

THE ASIAN DEVELOPMENT BANK AND THE CLIMATE INVESTMENT FUNDS DEVELOPING A PRIVATE SECTOR PORTFOLIO



ADB AND THE CLIMATE INVESTMENT FUNDS

Developing a Private Sector Portfolio

January 2016





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FOREWORD

The outcome of the 2015 Climate Change Conference (COP21) has reinvigorated the momentum for climate action globally and the record signing of the Paris agreement by 175 countries on April 22, 2016. We are on the way for a ratification of this milestone climate agreement. At the same time, the commitment to meet the goal of mobilizing \$100 billion of climate finance per year by 2020 has been underscored in many international forums and is a cornerstone of the agreement.

It is well understood that public finance alone cannot sustain the transformation that will move the world on a low-carbon development path and avoid catastrophic global warming. Private investments are critical for this transformation. We must find ways to tap, mobilize, and leverage private finance to reach global climate goals.

At the Asian Development Bank (ADB), we have scaled up our projects and programs under the Climate Investment Funds, using our experience in private sector operations to good advantage, to induce climate-related investments from the private sector. Of the \$1.5 billion CIF financing for ADB projects and programs, \$359 million are for private sector projects, primarily in the energy sector. This publication records our achievements to that end, and we hope that other climate finance players can benefit from the lessons, just as we have during the course of this engagement. Through the feedback expected from within ADB, from the Climate Investment Funds, and from other development partners as a result of this publication, we hope to improve our own efforts in private sector climate finance.

The Paris Agreement marks a monumental commitment by the world to tackle climate change. And we at ADB stand ready to channel enhanced climate finance to our developing member countries.



Ma. Carmela D. Locsin
Director General
Sustainable Development and Climate Change Department

PREFACE

The climate change programs of the Asian Development Bank (ADB) mobilize climate finance in three strategic ways. First, we deploy concessional funds—internal and external—sources to cofinance transformational programs and projects. Second, we access carbon market mechanisms, maximizing these instruments with the carbon funds that we manage, while providing technical support to enhance the use of such mechanisms. Third, we strive continuously to mobilize the private sector for climate action.

The Climate Investment Funds (CIF) have consistently emphasized the role of the private sector in clean technology investments. About 22% of the CIF portfolio in the private sector is managed by ADB through primarily the Clean Technology Fund's Dedicated Private Sector Programs (DPSP), and the Strategic Climate Fund's private sector set-asides.

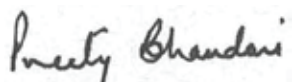
There are some exciting opportunities that have been tapped through such facilitation. ADB is implementing a \$150 million program under Indonesia's investment plan to develop geothermal projects in the country with the objective of overcoming traditional financial barriers and investment security to increase the penetration of geothermal energy. The subprojects under this program will facilitate financial closure of landmark projects and establish new milestones for accelerated development of this resource in Indonesia.

Private capital is facilitating direct project financing for utility-scale geothermal energy developments in the Philippines and Indonesia, through DPSP. The DPSP pipeline also includes renewable energy minigrids and distributed power generation, which make electricity more widely accessible in rural areas of India, Indonesia, and the Philippines.

In Thailand, ADB is implementing a \$100 million renewable energy program with five subprojects in the country's investment plan intended to accelerate the participation and scale-up of investments by the private sector in the development of utility-scale solar and wind power generation projects.

On the adaptation front, through the private sector set-aside, funds will be lent to project developers in Cambodia to pay for the capital cost of installing rainwater harvesting and drip irrigation technologies on a 717 hectare demonstration and teaching model farm in Battambang Province. To enable farmers to purchase these technologies, a line of credit to farmers using PPCR funds will be provided to approximately 1,000 farmers through a local bank.

I am pleased to share this publication with you to report on our experience on how the CIF has enabled our continuing efforts to mobilize the private sector for low carbon and climate resilient investments in the region.

A handwritten signature in black ink, reading "Preety Bhandari". The signature is written in a cursive, flowing style.

Preety Bhandari

Director

Climate Change and Disaster Risk Management

Sustainable Development and Climate Change Department

ACKNOWLEDGMENTS

This publication explores lessons learned from ADB's private sector transactions with the use of resources of the Climate Investment Funds. The project was undertaken under the overall guidance of Preeti Bhandari, Director, Climate Change and Disaster Risk Management Division, and Janette Hall, Principal Investment Specialist, Private Sector Investment Funds and Special Initiatives Division. The publication was written by Kate Hughes, Consultant.

Several key individuals were interviewed, making significant contributions to the contents of the publication. Thanks are due to the following at ADB: David Barton, Shuji Hashizume, Robert Lockhart, Don Purka, Lazeena Rahman, and Daniel Wiedmer, from the Private Sector Operations Department; Jiwan Acharya, Cinzia Losenno, and Cristina Santiago from the Sustainable Development and Climate Change Department; and Ancha Srinivasan from the Southeast Asia Department.

ABBREVIATIONS

ADB	Asian Development Bank
CDM	Clean Development Mechanism
CIF	Climate Investment Funds
CIP	country investment plan
CMP	Carbon Market Program
CTF	Clean Technology Fund
DMC	developing member country
DPSP	Dedicated Private Sector Programs
FCF	Future Carbon Fund
FIP	Forest Investment Program
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	greenhouse gas
MDB	multilateral development bank
MW	megawatt
PPA	power purchase agreement
PPCR	Pilot Program for Climate Resilience
PSOD	Private Sector Operations Department (ADB)
SCF	Strategic Climate Fund
SREP	Scaling Up Renewable Energy Program
TA	technical assistance
tCO ₂ e	tons of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change

Total CIF FUNDING for ADB DMCs

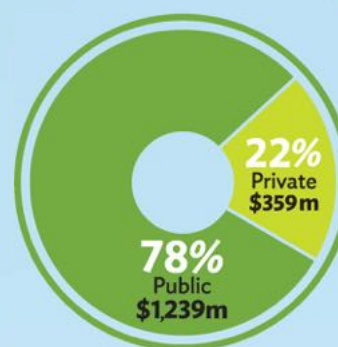
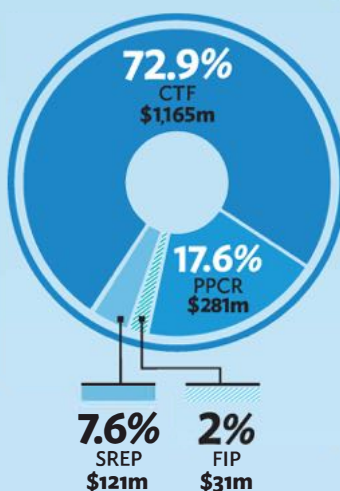
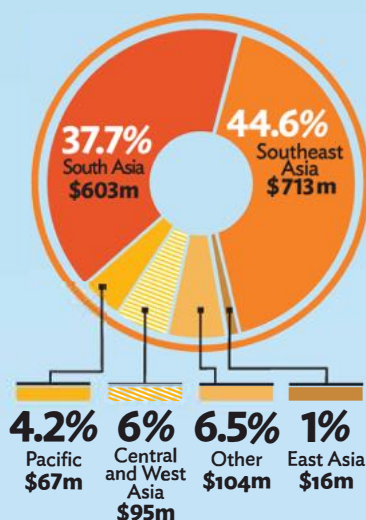
\$3.3 billion

\$1.5 billion

48%

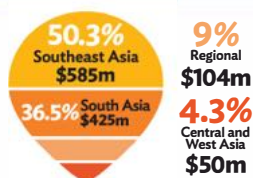
Total CIF
FUNDING
administered
by ADB

Note: Out of the \$1.5 billion ADB CIF Portfolio, total project funds approved to date amount to \$1.08 billion (68%)



CTF CLEAN TECHNOLOGY FUND		\$1.1b for 17 projects/programs
\$ million	# OF CTF PROJ./PROGRAMS	
\$104	Dedicated Private Sector Programs/Projects	4
\$50	1 Kazakhstan	1
\$100	2 Thailand	1
\$125	3 Philippines	2
\$150	4 Indonesia	1
\$211	5 Viet Nam	4
\$425	6 India	4

Note: Out of the \$1.1 billion CTF funds to be administered by ADB, \$775 million have been approved by the Trust Fund Committee



PPCR PILOT PROGRAM FOR CLIMATE RESILIENCE		\$281m for 19 projects
\$ million	# OF PPCR PROJECTS	
\$5	Private Sector Adaptation Projects (Cambodia)	
\$4	1 Pacific Region	1
\$20	2 Tonga	1
\$30	3 Papua New Guinea	1
\$28	4 Tajikistan	2
\$32	5 Nepal	2
\$72	6 Bangladesh	3
\$91	7 Cambodia	8

Note: The \$281 million PPCR funds to be administered by ADB have all been approved by the Subcommittee



AT LEAST 5,342 MW installed capacity

with expected annual electricity output of about 12,400 GWh from renewable energy sources

from the (i) Rajasthan Renewable Energy Transmission Investment Program, (ii) Indonesia Geothermal Program, (iii) Thailand Private Sector Renewable Energy Program, and (iv) DPSP Renewable Energy Mini-grids and Distributed Power Generation Program

AT LEAST 1.7m households with with access to clean energy

expected as a result of the (i) Rajasthan Renewable Energy Transmission Investment Program, (ii) Indonesia Geothermal Program, and (iii) DPSP Renewable Energy Mini-Grids and Distributed Power Generation Program

OVER 13,500 jobs created

during the construction and operation of (i) Indonesia Geothermal Program, (ii) Thailand Renewable Energy Program, and (iii) Market Transformation through Introduction of Energy Efficient Electric Vehicles Project

AT LEAST 941,000 people to benefit from improved public transport



from the (i) Market Transformation through Introduction of Energy Efficient Electric Vehicles Project, (ii) Sustainable Urban Transport for Ho Chi Minh City MRT Line 2, and (iii) Sustainable Urban Transport for Ha Noi Metro Line 3

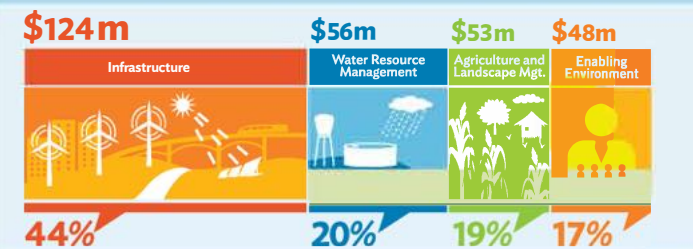
AT LEAST 203 m tCO₂e avoided

during project lifetimes of the (i) Rajasthan Renewable Energy Transmission Investment Program, (ii) Indonesia Geothermal Program, (iii) Market Transformation through Introduction of Energy Efficient Electric Vehicles Project, (iv) Thailand Renewable Energy Program, (v) Sustainable Urban Transport for Ho Chi Minh City MRT Line 2, (vi) Sustainable Urban Transport for Ha Noi Metro Line 3 Project, and (vii) DPSP Renewable Energy Mini-Grids and Distributed Power Generation Program

FIP FOREST INVESTMENT PROGRAM		\$31m for 2 projects
\$ million	# OF FIP PROJECTS	
\$13	1 Lao PDR	1
\$18	2 Indonesia	1

FOREST INVESTMENT PROGRAM

FIP supports developing country efforts to reduce deforestation and forest degradation and promote sustainable forest management that leads to emissions reductions and enhancement of forest carbon stocks (REDD+). Two of the eight FIP pilot countries are Indonesia and the Lao PDR, where ADB will administer projects under the approved investment plans.



\$103m South Asia 37%

\$96m Southeast Asia 34%

\$54m Pacific 19%

\$28m Central and West Asia 10%

SREP SCALING UP RENEWABLE ENERGY IN LOW INCOME COUNTRIES PROGRAM		\$121m for 9 projects
\$ million	# OF SREP PROJECTS	
\$7	1 Vanuatu	1
\$7	2 Solomon Islands	1
\$13	3 Maldives	1
\$16	4 Mongolia	1
\$17	5 Armenia	1
\$30	6 Bangladesh	2
\$32	7 Nepal	2

Note: Out of the \$121 million SREP funds to be administered by ADB, \$32 million have been approved by the Subcommittee

AT LEAST 26 MW installed capacity with expected annual electricity output of 55.6 GWh from renewable energy sources

from the (i) Maldives Preparing Outer Islands for Sustainable Energy Development Program, (ii) Nepal South Asia Subregional Economic Cooperation Power System Expansion Project, and (iii) Vanuatu Energy Access Project

AT LEAST 36,000 households with access to clean energy

expected as a result of the (i) Maldives Preparing Outer Islands for Sustainable Energy Development Program, (ii) Nepal South Asia Subregional Economic Cooperation Power System Expansion Project, and (iii) Vanuatu Energy Access Project

AT LEAST 1.4m tCO₂e avoided

during project lifetimes of the (i) Maldives Preparing Outer Islands for Sustainable Energy Development Program, (ii) Nepal South Asia Subregional Economic Cooperation Power System Expansion Project, and (iii) Vanuatu Energy Access Project





INTRODUCTION

The Climate Investment Funds (CIF) are the first large-scale international funds dedicated to financing action on climate change (CIF 2014c). Fourteen contributor countries have pledged \$8.1 billion to the CIF since 2009 (CIF, n.d.); \$2.4 billion of this total is intended for projects and programs that will stimulate private sector investment in climate change mitigation and adaptation activities (CIF 2014a). This significant change in the scale of climate financing shows wide acknowledgment of the link between climate change and development, as well as the need for large, sustained financial flows to enable developing countries to respond effectively to climate change. Although the global climate finance landscape has evolved since their establishment in 2008, the CIF remain the world's largest dedicated multilateral climate funds with active disbursements.

Leverage, empowerment, and transformation are central to the CIF. These funds were designed to provide concessional financing to share financing risk and leverage additional capital to achieve financing at scale. The \$8.1 billion pledged to the CIF is expected to leverage \$57 billion in cofinancing—a ratio of 1:7.7. Stimulating climate-related investments at this scale demonstrates the funds' robust capability to catalyze climate mitigation and adaptation projects in developing countries and to assist with the transition to a low-carbon economy.

Climate financing needs in developing countries are high. To achieve rapid transformational change, there is a pressing need to mobilize significant private sector capital as well as implementation support. Private entities manage a significant portion of assets in many climate-critical sectors, including agriculture, energy, transport, and water. The challenge, therefore, is to direct larger sums of private capital toward low-carbon and climate-resilient alternatives, and to ensure that consideration of climate change is mainstreamed into private sector financing, project design, and operations (UNEP 2014). Beyond capital, the private sector's technical expertise and innovation are necessary for the development of cost-competitive climate-adaptive technologies and systems and for efficient project execution (CIF, n.d., Private Sector).

For these reasons, engaging the private sector and leveraging private sector climate finance have been key aims of the CIF since they were set up. Unlocking the potential of private sector climate finance requires overcoming a range of barriers and risks—political, regulatory, financing, market, construction, and technological. The CIF have faced a variety of challenges in financing private sector projects and programs, and, since their establishment in 2008, their approach has evolved to include dedicated private sector initiatives specifically designed to narrow the financing gaps.

The Asian Development Bank (ADB), as one of the partner multilateral development banks (MDBs) through which CIF resources are channeled, has been a key player in operationalizing the funds. Under its CIF program, ADB has used the experience and expertise of its Private Sector Operations Department (PSOD) to gain access to CIF private sector funds and build a substantial portfolio of private sector transactions.

The process of building a private sector portfolio has not been without its challenges, and it offers many lessons to be learned. Those lessons are explored in this publication (and summarized in Table 1), which is focused on private sector transactions carried out by ADB's PSOD with CIF resources.¹ This publication shows how CIF funding has induced greater private sector investment in climate-relevant sectors by using innovative financial instruments to address risks.

This publication is meant to contribute to the key CIF objective of testing and learning from the deployment of climate finance at scale. By reflecting on its experience to date, ADB hopes not only to further develop its own climate finance capacity, but also to share its insights with other stakeholders in the ongoing development of the international climate finance architecture. The development and sharing of knowledge in climate financing will also help shape the future public policy and regulatory environments for climate finance. Much uncertainty still surrounds the prospects for climate finance and sharing experiences is likely to assist in the mobilization of financial and human resources needed to meet the climate challenge.

¹ This publication is based on a literature review, and a series of discussions with key ADB staff and consultants. Time constraints did not permit broader consultation with stakeholders outside ADB.

1

THE CLIMATE CHALLENGE: A THREAT TO DEVELOPMENT IN THE ASIA AND PACIFIC REGION

International private investment flows are essential for the transition to a low-carbon, climate-resilient future.... Careful and wise use of public funds in combination with private funds can generate truly transformational investments.

Patel (2011)

The Asia and Pacific region is highly vulnerable to the impact of climate change, its economic prosperity is increasingly threatened, and its development is facing new challenges. For ADB, fulfilling its vision of “an Asia and the Pacific free of poverty” and its mission to help its developing member countries (DMCs) reduce poverty and improve living conditions and quality of life (ADB 2008) will be impossible without sustained efforts to mitigate the causes of climate change and help the region adapt to its adverse impact.

There is huge diversity across the developing countries in Asia and the Pacific. The region includes the world’s largest emitter of greenhouse gases (GHGs), together with several countries with negligible emissions. Physical geography varies: there are small, low-lying island states as well as landlocked, mountainous countries. As a result, patterns of vulnerability and climate change impact and its timing differ extensively across the region.

The expected impact of climate change on Asia and the Pacific is complex. The water and agriculture sectors are among the most vulnerable. Extremes of flooding and drought will have severe impact on the water sector. Agricultural production throughout the region, particularly in South and Southeast Asia, will be adversely



affected.² The low-lying small islands and atolls of the Pacific are especially vulnerable to a rise in sea level, as are the millions residing in coastal cities and the low-lying deltas of South and Southeast Asia. Susceptibility to drought is high in the arid regions of Central and West Asia. Unpredictable changes in weather conditions, rising sea levels, and marked fluctuations in water availability are already discernible across the region. Climate change will heighten these risks as extreme weather events become more intense and frequent, rainfall patterns change, and temperatures reach greater extremes. Harmful effects on health and threats to the integrity of critical terrestrial, wetland, coastal, and marine ecosystems and their services are expected (ADB 2014a, 2010b).

More than two-thirds of the world's poor live in ADB's DMCs. Sixty percent of the region's population depends on employment in climate-sensitive sectors—agriculture, fishery, and forestry—as opportunities for alternative sources of income are limited. Areas of high poverty often coincide with areas of high climatic vulnerability. This means that the impact of climate change on the poor can be disproportionately large. Low income and inadequate access to infrastructure, services, and education make these people much less able to protect themselves (ADB 2014b).

At the same time, robust economic growth over the past 20 years, particularly in the larger economies, has led to a significant growth in GHG emissions in the region. The DMCs' share of global GHG emissions rose from less than 20% in 1991 to 35% in 2008, and to more than 40% in 2011 (ADB 2014b). Per capita emissions have also risen, from about 3.0 metric tons in 2008 to almost 3.6 metric tons in 2011.³ Rapid urbanization, industrialization, and economic development amplify these stresses. If trends continue, GHG emissions in Asia and the Pacific will soon be comparable to those in Europe and North America (ADB 2014b, 2010b).

To avoid the dangerous effects of climate change, Asia and the Pacific must adopt a development path that prioritizes both economic growth and climate compatibility. Otherwise, the region's continued economic development will be threatened.

ADB has therefore made environmentally sustainable growth one of the five strategic agenda items in its strategic framework, Strategy 2020. ADB seeks to support systematic, long-term, and transformational change toward green growth in the region, with climate change identified as one of the 10 priorities in the midterm review.

For over 2 decades, ADB has been assisting its DMCs in addressing climate change by strengthening knowledge and capacity, mobilizing finance, and helping the DMCs gain access to carbon market opportunities.⁴ In September 2015, ADB announced that it would double climate change financing to \$6 billion annually by 2020—about 30% of overall ADB financing. ADB's Climate Change Program is summarized in Appendix 1.

² See Ahmed and Suphachalasai (2014).

³ However, intraregional diversity means that Asia and the Pacific is home to the largest emitter of emissions, the People's Republic of China, and the smallest emitters, the Pacific island countries.

⁴ ADB has been increasingly integrating climate change into its core operations. Its Regional and Sustainable Development Department (RSDD) is now known as the Sustainable Development and Climate Change Department (SDCC), and the RSDD Climate Change Unit is now the Climate Change and Disaster Risk Management Division under SDCC.

2

THE CLIMATE INVESTMENT FUNDS

Establishment of the Climate Investment Funds

The CIF consist of two separate funds—the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF)—designed to help developing and middle-income countries achieve climate-resilient, low-carbon development, using concessional financing and risk mitigation instruments.

Established in 2008, the CIF grew out of the need to fill a gap in the international climate finance architecture.⁵ Although discussions on an international financing mechanism under the United Nations Framework Convention on Climate Change (UNFCCC) were ongoing, there was concern about the length of time it would take to reach agreement. Key stakeholders supported the creation of an interim measure that could provide concessional resources to support climate-related investments, and critical learning experience in mobilizing climate financing at scale and most effectively.

⁵ Following initial discussions, the World Bank and other regional banks began work on the CIF in early 2008. In February 2008, Japan, the United Kingdom, and the United States formally announced their intention to create the funds. The funds were quickly established. The first design meeting was held in March 2008 and by May 2008, 40 countries had reached agreement on the design of the funds. The World Bank's Board of Directors formally approved the CIF in July 2008 (CIF 2014c).



Objectives of the Climate Investment Funds

The CIF champion country-led investments in climate projects that support the national development agendas of the participating countries, in order to deliver development benefits as climate objectives are achieved. Their design is based on three core principles:

- (i) **Delivering investment to stimulate transformational change** by using CIF concessional resources flexibly and innovatively to address barriers and reduce perceived risk, in order to leverage cofinancing at scale. Delivering investment at scale will empower developing countries to make an economy-wide transformation onto a low-carbon, climate-resilient development path.
- (ii) **Fostering partnerships through a programmatic approach** that is country led and based on national investment plans developed by stakeholders from all sectors. This approach ensures the trust, transparency, and country ownership required for lasting transformational change.
- (iii) **Learning by doing, to achieve results**, using the CIF to test and learn about the deployment of climate finance at scale, and measuring and reporting results to develop a critical knowledge base and to promote international cooperation in climate financing.

Design of the Climate Investment Funds

Each of the two component funds has its own distinct programming focus. The multiprogram design enables the CIF to reflect differences in the preferences of contributors for supporting particular climate change mitigation and adaptation measures.

The CTF is mainly intended to scale up the demonstration, deployment, and transfer of low-carbon technologies with significant potential for long-term savings in GHG emissions. It funds large-scale renewable energy, energy efficiency, and low-carbon transport investments in middle-income countries. Its focus on a select group of countries allows it to concentrate its resources and carry out larger transactions.⁶ The aim is to bring down the costs of deploying a particular technology or to alter the risks involved in its use within a country.

The SCF is a policy framework for three investment programs designed to pilot-test new approaches to a specific challenge presented by climate change.⁷ The three programs are the following:

- (i) The **Pilot Program for Climate Resilience** (PPCR), approved in November 2008, supports the efforts of developing countries to integrate climate risk and resilience into core development planning and implementation. It is now being implemented in nine pilot countries and, through two regional programs, in nine small island states.

⁶ For further details on the CTF, see http://www.climateinvestmentfunds.org/cif/Clean_Technology_Fund

⁷ For further details on the SCF, see http://www.climateinvestmentfunds.org/cif/Strategic_Climate_Fund

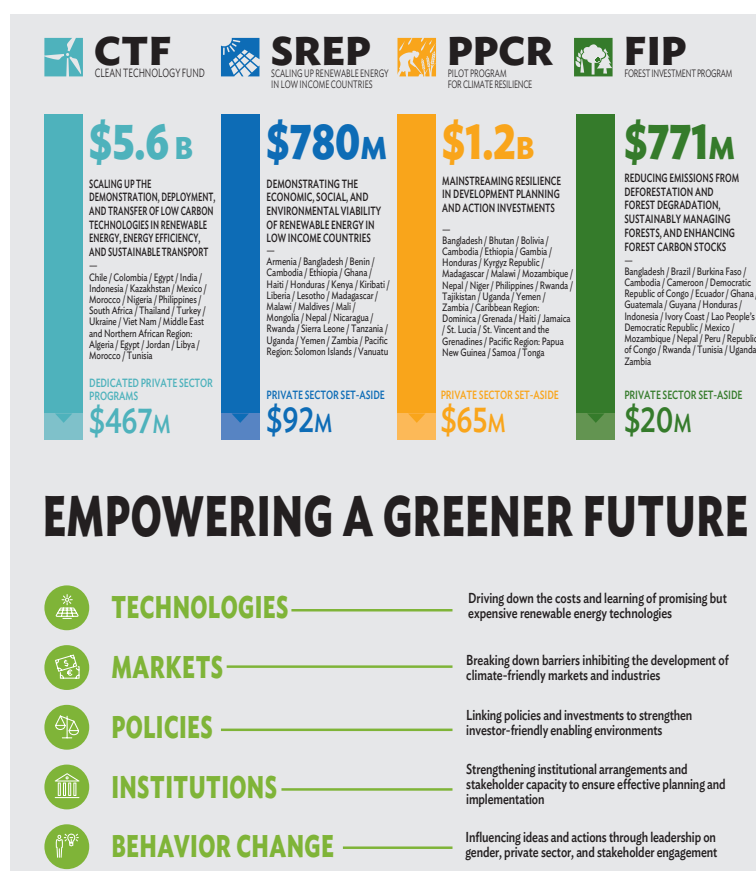
- (ii) The **Scaling Up Renewable Energy Program** (SREP), approved in May 2009, is focused on scaling up the deployment of renewable energy technologies and expanding renewable energy markets in the world's poorest countries. It is currently active in 27 countries and also has a regional program in the Pacific.
- (iii) The **Forest Investment Program** (FIP), approved in May 2009, supports developing countries' efforts to reduce emissions from deforestation and degradation. The FIP is active in eight pilot countries.

Partnerships are a strong theme of the CIF. The funds work with national governments, other development partners including the United Nations (UN) and UN development agencies, civil society organizations, indigenous groups, and the private sector.

The CIF have a broad-based and inclusive governance structure. The CTF and SCF trust funds are each governed by a trust fund committee, and the SCF has also designated a subcommittee for each of its three programs. Contributor and recipient countries are equally represented in each trust fund committee and subcommittee. The CIF administrative unit (housed at the World Bank), its MDB committee, and its trustee (the International Bank for Reconstruction and Development) support the work of both trust funds (CIF 2015a).

CIF activities cover 63 countries across Africa, Asia and the Pacific, and Latin America and the Caribbean. Current CIF pledges amount to \$8.1 billion from 14 contributor countries; \$5.3 billion is in the CTF and \$2.8 billion is distributed among the three programs of the SCF (Figure 1). Fifty-four percent of the total resources (\$4.4 billion) have been approved

Figure 1: Climate Investment Fund Program Allocations



for projects.⁸ The total CIF financing are expected to leverage an additional \$57 billion in cofinancing from the MDBs, other sources such as bilateral funding, and the financial markets (CIF 2014a).

Role of the Multilateral Development Banks

CIF disbursements are made through the MDBs, taking advantage of their wide network of strategic relationships and existing institutional architecture.⁹ The intent was to speed up the mobilization of funds.

These other potential advantages were considered in the decision to channel funds through the MDBs:

- (i) MDB investments, in parallel with CIF funding for programs and projects, would increase the total funding available.
- (ii) Involving MDBs would reduce the perceived risk of a transaction and encourage other parties to participate, thereby leveraging additional financing.
- (iii) MDBs could apply their extensive technical knowledge and experience in designing and implementing projects.
- (iv) MDBs' relationships with DMC governments, existing project pipelines, and in-depth knowledge of the national circumstances within DMCs would facilitate national development planning.
- (v) MDBs could provide the necessary policy and institutional support for CIF investments through technical assistance, capacity building, and grants.

The MDB committee of the CIF was established to facilitate collaboration, coordination, and information exchange among the MDBs.

ADB and Climate Finance

Among the multilateral banks, ADB is a key player in climate finance for the Asia and Pacific region, raising and managing climate finance and distributing the funds to its DMCs. ADB is actively involved in climate finance readiness activities in its DMCs, and in negotiating the future architecture of international climate finance arrangements.

Resources channeled from externally managed climate funds are vital sources of cofinancing for ADB's climate change program and significant means of access to climate financing for the DMCs. In addition to CIF financing, ADB has used the resources of the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF), both managed by the Global Environment Facility (GEF) (ADB 2014a). ADB is also authorized as an implementing agency to use the resources of the Adaptation Fund under the Kyoto Protocol but has not yet done so. ADB is likewise an accredited entity of the Green Climate Fund (GCF) and won

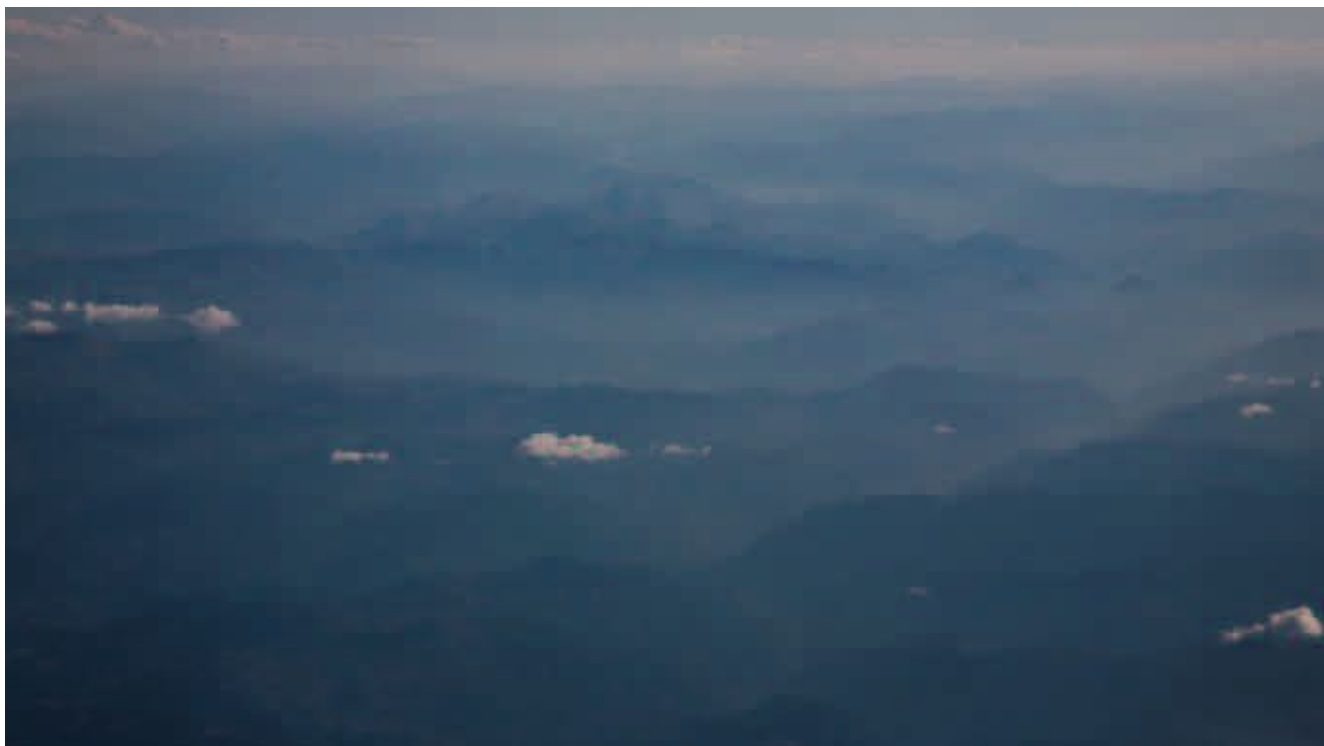
⁸ As of 31 December 2014.

⁹ The African Development Bank, ADB, the European Bank for Reconstruction and Development, the Inter-American Development Bank, and the World Bank Group.

approval in November 2015 for a public sector climate change adaptation grant for Fiji as part of the first-ever round of GCF projects.

To date, CIF is the largest source of cofinancing for ADB's climate change program with a total allocation for Asia and the Pacific at \$3.3 billion. ADB administers \$1.59 billion or about 48% of this allocated amount (see Appendix 2). The amount to which ADB has access through the CIFs show a contrast over the amount of cofinancing through the GEF: Board approved projects in support of ADB's strategic priority of Environment and Climate Change is at at \$754.6 million for the CIFs and only \$197.1 million for GEF. (ADB 2014c).

The experience with the CIF, as well as with the GEF and the SCCF, will continue to be invaluable to ADB in gaining access to resources from new climate change sources, including the GCF.



3

THE PRIVATE SECTOR AND CLIMATE FINANCE

The Importance of Private Climate Finance

Achieving transformational change to address the challenges of climate change requires economy-wide reform and a significant shift to investment in low-carbon, climate-resilient infrastructure. The scale of climate financing that is necessary is large, although estimates vary considerably. The starting point for the UNFCCC negotiations was \$100 billion per year mobilized by developed countries for the benefit of developing countries by 2020, as agreed on in Copenhagen in 2009. However, most sources estimate a much larger need. According to the International Energy Agency (IEA), the global energy sector alone will need an additional \$1.1 trillion in investments each year, on average, from 2011 to 2050 to meet the target of keeping the average rise in global temperatures below 2°C (Nelson et al. 2014). The World Economic Forum foresees a need to invest around \$5.7 trillion yearly in green infrastructure by 2020. This will mean moving the \$5 trillion in business-as-usual investments worldwide into green investments, and mobilizing \$700 billion more for clean energy infrastructure, low-carbon transport, energy efficiency, and forestry (WEF 2013).

For the required move to low-carbon infrastructure in the electricity sector, the New Climate Economy Report estimates a net financial benefit of up to \$1.8 trillion over the period 2015–2035 (NCE 2014). Whether the investments are for energy or urban development or for land use, the public sector would struggle to deal with the problem of climate change meaningfully without private sector participation at scale, both in financing and implementation.

The private sector owns significant assets in climate-sensitive sectors, such as water, agriculture, energy, and transport, and controls many factors that influence the mitigation or adaptation potential of an investment, or



even a sector. But beyond its capital resources, the private sector is valued for its technical capability and capacity to innovate. It can develop technologies and systems more quickly and efficiently than the public sector. Using this expertise is critical to meeting the climate challenge.

Barriers to Private Sector Investment

A number of barriers must be addressed to induce private sector investment in climate projects. The extent to which such barriers exist differs between countries, with their widely varying degrees of investment openness, within countries (for example, between their urban and rural areas), and between industry sectors. Developing countries will typically present higher risks for private sector investors. The barriers to private sector investment (see box) fall into several broad categories (Brown and Jacobs 2011; UNEP 2014; WEF 2013).

Box 1: Barriers to Private Sector Investment

- **Political barriers.** Sovereign risks and a weak enabling environment include political, economic, financial, or regulatory instability, particularly insecurity of property rights; uncertainty of contract enforcement through the courts; the high costs of unfamiliarity with the legal rights of foreign investors; restrictions on the free movement of capital; procedural uncertainties due to the underdeveloped state of institutional systems; and uncertainty about the longevity of regulatory incentives where they do exist (e.g., feed-in tariffs for renewable energy).
- **Currency barriers.** Concerns about the devaluation of local currencies and the higher hedging costs in developing countries fall under this category. Moreover, technology costs are often denominated in euros or US dollars, and revenues in local currencies, resulting in a mismatch between costs and revenues.
- **Technology barriers.** Investors face higher risks when working with new and relatively untested technologies than when using conventional technologies. For the Climate Investment Funds, technology risk is reduced by a focus on proven technologies. But there are still risks associated with applying these technologies in new contexts, such as limited local expertise, inconsistencies in supply chains for spare parts, and low availability of performance data for local environmental conditions.
- **Financing barriers.** Each of the barriers listed here adds to the risk of investing in climate projects, which in turn increases the cost of capital. In addition, private sector investors face a mismatch between the amortization of renewable energy projects with their long life spans and returns that increase slowly over time, and the desire of lenders to structure finance around investments that produce higher returns at an earlier stage of the project life cycle. This mismatch makes lending to renewable energy projects less attractive to potential financiers compared with lending to other sectors with a more attractive risk profile and amortization cycle.
- **Barriers to implementation.** These pertain to concerns about the capacity and experience of the local project developer to implement the project, and the difficulty of operating in an unfamiliar environment.

Each of these barriers contributes to an increase in the level of the perceived or real risk of investing in climate projects. Investor risk must be balanced with an appropriate return on investment to achieve a suitable “risk-adjusted return.” If the risks are perceived to be high, the return must be commensurately high. To attract greater private sector participation in climate finance, the CIF can take on a portion of these risks by participating in transactions with concessional financial instruments and supporting the implementation of projects through grants and technical assistance.

Another barrier to private sector participation in climate projects is the decline in international carbon markets, notably the Clean Development Mechanism (CDM) under the Kyoto Protocol. The CDM was highly successful in catalyzing private sector project development in developing countries—over 7,400 projects in 93 developing countries, with emission reductions of over 1.4 billion tons of CO₂ equivalent (tCO₂e) in less than a decade (Haïtes 2014). However, with international climate negotiations making slow progress, there was continuing uncertainty over countries’ emission reduction commitments under the second commitment period of the Kyoto Protocol. Coupled with long-term oversupply of carbon offsets in the EU Emissions Trading Scheme (the largest source of demand for certified emission reductions, or CERs) the market became hugely oversupplied in 2012 and the market price of CERs fell to less than \$1. The sudden loss of a potential revenue stream and questions about the certainty of the international climate change framework reduced the confidence of many private sector investors.

The Challenge for the Climate Investment Funds

One of the key challenges for the CIF is how best to use their funds in tandem with policy and institutional support to reduce risks and address barriers to private sector investment.

The CIF can meet the challenge by

- (i) increasing access to finance;
- (ii) making financing more affordable, with concessional terms and conditions for climate projects;
- (iii) sharing financing risk in developing countries for climate-related projects; and
- (iv) strengthening the enabling policy and institutional environment for climate projects.

The CIF are aiming for transformational change, choosing countries and sectors where they concentrate their attention on the basis of the potential for scale-up in the particular area of focus of the component funds.

The CIF at first sought to leverage private sector capital through country investment plans (CIPs). Despite some success, the CIF faced challenges: concerns among some governments that directing CIF resources to the private sector would reduce the resources available for public sector projects; lack of capacity to identify private sector projects in the preparation of CIPs; the long time lag between the identification of projects in CIPs and the granting of

approval; limited flexibility in the approval process to respond quickly to changing market conditions; the limited funds available to support capacity-building activities; the country-based structure, limiting the ability to pursue regional initiatives; and difficulty in matching the degree of concessionality and risk exposure required to encourage the private sector to the risk appetite of the contributors (CIF 2014c).

The CIF approach has evolved since 2008 to respond to these challenges. In addition to the \$1.7 billion allocated to private sector projects specified in the CIPs, \$508.5 million has so far been allocated to the CTF Dedicated Private Sector Programs (DPSP) and \$200 million to the SCF's private sector set-asides.

The CTF DPSPs were established in 2013 to achieve scale and speed by identifying opportunities for quick and large-scale private sector financing opportunities within CTF countries. Programmatic interventions are developed collaboratively by MDBs, independent of the country funding envelopes (CIF, n.d.). The intent is not to replace the CIP model but to provide an alternative pathway through which funds could target private sector investments. DPSP proposals must comply with the overall principles and objectives of the CTF, including the results framework. Program proposals, together with a preliminary list of ready projects or subprograms are submitted to the Trust Fund Committee (TFC) for endorsement and approval. Specific projects or subprograms under the program are then developed by the MDBs and submitted for approval to the TFC (CIF 2013). As usual, MDBs must also obtain board approval after TFC approval. In the past 2 years, \$508.5 million has been allocated to 23 subprojects and programs within six thematic areas: geothermal power, minigrids, mezzanine finance, energy efficiency, solar photovoltaic systems, and early-stage renewable energy (CIF 2014a).

Private sector set-asides were also established for each of the SCF's subprograms (FIP, PPCR, and SREP) in 2012 and 2013, to spur innovation and flexible delivery. Funding is allocated via competitive bidding to private sector projects for each of the three subprograms. Projects must be implemented by private entities working with MDBs. Funding calls are made in rounds at unspecified time intervals. MDBs submit concept proposals, which are reviewed by an expert review panel and the TFC, and then endorsed or not endorsed for further development. So far, the CIF have endorsed 23 private sector concepts totaling \$200 million—50% of the private sector projects in the FIP, PPCR, and SREP pipelines.



The challenge for the Climate Investment Funds is how best to use its funds in tandem with policy and institutional support to reduce risks and address barriers to private sector investment, in order to incentivize the private sector to invest in climate projects.



The Climate Investment Funds (CIF) approach has evolved over 6 years of operations to respond to challenges. The CIF now employ three financing vehicles to fund private sector projects. In addition to the \$1.7 billion allocated to private sector projects specified in the national investment plans, \$508.5 million has been allocated to the Climate Technology Fund Dedicated Private Sector Programs and \$200 million through the Private Sector Set-Asides of the Strategic Climate Fund.

Challenges remain for the CIF in furthering private sector investment. Key issues include the following:

- (i) Balancing the risk profile of CIF financial instruments with the risk appetite and expectations of contributors. For example, transactions involving non-senior debt or deployed on a non-*pari passu* basis may not match the risk appetite of contributors, even though these same transactions (using concessional lending to take a higher risk profile) have a higher potential for transformational change than a business-as-usual approach.
- (ii) Allowing the expansion of country eligibility requirements to match private sector opportunities while still achieving maximum climate impact.
- (iii) Scaling up technical support to facilitate improvements in the enabling environment for private investors (CIF 2014c).
- (iv) Balancing the sharing of lessons learned from the CIF with the private sector's need to protect commercially sensitive information.

The CIF continue to test new ideas to respond to these challenges. For example, local currency lending was approved under the CTF in 2014, after 3 years of negotiation (ICF International 2014). The CIF are also developing a risk management system to better inform decision making (CIF 2014a, 2014c).

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ADB'S CLIMATE INVESTMENT FUNDS' PRIVATE SECTOR PORTFOLIO

The CIF is currently the largest source of cofinancing for ADB's climate change program and of concessional climate finance for the Asia and Pacific region. ADB, which has been instrumental in implementing the CIF in the region is involved in 21 investment plans in 18 countries with a regional plan for the Pacific. Of the ADB-administered funds, \$1.1 billion has been approved for 46 projects or programs—17 under the CTF, 18 under the PPCR, 9 under the SREP, and 2 under the FIP (Appendix 2).

ADB has built a strong private sector portfolio under its CIF program. Of the \$1.59 billion in ADB-administered CIF resources, \$364 million (23%) is allocated to seven private sector projects or programs that have been approved or endorsed for development. Six of these are under the CTF; one is under the PPCR (Table 1).

ADB has developed these transactions by blending CIF concessional resources with ADB's own resources to leverage funds from commercial sources and catalyze climate projects.

ADB's main focus is on supporting private sector development by financing transactions that generate returns while delivering on its mission to promote environmentally sustainable and economically inclusive growth. ADB requires each private sector transaction, whether large or small, to address a key development challenge that constrains sustainable growth (ADB 2013a). The close alignment between the CIF's and ADB's objectives provides a solid foundation for structuring transactions involving CIF financing and ADB financing in parallel. ADB's extensive experience in structuring transactions, specific country knowledge, and its network of strategic relationships throughout the region are critical to identifying opportunities for private sector CIF transactions.

Table 1: ADB's Private Sector Portfolio under the Climate Investment Funds

Fund	Project/Program	Location	CIF Status	Funding Total (\$ million)	No. of Expected Projects
CTF	Private Sector Geothermal Energy Program	Indonesia	Approved	150.0	3
CTF	Thailand Private Sector Renewable Energy Program	Thailand	Approved	100.0	5
CTF	Renewable Energy Mini-Grids and Distributed Power Generation Program, Phase 1	Regional	Approved	34.3	7
CTF	Renewable Energy Mini-Grids and Distributed Power Generation Program, Phase 2	Regional	Endorsed	5.0	2
CTF	Utility Scale Renewable Energy: Geothermal	Indonesia, Philippines	Endorsed	30.0	1
CTF	Mezzanine Finance for Climate Change	Regional	Endorsed	35.0	4
PPCR	Rainwater Harvesting and Drip Irrigation for High-Value Crop Production Project	Cambodia	Endorsed	5.0	1

CIF = Climate Investment Fund, CTF = Clean Technology Fund, PPCR = Pilot Program for Climate Resilience.



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The projects and programs in ADB's CIF private sector portfolio are presented in detail below. Appendix 2 gives an overview of ADB's CIF portfolio.

Private Sector Geothermal Energy Program (Indonesia)

Indonesia's potential geothermal resources are among the largest in the world. However, of the estimated project potential of 3,200 megawatts (MW), only about 4% has been developed. Recognizing the economic and environmental imperative of sustainable growth, the Government of Indonesia has announced a target of 25% renewable energy generation by 2025. The country aims to achieve this target by adding around 18,000 MW of new renewable capacity. Geothermal power generation is a vital part of the plan for reaching this target and among the best options for diversifying the country's primary energy mix while minimizing growth in GHG emissions.

Increased perception of risk by foreign investors since the 1997–1998 financial crisis has stunted project development in the geothermal sector since that time. Large-scale and sustained commercial investment is required to accelerate development, increase market penetration, and enable the growth of the geothermal sector. Responding to this need, ADB developed the innovative Private Sector Geothermal Energy Program under the CTF to catalyze the demonstration, replication, and scale-up of the geothermal sector by financing a pipeline of private sector geothermal projects.

With CTF TCF approval in October 2013, \$150 million in CTF funds will support up to three projects that are expected to increase the country's geothermal capacity by 750 MW. These projects are also likely to reduce yearly GHG emissions by about 4.4 million tCO₂e while creating 4,000 jobs and benefiting more than 1 million households.

The allocated CTF funds for two of the projects have been fully disbursed (see the following sections/paragraphs), and the third project is undergoing detailed due diligence. Program funding is expected to be fully allocated by the end of 2016.

Sarulla Geothermal Power Project

The Sarulla project was designed to develop the steam resources in the Sarulla concession area and construct, operate, and maintain three geothermal power generation units with a total capacity of 320.8 MW. As the first private sector greenfield geothermal power project to successfully reach financial close in Indonesia in over 10 years, the project is seen to establish a new blueprint for the next generation of geothermal power projects in the country.

The limited precedents in the sector and capital market constraints called for an innovative financing structure to help reduce the risks of a first-mover private sector investment. High up-front capital requirements combined with the need to mitigate resource risk restricted the amount of debt financing that the project's cash flows could sustain. CTF funding was critical to overcoming this barrier and catalyzing the transaction. It bridged the gap between the commercial lenders and equity investors, augmented the project's debt capacity, and provided flexibility in the timing of funding and payment under those facilities, while ensuring that loans under the facilities share in the project security package on a pari passu basis (Project Finance International 2014). Total project funding of \$1,668.40 million was secured (Table 2).

Table 2: Financing for Indonesia's Sarulla Geothermal Power Project (\$ million)

Source	Financing
CTF loan	80.0
ADB	250.0
Japan Bank for International Cooperation	553.6
Canadian Climate Fund for the Private Sector in Asia (administered by ADB)	20.0
Private sector loan (commercial banks)	784.8
Total	1,688.4

ADB = Asian Development Bank, CTF = Clean Technology Fund.



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Rantau Dedap Geothermal Power Project

The 240 MW Rantau Dedap Geothermal Power Project (Phase 1) is in South Sumatra. Phase 1 constitutes the geothermal resource exploration and drilling phase. Steam-field development and power plant construction will be considered in later phases.

CTF financing was approved for phase 1, which will in turn facilitate the full development of the project (phase 2) through traditional project financing with ADB. The CTF financing provides for a portion of the up-front risk of exploration and drilling, and will thus have a key role in catalyzing the project. It will also be instrumental in developing the next generation of greenfield geothermal projects in Indonesia by pilot-testing an innovative, early-stage financing product. Geothermal developers in Indonesia are challenged to justify their investments when faced with full exposure to the high up-front costs of a drilling program and the inequitable risk-reward framework in the geothermal sector. By filling the financing gap and galvanizing activity upstream, the CTF financing will help demonstrate the viability of geothermal resources in Indonesia and increase the likelihood of attracting commercial investment in the expansion of the geothermal sector.

Private Sector Renewable Energy Program (Thailand)

As stated in its National Strategy on Climate Change, the Government of Thailand is committed to addressing climate change and to reducing GHG emissions through clean energy. The country's CTF investment plan builds on this core approach and identifies renewable energy as a key strategic area where CTF resources can be applied through direct private sector initiatives and other undertakings.

In this context, ADB's CIF team has worked closely with PSOD to develop the Private Sector Renewable Energy Program, a pipeline of renewable energy projects being developed by the private sector. The program is aimed at demonstrating, replicating, and expanding utility-scale renewable energy projects in Thailand. Specifically, the program will help clean energy projects move toward implementation through CTF cofinancing with ADB. The focus will be on the further development of the solar, wind, and waste-to-energy subsectors. CTF funds are to be structured as loans or guarantees alongside ADB assistance, with projects also funded by at least one commercial bank to build local capacity (Table 3).

Approved by the CTF TFC in May 2012, the program with its \$100 million in CTF funding has supported five projects (Table 3). These projects are expected to reduce GHG emissions by 1.073 million tCO₂e annually.

Table 3: Financing for Thailand's Private Sector Renewable Energy Program (\$ million)

Source	Provincial Solar Power	Theppana Wind Power	Central Thailand Solar	Subyai Wind Power	North Eastern Thailand Wind Power
CTF loan	12.6	4.00	35.0	30.0	18.9
ADB	25.2	4.54	52.0	53.0	157.5
Private	25.2	4.54	72.0	129.0	453.6
Total	63.0	13.08	159.0	212.0	630.0

ADB = Asian Development Bank, CTF = Clean Technology Fund.

Provincial Solar Power Project

This 50 MW solar power project using multi-crystalline photovoltaic technology was developed and implemented by Bangchak Petroleum over two phases of 25 MW each in Chaiyaphum and Ayutthaya provinces. The project is poised to become a replicable model for national and regional independent power producers. It will also help the country establish a critical mass of completed solar projects to reduce perceived risk and lower the cost of capital, and in turn enable future projects to achieve sustainability with domestic regulatory support. The reduction of financial and market risks can increase private sector participation and the number of solar end users. ADB provided grant resources to assist in development and financing, enhancing the project's overall financial profile. The CTF funding was structured to achieve minimum concessionality, with the obligor benefiting from the capital injection, a longer tenor, and lower interest rates and fees. This arrangement has made the sector more appealing to commercial investors and contributed to accelerating and expanding private investment in clean energy infrastructure in Thailand.



The Government of Thailand's commitment to addressing climate change, articulated through its National Strategy on Climate Change, identifies greenhouse gas reduction through clean energy as a core approach. The country's Clean Technology Fund (CTF) national investment plan builds on this approach and identifies renewable energy as a key strategic area where CTF resources can be applied through direct private sector and other initiatives.

Theppana Wind Power Project

As of January 2012 (when this project was prepared), Thailand had only 7.28 MW of wind power installed and operating. This 7.5 MW wind power project was developed as part of the long-term strategy of the Electricity Generating Public Company (EGCO) to strengthen its independent power generation business in Thailand. The intent was to diversify Thailand's energy mix, contributing to achieving the 25% renewable energy target and to accelerating



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and expanding private clean energy investments in the country. Successful project implementation and viable returns are expected to be particularly attractive to private investors in wind energy.

Central Thailand Solar Project

This 57 MW solar power project marks EGCO's entry into solar power and was developed as part of the company's independent power generation strategy. Like the Provincial Solar Power Project, this project demonstrates the viability and sustainability of a large-scale private sector solar project and contributes to building a track record in solar power projects that should attract other private investors by reducing the perceived risk.

The use of public funds to finance solutions that lessen resource and other financial and market risks across projects is a first not only for ADB but also for the region. These projects are making an impact by developing a model that is replicable both in Thailand and in neighboring countries. They are also providing a total of 500 jobs during construction and could lead to at least 150 permanent jobs subsequently. In addition, up to 112,000 tCO₂e in GHG emission savings yearly are foreseen.

Subyai Wind Power

This 81 MW power plant project, comprising 32 wind turbines, is the subject of a power purchase agreement (PPA) with the Electricity Generating Authority of Thailand (EGAT) under the Small Power Producers program. The PPA is automatically renewable every 5 years and, in addition to the wholesale tariff, includes an incentive adder of B3.5 per kilowatt-hour for 10 years from the start of commercial operation. The project will

be constructed under a fixed-price, date-certain, turnkey engineering–procurement–construction arrangement on a joint and several basis.

The scheduled commercial operation date under the PPA is December 2016. The project is expected to produce at least 120,000 megawatt-hours of wind power delivered to the off taker per year. GHG emissions will be reduced by at least 65,000 tCO₂e yearly. During construction, the project will employ up to 250 people.

Northeastern Thailand Project

The project involves the construction and operation of wind power facilities on three sites with a total installed power generation capacity of 260 MW; the construction of a substation of EGAT, the state-owned power utility; and the laying of three 155-kilovolt transmission lines 180 kilometers in total length to connect the wind power facilities to the substation. About 140 million tons of GHG emissions are expected to be avoided each year as a result.

This project, the fifth under Thailand's CTF Private Sector Renewable Energy Program, will be constructed and operated under PPA arrangements similar to those for the Subyai Wind Farm Project. The project sponsor, Energy Absolute, is the largest renewable energy company in Thailand. Its aim is to expand its energy investments in renewable energy generation and become one of the leading alternative energy companies in Southeast Asia. This objective fits in with the Thai government's commitment to renewable energy development to improve the country's energy security, save foreign exchange by reducing energy imports, and protect the economy from volatile energy prices in the global markets.

Renewable Energy Mini-Grids and Distributed Power Generation Program (Regional)

An estimated 1.3 billion people worldwide have no access to electricity. About 620 million of them live in developing countries in Asia (IEA 2014). Access to electricity is unquestionably linked to the ability to achieve development goals, leading to better lighting, education, communication, health care, and security. Reliable supply of electricity also brings longer-term opportunities to establish small and medium-sized businesses, improve income generation, and help communities break the cycle of poverty.

The Renewable Energy Mini-Grids and Distributed Power Generation Program is designed to provide financing to private sector companies and impact funds through a combination of senior debt, subordinated debt, guarantees, and equity investments. The program seeks to spur growth in electricity access mainly by addressing financial barriers to private sector-led distributed power generation and "mini grid" development from renewable energy.

The program pursues transformational change in the way modern energy is provided to underserved populations. It seeks to overcome limitations in the ability to expand centralized grids to rural populations and thereby increase the levels of offgrid electrification and use of clean energy and energy-efficient technologies. The program is not only about increasing access to electricity, but also about leapfrogging fossil fuel-dominated centralized electricity grids with clean energy technologies.

This regional program was developed under phase 1 of the CTF's DPSP, and received approval from the CTF TFC in May 2014.



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Phase 1: Program Deployment

Phase 1 is targeted at the deployment of the program in the CTF pilot countries of India, Indonesia, and the Philippines. Financing of \$30 million is available to be deployed over a 3-year investment period, and will be supported by a \$3.5 million technical assistance (TA) advisory program administered in collaboration with ADB's Energy for All Partnership. Up to 10 MW of installed minigrid capacity is expected, together with 29.2 gigawatt-hours per year of output and 31,000 tCO₂e in annual emission reduction. From 50,000 to 100,000 households are likely to benefit from the program, which is expected to create about 300 direct and 600 indirect jobs.

Phase 2: Utility-Scale Renewable Energy with a Focus on Geothermal

Under phase 2 of the CTF's DPSP, the CTF TFC has approved in principle the expansion of the existing Utility-Scale Renewable Energy Program (developed under DPSP phase one) to all CTF countries, as well as to some non-CTF CIF countries in Africa. ADB has received endorsement for \$30 million to fund the development of proposals for Indonesia and the Philippines.

The program is focused on mitigating drilling risk in geothermal project development to drive down the levelized cost of geothermal energy below that of alternative fossil-fuel baseload technologies. The program seeks to achieve this objective by

- reducing resource risk through the accumulation and dissemination of knowledge about successful risk mitigation strategies in drilling operations, including technical improvements;
- reducing investors' risk perception by improving drilling techniques and developing risk mitigation and risk-sharing strategies and instruments, which would lower the premiums for debt and capital;
- increasing the number of drilling rigs, drilling professionals, and contractors available by increasing the demand for their services, thus lowering costs; and
- pioneering the use of insurance-based products for geothermal projects to partially offset some of the risks faced by project developers.

Mezzanine Finance for Climate Change (Regional)

This program was endorsed for development under phase 2 of the DPSP in June 2014 for an initial amount of \$35 million, and was approved in December 2015. It seeks to provide financing for climate change projects that would otherwise not be viable with traditional senior debt and equity financing. Funds will be coinvested with ADB's flagship climate finance equity fund, Asia Climate Partners. The long-term vision of the program is to increase the depth of capital markets by introducing mezzanine financing as a new tool for climate projects. It would effectively create a third tier of financing available in the emerging markets, thereby increasing the impact of public and private finance and deepening the financial market for bridging the climate investment gap.



Rainwater Harvesting and Drip Irrigation for High-Value Crop Production Project (Cambodia)

Under the private sector set-aside of the PPCR, \$29 million in concessional funds have been set aside to finance innovative programs and projects that engage the private sector in reducing countries' exposure to climate risk and uncertainty. ADB has received endorsement to use \$5 million of these funds for the Rainwater Harvesting and Drip Irrigation for High-Value Crop Production Project in Cambodia.

This project will introduce drip irrigation and improved rainwater harvesting technologies to local farming communities through a 720-hectare demonstration farm in Battambang Province. The demonstration farm will operate as a training center, where about 4,000 local farmers will learn about new agricultural practices and technologies for growing high-value crops (such as organic spices) using rainwater harvesting and drip irrigation technology. The farmers are then expected to apply these techniques on their own farms. The farms in the region are typically rain-fed 7–8 months a year and need irrigation during the 4- to 5-month dry season. Drip irrigation fed from harvested rainwater will enable the farmers to irrigate their farms throughout the year without having to extract water from irrigation canals, lakes, rivers, or groundwater reserves. The developer of the demonstration farm will also act as crop offtaker, and plans to process and then export the products to international markets, primarily in the People's Republic of China, Japan, and the United States.

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5

LESSONS LEARNED

The lessons learned pertain mainly to the deployment of climate finance under the CIF framework and in building a private sector portfolio. ADB's CIF private sector investments are still at an early stage of project implementation and the success with which climate or development objectives are being achieved is therefore difficult to evaluate.

The lessons learned listed out in the following section, were evaluated for each stage of portfolio building: identifying opportunities, building a project pipeline, processing transactions, and obtaining donor approval. Project monitoring and evaluation is included, but this focuses on the design of monitoring frameworks, since few projects are at the stage where output is being monitored. Within each stage, the lessons were divided into those that were related to the design and implementation of the CIF, or to external factors—in the process highlighting successes and the remaining barriers. The key lessons are summarized in Table 1.¹⁰

The portfolio-building process begins with identifying opportunities before building a pipeline and processing transactions; obtaining donor approval is also a major step, with monitoring and evaluation crucial to completing the process. Lessons are identified under these headings, and further categorized under CIF design and implementation and lessons learned from external factors.

¹⁰ In the table, the private sector portfolio is referred to as “the portfolio.”



Lessons Learned—Identifying Opportunities

Design and Implementation of the Climate Investment Funds

- The collegial nature of the CIF has been one of their accomplishments. Both formal (via the MDB Committee) and informal communication among the MDBs has led to the identification of project opportunities, and MDBs have successfully avoided competition for funds by working together.

External Factors

- With many climate financing initiatives operating or under development, there can be confusion regarding the opportunities available and the means of access to those opportunities. Requirements for gaining access to financing initiatives also change frequently. ADB should use existing networks to disseminate information and communicate opportunities to DMCs.
- If one party executes a CIF transaction with ADB, it is likely that others will expect to be offered the same terms. Expectations must be carefully managed. The message that the terms of each transaction are tailored to specific project needs (“minimum concessionality”) must be conveyed.
- Unmet expectations regarding carbon markets diminished confidence in climate financing opportunities. Some project developers became wary of climate financing offers after earlier projects that relied on carbon financing did not materialize. These expectations need to be managed.

Building a Pipeline

Internal ADB Process

- Proactive in seeking project opportunities, the CIF team in practice relies on opportunities in the PSOD pipeline that fit CIF criteria while PSOD tries to use CIF funding to extend its pipeline and explore opportunities outside its core activities.
- The focus areas of PSOD heavily influence opportunities; the CIF can be instrumental in helping projects reach financial close. However, PSOD financing is typically limited to projects in its core areas of expertise and does not cover all the CIF sectors (for example, forestry).
- The ADB–CIF portfolio has a heavy concentration of renewable energy projects, reflecting PSOD’s focus on clean energy. Clean energy projects are easier to pursue as they generally have reliable streams of revenue, strong private sector involvement, and clear mitigation impact.
- There are few Forest Investment Program (FIP) projects in the CIF portfolio and none in ADB’s private sector. Forestry projects carry a unique set of risks—such as insecure land tenure, impermanence, and uncertain resources—that greatly reduce incentives for private sector investment. The environmental challenges are also significant and not all industry actors will meet ADB’s environmental and social safeguard standards. The total funding amounts under the FIP are not large enough

to encourage ADB to overcome these risks and engage in a sector that is not part of its core business.

- Agriculture has become a key focus area for PSOD and the department has established a dedicated agriculture unit to pursue opportunities in this area. The potential for CIF funding for the Rainwater Harvesting and Drip Irrigation for High-Value Crop Production Project and the Integrated Climate-Resilient Rice Value Chain Community Project, both in Cambodia, was an important factor in PSOD's decision to pursue the projects in this new area.

Design of the Climate Investment Funds

- There may be benefits in having the private sector CIF team work more closely with the public sector team in designing further technical assistance projects focused on strengthening the enabling environment for private sector financing.
- Opportunities must satisfy a number of criteria to be eligible for CIF financing. They must align with the design of the CIF, including their investment terms and conditions, the financial products available, the countries of focus, and the sectors eligible under each of the programs.
- At the transaction level, opportunities depend on the financing needs of the project, including the specific risks and the financing gaps. In particular, the ability to use CIF financing to leverage other financing depends on whether the CIF product offering is able to address the identified deficiency in a specific transaction.
- There is limited communication between those involved in executing private sector transactions and the national focal points responsible for managing national implementation plans (NIPs). Private sector opportunities pursued by the CIF with PSOD are most often identified outside the NIP process.
- As a result, feedback loops that would prompt government to improve the enabling environment are not generated. Better communication between the private sector and national governments would drive the necessary changes.
- The PPCR pilot countries were selected primarily on the basis of vulnerability to climate change. Although the PPCR countries face significant risks, they are not necessarily the most suitable countries for pursuing adaptation projects, particularly for the private sector, and identifying bankable projects in these countries can be challenging.
- In the past, opportunities under the SCF private sector set-asides were limited by the fixed timing of funding calls and uncertainty regarding the timetable for the calls. This uncertainty made it difficult for the CIF team to plan and manage the project timeline and to let PSOD know when the funding was likely to be approved. In May 2015, the PPCR process was changed to allow applications to be accepted on an ongoing basis.

External Factors

- Private sector opportunities at the country level depend heavily on the enabling environment and the strength of the private sector within the country. ADB's first CIF programs to be fully developed, with projects reaching financial close, are those in Indonesia and Thailand, both of which have relatively conducive

enabling environments for renewable energy projects. Although it is not the only consideration, the strength of the enabling environment has influenced the development of ADB's portfolio.

- The CTF is designed for middle-income countries with stronger enabling environments and a better developed private sector, and therefore has a larger proportion of private sector projects than the SCF, which faces more barriers because of the countries in which it operates or its project types.
- Identifying private sector adaptation projects is particularly difficult. The output of adaptation projects—risk avoidance and improved resilience—constitutes a public good that has benefits for the private sector but that does not by itself generate a revenue stream. Consequently, attracting private sector investment in projects is difficult. Private sector involvement in adaptation projects tends to be limited to supplying technology, materials, or expertise.
- There are opportunities for the private sector to be more involved in adaptation, if the right projects can be identified and the right financing instruments can be developed. The PPCR can play an important role in initiating a change in the approach to managing adaptation. Increasing awareness of climate risk, and making it a core part of the planning approach at the national level, will start to create the enabling environment needed to attract greater private sector participation.

Lessons Learned—Processing Transactions

Design of the Climate Investment Funds

- Flexibility in the use of CIF financing, including the financial instrument and the structure and terms of each transaction, is critical. Flexibility allows ADB to design transaction specifications that will be attractive to private investors.
- Specific restrictions included in the design of the CIF, such as minimum floor price, limits placed on the amount of CIF financing that can be subordinated, and inability to lend in local currencies, have previously been cited as barriers to the uptake of CIF financing (CIF 2014c). Those interviewed for this report strongly echoed this view.
- The CIF's ability to mitigate project risks by taking a subordinated position to ADB is particularly attractive to PSOD for its potential to catalyze certain transactions.
- Where the CIF are not *pari passu* with ADB in a transaction, the transaction costs are higher. For example, separate legal due diligence and separate risk assessment are required. Fees should take these additional expenses into account.
- The programmatic approach under the CTF offers ADB the most flexibility in responding to opportunities. Having the entire program amount approved up front allows ADB to engage with prospective clients with confidence that the funds are available. ADB can then use its expertise to identify and design the individual projects within the parameters of the approval (subject to ADB Board approval).
- The programmatic approach makes for more efficient processing, as only a single funding application is required. It also avoids issues related to the misalignment of ADB and CIF timelines.

- The programmatic approach requires the CIF team to anticipate concepts and plan in advance in order to secure program approval ahead of the examination of individual transactions by the CIF.
- Unique projects may not fit into a program framework. Having single projects approved could be more appropriate if the size of the opportunity warrants it.

External Factors

- Pilot projects demonstrate the potential of a project type in a particular country context. However, a single project is insufficient to lower the risk perception around a new type of project or give sufficient comfort to investors.
- The CIF can play a critical role in driving transformational change by supporting a series of projects within a country in order to build critical mass. A critical mass of projects provides a sufficient track record to begin to entrench the technology and alter investor risk perception. It also provides vital performance data to assist in quantifying performance risk. In addition, developing a series of projects within a sector builds the capabilities of other parties involved in processing the transaction, such as lawyers and insurers. Ultimately, each of these factors helps reduce the costs of deploying a particular technology in a particular market.
- Entrenching a particular technology in a country is especially important when policy incentives that were put in place to stimulate a sector start to wind down. The CIF can play a critical role in ensuring that enough projects still proceed, to cement the industry and maintain momentum.
- Markets will react quickly to the success or failure of a particular project. The CIF need to capitalize on their successes and move quickly to identify and approve further transactions.

Lessons Learned—Obtaining Donor Approval

Design of the Climate Investment Funds

- A balance between the objectives of the private sector and those of ADB and the contributors can be difficult to achieve. The private sector is motivated by an appropriate trade-off between risk and return, whereas contributors may be more heavily influenced by potential development outcomes.
- The structure of the CIF, with two separate funds, is complex, as is the governance structure with six governing bodies (including one each for the CTF, the SCF, the PPCR, the FIP, and the SREP). Differences in design between programs are not always well understood outside the core CIF team and can create confusion. For example, the difference between rolling approvals under the CTF DPSP and fixed funding calls under the SCF set-asides can create confusion regarding the timeline for seeking CIF funding approval.
- The design of the CTF allows for the use of a range of financial instruments including equity investments. In practice, the reluctance of some contributors

to support equity transactions has been a barrier to ADB support for certain types of investments. For example, geothermal exploration projects often take an equity portfolio approach to risk management. The reluctance to use equity investments results from differing expectations of capital returns and project risk between contributors. Divergent expectations arise between contributors who commit capital funding and will typically take on more risk and contributors who lend funds and are seeking a project with a lower risk profile.

External Factors

- A practical difficulty in seeking approval for private sector transactions is the sensitivity of commercial-in-confidence information. While transparency is a key commitment of the CIF, there are limitations around commercial-in-confidence information that can be shared.

Lessons Learned—Monitoring and Evaluation

Design of the Climate Investment Funds

- Different stakeholders have very different measures of success for the CIF and a different understanding of effectiveness. The measures include funds raised, funds approved, funds dispersed, and number of projects.
- ADB and other MDBs need to be as open as possible in sharing results in order to truly start to understand what is effective.
- ADB specifies performance indicators and monitoring parameters within its design and monitoring framework. For most project types within the portfolio, there is a good correlation between ADB indicators and CIF indicators, and CIF monitoring requirements do not place an additional burden on the project.
- The success of monitoring ultimately depends on the quality of information received from the project. It can be resource intensive to chase monitoring reports, particularly after financing is fully dispersed. Consistency in the monitoring methods is also critical.
- Monitoring has so far been done predominately at the project level and there has been limited comparison of results across projects, at a portfolio level. There has also been limited comparison of performance results against estimates prepared at the time of transaction approval.

External Factors

- Operational success is more difficult to monitor for adaptation projects than for mitigation projects. Many adaptation measures are tested only in the event of a disaster. Monitoring adaptation projects also requires consideration of long time horizons and is characterized by uncertainty both in terms of future climatic conditions and the socioeconomic circumstances in which the adaptation measures will operate.

All lessons documented are based on ADB's experience as gathered in the course of internal consultations with ADB staff and consultants involved in the CIF operations. (Lessons summary in Table 4). Many of the lessons echo findings of other CIF evaluations, including two that were prepared by and for the CIF in 2014 (ICF International 2014; CIF 2014c).

Table 4: Summary of Lessons Learned

Identifying Opportunities	Building a Pipeline	Processing Transactions	Obtaining Approval	Monitoring and Evaluating Projects
<p>Comprehensive knowledge of local markets and development partners is needed to identify concessional financing opportunities.</p> <p>Opportunities must be communicated and market expectations managed.</p> <p>Market mapping helps identify concessional finance opportunities.</p>	<p>ADB's pipeline is greatly influenced by the enabling environment within the country and the sector, and the existing private sector pipeline.</p> <p>In identifying opportunities, satisfying several sets of CIF criteria can make the process more difficult than business as usual.</p> <p>The CIF play a key role in driving transformational change by supporting a series of projects within a country to build critical mass.</p>	<p>Structuring CIF funding subordinated to ADB (where there is strong justification for concessionality) lowers the risk profile for all senior lenders, allowing projects that may otherwise struggle to reach financial close to be financed.</p> <p>Under these circumstances, the additional risk taken on by the CIF fills market gaps and extends ADB's ability to finance such projects.</p> <p>Perceived restrictions in the design of the CIF can translate into barriers to the uptake of opportunities.</p> <p>The programmatic CTF approach allows more efficient fund deployment rather than project-by-project approval.</p> <p>The CIF must capitalize on their successes and move quickly.</p>	<p>Understanding contributors' expectations is key.</p> <p>Balancing the objectives of the private sector, ADB, and external funds can be difficult.</p> <p>A high level of understanding of the private sector among trust fund committee members is useful.</p> <p>The structure of the CIF and their governance can be perceived as a challenge to engage with the private sector.</p>	<p>Different stakeholders have different measures of success.</p> <p>The ability to measure results varies with project type, the quality of information received, and correlation with ADB monitoring criteria.</p> <p>Owing to the early stage of CIF projects, there has been limited comparison of results at a portfolio level, or analysis of climate and development impact.</p> <p>Sharing results is critical to understanding what is effective.</p>

ADB = Asian Development Bank, CIF = Climate Investment Funds, CTF = Clean Technology Fund.

Source: ADB.

APPENDIX 1

ADB'S CLIMATE CHANGE PROGRAM

For over 2 decades, the Asian Development Bank (ADB) has been assisting its developing member countries (DMCs) in addressing climate change by strengthening knowledge and capacity, mobilizing finance, and facilitating access to carbon market opportunities (Figure A1).¹

Knowledge and Capacity Building

ADB's climate change program was focused at first on improving DMC knowledge of the effects of climate change and the response needed to adapt to and mitigate its impact. Two landmark technical assistance (TA) projects were implemented in 1998–1999. The study on least-cost greenhouse gas (GHG) emissions in Asia and their abatement (ADB 1998), the largest ADB TA project up to that point, produced a regionwide inventory of GHG emissions and accompanying least-cost abatement strategies. The second TA study (ADB 1999), was instrumental in building DMC capacity in preparation for the implementation of the Kyoto Protocol and the Clean Development Mechanism (CDM) (ADB 2014a).

ADB has continued its ambitious program of climate change TA, often in response to developments in the international climate regime. Following the establishment of the Technology Mechanism in 2010 under the United Nations Framework Convention on Climate Change (UNFCCC), ADB approved a cluster TA (ADB 2011) to coordinate assistance in developing and deploying climate mitigation and adaptation technologies in Asia and the Pacific.

ADB's knowledge development activities complement its TA work. These activities include organizing regional events and conferences, such as the annual Asia Clean Energy Forum, which ADB has hosted since 2005, and producing knowledge products on climate change (see ADB [2009a] for one such knowledge product).

ADB also has a strong history of building adaptive capacity in its DMCs. In answer to climate change threats posed to its Pacific island DMCs, ADB implemented a regional TA to mainstream climate change adaptation into development planning in selected Pacific island DMCs (ADB 2005). ADB's pioneering work in the climate proofing of infrastructure, an approach that has since been integrated into all ADB operations, grew out of this TA. From 2011–2015, ADB provided around \$3 billion per year in climate financing for a total of \$15.5 billion over the period.

¹ ADB has been increasingly integrating climate change into its core operations. Its Regional and Sustainable Development Department (RSDD) is now known as the Sustainable Development and Climate Change Department (SDCC), and the RSDD Climate Change Unit is now the Climate Change and Disaster Risk Management Division under SDCC.

Mobilization of Financing

ADB has developed several climate change financing facilities to mobilize additional concessional funds for mitigation and adaptation. The Renewable Energy, Energy Efficiency and Climate Change (REACH) Program, established in 2002, comprises four bilateral trust funds administered by ADB.² The funds seek to assist the DMCs in overcoming barriers to implementing renewable energy and energy efficiency projects. REACH enables the DMCs to build essential capacity for clean energy and climate change, and is instrumental in strengthening ADB's internal capacity to use its lending operations to promote and develop clean energy projects (ADB 2010c). Other financing initiatives include the Clean Energy Financing Partnership Facility (CEFPF), established in 2007 with a target size of \$250 million (ADB 2010c), and the Energy Efficiency Initiative (EEI), launched in 2005.

Access to Carbon Markets

Recognizing the potential benefit to DMCs in maximizing opportunities from market-based instruments under the Kyoto Protocol, ADB launched its Carbon Market Program (CMP) in 2006 with eventual funding of \$266.8 million.³ The CMP is made up of two carbon funds—the Asia Pacific Carbon Fund (APCF), with \$151.8 million in funding, and the Future Carbon Fund (FCF), with \$115 million. The funds provide up-front financing for projects with GHG mitigation benefits under the CDM of the Kyoto Protocol. In return, the funds receive carbon credits to be dispersed to fund participants for complying with their emission reduction commitments. The CMP supports private sector emission reduction activities throughout the DMCs where it operates. Both the APCF and the FCF contract private sector projects as part of their portfolios. An additional benefit is the experience gained by the FCF in facilitating partnerships between the public and private sectors, contributing to an enhanced knowledge base in public-private partnerships.

The funds are supported by the CMP's Technical Support Facility, which works with project developers in the DMCs to identify and develop CDM projects and increase their capacity to participate in carbon markets.

ADB's Climate Change Program

In 2008, ADB reviewed its climate change program with the intent of aligning it better with the inclusive and environmentally sustainable growth agenda under Strategy 2020. This review was followed by the development of ADB's Energy Policy in 2009, expanding on the energy components of Strategy 2020 and highlighting the joint objectives of energy security, poverty reduction, and transition to a low-carbon economy. The Energy Policy set a target of \$2 billion per year in clean energy spending by 2013 (ADB 2009b).

For ADB, climate change mitigation through the promotion of clean energy has been a major focus in recent years. The 2013 Energy Policy target was reached 2 years early, through investments in renewable energy, energy efficiency, and the development of pilot

² The Canadian Cooperation Fund on Climate Change; the Danish Cooperation Fund for Renewable Energy and Energy Efficiency in Rural Areas; the Dutch Cooperation Fund for Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement; and the Finnish Technical Assistance Grant Fund.

³ Established as the Carbon Market Initiative.

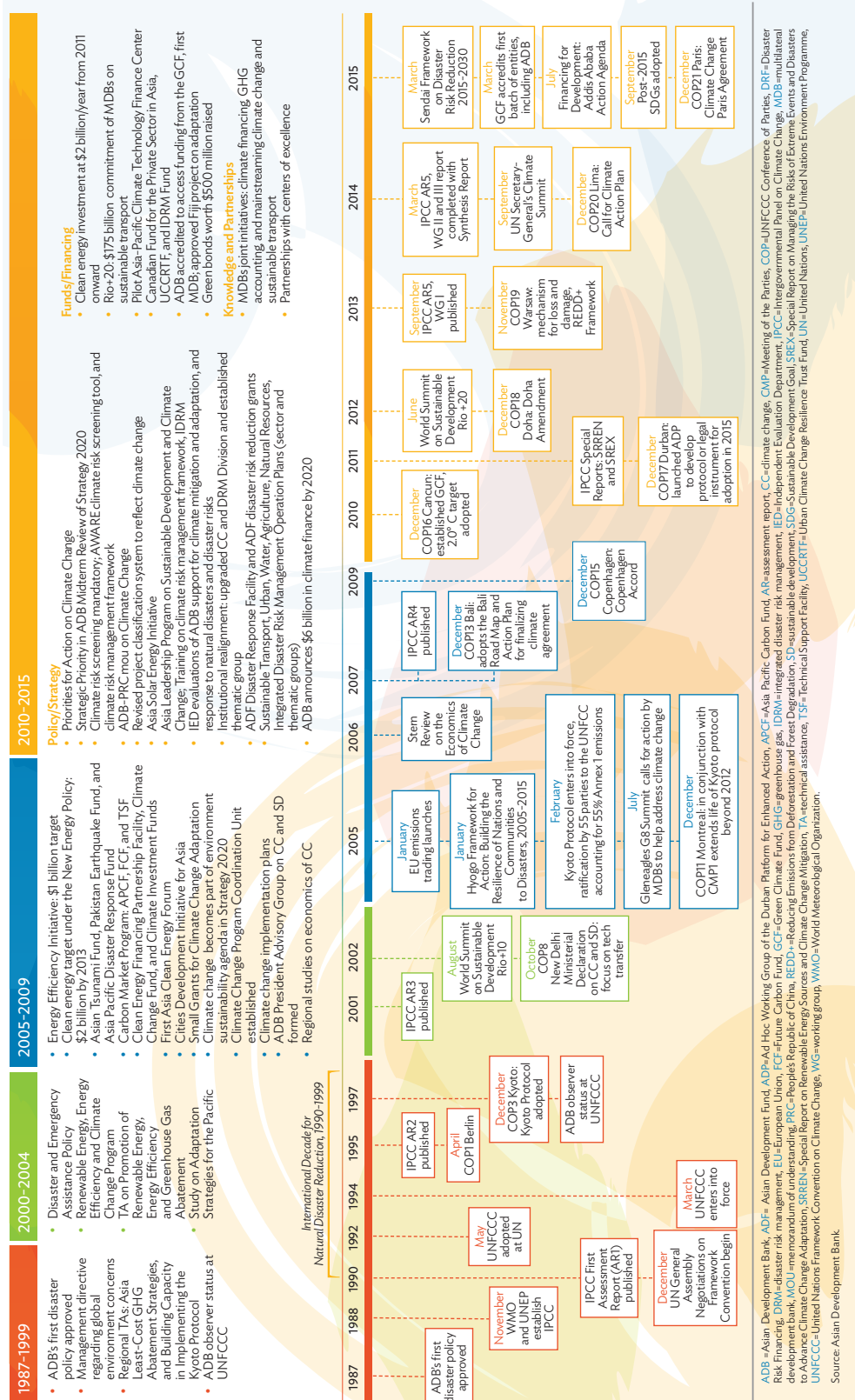
applications of innovative technologies, such as carbon capture and storage. Investments in sustainable transport, efficient urban heating, and waste-to-energy projects are also features of ADB's portfolio.

In its midterm review of Strategy 2020 (ADB 2014b), ADB reaffirmed its commitment to climate change as part of its long-term strategic framework. The report outlined seven strategic priority areas for climate change support:

- (i) Supporting clean energy investments, by continuing to invest \$2 billion yearly in clean energy, increasing the share of energy efficiency projects in ADB's clean energy investments, and continuing to support the Sustainable Energy for All Initiative.
- (ii) Increasing assistance for sustainable transport, by investing \$30 billion in transport from 2012 to 2021, to increase the share of low-carbon and environmentally sound modes of transport in ADB's transport portfolio from 2% to 30% for urban transport, and from 17% to 25% for railways. ADB will also increase its support for inland waterways and incorporate sustainable transport principles in its transport sector and country planning.
- (iii) Scaling up support for climate change adaptation, by moving climate change adaptation and resilience further into the development planning and project design and implementation mainstream. ADB will develop adaptation knowledge and establish partnerships. It will also seek additional grant financing to help the DMCs become more resilient to climate change.
- (iv) Strengthening integrated disaster risk management, through stand-alone projects, disaster risk financing instruments, and comprehensive national disaster risk financing strategies. ADB will act as a regional conduit for sharing skills, knowledge, and expertise in disaster risk management among the DMCs.
- (v) Promoting natural resources management, through investments that protect, maintain, and improve the productive potential and performance of land, forest, and water resources in supporting food, water, and energy security, as well as in maintaining or sequestering carbon. ADB will also invest in regional cooperation initiatives aimed at managing large transboundary ecosystems and other natural resource public goods in the region.
- (vi) Strengthening policies and capacity, by helping to strengthen policies, regulatory frameworks, and incentives in the DMCs to promote greater resource efficiency and reduce pollution. Policies targeted at reducing GHG emissions and integrating climate change considerations into development planning are included in this strategy area.
- (vii) Facilitating access to global and regional funds, by increasing its engagement with international financing mechanisms, such as the Global Environment Facility, the Green Climate Fund, new carbon market mechanisms, and innovative financing methods including payments for ecosystem services, and with bilateral sources. ADB will also assist the DMCs in developing a pipeline of climate change projects and in strengthening public financial management structures to make them more ready to receive, use, and monitor financial flows from global and regional funds.

ADB announced that it would be doubling its climate financing to \$6 billion out of its own resources prior to the Paris climate conference where 195 countries adopted the agreement for climate action. Before this, ADB reorganized the Climate Change Coordination and Disaster Management Unit into the Climate Change and Disaster Risk Management Division (SDCD) under the Sustainable Development and Climate Change Department (SDCD) and established the Climate Change and Disaster Risk Management Thematic Group.

Figure A1: Overview of ADB's Climate Change Program, 1989–2015



APPENDIX 2

ADB'S CLIMATE INVESTMENT FUND PORTFOLIO



Total CIF FUNDING for ADB DMCs

\$3.3 billion

\$1.5 billion

48%

Total CIF FUNDING administered by ADB

Note: Out of the \$1.5 billion ADB CIF Portfolio, total project funds approved to date amount to \$1.08 billion (68%)

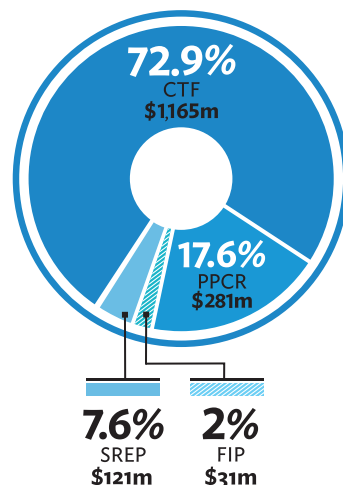
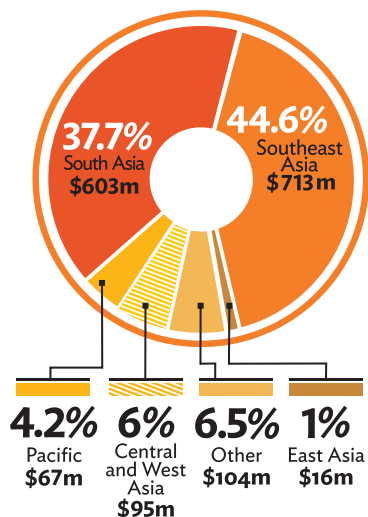
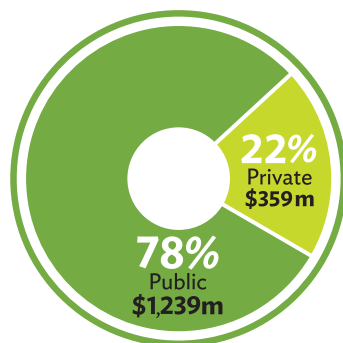


CTF CLEAN TECHNOLOGY FUND		\$1.1b for 17 projects/programs
\$ million	# OF CTF PROJECTS/PROGRAMS	
\$104	Dedicated Private Sector Programs/Projects	4
\$ 50	1 Kazakhstan	1
\$100	2 Thailand	1
\$125	3 Philippines	2
\$150	4 Indonesia	1
\$211	5 Viet Nam	4
\$425	6 India	4

PPCR PILOT PROGRAM FOR CLIMATE RESILIENCE		\$281m for 19 projects
\$ million	# OF PPCR PROJECTS	
\$ 5	Private Sector Adaptation Projects (Cambodia)	
\$ 4	1 Pacific Region	1
\$ 20	2 Tonga	1
\$ 30	3 Papua New Guinea	1
\$ 28	4 Tajikistan	2
\$ 32	5 Nepal	2
\$72	6 Bangladesh	3
\$ 91	7 Cambodia	8

FIP FOREST INVESTMENT PROGRAM		\$31m for 2 projects
\$ million	# OF FIP PROJECTS	
\$ 13	1 Lao PDR	1
\$ 18	2 Indonesia	1

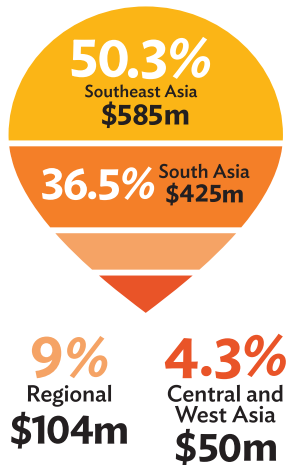
SREP SCALING UP RENEWABLE ENERGY IN LOW INCOME COUNTRIES PROGRAM		\$121m for 9 projects
\$ million	# OF SREP PROJECTS	
\$ 7	1 Vanuatu	1
\$ 7	2 Solomon Islands	1
\$ 13	3 Maldives	1
\$ 16	4 Mongolia	1
\$ 17	5 Armenia	1
\$ 30	6 Bangladesh	2
\$ 32	7 Nepal	2





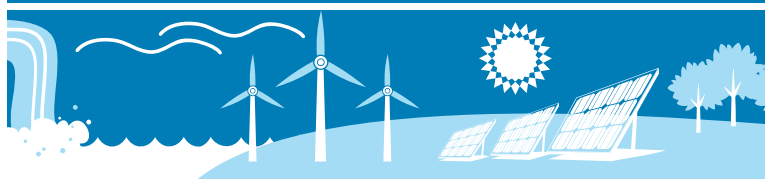
CTF CLEAN TECHNOLOGY FUND		\$1.1b for 17 projects/ programs
\$ million	# OF CTF PROJECTS/PROGRAMS	
\$104	Dedicated Private Sector Programs/Projects	4
\$ 50	1 Kazakhstan	1
\$100	2 Thailand	1
\$125	3 Philippines	2
\$150	4 Indonesia	1
\$211	5 Viet Nam	4
\$425	6 India	4

Note: Out of the \$1.1 billion CTF funds to be administered by ADB, \$775 million have been approved by the Trust Fund Committee



\$799m

Renewable Energy



69%

**AT LEAST
5,342MW**
installed capacity



with expected annual electricity output of about **12,400 GWh** from renewable energy sources

from the (i) Rajasthan Renewable Energy Transmission Investment Program, (ii) Indonesia Geothermal Program, (iii) Thailand Private Sector Renewable Energy Program, and (iv) DPSP Renewable Energy Mini-Grids and Distributed Power Generation Program



**AT LEAST
1.7m**
households with
access to clean energy



**OVER
13,500**
jobs created

expected as a result of the (i) Rajasthan Renewable Energy Transmission Investment Program, (ii) Indonesia Geothermal Program, and (iii) DPSP Renewable Energy Mini-Grids and Distributed Power Generation Program

during the construction and operation of (i) Indonesia Geothermal Program, (ii) Thailand Renewable Energy Program, and (iii) Market Transformation through Introduction of Energy Efficient Electric Vehicles Project

\$255m

Transport



22%

\$110m

Energy Efficiency



9%

\$1m

M&E

0.1%

**AT LEAST
941,000**

people to benefit from improved public transport



from the (i) Market Transformation through Introduction of Energy Efficient Electric Vehicles Project, (ii) Sustainable Urban Transport for Ho Chi Minh City MRT Line 2, and (iii) Sustainable Urban Transport for Ha Noi Metro Line 3



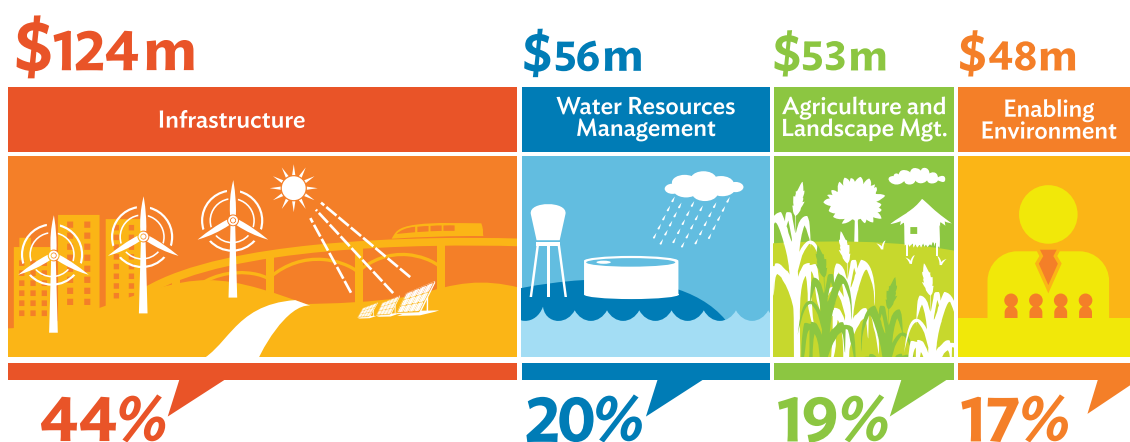
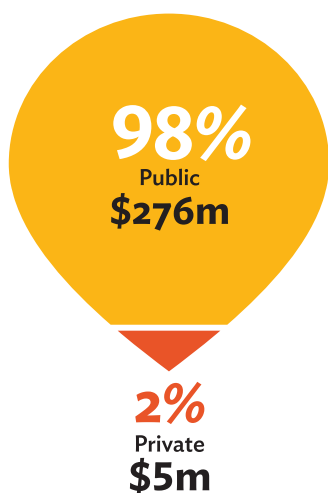
AT LEAST 203m
tCO₂e avoided

during project lifetimes of the (i) Rajasthan Renewable Energy Transmission Investment Program, (ii) Indonesia Geothermal Program, (iii) Market Transformation through Introduction of Energy Efficient Electric Vehicles Project, (iv) Thailand Renewable Energy Program, (v) Sustainable Urban Transport for Ho Chi Minh City MRT Line 2, (vi) Sustainable Urban Transport for Ha Noi Metro Line 3 Project, and (vii) DPSP Renewable Energy Mini-Grids and Distributed Power Generation Program



PPCR PILOT PROGRAM FOR CLIMATE RESILIENCE		\$281m for 19 projects	
\$ million	# OF PPCR PROJECTS		
\$ 5	Private Sector Adaptation Projects (Cambodia)		
\$ 4	1	Pacific Region	1
\$ 20	2	Tonga	1
\$ 30	3	Papua New Guinea	1
\$ 28	4	Tajikistan	2
\$ 32	5	Nepal	2
\$ 72	6	Bangladesh	3
\$ 91	7	Cambodia	8

Note: The \$281 million PPCR funds to be administered by ADB have all been approved by the Subcommittee





SREP

SCALING UP RENEWABLE
ENERGY IN LOW INCOME
COUNTRIES PROGRAM

\$121m
for 9 projects

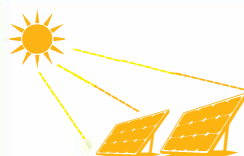
\$ million		# OF SREP PROJECTS
\$ 7	1 Vanuatu	1
\$ 7	2 Solomon Islands	1
\$ 13	3 Maldives	1
\$ 16	4 Mongolia	1
\$ 17	5 Armenia	1
\$ 30	6 Bangladesh	2
\$ 32	7 Nepal	2

Note: Out of the \$121 million SREP funds to be administered by ADB, \$32 million have been approved by the Subcommittee

AT LEAST
26 MW

installed capacity with
expected annual electricity
output of **55.6 GWh** from
renewable energy sources

from the (i) Maldives Preparing
Outer Islands for Sustainable Energy
Development Program, (ii) Nepal
South Asia Subregional Economic
Cooperation Power System Expansion
Project, and (iii) Vanuatu Energy
Access Project



AT LEAST
36,000

households with
access to clean energy

expected as a result of the
(i) Maldives Preparing Outer
Islands for Sustainable Energy
Development Program, (ii) Nepal
South Asia Subregional Economic
Cooperation Power System
Expansion Project, and (iii) Vanuatu
Energy Access Project



AT LEAST
1.4m
tCO₂e avoided

during project lifetimes of the
(i) Maldives Preparing Outer
Islands for Sustainable Energy
Development Program,
(ii) Nepal South Asia
Subregional Economic
Cooperation Power System
Expansion Project, and
(iii) Vanuatu Energy Access
Project





FIP FOREST INVESTMENT PROGRAM		\$31m for 2 projects
\$ million	# OF FIP PROJECTS	
\$ 13	1	Lao People's Democratic Republic
\$ 18	2	Indonesia

FOREST INVESTMENT PROGRAM

The FIP supports developing country efforts to reduce deforestation and forest degradation and promote sustainable forest management that leads to emissions reduction and enhancement of forest carbon stocks (REDD+). In two of the eight FIP pilot countries, Indonesia and the Lao People's Democratic Republic, ADB will administer projects under the approved investment plans.



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The Asian Development Bank and the Climate Investment Funds

Developing a Private Sector Portfolio

ADB is making strides in private sector participation within its portfolio for the Climate Investment Funds (CIF) by leveraging concessional public funds. Aside from the private sector projects within Investment Plans, ADB through the Dedicated Private Sector Programs under the Clean Technology Fund is channeling over \$100 million directly into private sector investments in geothermal energy development, renewable energy minigrids, and other projects. ADB will also be implementing an adaptation project through the Private Sector Set-Asides under the Pilot Program for Climate Resilience. This publication presents an overview of ADB's experience in building a CIF private sector portfolio, highlighting how funding has been able to encourage greater private sector investment in climate-relevant sectors by using innovative financial instruments to address risks.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to the majority of the world's poor. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.



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