581**	**22,759**	**20,473**	**23,542**[a]	**24,304**

Including private sector operations. Source: 2024 ADB Annual Report



Source: ADB. 2025. Climate Finance in 2024.

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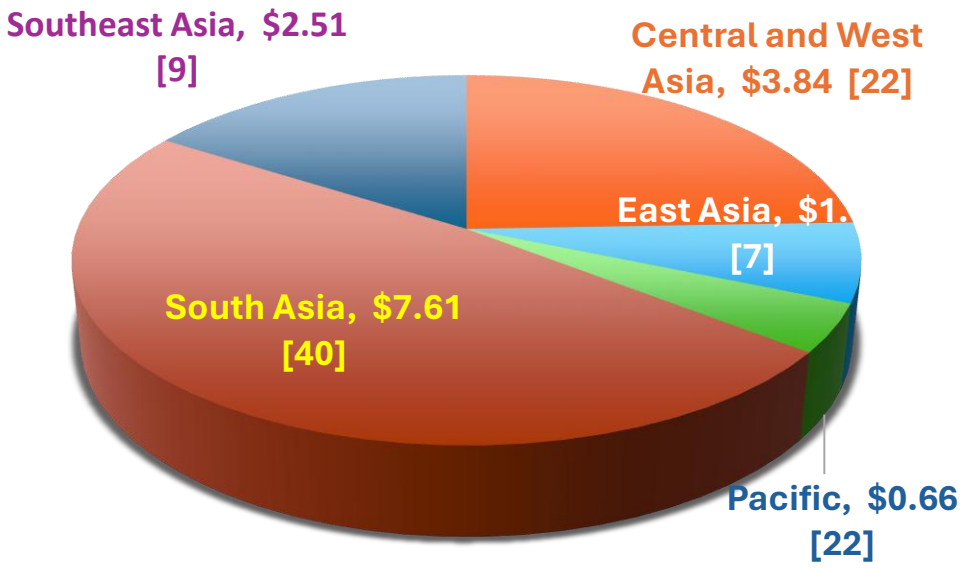
Energy Sector Operational Priorities

Decarbonize energy supply system	• Promotion of affordable and reliable RE (energy storage) • Digitalization of TD system • Decentralized power systems
Decarbonize Energy Consumption	• Air quality improvement • RE++ agriculture, ecological rehabilitation and environmental protection, Critical Minerals to Manufacturing Value Chains • Building- Grid ecosystem; Vehicle- Grid ecosystem; CCUS/green hydrogen for hard to abate sectors
Enabling Private Sector Participation	• Sovereign loan or Partial Credit Guarantee to create enabling environment for private investments in clean energy supply
Regional cooperation and integration	• ASEAN Power Grid • Caspian Sea Green Energy Corridor
Strengthening Sector Governance and Regulatory Framework	• PBLs: power market reform & regulations for RE integration and energy transition

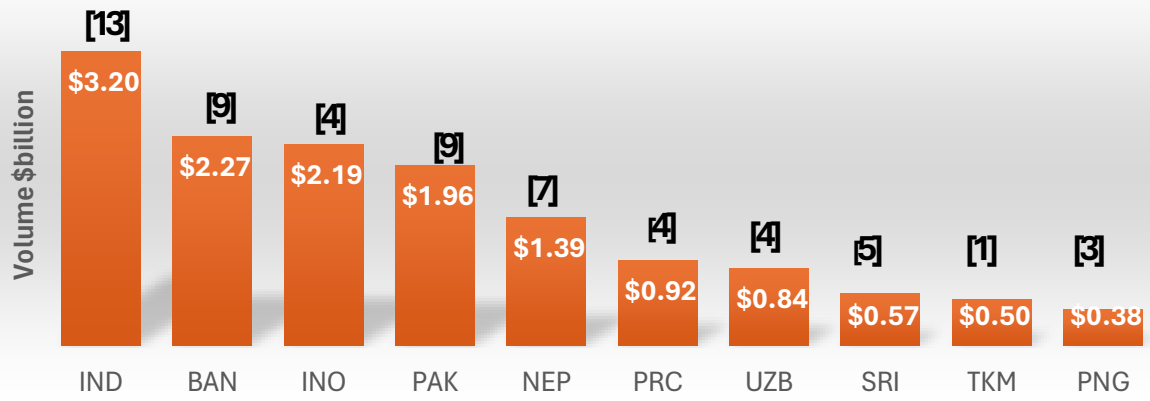
Overview – Energy Sector Lending Portfolio and Pipeline

Active Lending Portfolio by Region

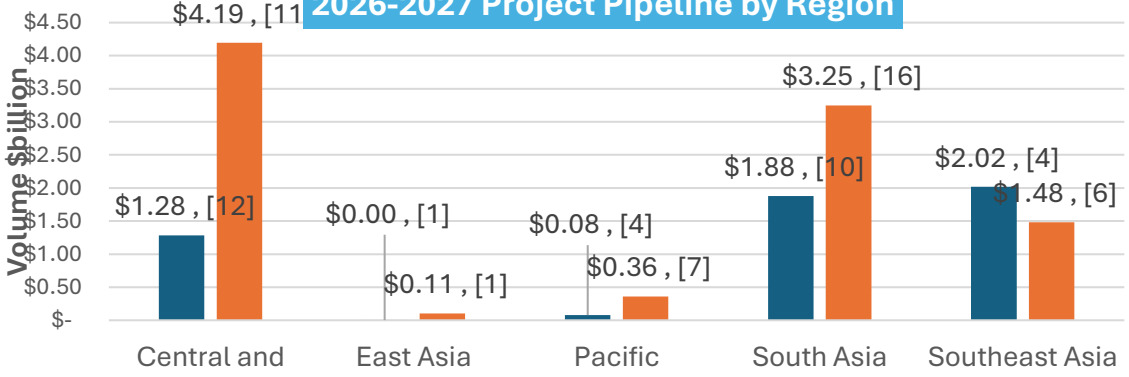
Volume: $15.71 billion



Top 10 DMCs for Active Lending Portfolio



2026-2027 Project Pipeline by Region



Year	Volume
2026	$ 5.26
2027	$ 9.39

Notes:

1. **The numbers enclosed in parentheses refer to the total number of projects for each region and DMC.**
2. **AFG and MYA projects are excluded.**

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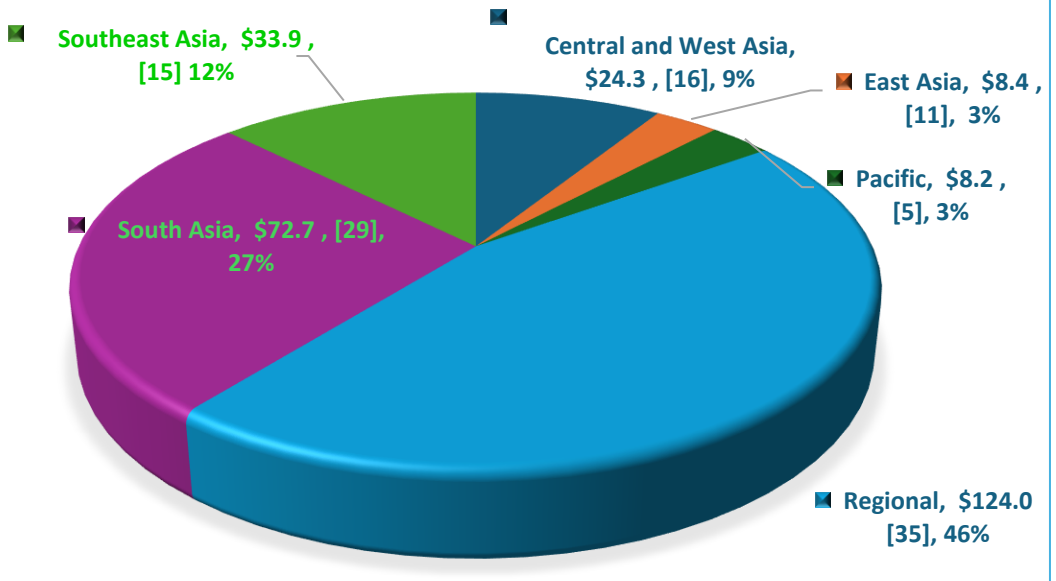
Overview – Energy Sector Non-Lending Portfolio and Pipeline

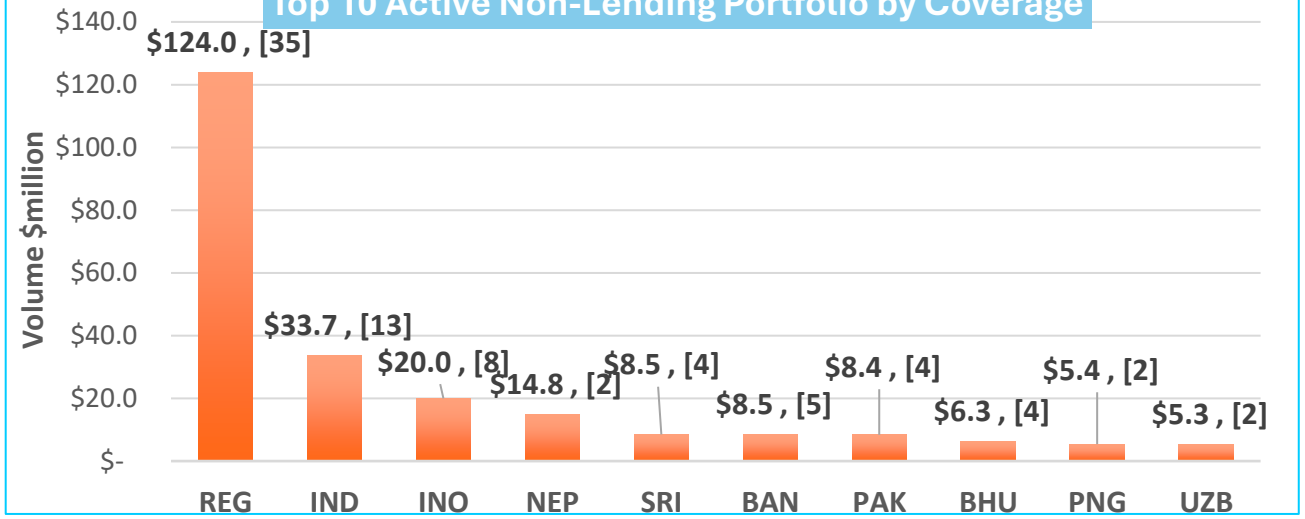
ACTIVE NON-LENDING PORTFOLIO

Volume: $217 million

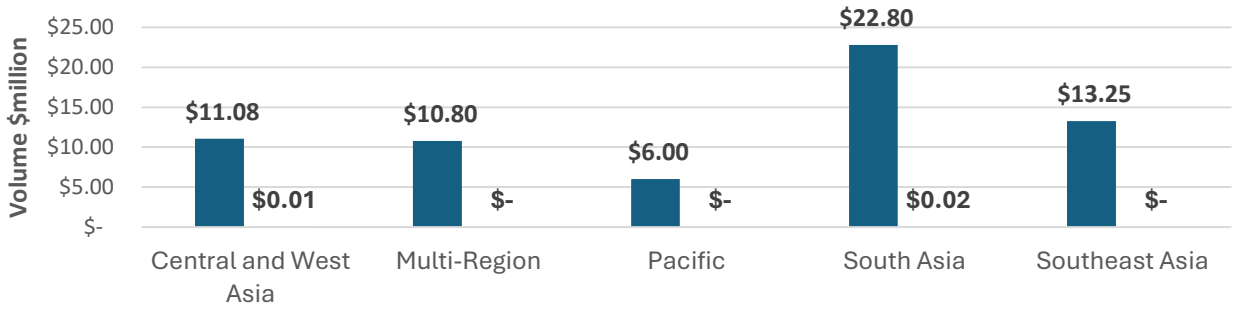


Notes:
1. The numbers enclosed in parentheses refer to the total number of TAs for each region.
2. MYA TAs excluded.

Top 10 Active Non-Lending Portfolio by Coverage



2026-2027 Non-lending Pipeline by Region

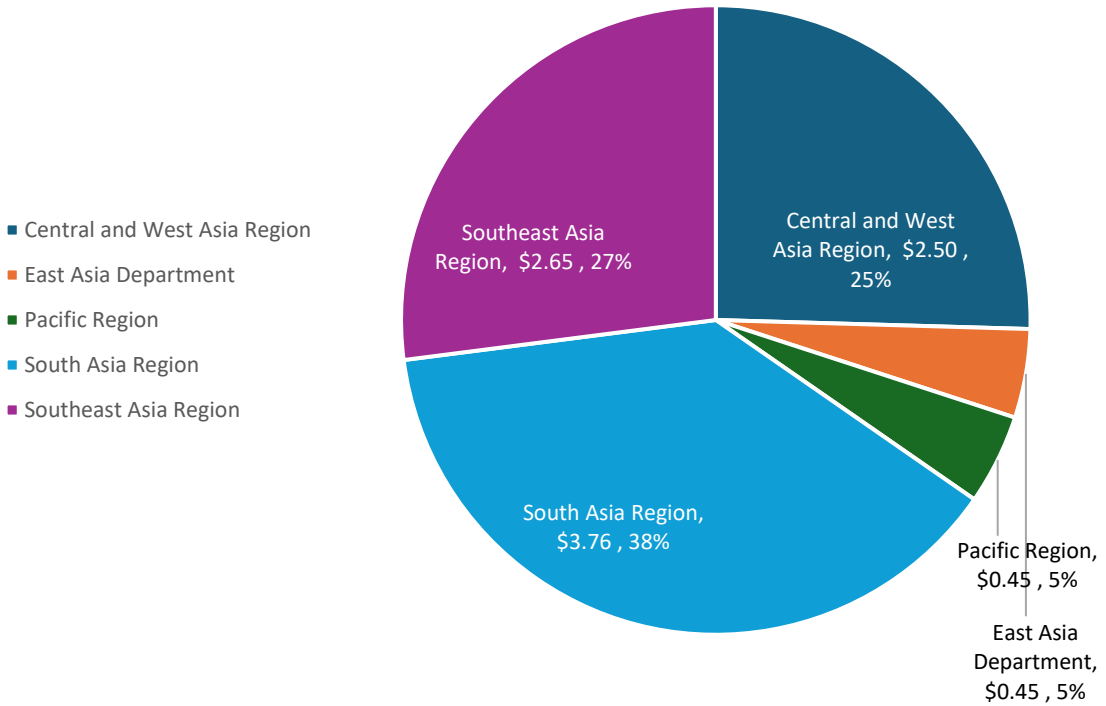


Year	Volume $milliion
2026	$ 63.93
2027	$ 0.02

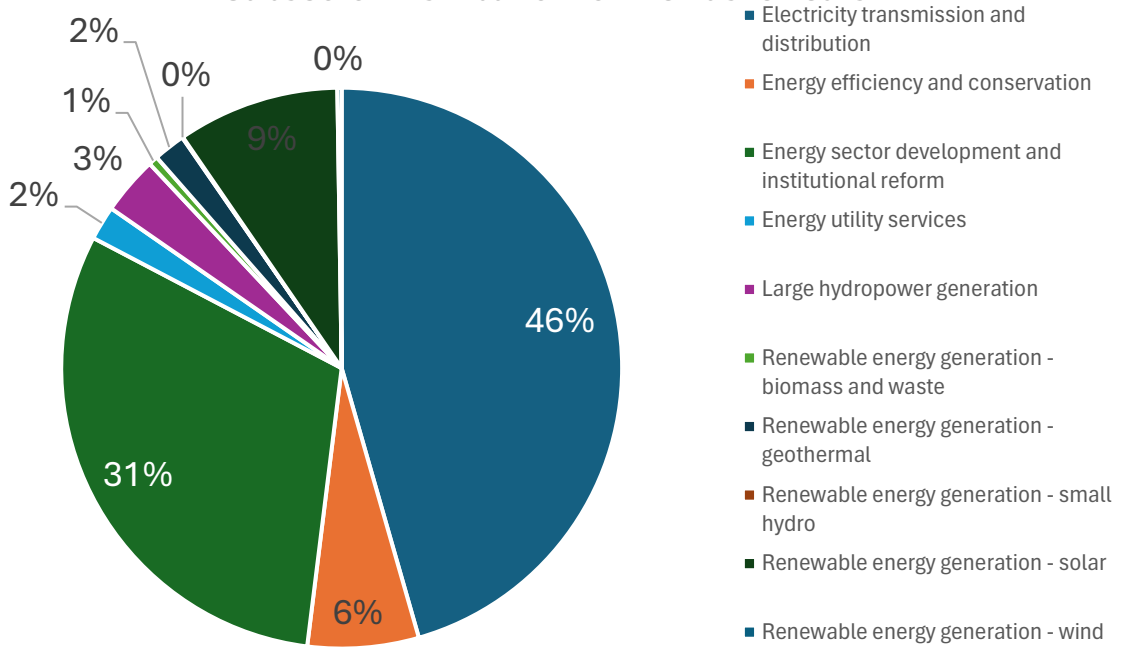
Subsector Distribution, 2021-2025

Subsector Distribution for the Past 5 Years, by Region

Volume: $ 9.8 billion



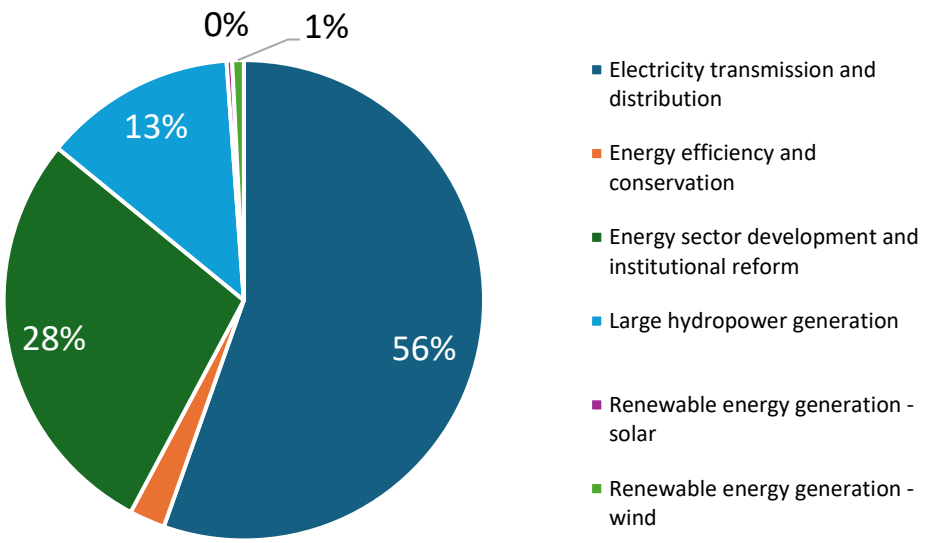
Subsector Distribution for the Past 5 Years



Subsector	2021-2025
Electricity transmission and distribution	4,472.68
Energy efficiency and conservation	628.68
Energy sector development and institutional reform	3,015.48
Energy utility services	192.73
Large hydropower generation	328.33
Renewable energy generation - biomass and waste	53.55
Renewable energy generation - geothermal	180.00
Renewable energy generation - small hydro	4.30
Renewable energy generation - solar	916.48
Renewable energy generation - wind	24.36
Total	**9,816.59**

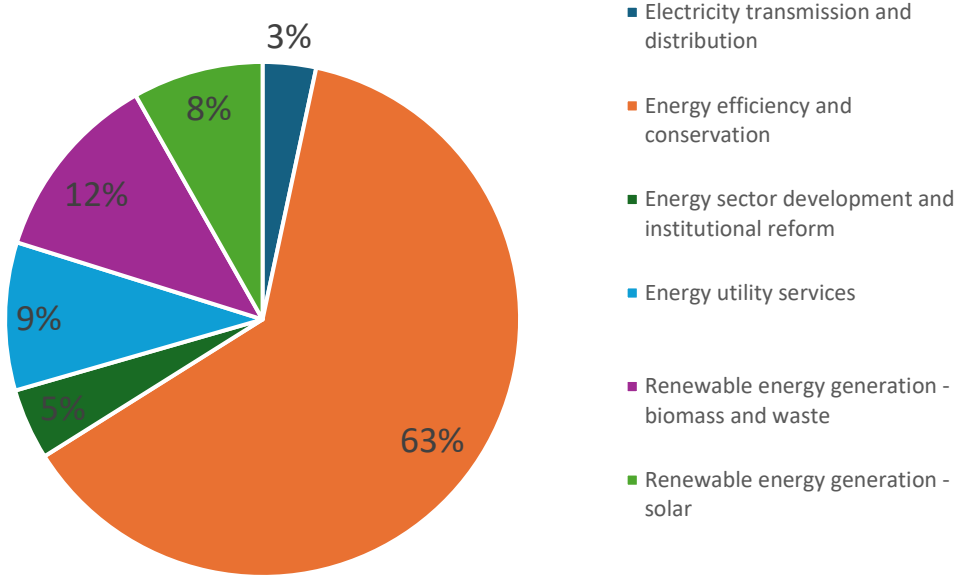
Subsector Distribution by Region, 2021-2025

Central and West Asia Region



Central and West Asia Region	2,499.09	
Subsector	**Amount**	**%**
Electricity transmission and distribution	1,384.70	55%
Energy efficiency and conservation	60.00	2%
Energy sector development and institutiona	702.23	28%
Large hydropower generation	323.33	13%
Renewable energy generation - solar	9.37	0%
Renewable energy generation - wind	19.46	1%

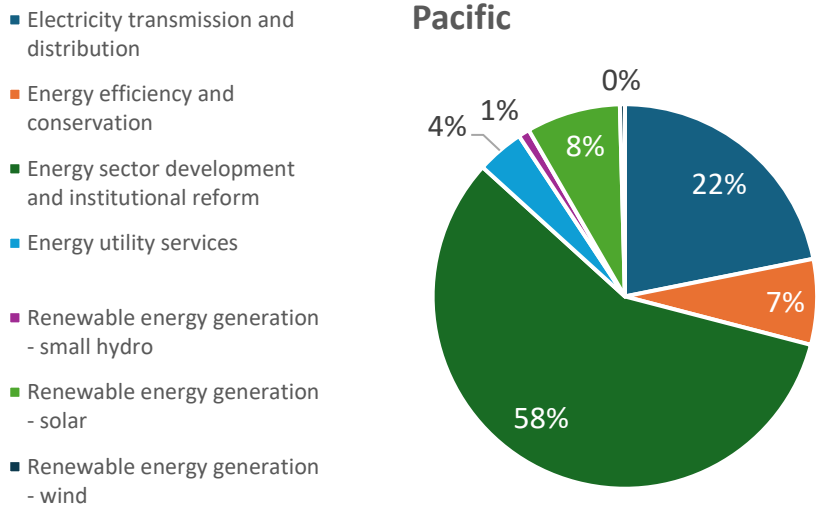
East Asia Region



East Asia Department	447.86	
Subsector	**Amount**	**%**
Electricity transmission and distribution	15.00	3%
Energy efficiency and conservation	280.94	63%
Energy sector development and institutiona	20.00	4%
Energy utility services	41.63	9%
Renewable energy generation - biomass ar	53.55	12%
Renewable energy generation - solar	36.74	8%

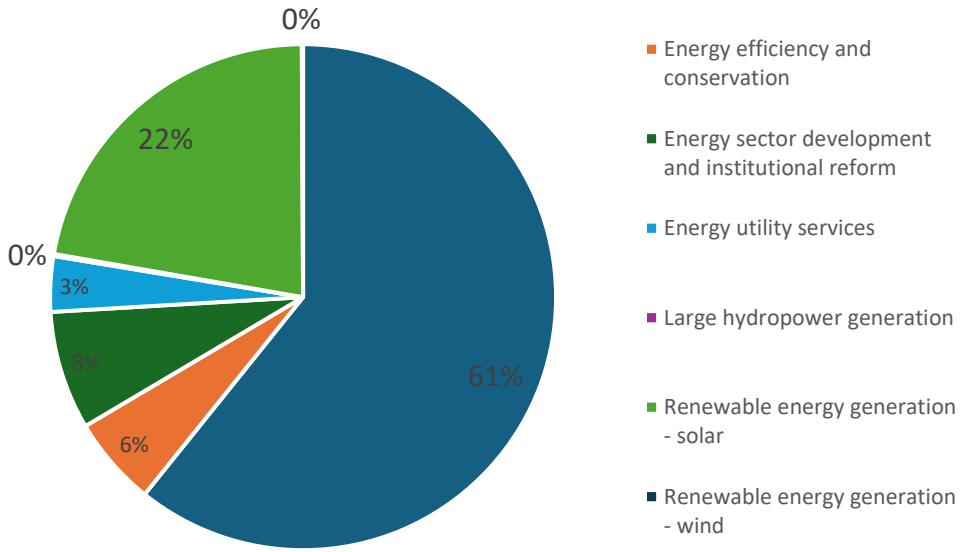
Subsector Distribution by Region

Pacific



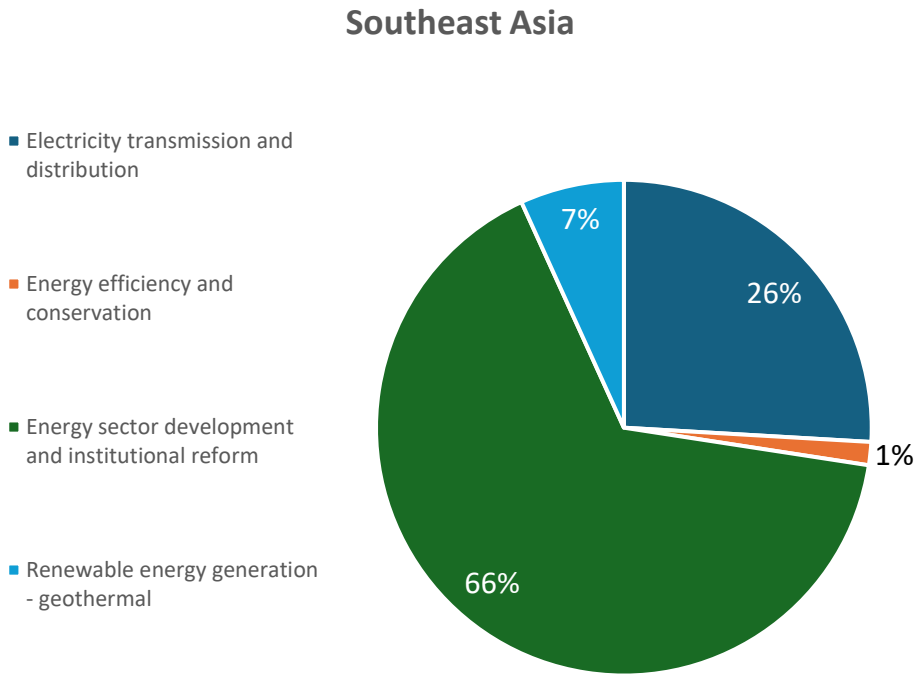
Pacific Region	454.99	
Subsector	**Amount**	**%**
Electricity transmission and distribution	99.46	22%
Energy efficiency and conservation	32.74	7%
Energy sector development and institutiona	262.44	58%
Energy utility services	18.10	4%
Renewable energy generation - small hydrc	4.30	1%
Renewable energy generation - solar	36.05	8%
Renewable energy generation - wind	1.90	0.4%

South Asia



South Asia Region	3,761.12	
Subsector	**Amount**	**%**
Electricity transmission and distribution	2,285.80	61%
Energy efficiency and conservation	215.00	6%
Energy sector development and institutiona	285.00	8%
Energy utility services	133.00	4%
Large hydropower generation	5.00	0%
Renewable energy generation - solar	834.32	22%
Renewable energy generation - wind	3.00	0%

Subsector Distribution by Region



Southeast Asia Region	2,653.53	
Subsector	**Amount**	**%**
Electricity transmission and distribution	687.72	26%
Energy efficiency and conservation	40.00	2%
Energy sector development and institutiona	1,745.81	66%
Renewable energy generation - geotherma	180.00	7%

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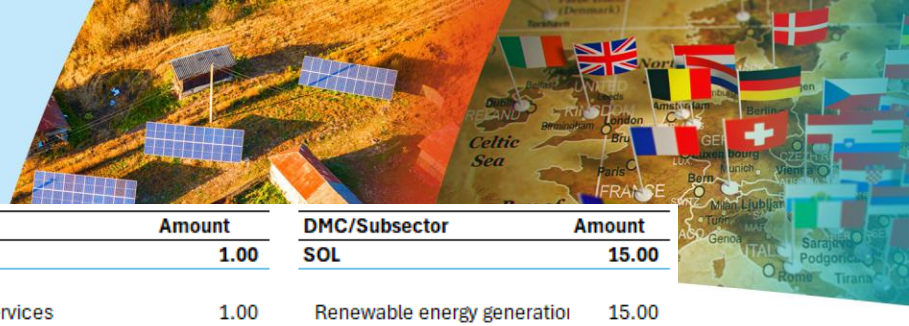


Subsector Distribution by DMC

DMC/Subsector	Amount
MON	**36.00**
Electricity transmission and distribution	15.00
Energy sector development and institutional reform	20.00
Energy utility services	1.00
BAN	**651.00**
Electricity transmission and distribution	451.00
Energy efficiency and conservation	100.00
Energy utility services	100.00
BHU	**53.26**
Large hydropower generation	5.00
Renewable energy generation - solar	48.26
CAM	**142.72**
Electricity transmission and distribution	52.72
Energy efficiency and conservation	40.00
Energy sector development and institutional reform	50.00
COO	**0.50**
Energy efficiency and conservation	0.50

DMC/Subsector	Amount
FSM	**20.50**
Electricity transmission and distribution	5.25
Energy sector development and institutional reform	0.75
Energy utility services	9.10
Renewable energy generation - small hydro	1.40
Renewable energy generation - solar	4.00
GEO	**212.66**
Electricity transmission and distribution	110.70
Energy sector development and institutional reform	101.97
IND	**2,175.86**
Electricity transmission and distribution	1,213.80
Energy efficiency and conservation	100.00
Energy sector development and institutional reform	81.00
Renewable energy generation - solar	781.06
INO	**2,246.19**
Electricity transmission and distribution	600.00
Energy sector development and institutional reform	1,466.19
Renewable energy generation - geothermal	180.00

DMC/Subsector	Amount
KGZ	**25.53**
Energy efficiency and conservation	25.00
Energy sector development and institutional reform	0.27
Renewable energy generation - solar	0.27
KIR	**23.23**
Electricity transmission and distribution	10.91
Energy sector development and institutional reform	2.59
Renewable energy generation - solar	9.73
MLD	**45.00**
Energy sector development and institutional reform	4.00
Energy utility services	33.00
Renewable energy generation - solar	5.00
Renewable energy generation - wind	3.00
NEP	**421.00**
Electricity transmission and distribution	421.00
PAK	**######**
Electricity transmission and distribution	934.00
Energy efficiency and conservation	35.00
Energy sector development and institutional reform	300.00
Large hydropower generation	302.33

DMC/Subsector	Amount
PAL	**1.00**
Energy utility services	1.00
PHI	**229.62**
Energy sector development and i	229.62
PNG	**308.60**
Electricity transmission and distri	50.00
Energy sector development and i	258.60
PRC	**411.86**
Energy efficiency and conservati	280.94
Energy utility services	40.63
Renewable energy generation - b	53.55
Renewable energy generation - s	36.74
RMI	**26.32**
Electricity transmission and distri	17.10
Energy utility services	7.00
Renewable energy generation - s	0.32
Renewable energy generation - w	1.90
SAM	**35.14**
Energy efficiency and conservati	32.24
Renewable energy generation - s	2.90

DMC/Subsector	Amount
SOL	**15.00**
Renewable energy generatio	15.00
SRI	**415.00**
Electricity transmission and c	200.00
Energy efficiency and conser	15.00
Energy sector development a	200.00
TAJ	**36.00**
Electricity transmission and c	15.00
Large hydropower generation	21.00
TIM	**35.00**
Electricity transmission and c	35.00
TON	**8.20**
Electricity transmission and c	8.20
TUV	**10.50**
Electricity transmission and c	2.00
Energy sector development a	0.50
Energy utility services	1.00
Renewable energy generatio	7.00
UZB	**653.57**
Electricity transmission and c	325.00
Energy sector development a	300.00
Renewable energy generatio	9.11
Renewable energy generatio	19.46
VAN	**6.00**
Electricity transmission and c	6.00

Sample Projects under Implementation

UZB: Distribution Network Digital Transformation & Resiliency

- 26 distribution substations upgraded to digital substations
- Digital protection installed and climate proofing design implemented to improve reliability and resilience of substations
- Increased integration of renewables

IND: Maharashtra Power Distribution Enhancement Program for Agriculture Solarization

- 75 MWh pilot project for BESS for integrating renewable energy into the grid and skill development interventions to support innovative sustainable irrigation practices and agriculture-linked solar energy-based livelihoods options

TUV: Increasing Access to Renewable Energy – Additional Financing

- ADB's first engagement in the country's energy sector
- Installation of a total of 224 kWp solar PV capacity to increase share of renewable energy in the generation mix
- 17,800 tons of carbon dioxide equivalent of greenhouse gas emissions to be reduced

MLD: Accelerating Sustainable System Development Using Renewable Energy

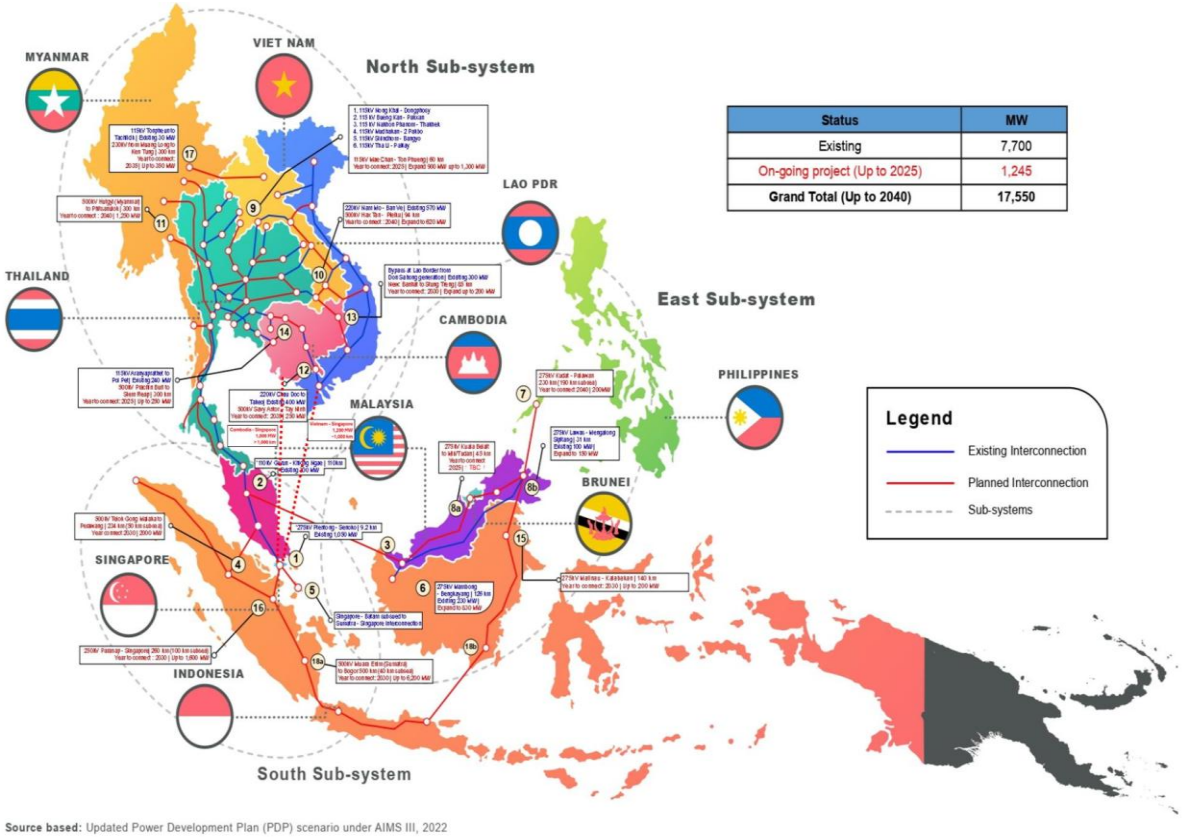
- Install grid-scale battery energy storage (44MWh) to attract private sector RE investments in generation
- Integrates effective gender mainstreaming elements
- One-ADB collaboration- SG-ENE and OMDP
- Water- Energy- Food Nexus support through cross sectoral approach.
- Flow battery , Ocean Energy technologies and small wind introduced.

LAO: Monsoon Wind Power

- First cross border wind project in Asia
- First wind power plant in Laos PDR
- Largest wind power project in ASEAN with ADB as the sole mandated arranger and bookrunner
- The project is estimated to contribute to the reduction of at least 748,867 tons of carbon dioxide equivalent of greenhouse gas emissions annually

ASEAN Power Grid (APG): A power grid for 700 million people in Southeast Asia

- The APG initiative aims to **fully integrate grid operations of ASEAN Member States by 2045.** Realizing the APG will require **over $100 billion** of investments **over the next 20 years –** from both public and private sources.
- ADB has launched the **APG Financing (APFG)** with ASEAN and the World Bank to convene partners, mobilize capital, and develop financing solutions.
- ADB has pledged to commit up to **$10 billion of financing for the APG** over the next decade, which includes subsea and overland interconnectors and domestic grid upgrades.
- In the next five years, **business opportunities** are
  - Power system studies, pre-FS and FS, HVDC subsea route selection and geo-tech surveys, grid integration studies, commercial structuring
  - Regional policy and regulatory harmonization for subsea cable development and market design for multilateral power trade
  - High-voltage transmission and substation EPC and other key grid technologies supply (including smart grid equipment)
- **European experience, technology and knowledge** on power grid connectivity are highly relevant.



Status	MW
Existing	7,700
On-going project (Up to 2025)	1,245
Grand Total (Up to 2040)	17,550

Source: ASEAN Centre for Energy

Note: Boundaries, colors, denominations or any other information shown on the maps do not imply, on the part of ADB, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries, colors, denominations or information.

ADB's ENERGY TRANSITION FOCUS AREAS

Industrial Decarbonization and Hard-to-Abate Sectors

OUTCOME: Achieving energy transition by accelerating decarbonization, energy efficiency, and green tech in hard-to-abate industries[1], ports, and industrial parks.

Challenges

High-intensity emissions

Steel, cement, and chemicals industries contribute ~30% of ASEAN energy-related CO_2 and are still coal-centric

Technology maturity and cost

Green H_2, CCUS and electrified heat add 15-40 % to product costs without carbon pricing.

Capital-market friction

Paybacks > 7 yrs; limited green-capex lending windows and no established off-take contracts for low-carbon materials.

Policy and price signals

Carbon prices hover at US$ 0–5 / tCO_2 and sector-specific performance standards or tax incentives are minimal.

Solutions

Carbon capture and storage

Support for regulations, standards, and regional hubs

Green industries and alternative fuels

Standards and regional hubs development for green steel transition, green hydrogen, and alternative fuels

Methane reduction in oil and gas

Technical assistance for methane mitigation

Maritime decarbonization

Port and logistics emissions reduction; Collaboration with ADB SD1-TRA

Institutional coordination

Regional dialogue and collaboration platform; OneADB Industrial Decarbonization Working Group

Focus Countries

India
Philippines
Turkmenistan
Uzbekistan

Key Partners

Bilateral donors
Private sector
Asia Zero Emission Community (AZEC)

Achievements

Project pipeline development

- IND: FI loan for Green Fuels Development (USD400M, 2025)
- IND: Green Ammonia Project
- PHI: Asia Green Steel Project
- INO: Policy-based loan

CIF Industry Decarbonization Program

- IND and TUR: Development of IPs for each to access $60-80M of CIF concessional loans to be blended with ADB OCR
- INO and PHI: Introduction of CIF Transition Investment Plan (TIP) framework to include Industry Decarbonization under the CIF Accelerated Coal Transition IPs

Knowledge support

- Through publications such as "Report on Transition Finance in Southeast Asia"

[1] Target sectors: cement and concrete; iron and steel; zero-emission shipping (excluding international shipping); chemicals; eco-industrial parks; pulp and paper; glass, ceramics, and construction materials; non-ferrous metals (i.e., aluminum, copper); textiles; clean technology supply chains; etc.

Opportunities to work on industrial decarbonization (green H_2, CCUS, industrial parks, etc.):

- **TA 10700-India:** Accelerating India's transition from hydrocarbon to **green hydrogen economy** through novel technologies ($2M).
- **TA 10167-India:** Supporting India's energy transition through **carbon capture, utilization, and storage (CCUS)** and low-carbon technologies ($2M). Will conduct a feasibility study with detailed assessment of underground storage of carbon in locations like depleted oil wells and will include technical and financial feasibility.
- **TA 10359-Regional:** Focused on the **decarbonization of hard-to-abate industrial and maritime sectors** for countries including Turkmenistan, Philippines, India, Uzbekistan, Indonesia, and Azerbaijan ($2.35M).
  - **India:** assessment studies to identify decarbonization pathways for the Ministry of Steel.
  - **Uzbekistan:** feasibility study on pursuing a sector development program for an industrial park.
- Climate Investment Funds Industrial Decarbonization Program: ADB is supporting the investment plan preparation of Uzbekistan and Türkiye in close partnership with EBRD, WB, IFC, among other MDBs.

Opportunities to work on industrial decarbonization (green H_2, CCUS, industrial parks, etc.):

- **Georgia**: A US$104 million financing for the first grid-scale battery energy storage system (BESS) includes $400,000 TA for green hydrogen development
- **Knowledge:**
  - **Knowledge platform**: In partnership with International Solar Alliance, ADB supported the development of Green Hydrogen Innovation Center
  - **ADB Data Room**: ADB Green Hydrogen Economy (Knowledge Series 2024-2025)
  - **Key publications**: Accelerating the Net Zero Transition in Asia and the Pacific: Low-Carbon Hydrogen for Industrial Decarbonization (2024), Hydrogen in Decarbonization strategies in Asia and the Pacific (2023), Role and Development Pathways of Green Hydrogen Energy (2023), etc.

ADB's ENERGY TRANSITION FOCUS AREAS

Critical Minerals-to-Manufacturing Value Chains

OUTCOME: Achieving energy transition by boosting energy security, jobs, sustainable and inclusive regional growth through diverse, responsible, and resilient value chains

Challenges

- Limited value addition and industrialization
- Weak value chain linkages
- Low level of geo-prospective
- Supply chain vulnerabilities
- Unsustainable practices

Solutions

- Regional cooperation and integration
- Government capacity building
- Environmental, social, and governance practices
- Private sector investments
- Innovative technologies and digital solutions
- Greater recycling and circularity

Focus Countries

India
Indonesia
Kazakhstan
Lao PDR
Mongolia
Pakistan
Papua New Guinea
Philippines
Sri Lanka
Uzbekistan
Viet Nam

Key Partners

Government (line ministries, mineral authorities, regulatory agencies, trade and investment ministries)
Industry and trade associations
Knowledge institutions
International organizations
Investors and financial institutions

Achievements

- Approval of **Board Direction** and Operational Approach Paper in July 2025
- Knowledge support through publications
- Internal ADB brown bags and webinars

Opportunities to work on CMM:

- **TA 10312-Regional Advance Sustainable Clean Energy Network for Development ($1.65M)** focused on supporting critical minerals for countries including India, Indonesia, Kazakhstan, Mongolia, the Philippines, Tajikistan, Uzbekistan and Viet Nam.

- **New TA 10767-Regional Responsible Critical Minerals Value Chains for a Clean Energy Future ($1M)** focused on supporting private sector critical minerals development in Lao PDR, Sri Lanka, and Papua New Guinea.

- ADB is working with peer institutions to build an **investment pipeline across mining, manufacturing, and recycling**. A dedicated Financing Partnership Facility is being designed to mobilize sovereign and non-sovereign financing, and is expected to be launched in 2026.

Way Forward- Climate Actions

Supply: Decarbonize energy supply and develop new pattern energy system.

End-use: B-G ecosystem; V-G ecosystem;
Biofuels, SAF;
Integrated cross-sectoral interventions: RE++ agriculture, water, ecological rehabilitation, environmental protection

Hard to abate sectors: CCUS

Integrated solutions: Zero-carbon emission industrial parks

Way Forward- Private sector development shift

- Policy dialogue with the governments
- Joint Sovereign & non-sovereign interventions
- Develop PPP opportunities with OMDP

Upstream

- Policy Reform
  - ✓ Cost-reflective tariff
  - ✓ State-owned enterprises commercialization
  - ✓ Improve investment climate
- Policy Dialogue
  - ✓ RE generation
  - ✓ Specific transmission and distribution investments
  - ✓ Green mining principles and clean energy manufacturing

Midstream

- Develop bankable contractual framework for RE projects
- Screening, preparation, and tendering of RE projects
- Innovative financial products, and market development

Downstream

- Sovereign financing: credit enhancement for RE development
- NSO financing: mobilize co-financing for solar, wind, and hydropower

Way Forward- Solutions shift

Digitalization and intelligentization for RE integration and energy efficiency

- Grid management
- Smart meters

Decarbonized technologies

- Advanced biofuels
- Geothermal systems
- Ocean and marine renewable energy
- Carbon capture, use, and storage

Integrated cross-sector approach

- Agri-photovoltaic systems
- Energy efficient disease resilient air-conditioning systems

Way Forward- Special initiatives and knowledge activities

New Energy Sources

- Hydrogen, Methanol, Biofuels etc
- Marine RE, floating PV

Hard-to-abate sectors

- Cement, Steel
- Long distance transport

Energy Efficiency

- Buildings, industries

Clean technology manufacturing

- Critical Minerals

Asia Clean Energy Forum (ACEF)

Singapore International Energy Week

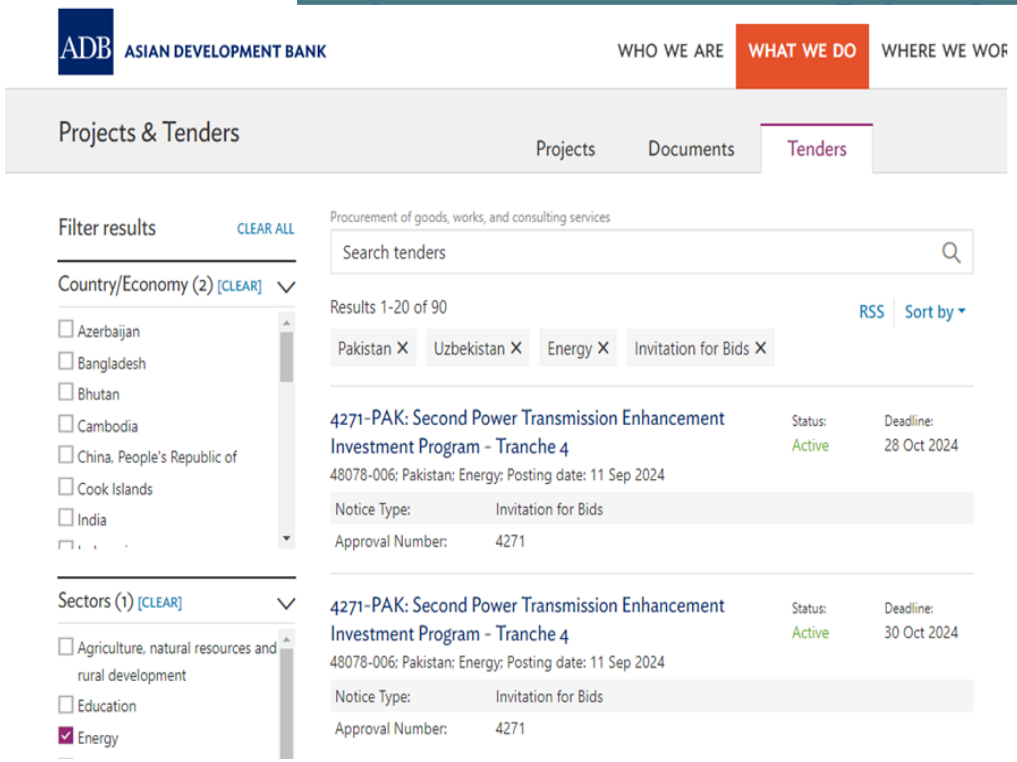
Transpacific Sustainability Dialogue

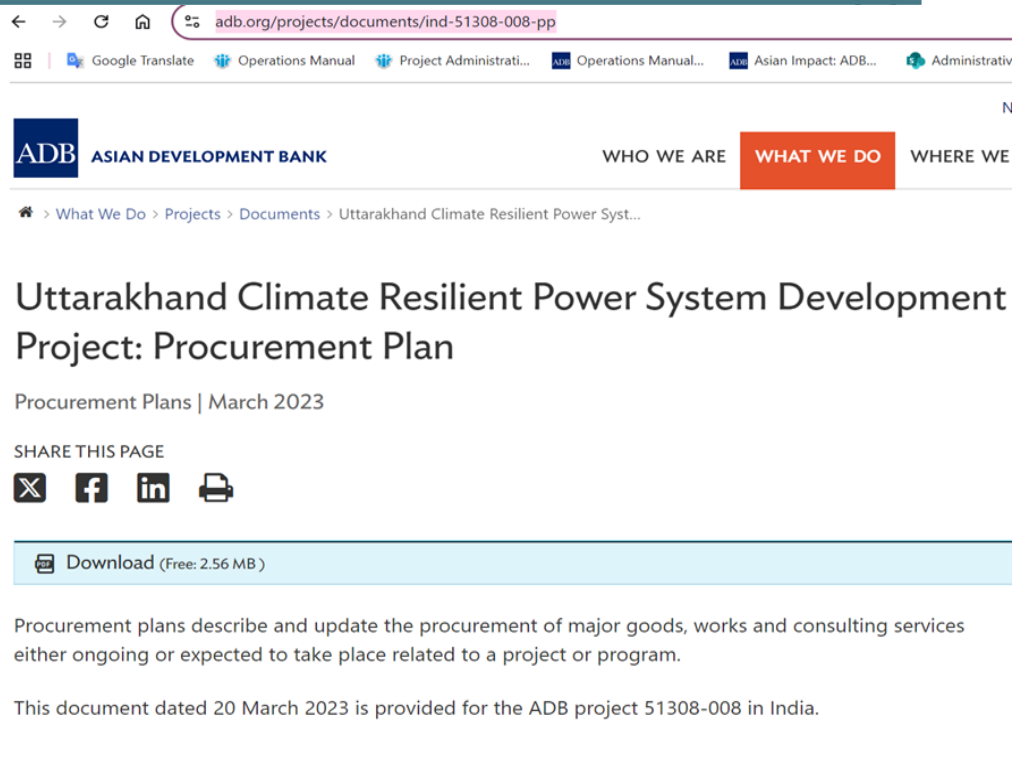
Clean Energy Ministerial Meeting

World Energy Congress

Opportunities (under Ongoing Projects)

- https://www.adb.org/projects/tenders
- https://www.adb.org/projects/documents/ind-51308-008-pp





THANK YOU