



ADB Climate Change and Disaster Risk Management Current and upcoming projects

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Outline

1. ADB's Strategic Directions on Climate and Disaster Risk Management and Climate Finance

- Strategy 2030: OP3 *Tackling climate change, building climate and disaster resilience and enhancing environmental sustainability*
- Climate Financing Commitments
- Mobilizing Finance
 - Internally managed-funds and deployment of global funds

2. Climate Change and the COVID-19 Crises

3. Building Resilience in Asia and the Pacific Region

4. Project Examples with Innovative Technology

ADB

ADB's Strategic Directions on Climate and Disaster Risk Management and Climate Finance



S 2030 Operational Priority 3
**Tackling climate change,
building climate and disaster
resilience, and enhancing
environmental sustainability**



- Integrated approach in CPS/COBP
- Deploy approaches for capturing co-benefits in coordination with other OPs
- Promote innovative clean technology
- Expand private sector operations

- Build partnerships with think tanks, NGOs, academe, and private sector
- Access to finance: use of concessional finance in a targeted and catalytic way – maximizing delivery of outcome

Targets: 75% committed operations (3-year rolling average) and **\$80 billion** of own resources (2019-2030, cumulative) will support climate actions

Strategic Operational Priorities

1 Mitigation of climate change increased

2 Climate and disaster resilience built

3 Environmental sustainability enhanced

Operational Approaches

Clean energy



Green business and jobs

Sustainable transport and urban development



Clean air and water, waste management

Climate smart-agriculture and sustainable land use



Climate and disaster resilience



Physical (climate-proof), eco-based, financial, social and institutional

Water-food-energy security nexus



Air and water pollution management

Natural capital and healthy oceans

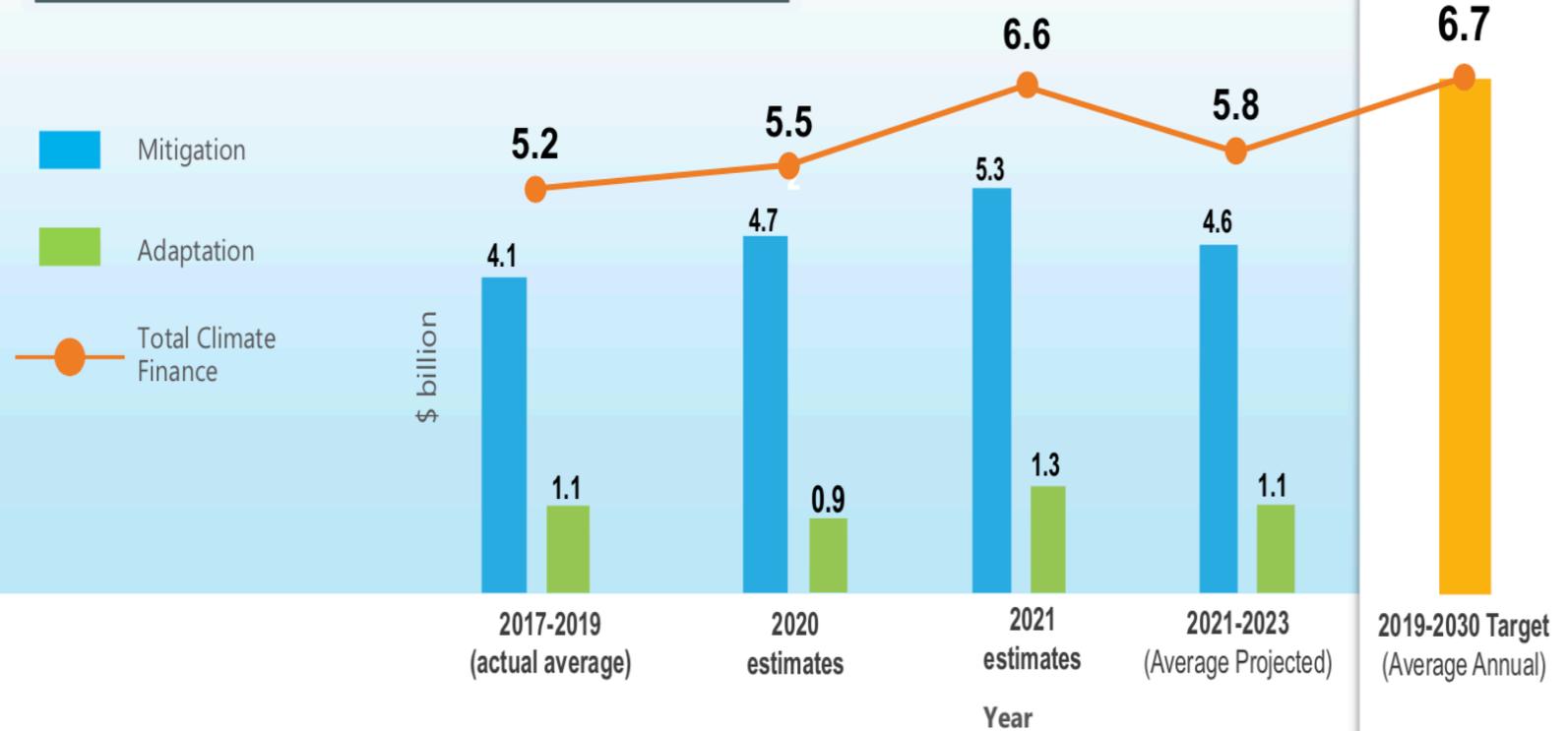
Environmental Governance

Results Framework Indicators: Sub pillars

- Access to climate finance increased
- Developing member countries' capacity to implement climate actions enhanced
- Low-carbon infrastructure improved
- Renewable energy capacity increased
- Low-carbon development solutions implemented
- Integrated flood risk management measures supported
- Resilience building initiatives implemented
- Financial preparedness for post-disaster response enhanced
- Planning for climate change adaptation and disaster risk management improved
- Infrastructure assets made more resilient
- Pollution control infrastructure assets implemented
- Pollution control and resource efficiency solutions promoted and implemented
- Conservation, restoration and enhancement of terrestrial, coastal and marine areas implemented
- Solutions to conserve, restore, and/or enhance terrestrial, coastal, and marine areas promoted and implemented
- Water-food-energy security nexus addressed

ADB Climate Finance based on Commitments

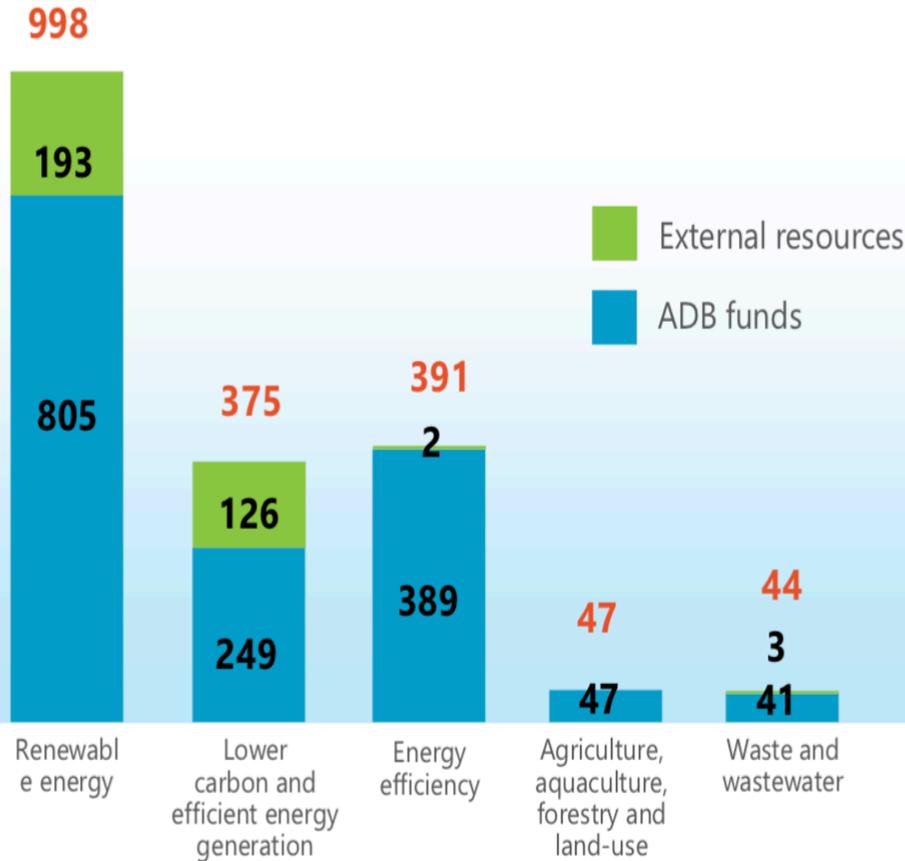
2019 Climate Finance	Mitigation	Adaptation	TOTAL
ADB resources	5,142	1,418	6,561
External resources	288	128	416
TOTAL (In \$ millions)	5,431	1,546	6,977



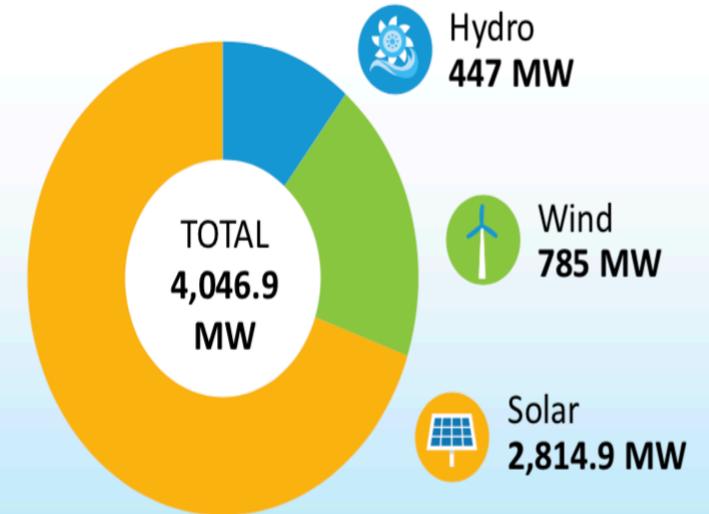
Note: Climate finance amounts from ADB resources for 2020 are only for investments and are only estimates based on project pipelines of ADB's Operating Departments as of end of August. Figures for 2021-2023 are based on ADB's Work Plan and Budgetary Framework 2021-2023.

2019 Climate Mitigation Finance

By Technology Type (amount in \$ million)



Mitigation Finance Outputs



Notes:

1. Amounts are based on approvals.
2. Not shown in the graph are mitigation finance for transport amounting to \$3,542 million (\$3,011 of which are for railways; and others (non-energy GHG reduction, low-carbon technologies, and cross-cutting issues) amounting to \$139 million.

Mitigation activities of projects approved in 2019 would result in the following:

- At least 10.4 million tons CO₂ equivalent of GHG emissions reduction
- Total renewable energy capacity = 4,046.9 MW



ADB Approach to Climate Finance Mobilization

Deploying concessional resources

Internally managed resources (ADB donor trust funds and special funds)

- Climate Change Fund (CCF)
- Clean Energy Financing Partnership Facility (CEFPF) including Carbon Capture and Storage Fund (CCSF)
- Urban Climate Change Resilience Trust Fund (UCCRTF)
- **Asia-Pacific Climate Finance Fund (ACliFF)**
- **High Level Technology Fund (HLTF)**
- Others with bilaterals (e.g. Ireland Trust Fund)

Multilateral funds

- Climate Investment Funds (CIF)
- Global Environment Facility (GEF)
- Green Climate Fund (GCF)

Maximizing market mechanisms

- **Upfront carbon finance**
 - Asia Pacific Carbon Fund
 - Future Carbon Fund
- **Carbon Market Technical Support Facility**
 - Clean Development Mechanism support
 - domestic emissions trading
- **Japan Fund for the Joint Crediting Mechanism**
- **Green and Climate Bonds**
- Supporting **other market mechanisms** (e.g. renewable energy credits; feed-in tariffs)

Catalyzing private capital

- **Direct project finance** (lending, guarantees, syndications), and equity investment
- **Public private partnerships: (PPPs)** working with client DMCs across stages of PPPs

ADB's Carbon Market Program

Mobilizing carbon finance for incentivizing investments in low carbon technologies

Future Carbon Fund

- 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 **10.45 million CERs** with an investment of \$59.5 million
- Supporting 36 CDM projects in 12 DMCs
- Providing carbon finance support to 1.2 GW renewable energy projects

Japan Fund for the Joint Crediting Mechanism

- Provides grants for advanced low-carbon technologies in ADB-financed and administered projects utilizing the Joint Crediting Mechanism initiated by Japan
- **\$79.29 million** contributed by the Government of Japan
- Supports six mitigation activities in **Maldives, Cambodia, Bangladesh and Mongolia**

Article 6 Support Facility

- 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.**

Climate Action Catalyst Fund

- **New carbon fund** to mobilize carbon finance through post-2020 carbon markets under Article 6 of the Paris Agreement
- **\$100–150 million** to support DMCs in achieving NDC commitments cost effectively and raising ambition over time
- **Swedish Energy Agency and the Foundation for Climate Protection and Carbon Offset (KliK), Switzerland** have committed to be initial financing partners

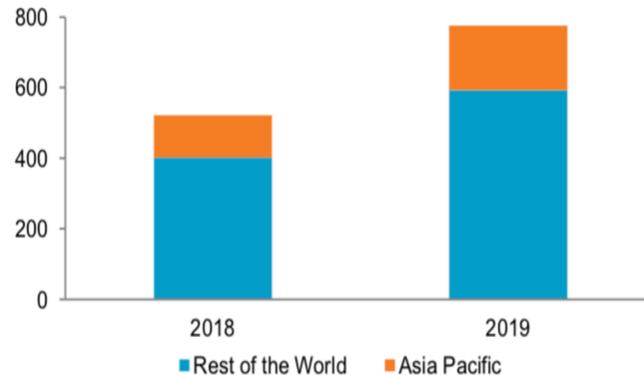


Finance: Asia-Pacific Climate Finance Fund (ACliFF)

- A multi-donor trust fund approved on 28 April 2017 with up to **US\$30 million** contribution from Germany; ADB has made an initial contribution **of US\$1 million** towards an accompanying Technical Assistance to support the operationalization of ACliFF.
- ACliFF supports the development, and implementation of **financial risk management products** addressing climate investments and extreme weather risks.
- Three (3) direct charge applications were approved from March to September 2020 with total ACliFF support of \$600,000. Allocation for two (2) TAs was also authorized for a total of \$3.9 million.
- ACliFF applications under review include two (2) investment grant applications and one (1) direct charge application from an eligible external organization. Estimated funding for these applications is \$6.5 million

ADB and the Green Bond Market

Cumulative Green Bond Issuances Outstanding
in USD billions

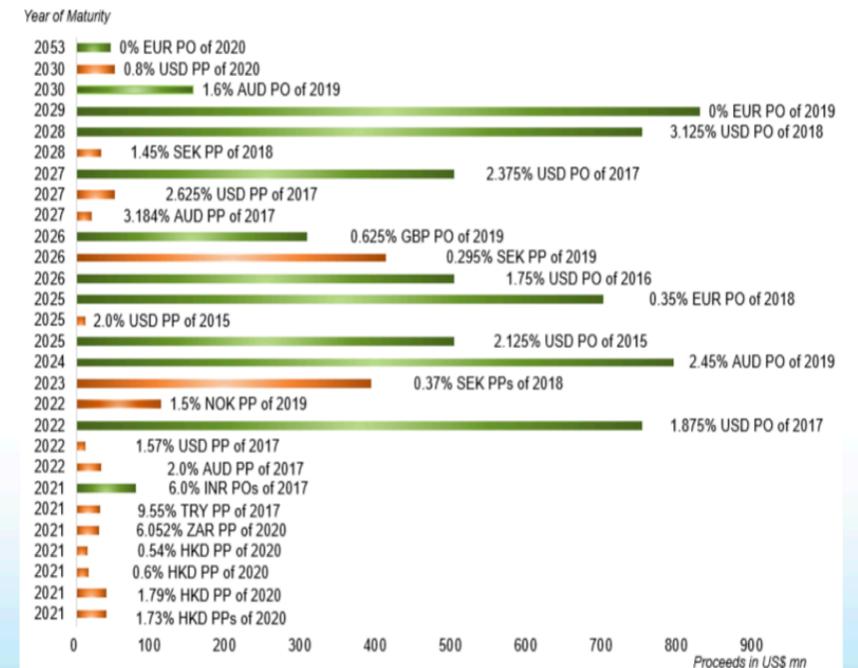


Source:
Climate Bond Initiative (CBI). *Green Bonds Global State of the Market 2019*. <https://www.climatebonds.net>

- The green bond market continues to grow with over \$258 billion issued in 2019 (over 51% increase compared to 2018). Asia Pacific accounted for about \$184 billion of issuance, up 29% from 2018.
- ADB maintains a regular presence in the green bond market, raising a total of \$8 billion as of 31 July 2020 since the green bond program was launched in 2015. ADB's green bond issuances have been diverse, with transactions printed across currencies including Australian dollars, euros, Hong Kong dollars, Indian rupees, Norwegian kroner, pounds sterling, Swedish kronor, and Turkish lira.

- In 2019, ADB invested USD20 million in the maiden USD410 million climate bond issuance of AC Energy in the Philippines. This is the first CBI certified USD climate bond in Southeast Asia listed on the Singapore Stock Exchange.
- In March 2020, ADB introduced a technical assistance program to create the necessary ecosystems for green local currency bonds for infrastructure development in ASEAN+3 and promote the use of the ASEAN+3 Multi-Currency Bond Issuance framework, a common regional bond issuance program allowing issuers to issue bonds in multiple jurisdictions through universal procedures.

OUTSTANDING ADB GREEN BOND ISSUANCES



BUSINESS
OPPORTUNITIES

ASEAN Catalytic Green Finance Facility (ACGF)

The only Regional Green Financing Initiative in Asia

Under the ASEAN Infrastructure Fund (ASEAN + ADB), managed by ADB

ACGF leverages Public Funds to Accelerate Commercial Finance into Green Infrastructure

- Project preparation & financial structuring
- De-risking funding (2-step loan + blend from climate donors)
- Capacity building on green & innovative finance

Criteria / conditionality

- Green
- Transition to bankability
- Catalyzing Commercial Capital
- Sovereign / PPP / SOE Projects

Launched by ASEAN Finance Ministers & ADB President, April 2019



ADB, Agence française de développement, European Investment Bank, European Union, KfW, Global Green Growth Institute, Republic of Korea, UK, Carbon Disclosure Project, Green Climate Fund...



Deploying Concessional Resources Multilateral Climate Funds

Fund	Date Established	Total Global Fund Size (\$ million)	Allocated to ADB (\$ million)
A. Climate Investment Funds	2008	8,095.0	1,444.6
Clean Technology Fund (CTF)		5,400.0	1,000.0
Scaling-Up Renewable Energy Program for Low Income Countries (SREP)		720.0	134.3
Forest Investment Program (FIP)		775.0	30.8
Pilot Program for Climate Resilience (PPCR)		1,200.0	279.5
B. Green Climate Fund (GCF)*	2010	20,100.0	473.0
C. Global Environment Facility (GEF)	1991	8,433.5	497.1
GEF Trust Fund	1991	6,619.7	127.9
GEF-Least Developed Countries Fund (LDCF)	2002	1,460.2	358.6
GEF-Special Climate Change Fund (SCCF)	2005	353.6	10.6
C. Kyoto Protocol Adaptation Fund (AF)	2009	565.3	0.0
Total		37,193.8	2,414.7

Note: As of August 2020; except GEF, which is as of 31 March 2020.

* The initial resource mobilization for GCF reached \$ 10.3 bn, however US has not provided the full \$ 3 bn it pledged; In 2019 GCF mobilized \$ 9.8 billion in its first replenishment. GCF allocation to ADB refers to total funding approved as of date of the global total approval of \$ 6.2 billion.

1 Climate Finance Mobilization

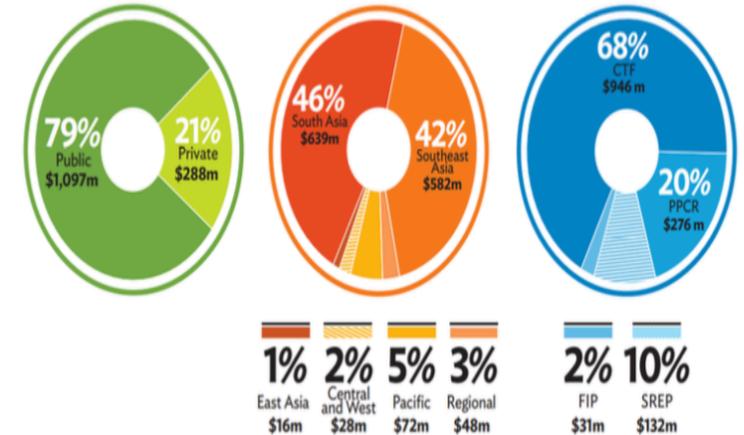
Finance: Deploying Concessional Resources from Multilateral Funds



Established in 2008 represents one of the first global efforts to invest in a dedicated climate finance vehicle.



Note: Out of the \$1.39 billion ADB CIF Portfolio, total project funds approved to date is \$1.28 billion (92%)



*PPCR updated figure is \$279.5 million.

CTF=Clean Technology Fund, FIP=Forest Investment Program, PPCR=Pilot Program for Climate Resilience, SREP=Scaling Up Renewable Energy in Low Income Countries Program



Established in 2010 to channel climate finance, with pledges of **\$20.1 billion** from **43 state governments***

ADB's total GCF Funding to date: **\$473 million**

Green Climate Fund (GCF)

has so far committed

\$6.2 billion to



143 projects globally



*First replenishment received \$9.8 billion in pledges from 28 governments including two additional EU member states with new pledges during the Replenishment Pledging Conference held in Paris on 24-25 October 2019

ADB

Climate Change and COVID-19 Crises

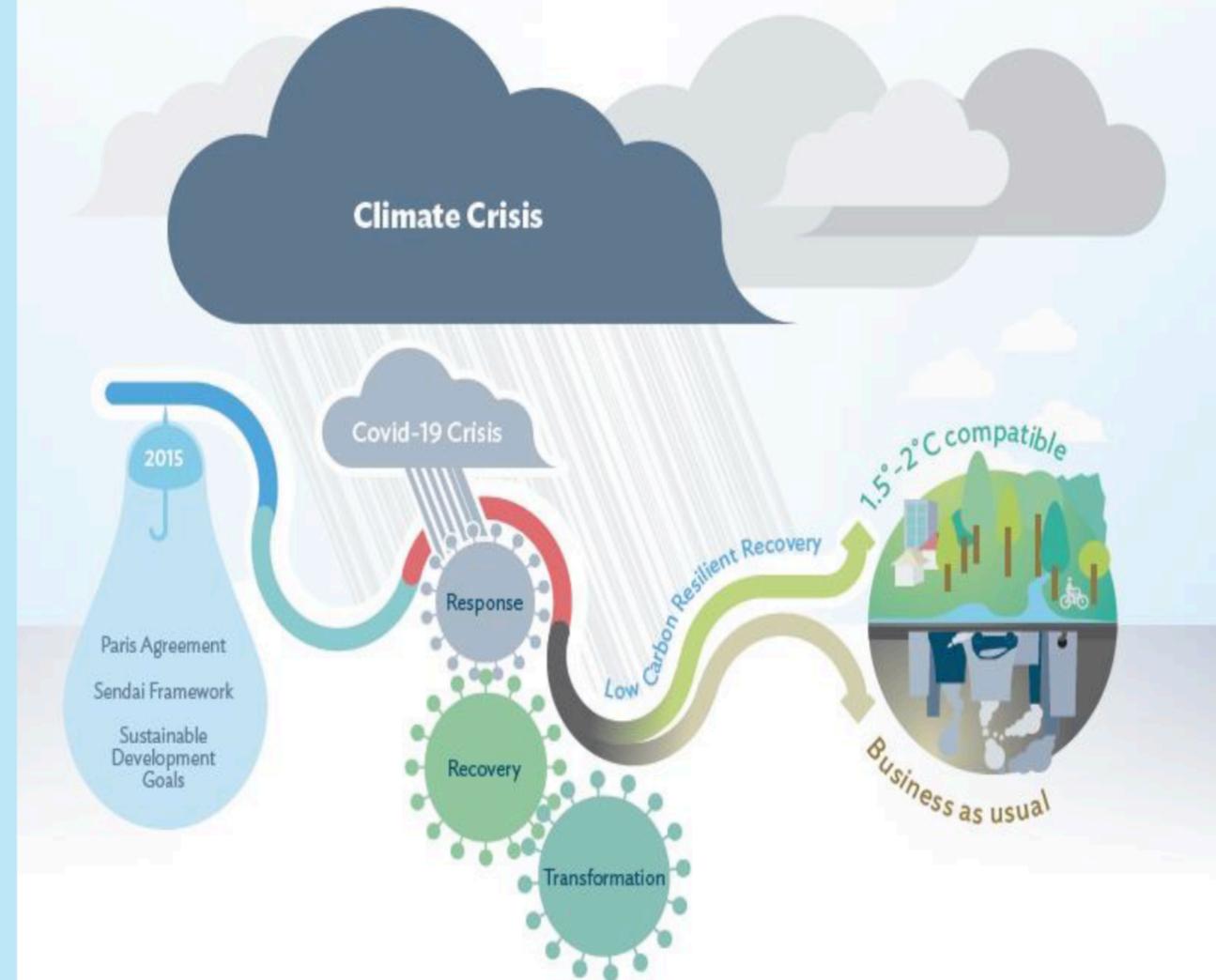


COVID-19 Recovery is an Opportunity

Reorient economies toward a more **strategic low-carbon trajectory**.

Simultaneously address underlying **vulnerabilities** and strengthen **resilience**.

Need a vision of **long-term transformation** – investments supported by policy and structural changes



Recovery interventions can deliver strong economic and social benefits in addition to climate and resilience benefits

Strong climate action has the potential to:

GENERATE over 65 million new low-carbon jobs by 2030

DELIVER at least US\$26 trillion in net global economic benefits

AVOID 700,000 premature deaths from air pollution

The Global Commission on Adaptation has estimated that **investing \$1.8 trillion globally from 2020 to 2030 in resilience-building measures could generate \$7.1 trillion** in total new benefits.

US\$1 million spending in fossil fuels would create 2.7 full-time equivalent jobs, that same spending would create

- **7.5 full time equivalent jobs** in renewable energy
- **7.7 full time equivalent jobs** in energy efficiency and
- **39.7 full time equivalent jobs** for nature-based solutions investments



Countries need a package of recovery interventions that provide the required stimulus and address underlying barriers to ensure that changes are sustained.

Countries must identify low-carbon and resilient interventions, potential sources of financing, and the supporting policy and institutional changes.

Rapid Assessment Framework

Systematic process for evaluating, and comparing, the potential of climate and resilience recovery interventions to achieve recovery objectives.

Recovery Measures	Climate and Resilience Results and Benefits	Type of Measure	Requirements of COVID-19 Recovery Measures							
			Short Implementation Timeline	High Employment Intensity	Skills Development	Strong Supply Chain	High Economic Multiplier	Contribution to the Productive Asset Base	Support for Long-Term Transformation	Positive Environmental and Social Outcomes
Low-Carbon Development										
Investment in low-carbon (renewable) energy production and energy storage infrastructure		DI	Medium	High	High	Medium	High	High	High	High
Climate and Disaster Resilience										
Reorientation of labor market programs to support resilience-building measures (e.g., water resource conservation, reforestation)		DI	High	High	Medium	Low	Medium	Medium	High	High

What is needed to support COVID-19 recovery?

- Short implementation timeline
- High employment intensity
- Skills development
- Strong supply chain
- High economic multiplier
- Contribution to the productive asset base
- Support long term transformation
- Positive environmental and social outcomes



ADB

Building Resilience in Asia and the Pacific Region



Contingent Disaster Financing

- Building on experience gained through several related pilots, a tailored contingent disaster financing (CDF) option under ADB's policy-based loan instrument was approved by the Board in August 2019.
- The instrument was expanded to include health-related emergencies, in addition to disasters triggered by natural hazards, in April 2020.
- Eight Pacific countries have availed of CDF arrangements to date, all of which have disbursed.
- Further CDFs are currently being processed for 10 Pacific countries, Indonesia and the Philippines.
- Prior policy and monitorable actions focus on measures to enhance long-term resilience.
- Achievement of the prior actions enables eligibility to disburse funds.
- Funds disburse in the event of a pre-agreed soft trigger event

Tonga experience

December 2017

\$6 million contingent financing approved

12-13 February 2018

Tropical Cyclone Gita (category 4) strikes

14 February

government requests release of full amount

15 February

financing in government account

Community Resilience Partnership Program (2020-2029)

1. Support DMCs scale up resilience investments that explicitly tackles the nexus between poverty and climate and disaster risk
2. Support three types of projects that :
 - Strengthen livelihoods and community infrastructure (e.g. resilient community-driven development programs);
 - Allow finance to reach the hands of the poor (e.g. adaptive social assistance programs); and
 - Strengthen capacity of local government and communities to participate in decision-making processes on resilience (e.g. climate risk-informed decentralization programs).

3. Program to include a Trust Fund to support DMCs:

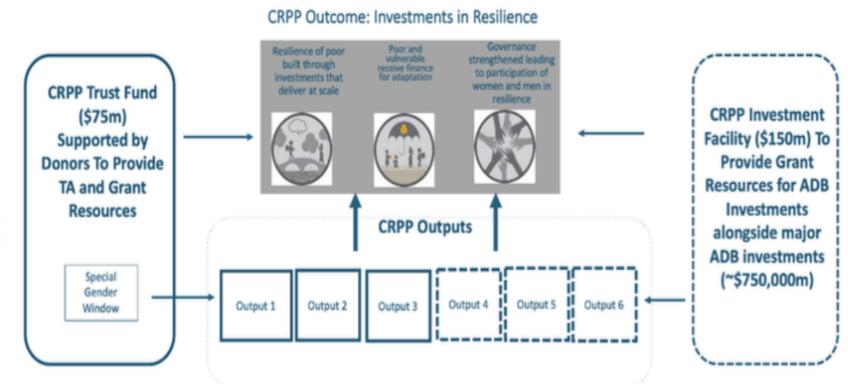
- undertake research;
- develop projects and
- build capacity .

4. Program to include a proposed GCF Investment Facility, to support implement the projects that are prepared through the Trust Fund.

5. Program to support implementation of OP3 and the following SDGs:



CRPP Program Architecture (2020-2024) (Phase 1)



ADB

Project Examples of Innovative Technology



Tonga: Renewable Energy Project (under the Pacific Renewable Energy Investment Facility)



Innovative Technology

TOTAL FINANCING: \$53.2 million

- \$12.2 million ADF (grant)
- \$8.6 million Government and others (counterpart)
- \$29.9 million Green Climate Fund (grant)
- \$2.5 million Government of Australia (grant)

DATE APPROVED 11 March 2019

TOTAL CLIMATE FINANCE: \$44.6 million

TOTAL ADAPTATION FINANCE

\$0.61 million (ADF)
\$1.495 million (GCF)
\$0.125 million (AUS)

TOTAL MITIGATION FINANCE

\$11.59 million (ADF)
\$28.405 million (GCF)
\$2.375 million (AUS)

Pacific Department

CONTEXT

Multiple challenges (climate change, energy insecurity and high electricity cost, and low energy access rate).

DESCRIPTION

Assist Tonga generate more than 50% renewable energy by 2020 and 70% by 2030. The project will create technically enabling environment for IPPs: a 6 MW solar PV of IPP transaction is being finalized (PSDI provided transaction advisory services, and PSOD is considering to co-finance the transaction under Pacific Renewable Energy Program approved in 2019).

UNIQUE FEATURE

- The project is under Pacific Renewable Energy Investment Facility (approved in 2017)
- A large battery energy storage system capacity in the main island to store intermittent electricity renewable energy
- Solar PV, hybrid system, and grid technologies and management upgrade in the outer islands
- Effective gender mainstreaming



Innovative Technology

TOTAL FINANCING: \$119.173 million

- \$100 million COL
- \$10.538 million Government (counterpart)
- \$ 45.538 million Agence Française de Développement (loan)
- \$10.000 million Japan Fund for the Joint Crediting Mechanism
- \$5.097 million Asia Investment Facility (not ADB administered)

DATE APPROVED 7 December 2017

TOTAL CLIMATE FINANCE: \$11.73 million

TOTAL ADAPTATION FINANCE
\$1.73 million (COL)

TOTAL MITIGATION FINANCE
\$10 million (JFJCM)

Southeast Asia Department

CONTEXT

Population access to improved water supply in urban areas (except Phnom Penh) is 69.7%, while access to piped water supply is only 42.2%. Rapid expansion of the infrastructure is required to meet the Government's 2025 target of 100% access to potable water for the entire population. Access to improved sanitation in urban areas is 80.2%, while access to sewerage and wastewater treatment is only 10.7%. The low sanitation coverage across the country has led to widespread pollution, affecting rivers, coastal areas, and tourist areas. Except for Phnom Penh, the government has not been able to invest adequately in urban water supply and sanitation (WSS) since the mid-1990s resulting in significant service delivery gaps.

DESCRIPTION

The project will expand water supply and sanitation services and contribute to the Government's target of (i) 100 percent urban 24-hour water supply coverage for all town centers and 90 percent coverage for all suburbs by 2025 with improved water quality to national standards and services; and (ii) improved urban sanitation by focusing on the provision of septage management services and piped sewerage system development to complement the expansion of the water supplies in the towns and ongoing and/or planned ADB development projects.

UNIQUE FEATURE

To expedite project implementation and promote the use of high-level technologies, design-build contracts will be used for the (i) water supply subprojects at Battambang and Kampong Cham, including water source, treatment, and distribution system; (ii) wastewater treatment plant (WWTP) in Sihanoukville, where solar-powered aerators will be employed to increase capacity and to reduce energy and carbon emissions; (iii) WWTP at Battambang, where a more advanced process (based on modified trickling filters, but open to other processes) will be used to avoid land acquisition and reduce energy and carbon emissions; and (iv) trunk sewers at Siem Reap where trenchless construction will minimize resettlement and compensation costs, and reduce pollution of local water courses.

Cambodia: National Solar Park Project



Innovative Technology

TOTAL FINANCING: \$27.21 million

- \$7.64 million COL
- \$5.07 million Government and others (counterpart)
- \$11 million CIF (SCF-SREP) (loan)
- \$3 million CIF (SCF-SREP) (grant)
- \$.5 million Republic of Korea e-Asia and Knowledge Partnership Fund (TA)

DATE APPROVED 23 May 2019

TOTAL CLIMATE FINANCE: \$22.14 million

TOTAL ADAPTATION FINANCE
\$1.17 million (COL)TOTAL MITIGATION FINANCE
\$6.47 million (COL)
\$11 million (CIF loan)
\$3 million (CIF grant)
\$0.5 million (Republic of Korea e-Asia and Knowledge Partnership Fund (TA))

Southeast Asia Department

CONTEXT

Overreliance on hydropower and fossil fuel generation and rapidly growing demand, high system costs, low private sector participation in large utility-scale solar power.

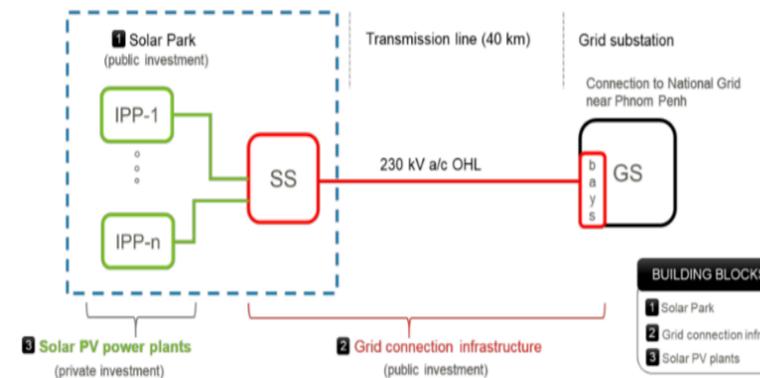
DESCRIPTION

The project will support the national electricity utility, Electricite du Cambodge (EDC), in constructing a 100-megawatt capacity solar power park (comprising civil works, including access roads, fencing, and drainage systems) and a transmission interconnection system to the nearest grid substation. Through a transaction advisory services agreement between the Office of Public-Private Partnership (OPP) of ADB and EDC, the project also aims to help EDC design and conduct a competitive tender for procuring an independent power producer to build the first solar power plant within the park.

UNIQUE FEATURE

(i) Demonstrate the ability of large-scale solar parks to lower solar energy prices, while providing technical benefits to the national grid and complementing hydropower through One ADB approach; (ii) combined an OPPP-led transparent, competitive tender for private solar PV generation with SERD public sector support for the common park facilities and transmission interconnection, de-risked the project and attracted strong private sector interest; and, (iii) PSOD is exploring financing for private PV generation within the park.

DESIGN/SPECIFICATIONS



Thailand: Energy Absolute Green Bond for Wind Power



Innovative Project Design

TOTAL FINANCING - THB 10 billion (~USD 318 million)

- **ADB OCR:** THB 3 billion (~USD 95 million)
- **Institutional and individual investors:** THB 7 billion (~USD 222 million)

DATE APPROVED:

- 23 September 2019

TOTAL CLIMATE FINANCE:

- **ADB:** THB 3 billion (~USD 95 million)

COLLABORATION BETWEEN:

- Private Sector Operations Department
- Sustainable Development and Climate Change Department

CONTEXT

Thailand has one of the highest rates of penetration of renewable energy in Southeast Asia and significant potential for further wind power development. As the domestic market matures, innovative financing instruments such as green bonds can help to deepen the capital markets and leverage additional private capital to help finance renewable energy projects.

DESCRIPTION

ADB, acting as the cornerstone investor, subscribed to the bonds and assisted the client (Energy Absolute) to ensure that the bonds were recognized as certified under the Climate Bonds Standard (CBS) of the Climate Bonds Initiative. The bonds will also comply with the International Capital Markets Association's Green Bond Principles (GBP) and the ASEAN Green Bond Standards (ASEAN GBS). Proceeds from the bond issuance will help support the long-term financing of Energy Absolute's 260-megawatt (MW) Hanuman wind farm in Thailand.

UNIQUE FEATURE

The project supports the first green bond issuance for a wind power project in Thailand and is the second Climate Bonds Standard-certified bond issued by a Thai energy company. As such, it will contribute to the development of the green bond market in Thailand and the region. The GBP and CBS are the two most widely recognized standards for green bonds based on international best practice.



Thailand: Southern Thailand Wind Power and Battery Energy Storage Project



Innovative Project Design

TOTAL FINANCING – THB 818 million (~USD 26.8 million)

- **ADB OCR:** THB 235 million (~USD 7.7 million)
- **Clean Technology Fund:** \$4.8 million (concessional loan)
- **Commercial Bank:** THB 235 million (~USD 7.7 million)
- **Sponsor's equity:** THB 205 million (~USD 6.7 million)

DATE APPROVED:

- 13 January 2020

TOTAL CLIMATE FINANCE:

- ADB - \$7.7 million
- ADB-administered co-financing - \$4.8 million

COLLABORATION BETWEEN:

- Private Sector Operations Department
- Southeast Asia Department

CONTEXT

By the end of 2018, global electricity storage deployment was roughly 8 GWh. However, in Southeast Asia, the lack of pilot projects and a lag in regulatory regimes has prevented widespread commercial deployment of battery storage technology seen in other parts of the world. Renewable energy is expected to contribute 15%-20% of Thailand's total energy production by 2036, up from the current 10%, and growth in storage is expected to rise.

DESCRIPTION

This is the first private sector initiative in Thailand to integrate utility-scale wind power generation with a battery energy storage system. ADB's blended finance offering (OCR & CTF) will provide long term financing to the Lomligor Company Limited for the 10MW wind project with an integrated 1.88 MWh pilot battery energy storage system. The participation of a concessional loan from the CTF was needed to improve the bankability and financial viability of the project.

UNIQUE FEATURE

This project aims to demonstrate commercial viability of this promising new segment of the market. As Thailand increases the share of intermittent renewable energy sources (e.g., solar and wind), battery energy storage will become an important technology to underpin the grid, providing services such as frequency support, voltage support, ramping support, peak shaving, load shifting, and transmission deferral.





Innovative Project Design

TOTAL FINANCING - \$57 million

- **\$17.6 million** - ADB (A Loan)
- **\$11.0 million** - Canadian Climate Fund for the Private Sector in Asia
- **\$4.0 million** - Canadian Climate Fund for the Private Sector in Asia II
- **\$4.4 million** - Leading Asia's Private Infrastructure Fund
- **\$20 million** - Sponsor's Equity

DATE APPROVED:

- 4 October 2018

TOTAL CLIMATE FINANCE:

- ADB - \$17.6 million
- ADB-administered co-financing - \$19.4 million

COLLABORATION BETWEEN:

- Private Sector Operations Department
- Southeast Asia Department

CONTEXT

Viet Nam's energy sector has made strong progress in achieving a high percentage of nationwide electrification and a relatively diversified energy mix (albeit heavily dependent on fossil fuels). Viet Nam is one of the fastest growing electricity markets globally, with 11% CAGR of installed capacity in the past 5 years. In 2017, the government announced a feed-in tariff for grid-connected solar PV projects to reduce emissions and encourage green growth.

DESCRIPTION

The project is the first floating solar project in Viet Nam and among the first internationally financed, private sector, utility scale solar projects in the country. It uses pioneering technology and involves the construction of a 47.5MWp solar PV installation on the reservoir of the existing 175MW Da Mi hydro plant. The solar installation is designed to move with fluctuating water levels in the reservoir. The anchoring and dynamic positioning was the most challenging engineering aspect of the project.

UNIQUE FEATURE

The project aims to demonstrate the viability of building solar projects in tandem with hydropower assets to better manage energy availability (seasonality) and vulnerability to drought, to save valuable agricultural land, to utilize existing transmission and distribution infrastructure, and to reduce evaporation from the reservoir.



Mongolia: First Utility-Scale Energy Storage Project



Innovative Technology

TOTAL FINANCING: \$114.95 million

- \$100 million OCR
- \$11.95 million Government (counterpart)
- \$ 3 million High Level Technology Fund (grant)

DATE APPROVED 22 April 2020

TOTAL CLIMATE FINANCE: \$103 million

**TOTAL ADAPTATION FINANCE
\$0.1 million (OCR)**

**TOTAL MITIGATION FINANCE
\$99.1 million (OCR)
\$3 million (HLTF)**

East Asia Department

CONTEXT

Renewable energy resources in Mongolia is marginally utilized, with total renewable energy capacity at 260 megawatts (MW) in 2019, compared to the estimated renewable energy potential of 2,600 gigawatts. This is due to the grid's absorption limit to evacuate renewable energy. Mongolia's renewable energy investment plan in 2015 estimated the maximum grid absorption capacity to be 50 MW in wind power and 125 MW in solar photovoltaic power without curtailment.

DESCRIPTION

The project aims to expand the central energy system's (CES) capacity to fully absorb renewable energy, which is otherwise curtailed to supply clean peaking power and to integrate additional renewable energy capacity into the CES grid. This would reduce greenhouse gas emissions from the highly carbon-intensive imported electricity from Siberia and provide room to connect an additional 350 MW of renewable energy capacity to the CES without curtailment.

UNIQUE FEATURE

The project will install 125 MW/160 megawatt-hours of advanced battery energy storage system (BESS) by 2022. The BESS will be resilient to extremely cold climate and will be equipped with a battery energy management system to be fully charged by renewable electricity, which is otherwise curtailed, and to discharge clean electricity to supply peaking power in the CES. The BESS will also provide the regulation reserve in the CES grid, which enables at least 350 MW of additional renewable energy capacity to be integrated into the CES.

The project will be the world's largest BESS in operation.



Innovative Technology

TOTAL FINANCING: \$18.89 MILLION
\$4.0 million LIBOR-based loan (OCR)
Canadian Climate Fund for Private Sector in Asia-II: \$3.85 million

DATE APPROVED: 2 April 2019

TOTAL CLIMATE FINANCE:
\$7.85 million

TOTAL MITIGATION FINANCE
\$4.0 million (OCR)
\$3,85 million (cofinancing)

Private Sector Operations Department

ISSUES

- AFG ranks amongst lowest 5% per capita electricity consumption (100 kWh compared to global average of 3,125 kWh).
- Total installed generation capacity of 568 MW falls far short of required demand. Chronic power shortage.
- Significant import dependence (80% of power and 97% of fuel); major implications for scarce FX reserves.
- Non-availability of long-term financing to support any infrastructure due to heightened country risk.

APPROACH/INNOVATIVE SOLUTION

- Identify a credible sponsor (with established track record and experience in Afghanistan)
- **Crowd in a blended finance package (innovative combination of long-term loans and concessional financing) to ensure commercial viability and meet entire financing requirement**
- Set precedent for private sector grid-connected solar sector by supporting the first, highly demonstrational solar power plant
- Fully consistent with objective to support FCAS countries by providing essential infrastructure.

DESIGN/SPECIFICATIONS

- 15.1 MW solar power project; 6 KM transmission line upgradation; equipment procured from highly reputed suppliers; 20-year PPA with DABS
- Generates 27.5 gigawatt-hours per year; Annual CO2 emission avoidance of 8,500 tons

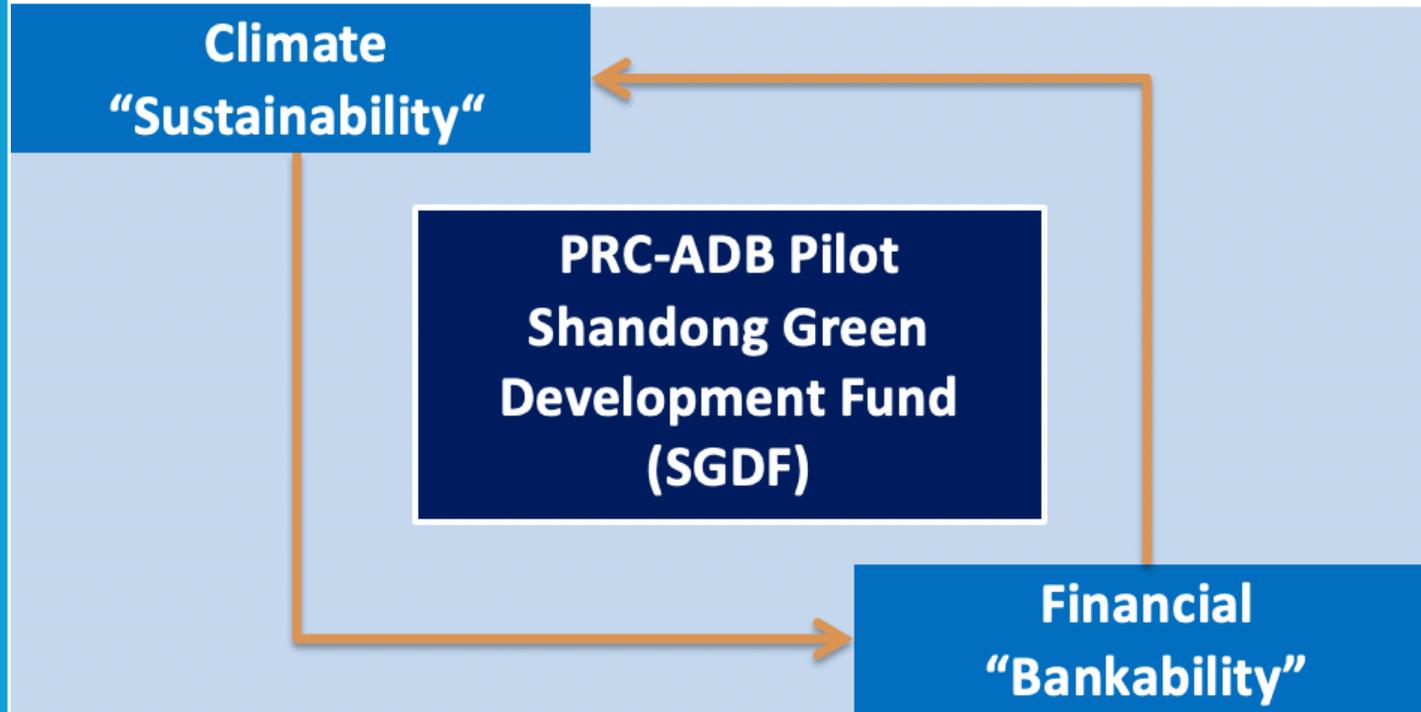
ADB

ADB

From Concept to Project: Shandong Green Development Fund



Catalyzing Green Finance



- Enabling financial close of climate-positive projects involving private finance
- Leveraging catalytic funding with more than 5 times multiplier



CATALYZING GREEN FINANCE
A CONCEPT FOR LEVERAGING BLENDED
FINANCE FOR GREEN DEVELOPMENT

ASIAN DEVELOPMENT BANK



Shandong Province: Proactive Climate Policies

Shandong Province Snapshot

- Part of Beijing-Tianjin-Hebei area
- Population ≈ 100 million (10 cities population > 5 million)
- 3,000 km coastline
- Largest energy and coal consumer (10%)

CO2 Emissions in 2027, 3 Years Ahead of INDC

- New energy and renewable energy will account for 7% of total energy consumption by 2020 and 18% by 2030
- Transition to low-carbon industries

Carbon Emission Reduction Targets by 2020



Binzhou: down by 23%
Liaocheng: down by 22%

Dongying, Weihai:
 down by 20%

**Qingdao, Zibo, Zaozhuang, Yantai,
 Weifang etc.:** down by 21%

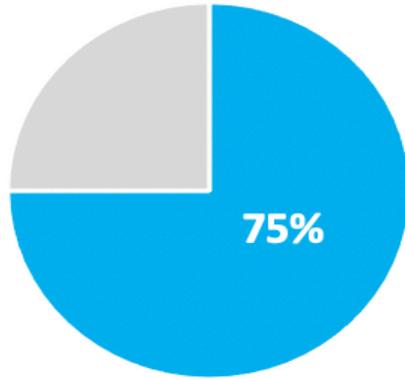
Jinan, Rizhao, Linyi, Dezhou, Heze:
 down by 20.5%

2020 compared with 2015

SGDF Portfolio Allocation

Climate Change Mitigation

Address the Main Sources of GHG Emissions in Shandong



Renewable Energy
51%



Green Buildings
13%



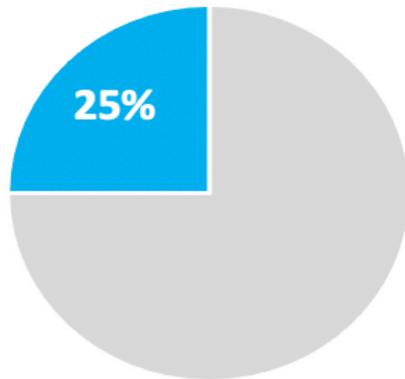
Urban Transport
6%



Energy Efficiency
5%

Climate Change Adaptation

Improve People's Climate Resilience



Coastal Protection
10%



Flood Control
6%



Drought / Agriculture
5%



Heat / Greening
4%

Potential Industries - Taxonomy

Principles
Based on
GCF
Investment
Framework**1** GHG Reduction/ Adaptation Impact

Does the industry address the key sources of GHG emission in Shandong Province / No. of project beneficiaries

2 "Paradigm Shift"

Scaling up & replication potential and innovation

3 Sustainable Development

Economic, social and environmental cobenefits

4 **5** Needs of Recipient & Ownership

Demonstrated need and capacity to implement

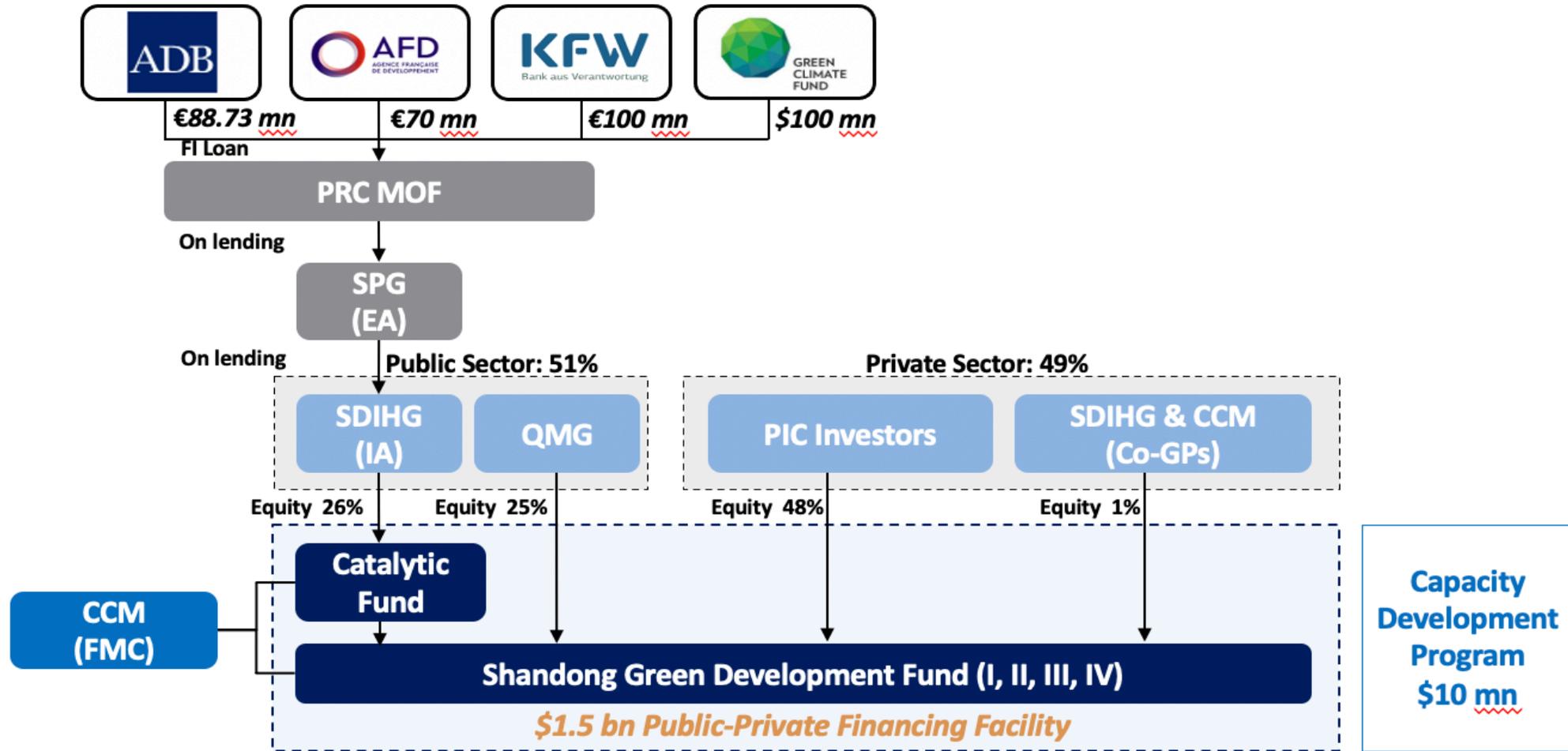
6 Efficiency & Effectiveness

The cost to deliver climate benefits, leverage etc.

Project Performance Assessment – Transformational, Advanced Benefits, Good Practices

Green Rating / Green Procurement

Innovative Financing Mechanism



CCM = CICC Capital Management Co., Ltd.; EA = Executing Agency; FI = Financial Intermediation; FMC = Fund Management Company; GP = General Partner; IA = Implementing Agency; MoF = Ministry of Finance; PIC = Private, Institutional and Commercial; PRC = People's Republic of China; QMG = Qingdao Municipal Government; SDIHG = Shandong Development & Investment Holding Group; SPG = Shandong Provincial Government.

A Mix of Investment Instruments and Exit Channel

	Instrument	% in funding	Tenor	Return Expectation	Exit
Mitigation	Equity	< 30%	N.A	> 12%	IPO/secondary sale/M&A
	Debt with equity component	30-50%	3-7 years	In line or at discount to benchmark lending rates, with equity upside	Redemption /conversion into equity
	Debt	Similar to below			
Adaptation	Mainly Debt	< 50%	3-7 years	In line or at discount to benchmark lending rates	Payback by project sponsor

Linking Climate Performance to Investment Terms

Debt	Maximum Funding*	Maximum Tenor	Interest Rate**	Equity	Maximum Funding*	Investment Horizon
Transformational	67%	8 years	Discounted	Transformational	50%	<8 years
Advanced Benefits	50%	6 years	In line	Advanced Benefits	30%	< 6 years
Good Practices	25%	5 years	Premium	Good Practices	-	-

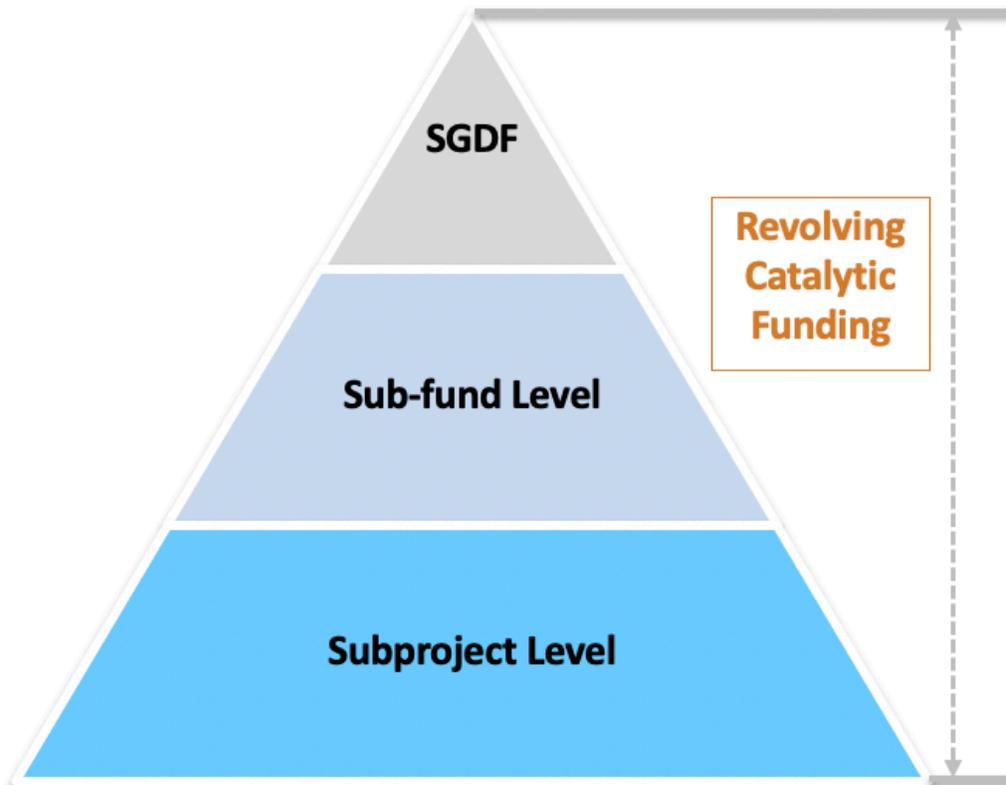
Note: Based on climate indicators and to be cross referenced with financial due diligence

* Percentage of a project's total debt/equity financing

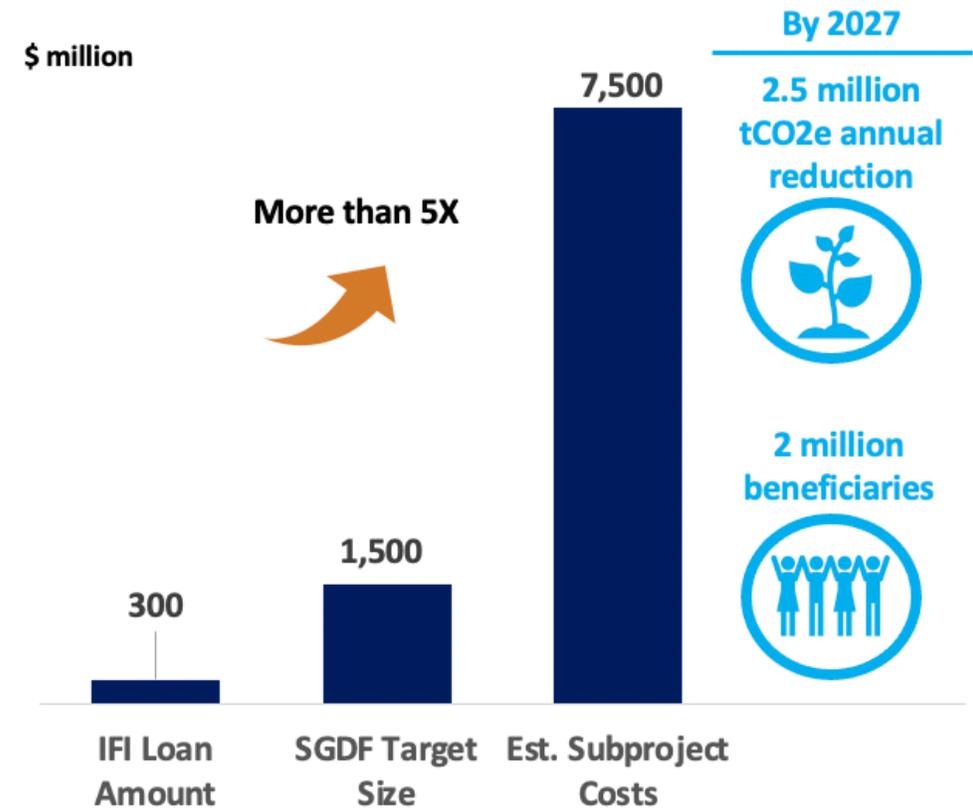
** Based on People's Bank of China benchmark lending rates

Significant Leverage to Crowd-in Private Finance

Multi-Tier Structure for Leveraging



Leveraging Effect



THANK YOU!

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