



WORLD BANK GROUP
Climate Change

Accelerating and Innovating Climate Action:

A Retrospective of the World Bank's
Experience with Select Climate and
Carbon Trust Funds

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LIST OF ABBREVIATIONS

AFOLU	Agriculture, Forestry and Other Land Use
ASA	Advisory services and analytics
BioCF	BioCarbon Fund
CPF	Carbon Partnership Facility
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
Ci-Dev	Carbon Initiative for Development
CIF	Climate Investment Funds
CONAFOR	Mexico's National Forestry Commission
COP	Conference of the Parties
CPI	Climate Policy Initiative
CSP	Concentrated solar power
CTF	Clean Technology Fund
DFI	Development finance institution
ERPA	Emissions Reductions Purchase Agreement
ERU	Emission Reduction Unit
ESMAP	Energy Sector Management Assistance Program
EU-ETS	European Union Emissions Trading System
FCCP	Mexico Forests and Climate Change Project
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program
GCF	Green Climate Fund
GEF	Global Environment Facility
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse gas
HFC	Hydrofluorocarbon
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IEA	International Energy Agency
IEG	Independent Evaluation Group
IFC	International Finance Corporation

IPCC	Intergovernmental Panel on Climate Change
ISFL	Initiative for Sustainable Forest Landscapes
ITMO	Internationally Transferred Mitigation Outcome
JI	Joint Implementation
KACP	Kenya Agricultural Carbon Project
KP	Kyoto Protocol
LDCF	Least Developed Countries Fund
MDB	Multilateral development bank
MFD	Maximizing finance for development
MLF	Multilateral Fund for the Implementation of the Montreal Protocol
NDC	Nationally Determined Contribution
NCDMF	Netherlands Clean Development Mechanism Facility
NECAF	Netherlands European Carbon Facility
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
PAF	Pilot Auction Facility
PCF	Prototype Carbon Fund
PES	Payment for environmental services
PMR	Partnership for Market Readiness
RAF	Resource Allocation Framework
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SCF	Spanish Carbon Fund
SDCF	Special Climate Change Fund
SDG	Sustainable Development Goal
STAP	Scientific and Technical Advisory Panel
STAR	System for Transparent Allocation of Resources
TA	Technical assistance
TCAF	Transformative Carbon Asset Facility
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reductions

Executive Summary



This retrospective examines how the World Bank's strategic use of climate-related trust funds has enabled it to play an outsized role in catalyzing climate action worldwide for nearly 30 years. By looking back at the history of climate and carbon finance—with a focus on the pioneering role of the Global Environment Facility (GEF) and World Bank carbon funds in spurring climate change mitigation activities—this report draws lessons and recommendations on how the World Bank and the wider development community can continue to benefit from climate-related trust funds to support countries in meeting their Paris Agreement commitments and achieving their sustainable development and poverty reduction goals.

INNOVATION, EVOLUTION, INFLUENCE

Since the adoption of the United Nations Framework Convention on Climate Change at the Rio Conference in 1992, the World Bank has been a leader in scaling up climate finance, pushing innovation and influencing global progress on climate change. Much of this work has been made possible by the parallel funding provided to the World Bank through trust funds. These funds are central to the Bank's comprehensive approach to systematically leverage all sources of finance, expertise, and solutions to support developing countries' sustainable, climate-smart growth.

The World Bank's use of trust funds has supported transformative outcomes through efficient channeling, blending, and aggregation of public and private sources of capital. In addition to project financing, trust funds have helped support verifiable emissions reductions, the establishment of standards and enabling policies, and the development of critical capacity needed to promote and scale up public and private climate investments at the national, regional, and local levels.

Trust funds allow the World Bank to be more innovative than it would otherwise be through regular country programming and investment. They can often bear more risk than financing from the Bank's own balance sheet, enabling pioneering investments and an acceleration of climate and carbon finance practices. In the process, the Bank has been able to play a key role in influencing policy and market development across emerging markets. Many climate and carbon finance developments over the last 30 years would not have been possible without the Bank's use of climate-related trust funds. Its intellectual leadership, willingness to take targeted risk in demonstration and pilot projects, credibility with policymakers and market actors, and ability to convene and catalyze other institutions and the private sector also contribute to the World Bank's unique role.

THE GEF

The GEF was established in 1991 to provide additional development assistance to improve the global environment, with climate change as one of its original priorities. The World Bank was one of the original three implementing agencies of the GEF and hosted its secretariat. The World Bank's strong engagement with the GEF at its inception resulted in close alignment in early strategies and operational priorities between the GEF and the Bank, particularly around clean energy. In the area of climate change, World Bank teams with the greatest access to GEF funds were those working on renewable energy and energy efficiency, as the linkages to climate action were easier to establish than with other sectors, such as agriculture, water, or transport. This has evolved over time as climate-related impacts in other sectors have become clearer and dedicated teams have been established in several arms of the Bank to coordinate more varied and innovative approaches to mitigation and adaptation investments, including those that were considered too risky to undertake by the Bank's International Bank for Reconstruction and Development (IBRD) or International Development Association (IDA) operations.

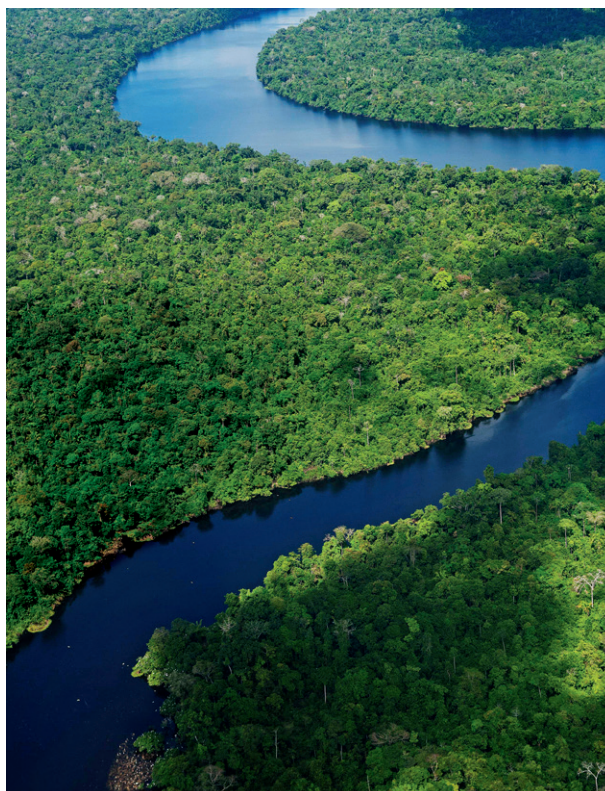
Even as the GEF's mandate has expanded to include more environmental issues and a growing number of implementing agencies competing for funding, early lessons from World Bank and GEF-funded activities remain relevant today. Other, newer climate-related trust funds have also incorporated World Bank-GEF operational approaches to streamline their own processes and procedures. Notably, the Climate Investment Funds (CIF) established in 2008 built its administrative processes on lessons learned from more than a decade of World Bank experience with the GEF.

CARBON FUNDS

The World Bank's involvement in carbon finance has evolved with the external environment, starting with early efforts related to project-based approaches, most notably under the Clean Development Mechanism (CDM), moving to achieve greater scale in response to market demand, and working to consolidate and support markets as they waned along with support for the Kyoto Protocol. Today, the World Bank focuses on building the enabling conditions, capacity, and finance mobilization necessary to achieve scale in line with the ambition of the Paris Agreement. The World Bank can be credited with helping to launch

the CDM and international trading in carbon units, building the capacity of national governments and market actors, and demonstrating methodologies, business models, and best policy practices for a carbon market with high environmental integrity. It has been an innovator and driver of private financing, convenor of policymakers and private actors, and contributor to knowledge about carbon finance.

Yet, the Bank's wide range of carbon funds emerged over time in a fragmented way, with multiple bespoke funds created in response to donor objectives (or in some cases constraints). The carbon-related trust funds were not always successful in leveraging each other or the broader strategies and resources of the World Bank, and their governance and processes were sometimes perceived as cumbersome. Financial commitments to Emissions Reduction Purchase Agreements (ERPAs) have not always translated into issuances, and progress in carbon finance has been slow outside major jurisdictions, especially in least developed countries. Results have also varied by sectors, with the largest reductions achieved in industrial gases and energy, while results in sectors related to land use have been more limited.



LESSONS LEARNED

Lesson #1: The World Bank was a unique actor in early climate and carbon finance

Early activity by the Bank on climate change was both ground-breaking and instrumental in accelerating mitigation efforts, particularly for promoting innovation, technology transfer, and building the carbon markets.

Lesson #2: The World Bank's focus on "market transformation" enabled it to take risks and innovate

Risk-taking is essential for results, creating development impact, catalyzing market transformation, and mobilizing private investment. The Bank's climate-related trust funds have been a source of grant funding that enabled greater risk-taking, piloting, and innovation than its on-balance sheet funding.

Lesson #3: Shared vision with donors enabled the Bank to be at its innovative best.

The Bank has been able to utilize carbon and climate trust funds most effectively when donor partners allowed the Bank the flexibility to innovate and transform the climate and carbon finance space. In cases where the Bank has engaged with partners without a shared broader strategic vision, the results have been less conclusive and significant.

Lesson #4: The World Bank was able to be flexible in a changing environment

As the external policy, scientific, and financial environments have evolved, the innovative and responsive capacity of the trust fund approach has allowed the Bank to adapt and be flexible to meet the needs of clients and countries, helping it to continue to generate results in climate and carbon finance.

Lesson #5: Support for capacity building and policy were essential features

Climate-related trust funds have been an essential source of funding for the Bank and its clients' work in building capacity at the national level in the public and private sectors and in underpinning global policy, rules, and best practices.

Lesson #6: Programmatic approaches have more impact than standalone projects

Project-based approaches are most successful

when anchored within broad programmatic approaches that consider not only the direct financing of individual projects, but also project and pipeline development, and funding and frameworks for the mobilization of private finance flows.

Lesson #7: Aligning trust funds with World Bank strategy is critical

Climate-related trust funds achieved the most impact when they were well aligned with the World Bank's overall programs and strategic goals.

Lesson #8: The World Bank has built a cadre of experienced staff with support from trust funds

The World Bank has benefitted as staff involved in climate investments and analytical work supported by trust funds have become technical experts and leaders in their field.



RECOMMENDATIONS

Recommendation #1: Continue to use trust funds to scale climate action

The World Bank Group is unique among development finance institutions and should continue to use trust funds strategically to address critical barriers and challenges for scaling up climate action at all levels, including helping clients to meet their commitments under the Paris Agreement and sustainable development goals.

Recommendation #2: Focus trust funds on highest potential impact areas

Increase focus on using climate-related trust funds to promote emerging high-impact, neglected, and priority niches for rapidly addressing climate change at a scale consistent with the ambition of the Paris Agreement, both in mitigation and adaptation.

Recommendation #3: Align and consolidate

Continue to seek alignment and efficiencies among existing climate-related trust funds, including consolidating where possible.

Recommendation #4: Integrate with wider World Bank strategy

Ensure climate-related trust funds are integrated into the strategy, planning, and budgeting of World Bank Group operational teams, global practices, and regions, and across all its institutions, including the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA).

Recommendation #5: Pursue complementarity and a keystone role

The World Bank should seek to ensure climate-related trust funds add to the overall climate finance architecture, complement existing efforts among its peers, and "crowd in" rather than "crowd out" private finance and markets.

Recommendation #6: Do not neglect grants

The imperative for trust funds to fund a range of activities in neglected high-impact areas and to be complementary to private finance means that trust funds must have sufficient grant-equivalent resources and not just concessional funding.

Recommendation #7: Leverage learning from trust funds

The World Bank should continue to invest in building staff and technical capacity across climate-related impact areas, including through the use of trust fund-supported programming.

Recommendation #8: Climate-related trust funds can drive global public goods provision

Strengthened trust funds focused on climate change mitigation and adaptation, using climate and carbon finance tools, can be at the heart of the World Bank's growing role in the provision of global public goods in support of its clients' sustainable development priorities.

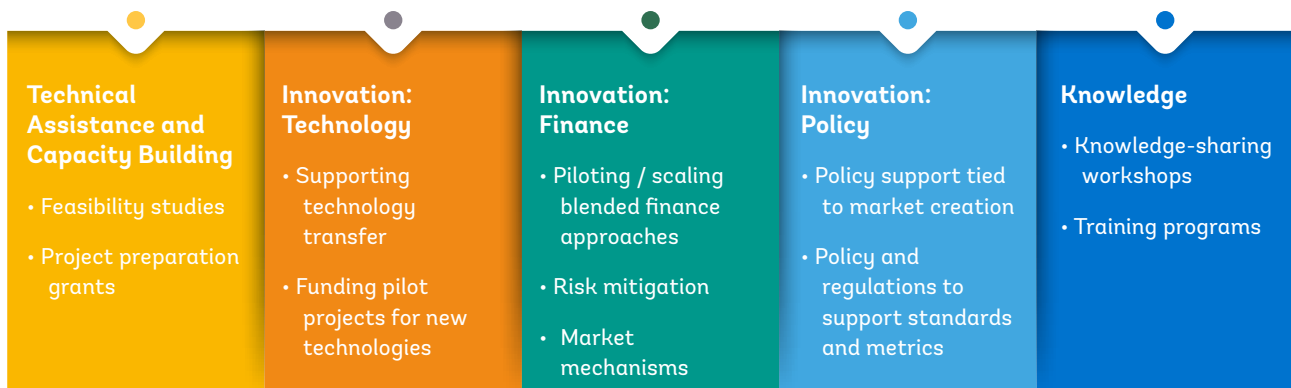


Introduction



With 189 member countries, staff from more than 170 countries, and offices in over 130 locations, the World Bank is a unique global development finance institution working for sustainable solutions that reduce poverty and build shared prosperity in developing countries. It is one of the world's largest sources of funding and knowledge for developing countries. In addition to its main lending, the World Bank employs trust funds to support—and often accelerate—the attainment of institutional goals. Trust funds provide grants and non-grant instruments, including low-cost concessional financing, that the World Bank and its clients can use to support technical assistance and capacity building, improve enabling environments, put in place standards, promote knowledge sharing, and support innovation in technology, finance, and policy.

Figure 1: World Bank Activities Supported by Carbon and Climate Trust Funds



The World Bank has been a pioneer in the use of trust funds for climate action, dating back to the early 1990s when the Global Environment Facility (GEF) and the Multilateral Fund for the Implementation of the Montreal Protocol (MLF) were established. With the creation of the Prototype Carbon Fund (PCF) in 2000, the World Bank helped catalyze the nascent carbon market envisioned under the Kyoto Protocol. This helped demonstrate proof-of-concept for a market mechanism to serve as an instrument for climate change mitigation and the global public good. In the 20 years since, the World Bank has continued to innovate and evolve in the way it uses both climate and carbon finance to support its clients in achieving progress toward climate change mitigation and adaptation.

SCALING CLIMATE AND CARBON FINANCE SINCE RIO

Since the adoption of the United Nations Convention on Climate Change (UNFCCC) at the Rio Conference in 1992, the World Bank has been at the forefront of efforts to provide and mobilize concessional finance for climate action. Over the years, it has significantly expanded its effort in climate finance in both the public and private sectors, supporting critical and necessary technical assistance and capacity building programs, without which many approaches to climate finance may not have scaled.

BOX 1: WHAT ARE CLIMATE AND CARBON FINANCE?

Climate finance is defined as international public finance that has the explicit objective of supporting mitigation and/or resilience-building activities, and which typically has some degree of concessionality.¹ The funds covered in this paper focus on mitigation-related activities, investments, and results.²

In general, carbon finance is a generic term used for the revenue that can be generated by low-carbon projects and activities from the sale of their emission reductions by sources (or removals by sinks) or from trading in carbon credits.³

In this paper, carbon finance refers more broadly to the financing undertaken by the carbon funds covered in this report, including for Emission Reduction Purchase Agreements (ERPAs) and World Bank advisory services and analytics (ASA) to develop capacity, policies, standards, and knowledge related to carbon markets and carbon pricing.



Overall climate flows have also increased. Global public and private climate finance flows are estimated to have reached \$579 billion per year on average during 2017-2018,⁴ but they remain insufficient to put the world on a climate-compatible pathway. The Paris Agreement and its related implementing decision under the UNFCCC⁵ call for cooperative efforts to mobilize additional public and private climate finance, building on the current mobilization goal of \$100 billion per year, and increasing from there as of 2025 (see Box 2). The Paris Agreement also provides for a new generation of market-based mitigation mechanisms under its Article 6, which have the potential for increased carbon finance flows between countries under the Sustainable Development Mechanism of the UNFCCC, via bilateral deals, internationally-linked carbon markets, or within so-called “carbon clubs” that might emerge among groups of countries.

¹ World Bank. 2018. *Strategic Use of Climate Finance to Maximize Climate Action: A Guiding Framework*. Washington, D.C.: World Bank Group, v.the

² This paper was commissioned by the Climate Funds Management Unit at the World Bank Group, and its focus is on the trust funds under its responsibility, namely the GEF and a number of carbon funds.

³ World Bank. 2018. *Carbon Markets for Greenhouse Gas Emission Reduction in a Warming World*. Independent Evaluation Group. Washington, D.C.: World Bank, xiii.

⁴ CPI. 2019. *Global Landscape of Climate Finance 2019*. London: CPI.

⁵ UNFCCC Decision 1/CP.21.

BOX 2: CLIMATE FINANCE: WHAT “COUNTS”

Perfect estimates of climate finance flows do not yet exist. Traditional aid flows tend to be easier to calculate than the mobilization of private finance by public funding or other policy incentives. CPI’s Landscape of Climate Finance is among the most comprehensive, but recognizes that it may not capture all flows, particularly climate-related finance for non-energy projects and private investment flows. Annual reports of multilateral development banks (MDBs) on their provision and mobilization of climate finance present a useful snapshot of their contributions to the achievement of the \$100 billion per year goal agreed to in UNFCCC negotiations.

What “counts” towards this goal is a difficult political question. In general, UNFCCC Parties agree that this \$100 billion should finance UNFCCC implementation in non-Annex I Parties, but the controversial issues include whether gross or net flows should count, how to treat carbon finance flows, and how to consider grant equivalency and additionality. Regardless, significantly more climate finance needs to flow to achieve the goals of the Paris Agreement, so discussions around climate finance and development often focus on the much larger financing needs to address climate change mitigation and adaptation.

In fiscal year (FY) 2018, the World Bank provided \$20.5 billion in finance for climate action, exceeding its own targets for the climate-related share of its lending. It again exceeded its target in FY 2019, with \$17.8 billion in climate finance representing 30 percent of all lending. At COP 24 in December 2018, the World Bank announced a target to double investment in climate action to around \$200 billion over five years (2021-2025). The World Bank’s increased ambition responds to client demand and the urgency underscored by mounting scientific analysis and evidence, including the Intergovernmental Panel on Climate Change (IPCC) 2018 report *Global Warming of 1.5°C*.

The World Bank’s tools, instruments, approaches, and priorities for deploying climate finance have evolved along with the external landscape, raised public awareness, more attention to climate-related business risks and opportunities, and increasing demand for support from clients. In particular, climate-related trust funds have enabled the World Bank to innovate, push market boundaries, and scale climate solutions.

By efficiently channeling, blending, and aggregating public and private sources of capital, the World Bank has leveraged trust funds to support, among other things, verifiable emissions reductions, the establishment of relevant enabling policies, and the development of critical capacity needed to promote and scale-up both public and private climate investments at the national, regional, and local levels.



THE WORLD BANK HAS CATALYZED CRITICAL PROGRESS ON CLIMATE ACTION

Lessons from the past can be instructive in informing the future. With close to 30 years' experience in delivering climate finance and 20 years' experience in nurturing, growing, and innovating carbon markets, the World Bank has a wealth of expertise on which to draw to inform current and future climate and carbon financing.

This report focuses on how trust funds under the responsibility of the World Bank's Climate Funds Management and Carbon Markets and Innovation units have enabled the Bank to play an outsized role in catalyzing climate action over the last 30 years (see Box 3). The trust funds covered in the report specifically supported climate change mitigation efforts.⁶ While not comprehensive of all World Bank climate finance efforts, these examples are particularly useful in providing lessons to the Bank to inform future climate finance strategies and recommendations on how to best use trust funds to achieve maximum impact. The wider climate finance community—donors, World Bank client countries, other international financial intermediaries and climate funds, the private sector, and civil society stakeholders—can also benefit as they seek to cooperate in achieving the full implementation of the Paris Agreement.⁷

BOX 3: REPORT SCOPE – FUNDS MANAGED BY WORLD BANK CLIMATE FUNDS MANAGEMENT AND CARBON MARKETS AND INNOVATION UNITS

The World Bank's Climate Funds Management Unit manages the Bank's portfolio supported by the GEF Trust Fund.⁸

The Climate Funds Management and Carbon Markets and Innovation Units also manage World Bank carbon funds (some of which are no longer active), including the following:

- **Plurilateral multi-sector carbon funds**, like the Prototype Carbon Fund (PCF), the Community Development Carbon Fund (CDCF), the Umbrella Carbon Facility (UCF), the Carbon Partnership facility (CPF), the Pilot Auction Facility (PAF), and the Transformative Carbon Asset Facility (TCAF);
- **Bilateral carbon funds**, like the Netherlands Clean Development Mechanism and European Carbon Facilities (NCDMF and NECAF), the Italian Carbon Fund, the Spanish Carbon Fund, the Danish Carbon Fund and the Carbon Fund for Europe;
- **Carbon funds focused on agriculture, forestry, and other land use**, like the BioCarbon Fund (BioCF) and its Initiative for Sustainable Forest Landscapes (BioCF ISFL), and the Forest Carbon Partnership Facility (FCPF), which includes a major ASA component; and
- **Other facilities providing technical assistance**, such as the Carbon Finance Assist Program, Partnership for Market Readiness (PMR) and Networked Carbon Markets initiative.

This retrospective report is not an evaluation, but it does draw on the work of the World Bank Independent Evaluation Group (IEG), which has the mandate to rigorously assess the results of the various funds covered in this report. Extensive desk research was also conducted as were interviews and facilitated discussions with a range of stakeholders who provided key insights into the evolution of the World Bank's work related to the GEF and carbon finance. They included client country officials, former participants in the governance of these trust funds, external experts from civil society, academia, and the private sector, as well as World Bank staff responsible for establishing and implementing the climate and carbon finance work described in this report.

⁶ The report does not cover adaptation-related support through trust funds, due to the fact that both the GEF and carbon finance had a primary early focus on mitigation activities. However, this report does include some references to adaptation co-benefits achieved through mitigation finance as well as the impact of shifting overall priorities, including for adaptation, on funding for mitigation.

⁷ This report does not directly focus on the Multilateral Fund of the Montreal Protocol, the Climate Investment Funds, or the Green Climate Fund, but they are part of the wider context in which the GEF and the carbon funds operate and have impact.

⁸ This responsibility was transferred to the World Bank's Environment, Natural Resources and Blue Economy global practice after the drafting of this report.

Quantitative illustrations included in this retrospective identify funding and financing trends over the time period covered and are based on data on trust fund commitments and results compiled by World Bank staff.

INNOVATION, EVOLUTION, INFLUENCE

The assessment was structured around three broad themes, namely:

- **Innovation:** What has been innovative about the World Bank's efforts supported by the trust funds examined in this report in the areas of climate and carbon finance and how this can translate to future World Bank strategies to advance climate action.
- **Evolution:** How the World Bank's deployment of climate and carbon finance has evolved since the early 1990s in response to internal and external drivers.
- **Influence:** How the World Bank's delivery of climate finance provided by trust funds has influenced policies and markets in client countries as well as World Bank internal operations.

The report begins with a broad overview of the context and history of the GEF and the carbon funds to understand the policy and political narratives that underpinned subsequent developments. A more in-depth retrospective is then provided for mitigation finance through the GEF, carbon finance, and AFOLU-specific developments. Finally, the report highlights key lessons learned and provides recommendations for future action.



Historical Background and Context



The GEF and carbon funds were among the earliest sources of finance that the World Bank used to support investments to address climate change mitigation. The results attained by these trust funds are among the most significant achieved by climate finance since the adoption of the UNFCCC.

AN EVOLVING GLOBAL POLICY AND SCIENCE LANDSCAPE

Global policy and science have evolved in lockstep, but action at all levels remains behind what the IPCC suggests is necessary to “prevent dangerous anthropogenic interference with the climate system”.⁹ The first IPCC report, *Climate Change, the IPCC Scientific Assessment*, published in 1990 led to the adoption of the UNFCCC in 1992, launching global cooperation on climate change. This cooperation is now crystallizing around the 2015 Paris Agreement, which aims to “strengthen the global response to the threat of climate change,”¹⁰ by achieving net-zero emissions in the second half of this century to build a climate-resilient society and orient financial flows towards climate-compatible development. However, emissions trends continue to be alarming and significant effort remains to put the world on track to warming levels that are manageable, as illustrated in the 2018 IPCC Special Report *Global Warming of 1.5°C*. Emissions from most sectors continue to grow despite increased action by national governments and the private sector across the globe.

However, growing public awareness, more comprehensive commitments under the Paris Agreement, and greater public and private sector capacity to measure and act upon emissions have led to a stronger consensus on the need for ambitious, economy-wide emissions reductions. This has resulted in a meaningful strengthening of promised and implemented policy regimes at the national and sub-national levels, as well as of actions taken by private sector actors, underpinned by increased support flows and investments. At the global level, almost half of all countries, covering three-quarters of global emissions, had national legislation and strategies in place in 2017; excluding the USA, countries representing 76 percent of global emissions and 90 percent of global population had economy-wide greenhouse gas (GHG) reduction targets.¹¹

⁹ UNFCCC, Article 2.

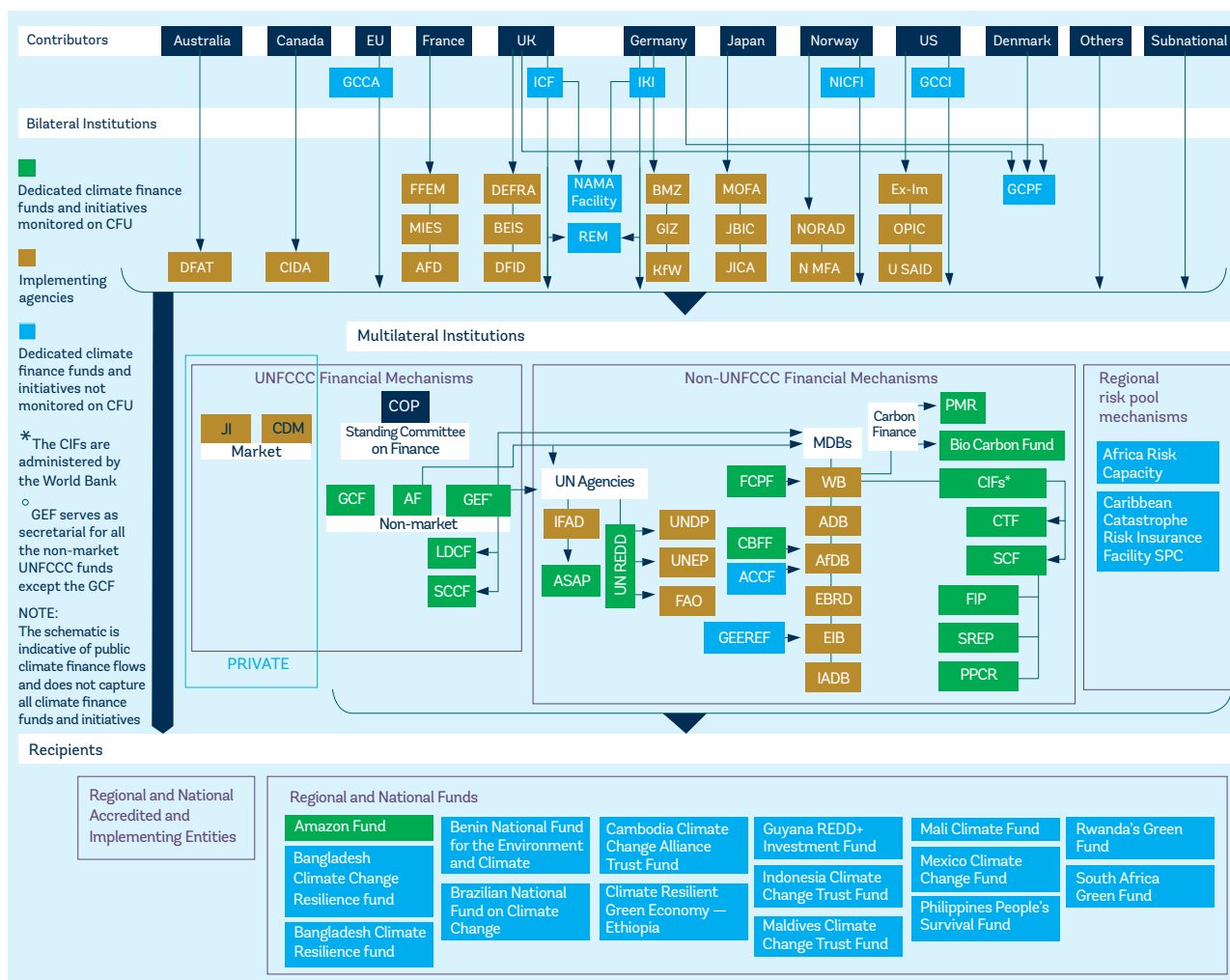
¹⁰ Paris Agreement, Article 2.

¹¹ Iacobuta, G., N. Dubash, P. Upadhyaya, M. Deribe, and N. Höhne. 2018. “National climate change mitigation legislation, strategy and targets: a global update.” *Climate Policy* 18 (9): 1114-1132.

A GROWING CLIMATE FINANCE ARCHITECTURE MOBILIZING GREATER FLOWS

The climate finance architecture has grown and become more complex. There were no dedicated funds for climate action in 1992. Now, there is a proliferation of international climate funds and channels through which funding can flow to support climate-related programs, projects, and other initiatives. The 2015 Climate Fund Inventory of the Organisation for Economic Co-operation and Development (OECD) included 91 such funds,¹² while a 2018 review by the Overseas Development Institute identified 21 multilateral and seven bilateral climate-related funds (see Figure 2).¹³ The GEF, launched in 1991, channeled much of the funding for climate action—with a focus on mitigation—until a range of other funds and initiatives were progressively established. These included carbon funds, starting with the PCF in 2000, dedicated multi-sector funds like the Climate Investment Funds (CIF) launched in 2008, and the Green Climate Fund (GCF) established in 2010, and sector-specific initiatives like the Forest Carbon Partnership Facility (FCPF) also launched in 2008. Non-climate specific initiatives also provide critical funding related to climate, such as the Global Facility for Disaster Reduction and Recovery (GFDRR) launched in 2006 or the Global Infrastructure Facility (GIF) launched in 2014.

Figure 2: Global Climate Finance Architecture



Source: Overseas Development Institute, 2018

12 OECD.2015. *Climate Fund Inventory: Report to the G20 Climate Finance Study Group*. <https://www.oecd.org/environment/cc/Climate-Fund-Inventory-Background-report-OECD.pdf>.
 13 Watson, C. and L. Schalatek. 2019. "The Global Climate Finance Architecture." *Climate Finance Fundamentals 2* (February 2019). The proliferation of funds has led to a concern about overlap and unnecessary administrative complexity and inefficiency. See Amerasinghe, N., J. Thwaites, G. Larsen, and A. Ballesteros. 2017. *Future of the Funds: Exploring the Architecture of Multilateral Climate Finance*. Washington, D.C.: WRI.

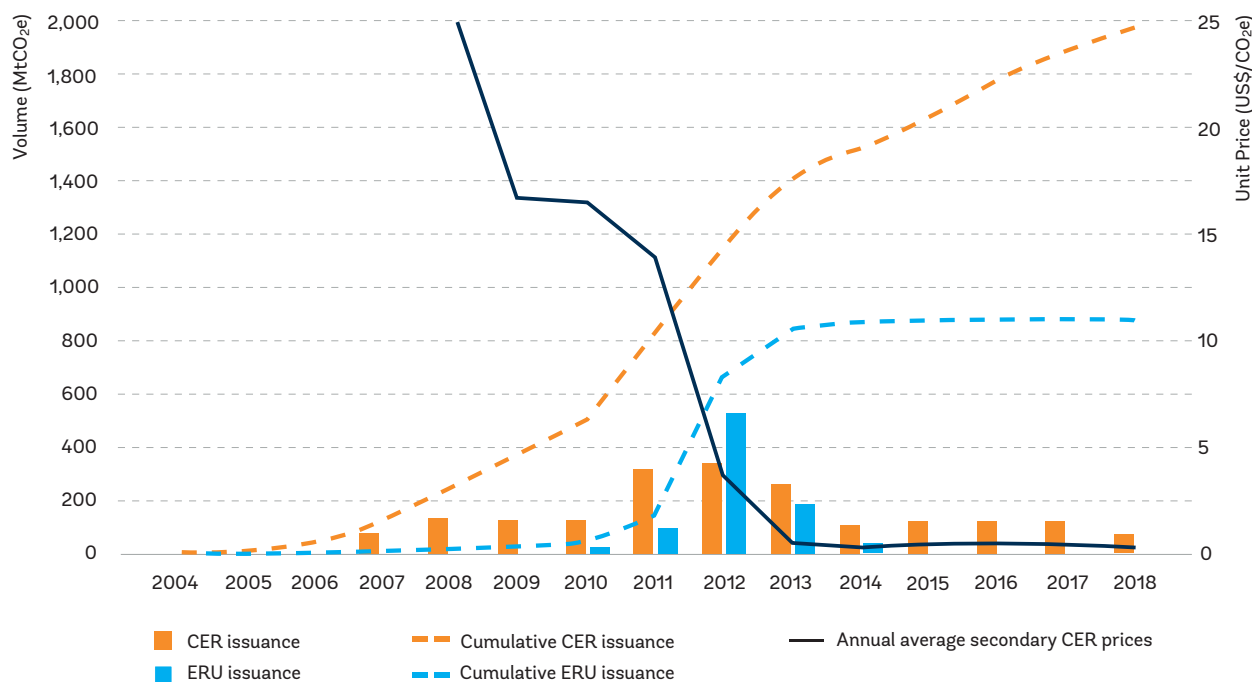
Climate finance flows have grown significantly with greater focus on using climate finance to catalyze private finance. Financial flows to developing countries were, for many years following the adoption of the UNFCCC, primarily from development finance institutions. It is now estimated that commercial financial flows exceed those from public, concessional sources, driven by growing understanding in the private sector of both the opportunities of needed economic transformation and the growing risks of inaction to corporate and financial sector bottom lines. International grant finance provision has also increased, with growing support for frontier regions and sectors. Domestic finance remains the largest source of climate finance, greatly exceeding international flows.¹⁴

RE-EMERGENCE OF CARBON FINANCE?

Carbon finance and carbon pricing may yet re-emerge as among the most efficient and viable policy actions to address emissions, after severe ups and downs in the volume and prices of carbon trading since the inception of carbon markets in the early 1990s. In 1992, carbon trading involved mostly nascent efforts to “cap and trade” sulfur dioxide (SO₂) in the United States (US).¹⁵ Under the 1997 Kyoto Protocol, participating in the “flexible mechanisms” was seen as a low-cost tool for countries to achieve their GHG emissions reduction targets. These included Emissions Trading, essentially a cap-and-trade system between Parties with Kyoto targets; the Clean Development Mechanism (CDM), which allowed Parties with targets to source offsets in Parties without them; and Joint Implementation (JI), which allowed Parties with targets to source offsets in another Party with a target.

Despite efforts by the international community, including the World Bank, international carbon markets collapsed in 2012. Supply of CDM credits, known as Certified Emission Reductions (CERs), and other credits exceeded demand from developed country markets, including a fledgling European Emissions Trading System that had overallocated emissions credits to covered entities (see Figure 3). Canada withdrew from the Kyoto Protocol in 2011 and Japan refused to take a second commitment period target. Combined with the non-ratification of the Kyoto Protocol by the US, years of uncertainty in international negotiations have left markets wondering whether demand for emission reduction credits generated in developing countries would ever recover.

Figure 3: Historic CDM and JI Issuance and CER Prices



Source: “State and Trends of Carbon Pricing 2019” State and Trends of Carbon Pricing (June), World Bank, Washington, DC.

¹⁴ Insights in this paragraph are based on CPI. 2019. *Global Landscape of Climate Finance 2019*. London: CPI.

¹⁵ The first “cap and trade” system was introduced as part of the 1990 Clean Air Act in the US. It sought to reduce acid rain-causing sulfur dioxide pollution by capping overall emissions and allowing regulated entities to trade credits for reductions achieved above the regulatory requirements to those who might not meet their respective obligations. This built upon the Clean Air Act of 1977, which included a provision for a company to get an offset for reductions it paid another company to implement.

The adoption and entry-into-force of the Paris Agreement has reignited global interest in carbon markets, as has progress on domestic carbon trading and pricing schemes. The Paris Agreement envisions the establishment of market-based transfers of emissions reductions under Article 6 to aid countries in achieving their nationally determined contributions (NDCs) at low cost and help raise their ambition. Although the “rules, modalities and procedures” for implementing new market mechanisms are still being negotiated more than four years after the Paris Agreement was adopted, there are significant opportunities for rebuilding the global carbon markets as an additional tool to support low-cost climate mitigation. Many jurisdictions are delivering or promising national or regional carbon pricing and trading schemes and considering participating in international pricing schemes. There are now 61 carbon pricing initiatives in place or scheduled to take effect, covering about 22 percent of global GHG emissions.¹⁶ As of April 2020, 97 countries now mention carbon pricing in their NDCs, as an actual or potential means to meet their NDC commitments.¹⁷

CLIMATE CHANGE: FROM NASCENT ISSUE TO STRATEGIC PRIORITY

Climate change was not a significant part of the World Bank’s development agenda in 1992, when it was first included as an objective of the Environment department. Today, climate change is a high-level, strategic priority, with ambitious financial targets for the World Bank and for every other major multilateral development bank (MDB), although some interviewees noted that even more comprehensive and ambitious effort is required. See the timeline in Figure 4 for an overview of this evolution.

The 2008 *Strategic Framework on Development and Climate Change* was the first major strategic climate-specific policy approved by the World Bank. It outlined comprehensively, and for the first time, how the Bank would support its clients in addressing climate change. In response to the international community’s progress toward adopting the Paris Agreement in December 2015, the World Bank adopted the *Climate Change Action Plan 2016-2020*, which included quantified targets and ambitious goals in areas such as renewable energy generation and resilient cities (see Table 1).

At the same time, the Bank was also a key source of international expertise on climate-related issues, most specifically on the nexus between climate change and development. World Bank research and publications drove knowledge and consensus on the urgency of climate action for sustainable development. The landmark *World Development Report 2010: Development and Climate Change* emphasized the importance of climate change as not just an environmental concern but one central to the achievement of development progress and sustained poverty reduction, with climate impacts putting hard-earned development gains at severe risk.¹⁸ Similarly, the *Turn Down the Heat* reports, prepared for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics in 2012-2014, highlighted potential risk to development gains if climate change went unaddressed and underscored the urgency of action as an integral component of development in the face of rising temperatures.¹⁹

In 2018, the World Bank joined other MDBs in committing to alignment with the Paris Agreement, and in 2019, the World Bank adopted an *Adaptation and Resilience Action Plan*, further reinforcing the Bank’s critical role in addressing climate impacts and risk for the poorest and most vulnerable countries and people. At COP25 in Madrid in 2019, the World Bank confirmed new financial and results targets for 2021-2025 (see Table 1) that reflect its effort to mainstream climate change into planning, operations, business development, and project screening.

¹⁶ “State and Trends of Carbon Pricing 2020” (May), World Bank, Washington, DC.

¹⁷ *Ibid.*

¹⁸ World Bank. 2010. *World Development Report 2010: Development and Climate Change*. Washington, D.C.: World Bank.

¹⁹ World Bank. 2012-2014. *Series: Turn Down the Heat*. <https://www.worldbank.org/en/topic/climatechange/publication/turn-down-the-heat>.

Table 1: World Bank Climate Finance Targets

	2016-2020 ^a	2021-2025 ^b
Direct financing	\$29 billion per year by 2020	\$133 billion
Leveraging of private finance	\$13 billion per year by 2020	\$67 billion
Adaptation support	\$16 billion for adaptation investments by 2020 in Africa, \$2 billion in lending for adaptation in the transport sector	\$50 billion
NDC support	Support countries in translating their NDCs into climate policies and investment plans into actions, and in mainstreaming climate considerations into policies and budgets	20 countries in implementation
Energy	Target of adding 20 GW in renewable energy generation over five years, invest \$1 billion to promote energy efficiency and resilient building in urban areas, and mobilize \$25 billion in commercial funding for clean energy	36 GW of renewable energy, and supporting 1.5 million GWh-equivalent of energy savings through efficiency improvement
Cities	A city-based resilience approach in 15 cities and transit-oriented development solution packages piloted in at least five cities	100 cities achieve low-carbon, resilient urban planning and transit-oriented development
Food and Land-use	Large-scale, multisector program promoting “forest-smart” development in 10 countries	Landscape management in up to 50 countries, covering up to 120 million hectares of forests

Note:

a World Bank. 2016. *World Bank Group Climate Change Action Plan 2016-2020*. Washington, D.C.: World Bank.

b World Bank. 2018. *2025 Targets to Step Up Climate Action*. Washington, D.C.: World Bank.

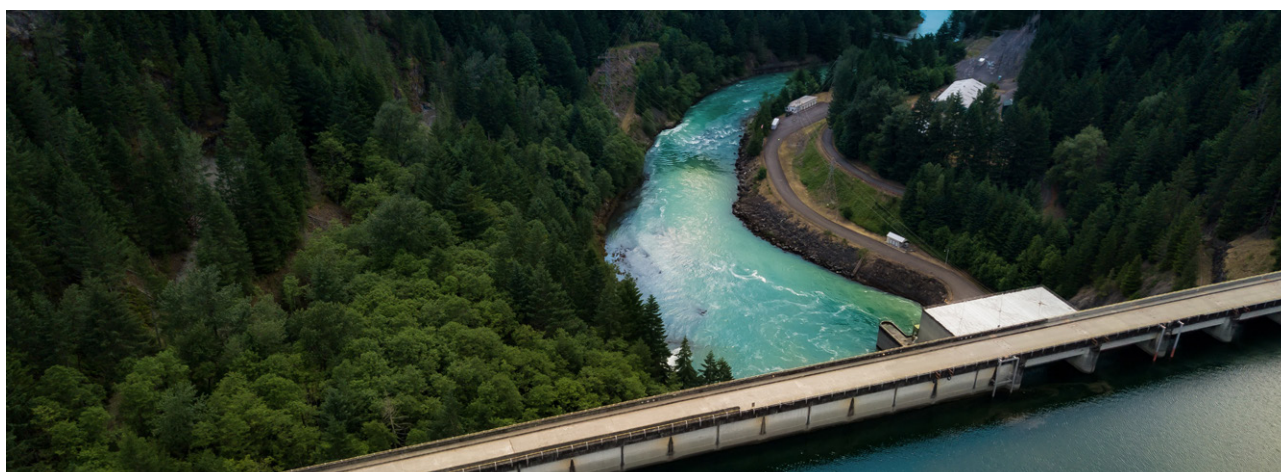
This period also saw significant increases in the provision of donor resources to trust funds at the World Bank and an increase in the number of climate-specific trust funds that needed to be managed. The so-called “fast-start financing” period (2010-2012 in the wake of the 2009 Copenhagen Accord) and, to a lesser extent, the years following the Paris Agreement, saw influxes of donor funding and proliferation of accounts that needed to be separately managed and overseen. This contributed to administrative challenges to which the World Bank has responded.

WORKING TO REFORM TRUST FUND MANAGEMENT

Trust funds have long been an important source of development finance and partnership for the World Bank, but they have not always been well integrated into the Bank's strategies, systems, and processes. In 2007, the World Bank launched the Trust Fund Management Framework²⁰ to develop clear guidelines, policies, and strategies applicable to trust fund mechanisms. Since then, the Trust Fund Management Framework has been a driving force behind efforts to align trust fund and World Bank operations for maximized development impacts. It is currently organized around four pillars: Serving All Clients, Maximizing Finance for Development, Leading on Global Issues, and Improving the Business Model (see Table 2). These pillars aim to address the challenges posed by the increasing volume and complexity of the World Bank's trust fund portfolio.

Table 2: The Four Pillars of World Bank Trust Funds

Pillar 1: Serving All Clients	<p>Trust funds are used strategically to complement core World Bank funding. They enhance global, regional, and country-level knowledge; provide targeted support to clients as a complement to IBRD and IDA funding. They finance much of the Bank's analytical work and pilot innovative ideas; provide funding to support quality and scale up the development impact of IBRD- and IDA-funded operations.</p>
Pillar 2: Maximizing Finance for Development	<p>One of the key factors hampering progress in achieving the sustainable development goals (SDGs) is a global financing gap estimated at \$3 trillion to \$5 trillion a year. Trust funds help close that gap by helping governments build their capacity to mobilize revenue, manage public expenditure and public debt, and improve their procurement and public financial management systems, and they support the development of innovative financial solutions and mobilization of new, nontraditional sources of development finance.</p>
Pillar 3: Leading on Global Issues	<p>The World Bank has identified five key strategic cross-cutting and global issues key for development: climate change, crisis response, jobs, gender, and infrastructure. In each of these focus areas, trust funds play a vital role, complementing IBRD, IDA, and IFC. Trust funds support the global aspects of public goods and facilitate assembling different national and global stakeholders into partnerships.</p>
Pillar 4: Improving the Business Model	<p>As good stewards of donor funding, the World Bank is mindful of the need to continuously improve its use of trust funds to complement its operations. It is engaged in an ambitious trust fund reform effort to ensure that trust funds are strategically aligned with the World Bank mandate and mission, that they are implemented and leveraged efficiently, and that they are focused on maximizing effectiveness and development impact.</p>



²⁰ World Bank. 2007. *A Management Framework for World Bank-Administered Trust Funds*. Washington, D.C.: World Bank.

Trust funds provide a crucial source of funding for the World Bank and its clients, augmenting the Bank’s own resources. Between FY15 and FY19, the Bank disbursed \$15.1 billion in trust fund resources. But the trust fund portfolio has become very fragmented, with 10 percent of funds accounting for 75 percent of total funds held in trust in 2019, indicating a long tail of small funds.²¹ While larger funds often have a clear strategy aimed at specific development outcomes and have a strong link to the World Bank’s priorities (e.g., climate change, gender), smaller trust funds are often “highly customized with heterogeneous governance mechanisms, resource allocation, reporting, results, etc.”²² Although the high level of fragmentation among trust funds increases transaction costs and lowers alignment with institutional priorities, smaller trust funds can allow for increased flexibility, innovation, and testing of new development solutions.

Since 2018, the World Bank has begun a new set of reforms to drive its future trust fund portfolio toward fewer, larger “Umbrella 2.0” programs, where one program will include multiple trust funds aligned along overarching strategic objectives, with global, regional, or country-level geographic scope. Consolidation and scaling of programs will enable efficiency gains and reduce transaction costs, with governance geared more toward long-term strategy and guidance. Work also continues to strengthen trust fund integration into wider World Bank strategy, planning, budgeting, and country engagement processes, allowing for closer alignment along these lines.

The objective and the vision of the current trust fund reform creates an opportunity for the World Bank, in partnership with committed donors, to define a clear vision and strategy for the use of climate and carbon finance at the Bank.



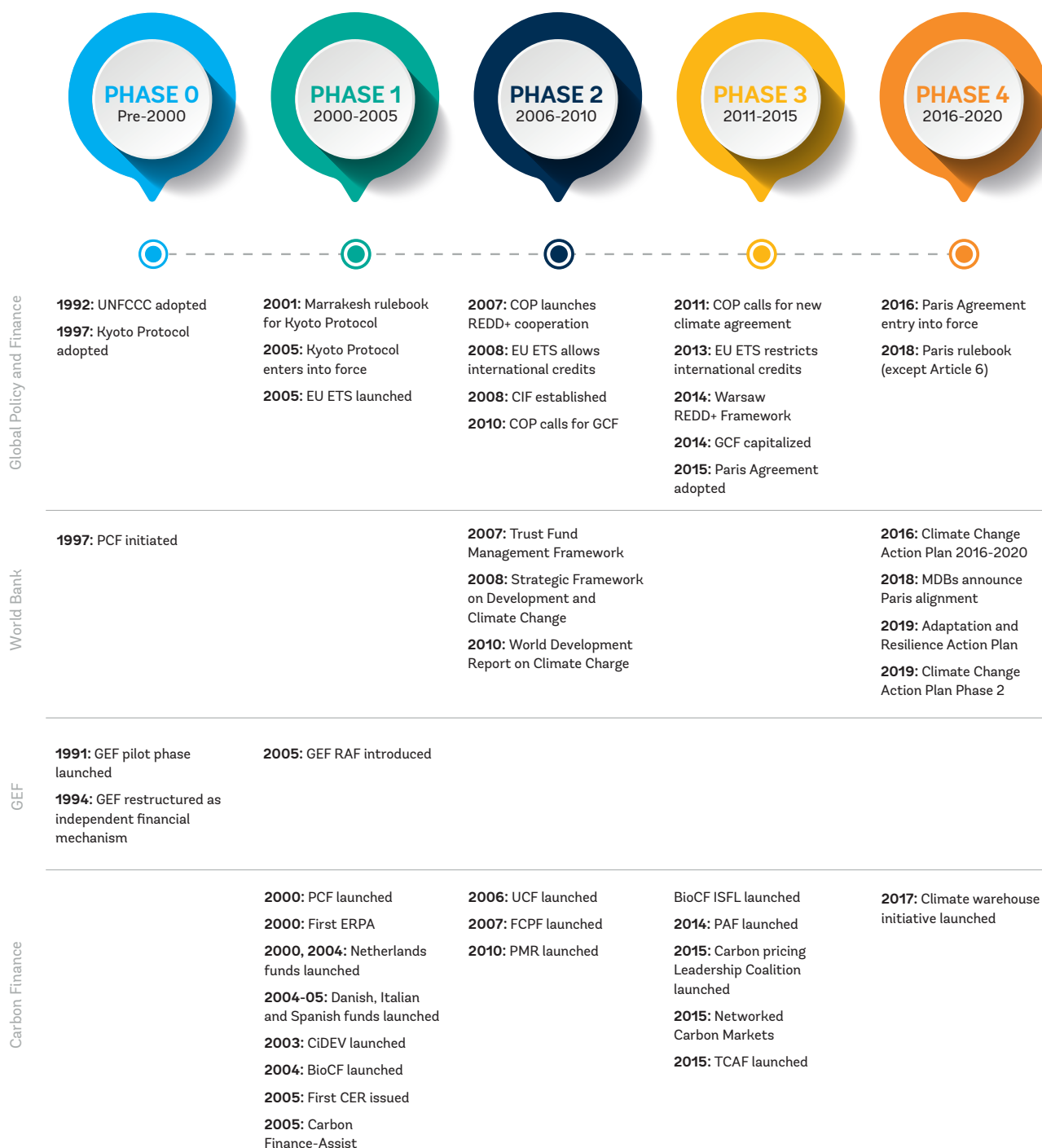
²¹ World Bank. 2019. *2018-2019 Trust Fund Annual Report*. Washington, D.C.: World Bank.

²² *Ibid.*

OVERVIEW TIMELINE

The timeline presented in Figure 4 captures key milestones at the World Bank, the GEF, and carbon funds, as well as wider global policy discussions around climate and carbon finance. It is broadly based on the phases of carbon finance at the World Bank identified in the 2018 IEG evaluation,²³ with the addition of a foundation period.

Figure 4: Key Milestones in Climate and Carbon Finance



²³ World Bank. 2018. *Carbon Markets for Greenhouse Gas Emission Reduction in a Warming World*. Independent Evaluation Group. Washington, D.C.: World Bank.

Analysis



WORLD BANK CLIMATE FINANCE EFFORTS IN PARTNERSHIP WITH THE GEF

Summary overview

The GEF was established in 1991 to provide additional development assistance to improve the global environment, with climate change as one of its original priorities. The World Bank was one of the original three implementing agencies of the GEF and hosted its secretariat. The World Bank's strong engagement with the GEF at its inception resulted in close alignment in early strategies and operational priorities between the GEF and the Bank, particularly around clean energy (see Box 4). World Bank teams with the greatest access to the GEF's climate change funds were those working on renewable energy and energy efficiency, as the linkages to climate action were easier to establish than with other sectors, such as agriculture, water, or transport. This has evolved over time as climate-related impacts in other sectors have become clearer and dedicated teams have been established in several arms of the Bank to coordinate more varied and innovative approaches to mitigation and adaptation investments. In particular, the Bank has used GEF grant resources to help clients to undertake more innovative or risky approaches than might have been possible with Bank support alone.

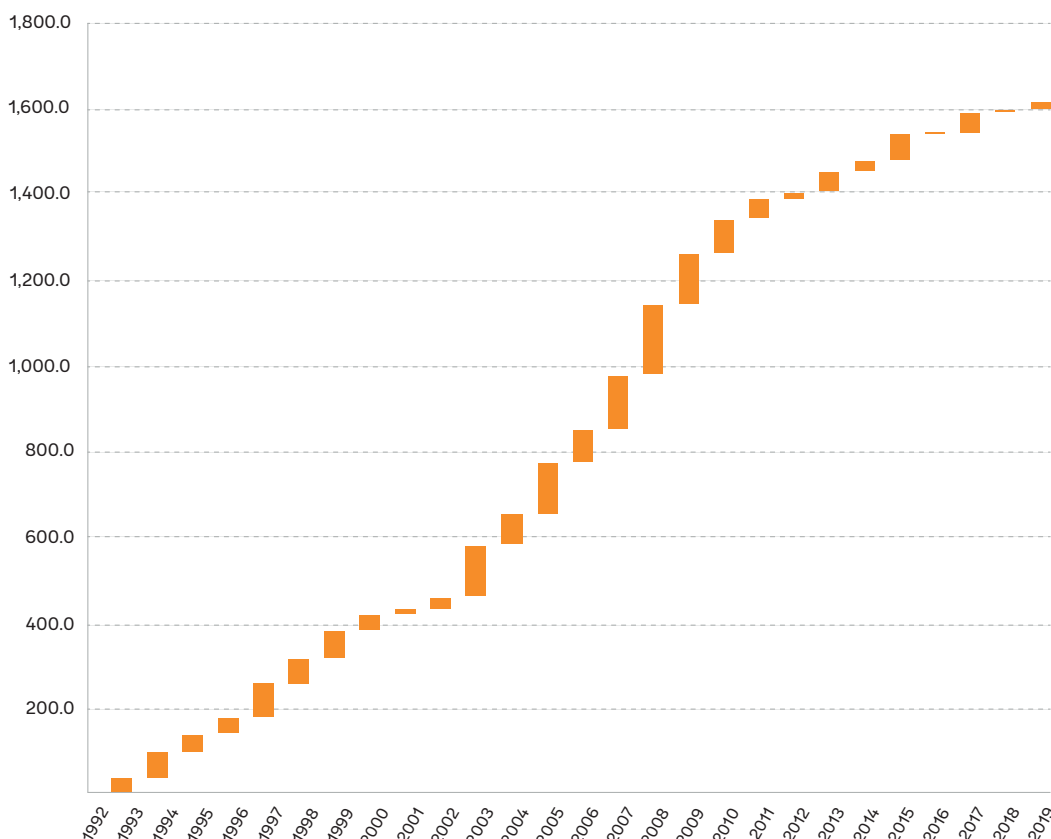
The World Bank share of GEF allocations declined as the GEF evolved, with the introduction of a country allocation system, a growing number of implementing agencies competing for funding and more environmental issues added to the GEF's mandate. The incentive to apply to the GEF for climate finance also declined in the late 2000s with the proliferation of other climate-related trust funds. Foremost among these was the CIF, which allowed the Bank to tap concessional funding for a wider range of mitigation and adaptation activities that was also easier to align with its policies and procedures and, with larger resource envelopes for participating countries, could achieve greater scale. Figures 5 and 6 highlight the annual, geographic and sectoral distribution of just over \$1.6 billion in GEF Trust Fund climate change focal area allocations for World Bank projects.

BOX 4: FOUNDATIONS OF THE GEF AND WORLD BANK ENVIRONMENT POLICY

World Bank environmental policy, strategy, and operations from 1992 to the early 2000s closely aligned with that of the GEF. Within the World Bank, discussion of a possible dedicated funding mechanism for global environmental issues began in the mid-1980s at a time when the Bank's reputation on environmental matters was considered "at a low point," given the role expected of the Bank in international development at the time.²⁴ Increased global attention on environmental issues and a growing awareness of the relationship between environment, growth and development led the Bank to establish its Environment Department in 1987. With support from France, later joined by other developed and developing countries, the World Bank developed a proposal for the GEF. The GEF began as a pilot funding mechanism in 1991 to provide additional resources to developing countries to fund projects that would generate global environmental benefits related to four focal areas: climate change, biodiversity, ozone depletion, and international waters.²⁵ A partnership of the World Bank, the United Nations Development Programme, and the United Nations Environment Program, the GEF was hosted within the World Bank until it became functionally independent in 1994.

The early period of the GEF's history was dominated by two Conventions adopted at the 1992 Rio Conference: the UNFCCC and the Convention on Biological Diversity (CBD).²⁶

Figure 5: GEF Trust Fund Climate Change Focal Area Allocations to the World Bank as an Implementing Agency (US\$ millions, by FY)



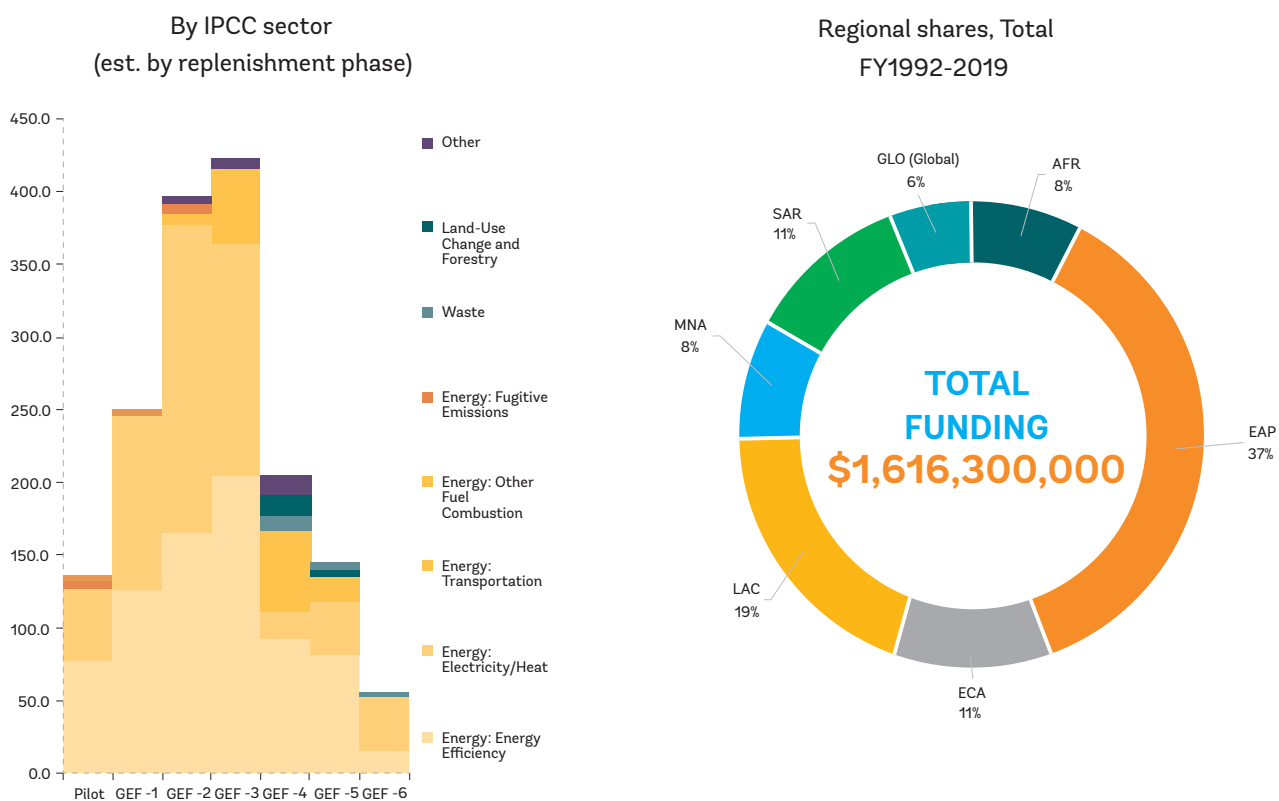
Source: World Bank

²⁴ World Bank. 2013. *The World Bank Group's Partnership with the Global Environment Facility, Volume 2: Appendixes*. Independent Evaluation Group. Washington D.C.: World Bank. 8.

²⁵ Lean, G. 2016. "GEF: How it all began." *GEF News*. <https://www.thegef.org/news/gef-how-it-all-began>.

²⁶ Through June 2012, climate change and biodiversity collectively accounted for 62% of GEF commitments. World Bank. 2013. *The World Bank Group's Partnership with the Global Environment Facility, Volume 2: Appendixes*. Independent Evaluation Group. Washington D.C.: World Bank. 1–2.

Figure 6: GEF Trust Fund Climate Change Focal Area Allocations to the World Bank as an Implementing Agency – by Sector and Region



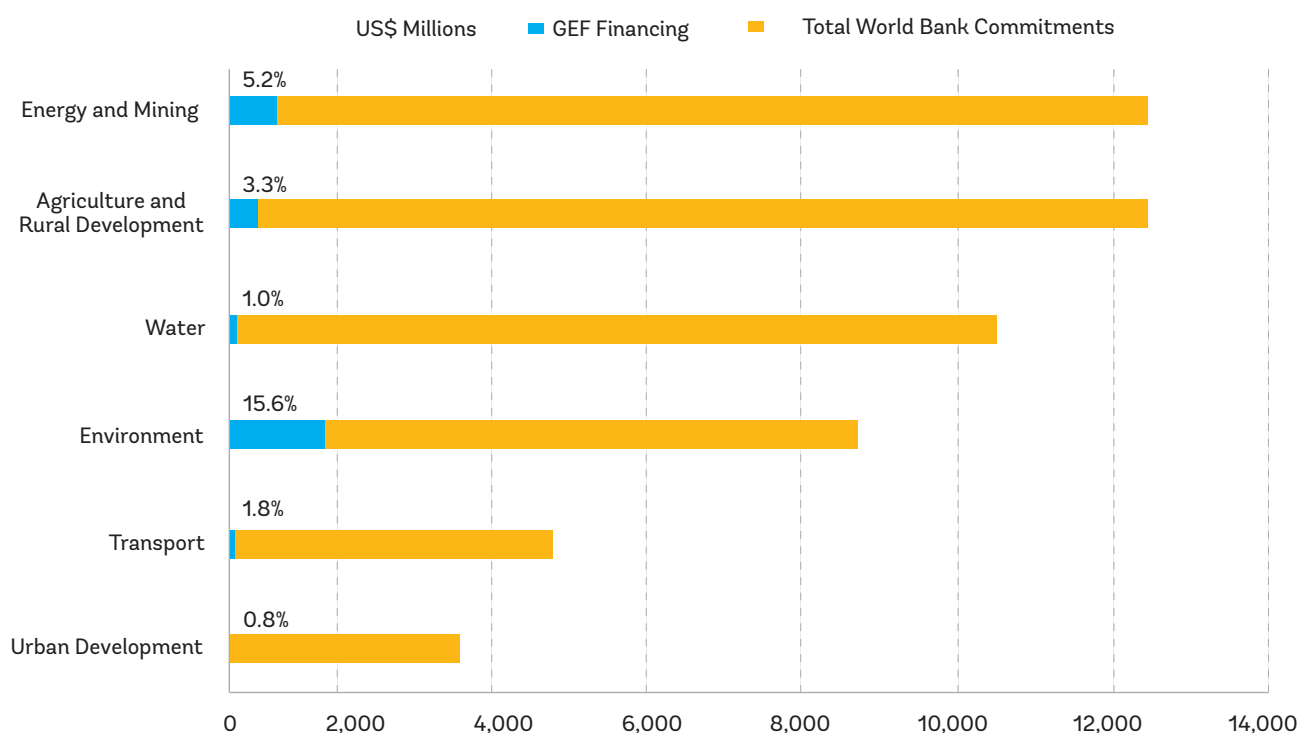
Source: World Bank

ANALYSIS

GEF resources were initially, and for some time, used primarily to enhance projects already of interest within the World Bank, rather than as the basis for new directions or strategies. This partly reflected the reality that GEF funds were only a small percentage of resources available to the World Bank. Over time, shared interests emerged in several areas, such as renewable energy and energy efficiency, and GEF support was well aligned with related Bank strategies (see Box 5 and Case Study 1 in Annex 1). In other areas, such as transportation, there was little alignment between the two and GEF funding played a smaller role in Bank projects (see Figure 7).



Figure 7: Share of GEF Financing in World Bank Commitments (Sector Board Mapping, FY 1992-2013)



Notes:

(a) Each World Bank project can identify up to five themes promoted by the project including environment and natural resource management themes such as biodiversity, climate change, pollution management, and water resources management. Commitments represent the proportion of the Bank’s total project commitments dedicated to such themes. GEF financing represents the share of these commitments financed by the GEF Trust Fund.

(b) These data exclude development policy operations (DPOs), since the GEF does not generally finance DPOs. If DPOs had been included, the percentages would be even lower.

(c) Each World Bank project is supervised by a task team leader who reports to a regional manager who is represented on a Bank-wide Sector Board. Each Project is thereby “mapped” — or becomes the responsibility of — that Sector Board.

Source: Reproduced from World Bank. 2013. *The World Bank Group’s Partnership with the Global Environment Facility, Volume 1: Main Report*. Independent Evaluation Group. Washington, D.C. 27.

As the first global provider of dedicated finance for activities to address climate change, the GEF’s influence on and funding for early World Bank environmental and clean energy efforts is widely recognized. The rise of clean energy projects within the Bank in the 1990s was closely linked to the first decade of the GEF. Before then, the World Bank and other development finance institutions (DFIs) had little investment in renewable energy or energy efficiency. GEF funding provided early support for pioneering projects to test new technologies, business models, and policies, laying the foundation for programs that later became mainstream. Some examples include demonstrating the energy savings company (ESCO) business model in numerous countries, rolling out efficient lighting programs, deploying solar home systems for off-grid energy access, supporting the expansion of grid-connected renewables from biomass, geothermal, and concentrated solar power (see Box 5), and supporting policy and regulatory frameworks to promote large-scale adoption of clean energy.

BOX 5: GEF SUPPORT FOR THE COMMERCIALIZATION OF NEW ENERGY TECHNOLOGIES

One of the initial Operational Programs (funding windows) of the GEF, OP7, focused on supporting the commercialization of new energy technologies. Several World Bank projects used GEF funding to help accelerate the adoption and transfer of clean energy and climate-related technologies in emerging markets. The Bank used GEF funding to support cutting-edge (for their time) technologies, such as fuel cells, battery storage, carbon capture and storage, and concentrated solar power (CSP).

Under OP7, the GEF's Scientific and Technical Advisory Panel (STAP) in 1996 recommended a focus on CSP projects. At the time, it was considered an early stage, high-cost, but promising technology for countries with high solar radiation and few local sources of fossil fuels. The logic used to justify GEF funding was an expectation of significant cost reduction with replication of early projects. During the late 1990s/early 2000s, a portfolio of four World Bank-GEF CSP projects was approved with GEF grant funding of \$194 million. While these projects encountered more implementation issues than expected (with only three of the four reaching completion), they provided valuable learning for the much larger World Bank-supported Noor CSP complex subsequently completed in Morocco, which benefitted from both GEF and later CIF funding support. See case study in Annex 1 for further detail on World Bank/GEF support for CSP.

The GEF's willingness and interest in supporting innovative technologies, financing, and other approaches has had a lasting influence on the World Bank. The IEG observed: "Innovation was to have been a major factor in the selection of GEF activities. In the GEF context, innovation has been liberally interpreted to include any technology that had not been used in any developing country or in the developing country in which the technology was being introduced. This feature should be one of the distinguishing features of the GEF, with further definition, examples, and dissemination."²⁷

The mutual influence that the World Bank and GEF have had on each other's strategies and operations helped shape the World Bank's early climate finance activities and strategic thinking on trust fund use to achieve development outcomes. World Bank staff have had a major role in managing the GEF from its creation. GEF Secretariat staff, in turn, have assumed key positions in the World Bank. The World Bank's Environment Director, Mohamed El-Ashry, headed the GEF during its pilot phase and served as its first CEO for nine years. The first Assistant GEF CEO, Ian Johnson, became the World Bank VP for Sustainable Development and Chair of the Consultative Group on International Agricultural Research. The GEF Scientific and Technical Advisory Panel (STAP) was another source of influential linkages. Robert Watson was the first chair prior to joining the World Bank as a senior member of the Environment Department, and Dennis Anderson, a prominent Bank energy economist, was a STAP member following his retirement. Working on GEF projects became a source of expertise that influenced internal operations. GEF staff became key actors in other donor programs, such as Patricia Bliss Guest who managed the CIF from its inception in 2007 until 2014 after a lengthy career in the GEF Secretariat. Ken Newcombe, who managed the Bank's Global Environment Coordination division in the mid-1990s, later went on to lead the Bank's carbon finance work for many years.

²⁷ UNDO, UNEP, and World Bank. 1994. Global Environment Facility: Independent Evaluation of the Pilot Phase. Washington, D.C., World Bank. For a more recent discussion of the GEF role in supporting innovation, see Toth, F. 2018. Innovation and the GEF. Scientific and Technical Advisory Panel (STAP) to the GEF, Washington, D.C.: GEF.

World Bank access to GEF resources has required working with an evolving, not always complementary, set of new definitions and bureaucratic procedures. A key principle that drove donor contributions to the GEF was its funding being limited to the incremental cost of global environmental benefits. These are the extra costs incurred to reduce CO₂ emissions or impacts on globally significant biodiversity, which are beyond the scope of traditionally defined investments for development.²⁸ For GEF climate projects, this principle limited funding to activities supporting mitigation. Adapting to a changing climate was viewed simply as “good development.” Adaptation financing in the first decade was thus largely limited to support capacity development.²⁹ The justification for financing energy efficiency projects—the expectation of cost savings on a life-cycle basis—was also an issue. It was solved by defining the need for such projects as “barrier removal” and calculating the support given based on the related efforts required (e.g., subsidies to attract consumers to products with initially higher cost).³⁰ The 2013 IEG review of the Bank partnership with the GEF found that a focus on global environmental benefits was a shared philosophy but, in practice, it was often incorrectly applied in World Bank proposals.³¹

Over time, several factors collectively have contributed to a decline of the Bank’s use to GEF funding, including a greater degree of competition and dilution in the award of funds.³² The number of thematic areas gradually expanded from the original four – biodiversity, climate change, international waters, and ozone – to include land degradation and persistent organic pollutants. Beginning in 2003, the GEF began approving additional implementing agencies and now has 18. These include regional development banks with investment operations; several UN agencies with activities related to energy efficiency, forestry, agriculture, and conservation; national agencies in China, Brazil, and South Africa; and several international civil society organizations.³³ Small funding windows for medium-size projects and a small grants program were developed early (although modified over time). At the same time, the World Bank gained increasing access to other sources of climate and carbon finance and had less need for GEF resources.

Other issues that have discouraged World Bank interest in the GEF relate to operational changes that have increased the effort required to obtain funding. The GEF project cycle was an obstacle for World Bank task managers as it is front-loaded and adds significant time and effort to project preparation.³⁴ This was remedied in part through the introduction of a “harmonization” procedure in 2013 to align the Bank and GEF project cycles. Agency fees for project implementation were reduced in 2012 further diluting motivation. The size of the GEF Secretariat also grew steadily, from 32 in 2002 to more than 80 in 2012 where it stands today. An evaluation unit was upgraded to become an independent evaluation office reporting to the GEF’s governing body, the Council. This growth has added to the perception that the GEF and its Secretariat are an additional layer of bureaucracy. Taken together, these factors have contributed to a decline in the World Bank’s share of GEF approvals (see Figure 8).

28 This concept was initially incorporated in the 1990 London Amendment to the Montreal Protocol as applied to the added cost of new chemicals replacing ozone depleting substances. It was subsequently included in both the UNFCCC and the CBD. The logic behind this requirement was that new funding should be additional to that already provided for development programs, including environmental objectives unrelated to global benefits.

29 An early World Bank GEF adaptation project was the Caribbean Planning for Adaptation to Climate Change (CPACC) project granted \$5.6 million. Lasting from 1997 to 2001, CPACC was implemented by the World Bank, executed by the OAS, and overseen by a Project Advisory Committee chaired by CARICOM. CCCCC. “History of CCCCC.” <https://www.caribbeanclimate.bz/about-us/history/>.

30 “[T]he GEF’s focus on providing funding for global environmental matters represents a highly relevant and complementary mandate to that of the World Bank.(pp. 27-28) ...[However] “More than 80 percent of surveyed GEF Program Managers estimated that, in one out of four cases or more often, project proposals submitted by the World Bank have not been consistent with the incrementality policy of the GEF” World Bank. 2013. The World Bank Group’s Partnership with the Global Environment Facility, Volume 1: Main Report. Independent Evaluation Group. Washington, D.C.: World Bank. 27–28, 30.

31 Ibid.

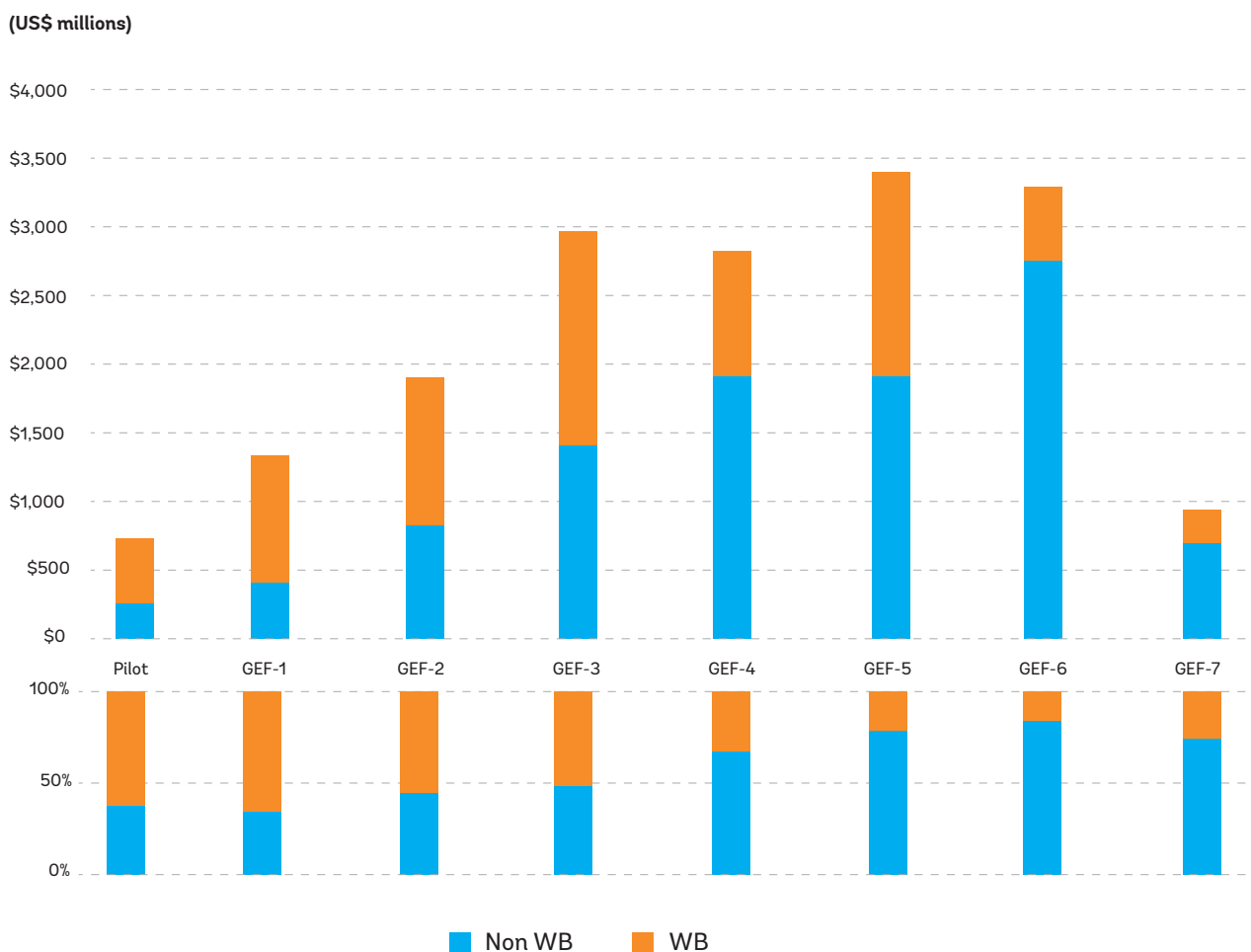
32 The evolution of the World Bank/GEF partnership and the influence of these factors was a major focus of the IEG 2013 review The World Bank Group’s Partnership with the Global Environment Facility. <http://ieg.worldbankgroup.org/evaluations/gef>.

33 For a complete list, see www.thegef.org/partners/gef-agencies

34 An evaluation in 2007 found that an average of 3.7 years was required for a project to move from concept to effectiveness. In 2013, the IEG reported that despite subsequent reform efforts, “projects have shown no sign of increasing processing speed” and that generally World Bank GEF environment-related projects required “significantly more time” to achieve approval. World Bank. 2013. Volume 1: Main Report. xix.

The GEF's adoption in 2006 of a formula-based resource allocation system fundamentally changed the way GEF funds were awarded and has had lasting impacts on the World Bank's ability to access GEF resources. Some country allocations became too small for World Bank-GEF projects. The country allocation system also empowered country GEF Focal Points, who became gatekeepers for GEF funds; because focal points are predominantly located in environment ministries, it has become more difficult for the Bank to access GEF finance for climate change mitigation projects undertaken with other line ministries, like energy or transport.³⁵

Figure 8: Share of GEF Trust Fund Financing Implemented by the World Bank



Source: World Bank

The increasing availability of funding for climate projects from other bilateral and multilateral trust funds has resulted in diluted interest to pursue GEF funding by World Bank operational teams. Beginning in the early to mid-2000s, climate-related trust funds began to multiply, as donors perceived the value addition of having the World Bank steward bilateral and multilateral climate finance mechanisms. New funds, including the CIF established in 2008, had similar funding mechanisms and objectives as the GEF, but were viewed by many internal Bank stakeholders as less cumbersome to access. Moreover, these new sources of funding could be used for larger projects and they offered more flexibility, enabling the Bank to deploy support through both grant and non-grant instruments toward mitigation and adaptation investments. The Bank's leadership role in supporting the creation of carbon markets and carbon finance also created an alternative source of funds and focus for internal climate strategy.

³⁵ The GEF's cross-cutting impact programs introduced in the GEF-6 (2014-2018) replenishment cycle and expanded in GEF-7 (2018-2022) offer some flexibility beyond the country allocations and may be a good opportunity for the World Bank. The scale of funding is larger and there is more opportunity for the Bank to apply its technical expertise, work across countries, and provide strategic direction. The Bank role as lead in the Food Systems, Land Use and Restoration Impact Program is an example as is the earlier GEF support for the Great Green Wall Initiative, a program with objectives that cross-cut climate change mitigation, adaptation, and desertification.

A growing interest in blended finance and non-grant instruments—signaling a shift from co-financing to more emphasis on enabling and leveraging private investment—has also led the Bank to seek funding outside the GEF. While grants can and have been used for this purpose, there is increasing recognition that the use of public funds in the form of risk mitigants (loan guarantees, equity investments, concessional loans, etc.) can often have greater impact (see Box 6).

BOX 6: WHAT IS BLENDED FINANCE?

Blended finance refers to a financing package comprised of concessional funding provided by development partners and commercial funding provided by IFC and co-investors. Blended finance solutions can provide financial support to a high-impact project that would not attract funding on strictly commercial terms because the risks are considered too high and the returns are either unproven or not commensurate with the level of risk. Blended finance can help bridge gaps and address market barriers that prevent private sector development in areas of strategic importance and high development impact.³⁶

Until the GEF-6 replenishment, when a small set-aside for non-grant instruments was introduced (and expanded under GEF-7), the GEF had been largely unwilling to approve the use of funds for non-grant instruments.³⁷ In the GEF's first two decades, the Earth Fund was one of the few efforts to support non-grant projects outside of its country allocation system. The GEF has recently stated its intention to expand its focus on blended finance and to be more effective in attracting private investment, a strategy that may facilitate greater World Bank engagement.³⁸

Although the GEF has become less attractive as a source of climate finance for Bank teams, it remains a rare source of grant finance for middle income countries. In China, in particular, there has been continued demand for Bank projects that utilize GEF grants for climate-related operations in the energy, urban and transport sectors. Bank teams are also increasingly pursuing multi-focal area GEF projects that seek to test innovative approaches to achieve and deliver multiple environmental and development outcomes, for example avoiding GHG emissions while restoring degraded lands or expanding protected areas. More than half of the GEF allocations received by the Bank during GEF-6 and nearly 80 percent approved to date during GEF-7 are for multi-focal area investments. This is also consistent with the shift in emphasis under GEF-7 toward more transformational projects that achieve systems change.



³⁶ "Blended Finance at IFC," <https://www.ifc.org/wps/wcm/connect/b775aee2-dd16-4903-89bc-17876825bad8/IFC+Blended+Finance+Fact+Sheet+%28July+2019%29.pdf?MOD=AJPERES&CVID=mUUEV3E>

³⁷ "Of the more than 9,000 projects GEF has funded since its inception, only about 97 projects have used GEF funding in non-grant instruments. . . [and] of these, only 17 have included provisions for "reflows," or return of funds to the GEF." Toth, F. 2018. Innovation and the GEF. STAP to the GEF. Washington, D.C.: GEF. 8.

³⁸ GEF. 2019. Advances in Blended Finance: GEF's Solutions to Protect the Global Environment. Washington, D.C.: GEF. The enlarged number of accredited implementing agencies, however, means the GEF now has multiple potential partners for blended finance as indicated in the publication.

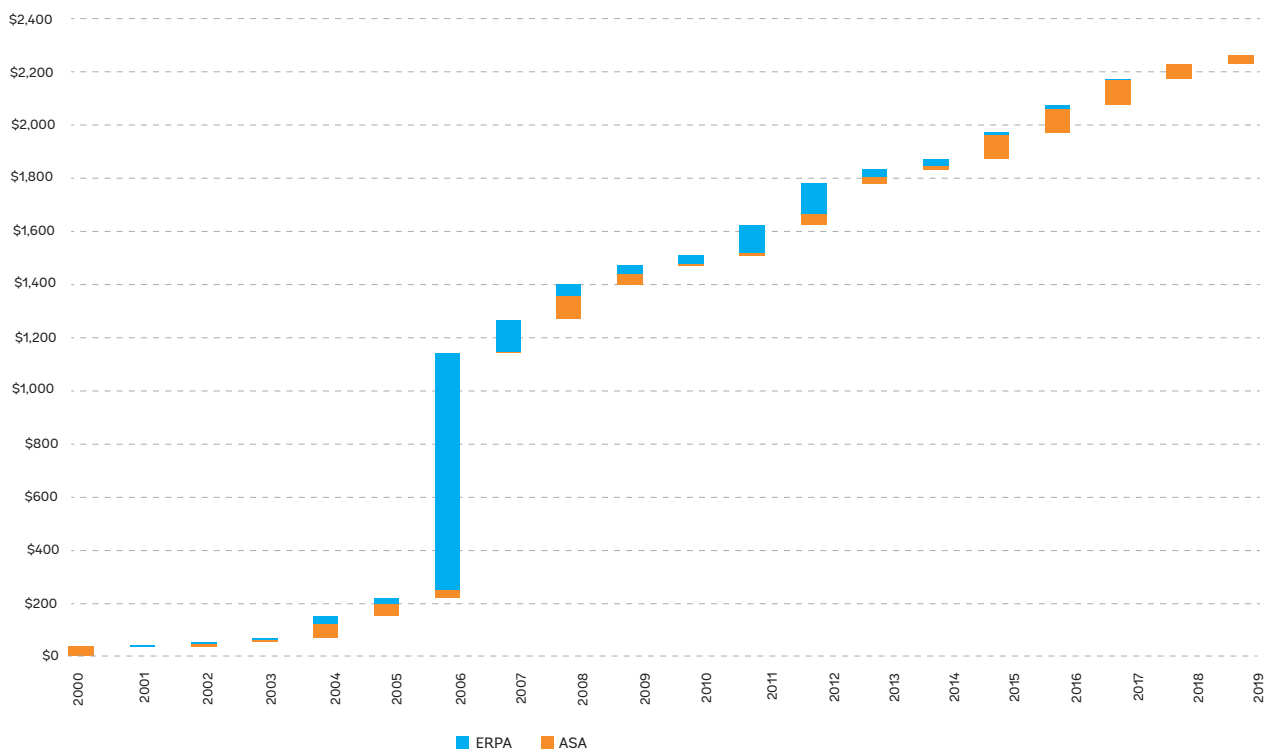
Carbon Finance



SUMMARY OVERVIEW

The World Bank's involvement in carbon finance has evolved with the external environment, starting with early efforts related to project-based approaches, most notably under the CDM, moving to achieve greater scale in response to market demand, working to consolidate and support markets as they softened along with support for the Kyoto Protocol, and now focusing on building the enabling conditions, capacity, and finance mobilization necessary to achieve scale in line with the ambition of the Paris Agreement. The World Bank has delivered a total of \$2.4 billion through 13 carbon-related trust funds through FY 2019 (see figures 9 and 10). Programs under these trust funds have generated an estimated 210 MtCO₂e reduced.

Figure 9: Cumulative Commitments (ERPA and ASA) of World Bank Carbon Funds (US\$ millions)

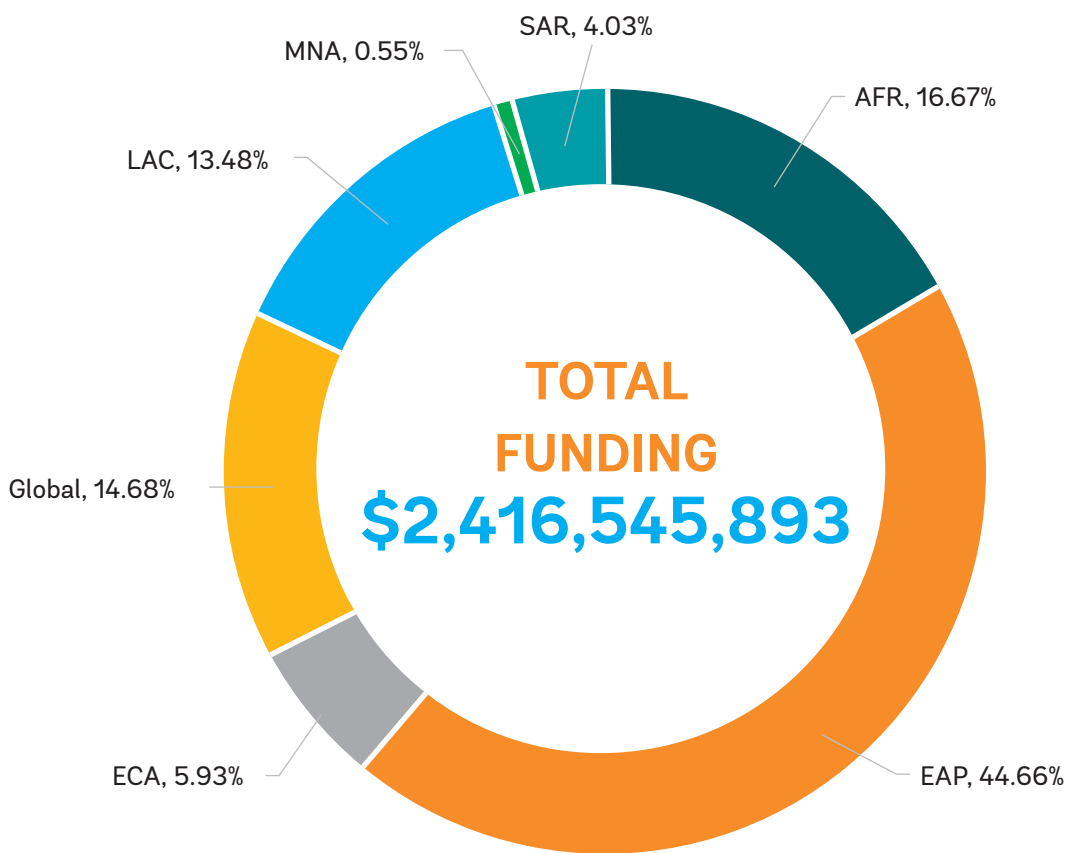


Source: World Bank

The World Bank can be credited with helping to launch the CDM and international trading in carbon units, building the capacity of national governments and market actors, and demonstrating methodologies, business models, and best policy practices for a carbon market with high environmental integrity. It has not only been an innovator, but also a driver of private financing, convenor of policymakers and private actors, and contributor to knowledge about carbon finance.

Despite significant innovation and impact, some challenges have persisted. Like many trust funds, carbon funds have been fragmented and not always successful in leveraging the wider strategies and resources of the World Bank. Financial commitments to ERPAs have not always translated into emissions reduction issuances, and progress in carbon finance has been slow outside major jurisdictions, especially in least developed countries (LDCs), where only now commitments have increased. Results have varied depending on sectors targeted. By far, the largest reductions have been achieved in industrial gases and energy, while results have been much more limited in AFOLU.

Figure 10: World Bank Carbon Fund Payments by Region (FY 1992-2019)



Source: World Bank

With the Paris Agreement providing an impetus to revitalize carbon pricing and global carbon markets, lessons learned on the need for risk-taking, scale beyond the project level, and effective alignment among technical assistance, emissions reduction unit purchases, and other forms of climate finance gain traction. Past experience can help realize the promise of carbon finance and support ambitious reductions in underserved sectors such as transport and AFOLU.

ANALYSIS

As outlined in the 2018 IEG evaluation of carbon finance at the World Bank Group,³⁹ the Bank's involvement in carbon finance has progressed through several phases related to the external carbon market and pricing environment. The Bank has progressively assumed multiple roles: catalyzing and developing carbon markets; innovating and developing tools in carbon finance; helping build capacity; and exercising thought leadership and convening power.⁴⁰

Figure 11: Timeline of Carbon Finance at the World Bank



Source: Derived from World Bank. 2018. Carbon Markets for Greenhouse Gas Emission Reduction in a Warming World. Independent Evaluation Group. Washington, D.C.: World Bank.

³⁹ World Bank. 2018. Carbon Markets for Greenhouse Gas Emission Reduction in a Warming World. Independent Evaluation Group. Washington, D.C.: World Bank.
⁴⁰ Ibid.

As depicted in Figure 11, the World Bank's involvement in carbon markets can be divided into five phases:

- **A foundational phase (Phase 0, prior to 2000)** saw landmark international climate agreements being adopted, namely the UNFCCC and the Kyoto Protocol, and experimentation in market-based solutions to environmental challenges advancing to implementation with the adoption of a SO₂ trading system in the US. This phase saw the initiation of the PCF, the World Bank's first carbon fund, with World Bank President James Wolfensohn making a formal announcement of the Bank's intention to establish the fund at the UN General Assembly back in 1997.
- **An early phase (Phase 1, 2000-2005) prior to the Kyoto Protocol** focused on piloting the Kyoto Protocol flexible mechanisms, including the CDM and JI, first through the PCF followed by other bilateral and plurilateral funds. The first CERs were generated in non-Annex I countries and the first Emission Reduction Units (ERUs) in transition economies, helping private sector developers and financiers understand and engage in the CDM and JI. This progress was underpinned by capacity and methodology support to help build the policy and measurement, reporting, and verification (MRV) infrastructure necessary for the Kyoto Protocol mechanisms to operate with environmental integrity. During this period, several key carbon funds were established at the Bank.
- **A "golden age" (Phase 2, 2006-2011) of growth in carbon markets** saw issuance of CERs grow significantly in response to expectations of significant demand from Annex I countries, despite the market's dependence on expected demand from the EU ETS after the withdrawal of the US from the Kyoto Protocol. A catalyzing moment for this phase was the commitment in December 2005 of the \$1.02 billion first tranche of the Umbrella Carbon Facility (UCF) to purchase CERs from two industrial gas (HFC-23) phasedown projects in China.⁴¹ With these two large transactions in its portfolio, World Bank purchases of CERs represented 40 percent of CER contract value in 2005. World Bank support through various carbon funds helped spark this period and broaden carbon market approaches to various sectors, including AFOLU.
- **A period of crisis in carbon markets (Phase 3, 2012-2016)** occurred when EU ETS prices collapsed, the European Union and Japan limited access of CDM credits to their domestic compliance markets, and CER supply outstripped demand from Annex I countries. It became clear that the Kyoto Protocol was unlikely to be the basis for the climate regime going forward. The World Bank played a somewhat counter-cyclical role by trying to mitigate the impact of price collapses on project completion in client countries and maintain policy and market capacity to keep the potential of carbon markets alive. During this period, the orientation of carbon market work shifted from supporting supply of CERs for the purpose of compliance in Annex I countries to the development of capacity to apply carbon pricing as a domestic tool in developing countries. Parties to the UNFCCC continued discussions on a universal climate agreement that would see all countries have domestic mitigation obligations, culminating in the adoption of the Paris Agreement in 2015.
- **The current period (Phase 4, 2017-present), has focused on relaunching carbon markets and** carbon market cooperation even as Parties negotiate rules to implement Article 6 of the Paris Agreement. The move is away from CDM-like offsetting toward a network of carbon pricing systems that support efficient achievement of national emission reduction targets and provide for transfers or trading of emissions reductions across jurisdictions for compliance purposes. The World Bank's efforts continue to address policy capacity in client countries and are increasingly focused on the need for significant scale in emission reduction approaches. It is shifting from project-based mechanisms toward achieving ambition and generating transferable/tradable reductions at a sectoral, jurisdictional or economy-wide level. Exemplifying this trend is the Bank's new Partnership for Market Implementation, set to launch in 2020 to help countries embarking on carbon pricing move from readiness to rollout.

⁴¹ HFC-23 is a greenhouse gas with a global warming potential 12,400 times more powerful than CO₂.

Notwithstanding the rocky evolution of carbon finance over the last 30 years, the World Bank has been—and continues to be—a primary innovator and influencer of carbon markets. From helping to launch the Kyoto Protocol mechanisms to recent efforts through the Transformative Carbon Asset Facility (TCAF) to build transferable mitigation outcomes compliant with the Paris Agreement, the World Bank continues to be a keystone actor providing thought leadership, supporting technical progress on carbon market design, and financing innovative approaches.

- **Advocacy, knowledge sharing and thought leadership:** Amongst the many knowledge products and market intelligence products, the World Bank’s annual flagship report ‘*State and Trends of Carbon Pricing*’ is the premier publication reporting on global carbon finance trends and policy developments. The Bank-led Carbon Pricing Leadership Coalition works to advance the carbon pricing agenda by strengthening the evidence base in support of carbon pricing and conducting advocacy and outreach to governments, private companies, and a wide range of other stakeholders.
- **Innovation in policy and business models:** The World Bank “actively supported the move to” Programmes of Activities (PoAs) under the CDM,⁴² in order to get away from what was a purely project-based mechanism and build more programmatic approaches at scale. The Carbon Initiative for Development (Ci-Dev), through its support to small-scale energy access programs, helped to show how programmatic approaches could be done well and generate development benefits for households. The Carbon Partnership Facility (CPF) demonstrated how programmatic approaches could achieve scale through investments in methane capture from landfills, small-scale renewable energy, and energy efficiency.
- **Innovation in finance:** The Pilot Auction Facility (PAF) has innovated the use of auctions to achieve an efficient allocation of public funding for emission reductions, with a view to supporting so-called “stranded” CDM projects that were not viable and therefore not implemented with low carbon prices. It is demonstrating how such approaches can enable price discovery in a market and achieve reductions while limiting windfall profits for low-cost projects.

The World Bank has exercised global leadership in helping to demonstrate the role of carbon markets in efficiently achieving GHG reductions. It has helped to build national and private sector capacity to engage in carbon markets and provided thought leadership and convening power. The World Bank’s involvement has brought credibility to carbon markets in a way that individual national players could not. By operating globally, the Bank has been able to convene host and buyer countries and engage the private sector in early trust funds. Despite uncertainty in the rules for carbon market cooperation under the Kyoto Protocol prior to its entry into force in 2005, the Bank helped catalyze the Kyoto Protocol flexible mechanisms by pioneering business models and emissions reduction methodologies and engaging national governments and private sector actors in generating and acquiring tradable emission reduction units, including through trust funds. The Bank has also helped secure financing for unit-generating projects by acting as a buyer for generated units.

The capacity building vehicles associated with the early carbon funds⁴³ and the multi-donor Carbon Finance Assist (CF-Assist) were critical in building national policy and market-making infrastructure for carbon market participation, including developing methodologies with high integrity and improving CDM project quality. The World Bank’s **Partnership for Market Readiness** has significantly scaled up these impacts, helping build a cadre of national experts and a set of national policies and programs that will underpin domestic carbon pricing and future international markets under Article 6 (see Case Study 3). Overall, capacity-building efforts by the carbon funds have focused on three broad areas: “(i) developing tools and methodologies and strengthening capacity for CDM project design [...]; (ii) contributing to the design or implementation of carbon market readiness or carbon pricing [...]; and (iii) building capacity for carbon sequestration and REDD+ [reducing emissions from deforestation and forest degradation]”.⁴⁴

⁴² Ibid. 66.

⁴³ A number of the early carbon funds had associated vehicles that served to channel grant resources used for technical assistance and capacity building.

⁴⁴ World Bank. 2018. Carbon Markets for Greenhouse Gas Emission Reduction in a Warming World. Independent Evaluation Group. Washington, D.C.: World Bank. 47.

At the same time, the governance arrangements of many of the first-generation carbon funds, in particular the limited provisions for voice for seller or “host” countries and the preponderance of buyer-carbon funds administered by the Bank, did not always support the interests of client countries. This has led to ex-post criticism by some of the way carbon funds have operated, including of the trend, over time, for carbon funds to transfer more risks, including regulatory uncertainty, to sellers through the ERPA. More recent carbon funds and initiatives, including the CPF, PMR, and FCPF, have sought to ensure greater participation of client countries through more equitable governance arrangements. The governance structure of the CPF featured the balanced participation of buyers and sellers, while the PMR is governed by a Partnership Assembly composed of representatives from all implementing countries (19 at present) and the 13 contributors with all decisions made by consensus. Interviewees highlighted the need for development of new carbon finance products and business models focused on client countries as the Bank moves towards servicing Paris Agreement-based markets linked to the NDCs of client countries.

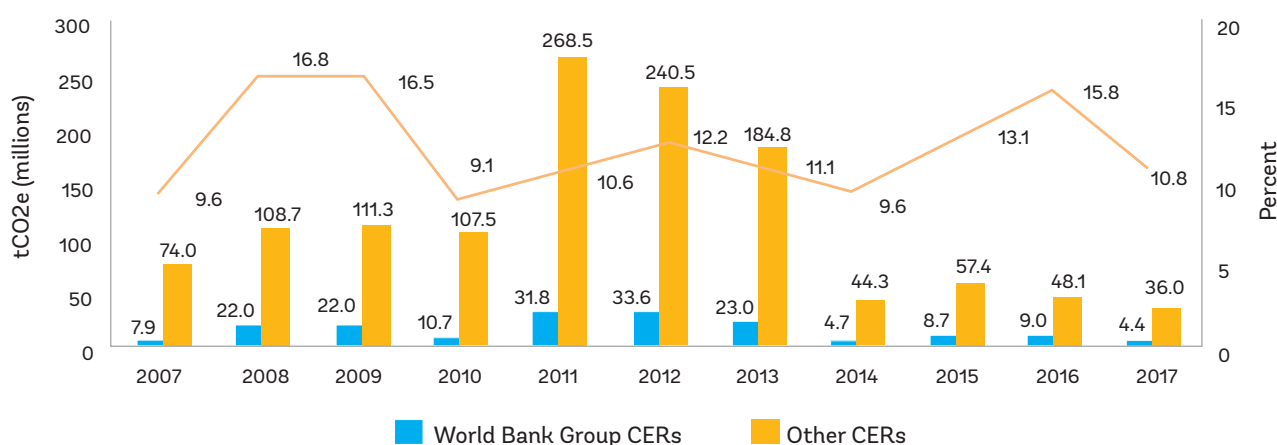
Leveraging private sector actors and mobilizing private finance have been key successes of the carbon funds under consideration in this report. While there was some initial concern that the World Bank carbon finance efforts would crowd out the private sector,⁴⁵ approaches undertaken have ultimately helped to crowd in private investment into the carbon market. The trust funds’ focus on developing common standards, building capacity, and being an early innovator of carbon assets and purchaser of ERPAs have provided market security and comfort, and have, over time, catalyzed private investment activity. Bank carbon funds have used various innovative financing techniques to respond to different market gaps and barriers, such as advance payments, price premiums, and auctions.

The PCF, the Bank’s first carbon fund, “blazed the trail” in defining practices around methodologies and the project approval cycle, from project idea notes to ERPAs. It was one of the first trust funds in which private sector companies were direct participants rather than observers. The PCF helped to crowd in private players who were reluctant to get involved in the market, by helping them become more familiar with climate change-related investments and carbon market approaches and rules and connecting them with decision-makers in CDM host countries. Participants were able to draw on their PCF experience to source CERs directly from the market. The UCF, launched in late 2005, helped build scale as carbon market participants became more familiar with project-level transactions. About 75% of the money in the UCF’s first tranche represented private capital.⁴⁶ By leading the syndication for larger-scale transactions, the Bank helped build financial sector interest in the potential of climate financing. It also helped support carbon market continuity after markets collapsed. World Bank payments for CER issuances have been a significant part of the overall market since its inception (see Figure 12).

⁴⁵ “Some stakeholders and experts interviewed judged the World Bank to have been overly aggressive in establishing follow-on funds after the PCF, which were seen as competing for business against private firms.” Ibid. 38.

⁴⁶ World Bank, 2006. “Umbrella Carbon Facility Completes Allocation of First Tranche” World Bank News, Press Release. <https://www.worldbank.org/en/news/press-release/2006/08/30/umbrella-carbon-facility-completes-allocation-first-tranche>

Figure 12: World Bank Group Share in CDM CER Issuance, 2007-2017



Source: Independent Evaluation Group analysis based on Bank Group portfolio and United Nations Framework Convention on Climate Change (UNFCCC) data.

Note: CER = certified emission reduction; WBG = World Bank Group.

However, interviewees also cited factors that have discouraged (or could discourage in the future) private sector participation and overall achievement of results. They include unevenness in speed and transparency of approvals at the national level in different jurisdictions, reduced risk-inclination over the timeframe of the funds, inconsistent and changing direction from trust fund boards as membership has changed, lack of national capacity to identify opportunities for tradable mitigation outcomes aligned with NDC achievement plans, and broader uncertainty about the Article 6 related rules, infrastructure, and project cycle. Tapping large actors with access to significant capital has not always been feasible. For example, most AFOLU project sponsors are not large corporates able and willing to access and commit capital for project development.⁴⁷

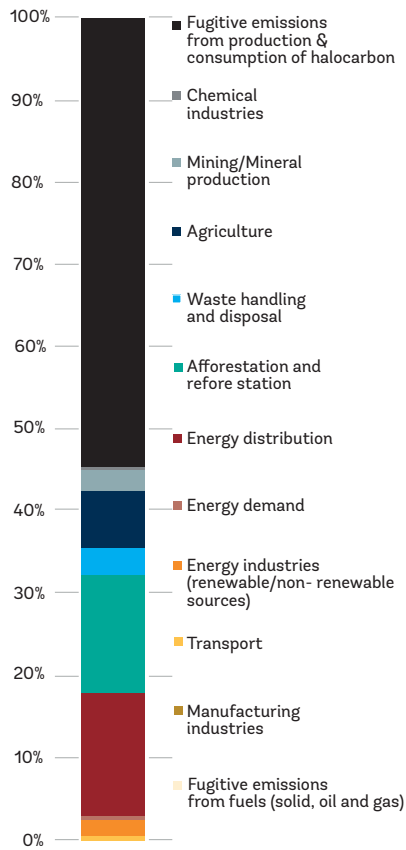
The World Bank, through its carbon funds, has achieved significant results in key sectors, notably renewable energy, energy efficiency, and the abatement of methane and industrial gases. In addition to realizing meaningful reductions, the Bank has improved technical capacity to reduce emissions, developed and deployed low emissions technologies at scale, and delivered significant investment in low-emissions production. As of December 2019, 210 million tCO₂e in reductions were achieved (including 171 million tCO₂e of CERs from CDM projects). Roughly one in six (or over 15 percent) of GHG accounting methodologies used in the CDM was developed or supported by the Bank.⁴⁸ Figure 13 illustrates the sectoral distribution of World Bank carbon fund projects, in total and by region. Of these, only 3.8 million tCO₂e – less than two percent – were delivered in LDCs (see Figure 14).

⁴⁷ Bio CF. 2011. BioCarbon Fund Experience: Insights from Afforestation and Reforestation Clean Development Mechanism Projects. Washington, D.C.: World Bank. 8.

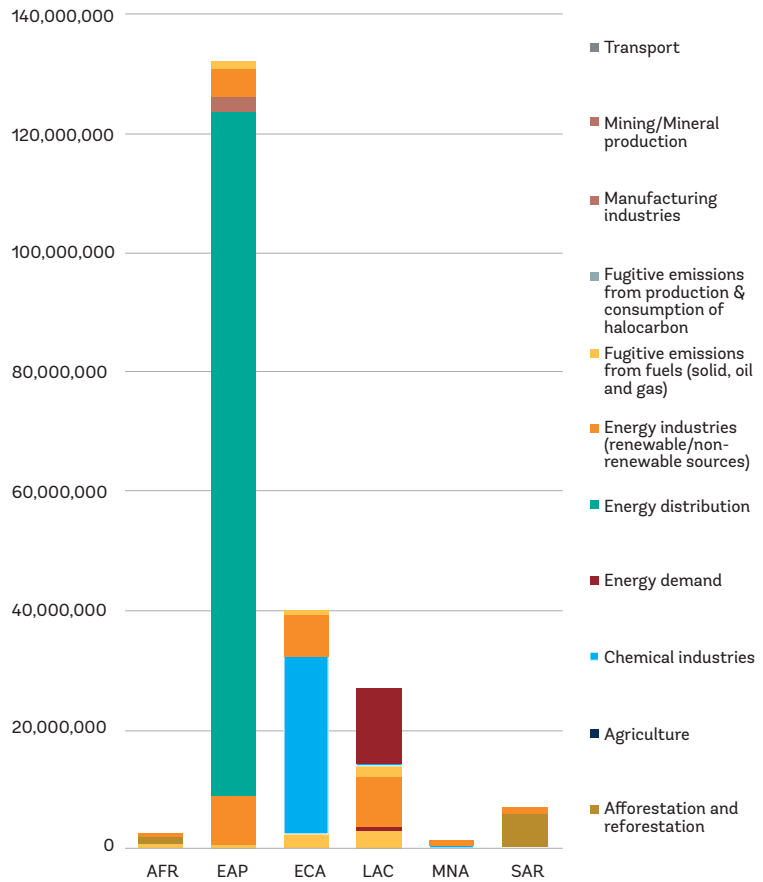
⁴⁸ It is important to note that interviews highlighted that with carbon prices below the \$20-30 range, which was generally true during the period covered by this report, it is challenging to assess additionality and whether transformation occurred in the markets in which the World Bank operated. "End of pipe" projects were the exception. HFC-23 and N₂O have no current market value but a very significant externality that can be monetized, such that the carbon market had a significant transformative impact. However, some of these same industrial gas projects are emitting again because the collapse of carbon markets eliminated the CER cash flow to pay for the necessary catalysts.

Figure 13: Emissions Reductions Purchased by World Bank Carbon Funds (tCO₂e, 2001-2019)

Share of total by sector



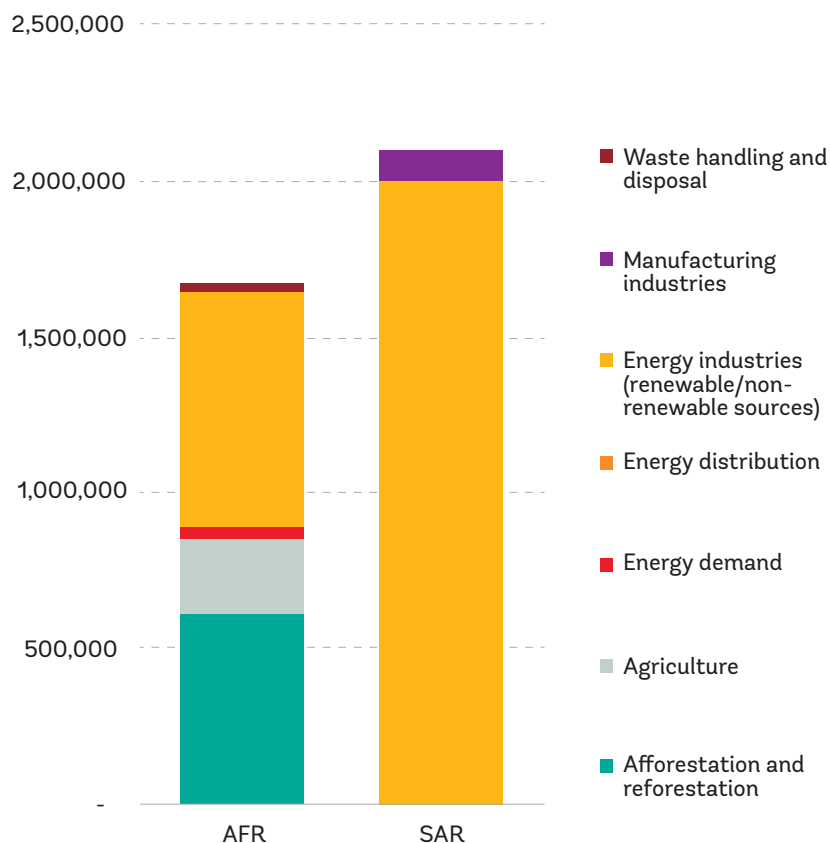
Reductions by sector and region



Source: World Bank



Figure 14: Emissions Reductions Purchased by World Bank Carbon Funds by Region and Sector in LDCs



Source: World Bank

In certain sectors, progress has been sluggish and World Bank results hampered by both external and internal factors. Relatively few World Bank ERPAs have been contracted in the transport and agriculture sectors, despite the significant emissions coming from those sources in client countries. The Bank has worked to improve its programming approaches to address some of the external factors underpinning this lack of progress. For example, these sectors require significant investment in enabling policy at various levels of government.

Despite its prominent role in shaping global carbon finance markets, the Bank struggled to align its trust-funded carbon finance operations to its IBRD and IDA operations. Only about one-fifth of Bank ERPAs were generated from Bank-financed projects.⁴⁹ And the Bank’s support for carbon finance was not well reflected in country strategy documents, particularly at the height of the market in the late 2000s.⁵⁰ As a result, the contribution of carbon finance to the Bank’s work to promote sustainable development was limited. As the carbon funds had their own governance structures separate from the Bank’s Board of Directors, they operated somewhat independently of broader Bank governance, which had limited involvement in their operations.

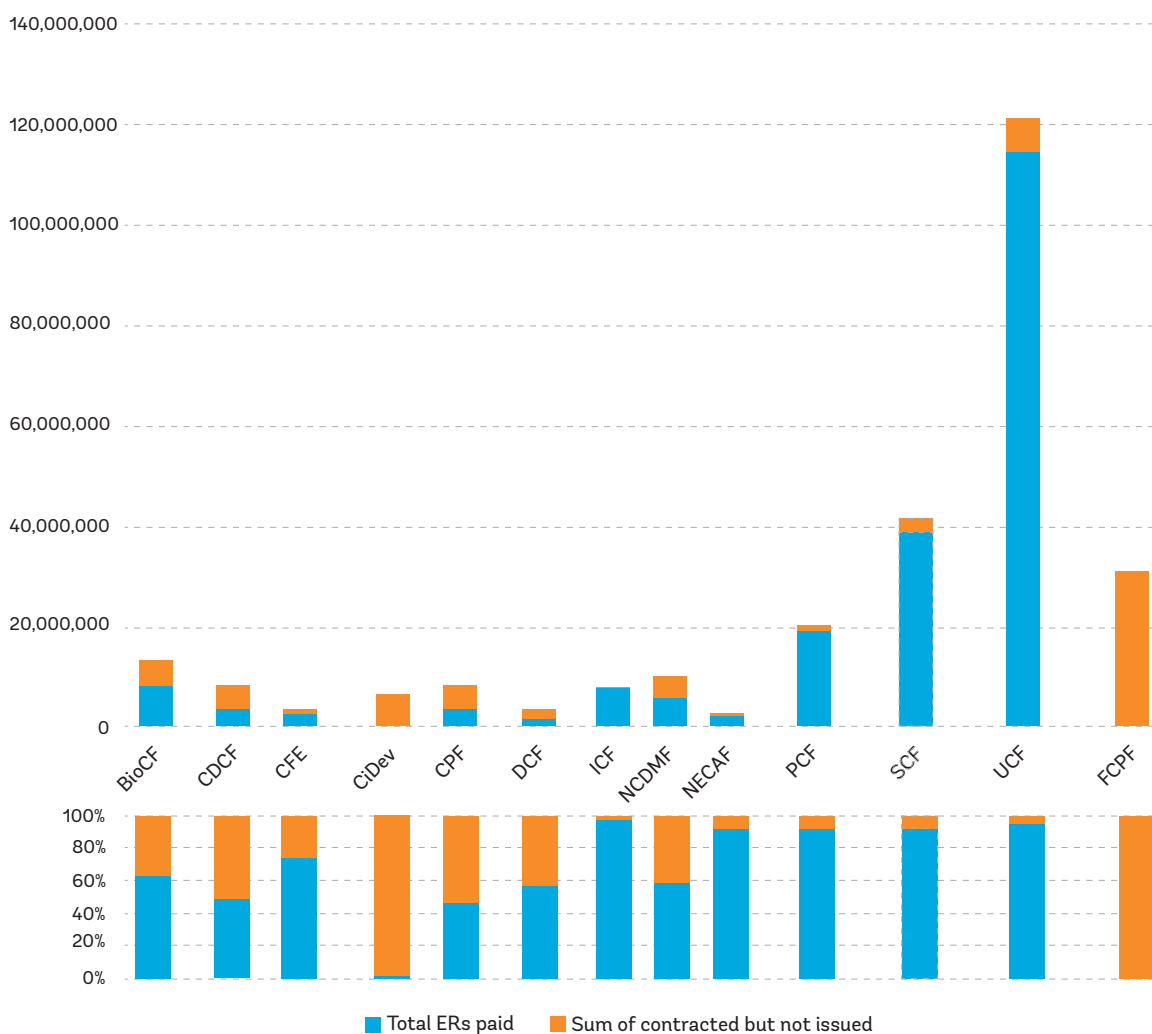
The challenge of aligning carbon funds with the Bank’s own lending operations persists. The TCAF, one of the Bank’s newest carbon finance instruments, was designed to leverage and complement other types of World Bank financing with the aim of supporting sector-wide mitigation measures or policy interventions in middle-income countries. While it became operational in 2017, it is now expected to develop its first programs only in early 2021. Interviewees suggested that TCAF has faced challenges building a robust shared vision among its fund participants, which has stymied potential transactions linked to Bank operations.

⁴⁹ World Bank. 2018. *Carbon Markets for Greenhouse Gas Emission Reduction in a Warming World*. Independent Evaluation Group. Washington, D.C.: World Bank. 72.
⁵⁰ Ibid. 32.

In the AFOLU sector, a successful long-term engagement by the Bank in Mexico has proven that trust-funded operations can scale to on-balance sheet transactions (see case study 4). On the whole, however, such successful large-scale, national-level lending operations in AFOLU by the Bank remain the exception rather than the rule. The presence of *sui generis* funds for REDD+ and AFOLU has been a double-edged sword in that the ring-fenced trust fund resources ensured dedicated resource flows, but, at the same time, isolated them in many instances from mainstream on-balance sheet operations. The agriculture and forestry sectors have, by and large, not been guided by a consistent strategy that leverages trust fund investments. The disconnect with substantial donor commitments has represented a missed opportunity to develop an AFOLU-related project pipeline in a sector that has traditionally presented challenges for the Bank’s (and other MDBs’) on-balance sheet lending at scale.

Progress in addressing deforestation, notably REDD+, through carbon funds has been mixed. Significant commitments have been made in this area, but the delivery of ERs has lagged. Figure 15 shows commitments versus issuances by carbon fund, highlighting the lack of issuances by the FCPF. Major advancements have been made in building national capacity for REDD+, notably through the FCPF, but results-based payments for reduced deforestation have not started to flow in an “efficient and methodologically consistent manner”⁵¹ sufficient to accelerate government-led actions and policy changes, let alone ensure a flow of high-integrity carbon units that could be used for compliance purposes.

Figure 15: Commitments vs. Issuances of World Bank Carbon Funds (tCO₂e, 2001-2019)⁵²

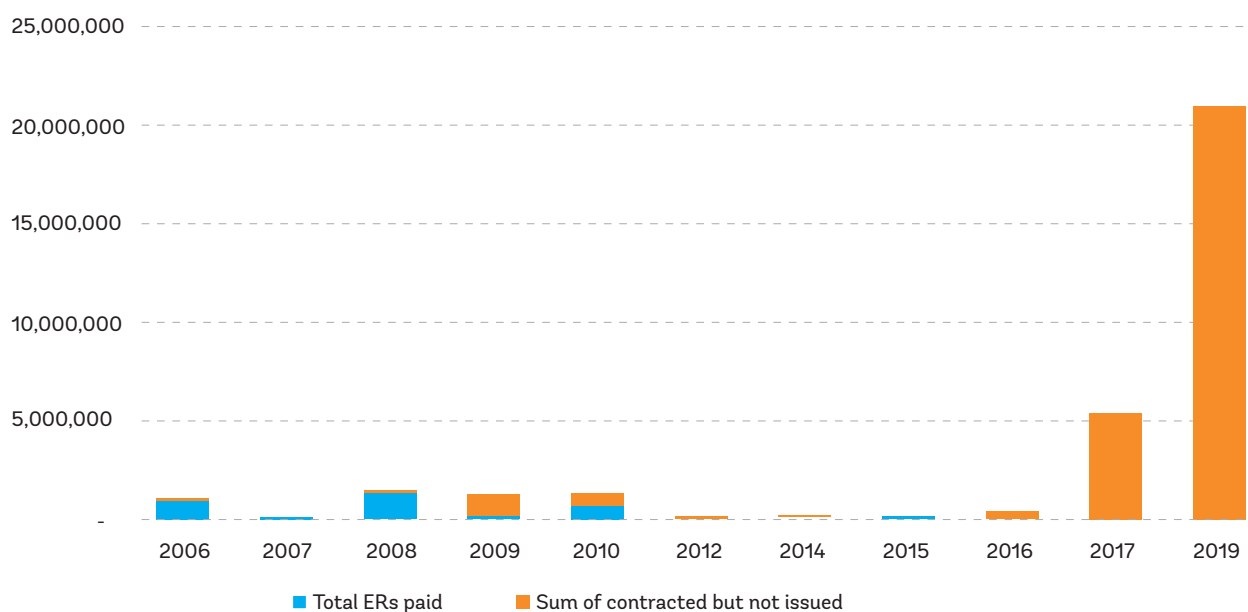


Source: World Bank

51 Meyer, C. 2018. “The state of REDD (mid-2018 edition).” *EDF Climate 411 Blog*. <http://blogs.edf.org/climate411/2018/06/20/the-state-of-redd-mid-2018-edition/>.
 52 Note that this chart excludes TCAF, which had not entered into any commitments as of December 2019.

AFOLU represents a small share of total projects, accounting for less than two percent of the total value of emissions reductions purchased with carbon finance (as of December 2019).⁵³ The challenge of achieving scale in carbon finance from forestry, land use, and agriculture was apparent to the Bank even early on: a 2011 review of the Bank’s carbon finance portfolio noted that most of the Bank’s ERPAs used only 15 of 120 approved methodologies, none of which were land-use related. It also noted that land-use projects tend to have particularly high project development costs, and that conservative decisions surrounding UNFCCC crediting methodologies for preserving forest carbon and non-renewable woody biomass contributed to the low rate of development of CDM projects in least-developed countries—a problem for carbon funds across sectors. Recent FCPF ERPA commitments in LDCs may signal a shift in this trend, as illustrated in Figure 16.

Figure 16: Commitments vs. Issuances of World Bank Carbon Funds in LDCs (tCO₂e, 2001-2019)



Source: World Bank

Nevertheless, the World Bank has played a vital role in pioneering land-based pay-for-performance carbon finance program design, project methodologies, and implementation approaches. The first tranche of the BioCarbon Fund (BioCF), dedicating \$90 million for afforestation, avoided deforestation, agriculture and soil carbon in 2004, represented the first major international donor commitment to pay-for-performance projects in the AFOLU domain, and pioneered many of the first projects in the sector. The \$400 million FCPF Readiness Fund, meanwhile, played a vital role in developing and supporting a common REDD+ readiness framework starting in 2008. Since it was launched in 2013, the BioCF’s innovative Initiative for Sustainable Forest Landscapes (ISFL) has combined jurisdictional-scale pay-for-performance carbon payments and comprehensive partnerships with the private sector and other stakeholders to change economic incentives across entire value chains and forested regions.⁵⁴

The AFOLU sector is perhaps the best example of how climate and carbon finance need to work hand-in-hand to achieve results. Land-based approaches were largely outside of the remit of climate change mitigation in the early days of the GEF, but nevertheless made advances through the biodiversity focal area. Though forestry, agriculture, and land use were not part of the GEF’s formal climate change mandate from its inception in the early 1990s, the GEF’s support of biodiversity and implementation of the CBD has embodied ecosystem protection, including sustainable management of soil and forests (i.e., the pillars of AFOLU-based emissions mitigation) since its early days. These efforts have delivered

⁵³ \$37 million of \$2.2 billion, per World Bank data.

⁵⁴ World Bank. 2011. *Ten Years of Experience in Carbon Finance: Insights from Working with Carbon Markets for Development & Greenhouse Gas Mitigation*. Washington, D.C.: World Bank.

a substantial body of experience across the developing world that has helped to lay the foundation for future climate and development finance initiatives in carbon finance, REDD+, sustainable and climate-smart agriculture, and related land-based emissions mitigation approaches.

GEF efforts to mainstream conservation into government practice and policy pioneered approaches for securing land-based emissions reductions, and foreshadowed later work of REDD+, carbon finance, balance-sheet lending of the Bank, and GCF programming. Between 2010 and 2012, important multi-focal area linkages between biodiversity and REDD+ were formed.⁵⁵ The cross-pollination and dedicated GEF support at the inception of key REDD+ efforts provided a helpful tailwind for GEF REDD+ investment at the country level. Nonetheless, progress has been constrained by the high cost, complexity, and protracted undertaking of REDD+. These challenges in building pay-for-performance carbon finance were anticipated in 2008 when the FCPF launched,⁵⁶ but it has taken time and experience to fully grasp the issues (see Box 7).



⁵⁵ Across its portfolio (inclusive of the World Bank and other implementing agencies), the GEF supported 46 multi-focal-area projects and programs inclusive of Sustainable Forest Management and Reducing Emissions from Deforestation and forest Degradation (SFM-REDD+) between 2010 and 2012. GEF. 2012. "GEF Details Success Stories from Investments in Biodiversity 2010-2012." GEF News. <https://www.thegef.org/news/gef-details-success-stories-investments-biodiversity-2010-2012>.

⁵⁶ A 2011 evaluation of the FCPF found that "[s]ince its inception in 2008, FCPF has made significant progress in meeting the first and last objectives (building in-country capacity and disseminating lessons learned in readiness), but less progress has been made on the two other objectives as would be expected at this early stage (piloting a performance-based system of payments; enhancing livelihoods & conserving biodiversity)." World Bank. 2011. *FCPF: Final Evaluation Report*. Washington, D.C.: World Bank. f.

BOX 7: THE FCPF: GENERATING LESSONS ON RESULTS-BASED FINANCING IN A COMPLEX ECOSYSTEM

Established in 2008, the \$1.3 billion FCPF is the largest global initiative to support countries to reduce emissions from deforestation and forest degradation (REDD+). The FCPF consists of two funds: a \$400 million Readiness Fund to help countries put in place the regimes to effectively implement REDD+, and a \$900 million Carbon Fund to pilot results-based payments in selected countries. To date, the FCPF is working with 47 countries to build their capacity to implement REDD+, and has signed letters of intent with 19 countries to purchase emissions reductions.

Although premised on a simple concept – paying countries to keep trees standing – REDD+ has proven to be challenging to implement, given the complex web of issues upon which it touches. These include land tenure, protecting the rights of indigenous peoples and local communities, addressing the external drivers of deforestation, and ensuring that the emissions generated are of high environmental integrity, underpinned by the need to convene disparate stakeholders at the national and global levels who have different roles to play in realizing the REDD+ agenda.

While the FCPF has been widely recognized for its contributions in helping countries put in place the building blocks for implementing REDD+ and its influence on the development of REDD+ at the global level, it has been criticized for its slowness in reaching the stage of signing ERPA and issuing payments. To date, the FCPF has signed ERPAs with four countries to provide results-based payments of up to \$181 million.⁵⁷

The contrast between the relative ease of entering into ERPAs and the good disbursement record of the \$1.02 billion first tranche of the Umbrella Carbon Facility (UCF)⁵⁸ and the struggle to reach ERPA stage with the FCPF Carbon Fund is, while certainly not comparable, instructive for future results-based financing mechanisms. The two UCF projects applied a clear CDM methodology linking the performance of the HFC-23 incinerator with the calculation of the projects' GHG reductions, leaving little regulatory or performance risk and clear definition of the outcome. This ensured prompt annual and substantial payments against modest upfront investments to destroy the powerful greenhouse gases. By contrast, the complexity of the methodologies, concerns with leakage⁵⁹ and permanence,⁶⁰ and the need to put in place robust safeguards against adverse environmental and social impacts have made agreeing on and achieving the outcomes necessary for payment through the FCPF extremely difficult. As the World Bank explores channeling results-based finance toward new applications critical for addressing the climate challenge, such as "blue" carbon stored in coastal and marine ecosystems, it will be important to learn from these experiences.

Over the course of the late 2000s and early 2010s, the intensive work on forest-based carbon finance initiatives revealed the degree to which improvements and reforms in land management, political governance, and rural economic development enable viable land-based emissions reduction regimes. Across the major forest-based carbon finance readiness and market funds, land-based emission reduction programs evolved from individual REDD+ projects to broader landscape- and jurisdiction-scale approaches. The ISFL, for example, uses a "landscape approach in each jurisdiction... to implement a development strategy that pursues environmental, social, and economic impacts at scale."⁶¹ This approach has guided REDD+ financing ever since, including in other funds. Notably the CIF's Forest Investment Program (FIP) "target[s] fundamental shifts in socio-economic incentives and norms... to reframe forestry as a more mainstream component of the rural socio-economic development agenda."⁶²

⁵⁷ World Bank, 2019. "World Bank and Chile Sign Agreement to Reduce Forest Emissions, Improve Local Livelihoods." *World Bank News, Press Release*. <https://www.worldbank.org/en/news/press-release/2019/12/05/world-bank-and-chile-sign-agreement-to-reduce-forest-emissions-improve-local-livelihoods>

⁵⁸ As of December 2019, 95% of the contracted ERPA volume has been paid.

⁵⁹ Leakage occurs when an emissions reduction effort in one jurisdiction inadvertently causes an increase in emissions in another jurisdiction that does not have an equivalent emissions-reduction effort.

⁶⁰ Permanence refers to the long-term nature of emissions reductions.

⁶¹ BioCarbon Fund Initiative for Sustainable Forest Landscapes. "Approach." <https://www.biocarbonfund-isfl.org/approach>. Accessed January 15, 2020.

⁶² Itad. 2019. *Final Evaluation Report: Evaluation of Transformational Change in the Climate Investment Funds*. Hove, UK: Itad. 39.

The evolution toward economy-scale interventions has also been driven by the fact that project-level successes often proved difficult to scale, as carbon payments were neither sufficiently large nor reliable enough to serve as motivators of behavioral change. An evaluation of the FIP characterized thinking on this issue succinctly: the FIP “recognized that valuing carbon was not in itself sufficient to drive transformational change.”⁶³ One pilot project in Kenya showed that “farmers care less about the [carbon payment] bonus [from soil carbon sequestration] than about more consistent, higher yields” resulting from the improvements in cultivation techniques initiated by the project (see Case Study 3).

Starting in the late 2000s, World Bank forest carbon programs, such as the BioCF and FCPF, provided much of the field experience that informed the tortuous but productive UNFCCC negotiations to establish meaningful regimes for forest protection and international results-based carbon finance flows.⁶⁴ It has been observed, “When REDD+ was first introduced into the UN Framework Convention on Climate Change, the role of the private sector was viewed as minimal.”⁶⁵ It was further assumed that pay-for-performance financing of REDD+ would scale quickly, and that governance (both of the fund and of country-level operations) was one of many considerations, though perhaps not the highest priority. Over time, these views have changed to embrace a slower, more methodical approach prioritizing local legitimacy and integrity over the rapid pursuit of market transactions. By 2011, after three years of operation, the World Bank had already concluded, “The governance structure and processes of the FCPF are seen as highly effective by members and observers alike. This is promoted by the implementation of a learning-by-doing approach, high levels of participation, a good balance in membership, and consensus-based decision making.”⁶⁶

In recent years, AFOLU-focused carbon finance initiatives have increasingly internalized robust support for governance, market readiness, community participation, and private sector partnerships in a holistic manner. As a World Bank study noted in 2017, “It is a relatively new approach to explicitly develop emission reductions programs with private sector involvement to address deforestation through a dialogue between donor governments, forest countries, and the private sector.”⁶⁷ At times, there has been a trade-off between community engagement to ensure buy-in and political legitimacy, on the one hand, and expediency of implementation on the other. The upshot of this discovery has been a bifurcation of forest and agro-carbon programs. More nimble private sector partnerships can achieve impactful project-level interventions, while more methodical, long-term approaches can focus on building governance and political regimes to enable large-scale conservation.

The promising early results of the ISFL suggest that deeper, integrated approaches to land-based emissions reduction that incorporate both carbon finance and private climate finance elements can be successful. ISFL’s design embodies market readiness for results-based finance regimes and alignment of local economic incentives with conservation and stewardship. A recent evaluation of ISFL found that carbon finance has played a small role in purely government/public-entity/NGO-led or private sector-led projects, but has had a major catalytic role in public-private partnerships.⁶⁸ ISFL’s successes in developing private sector partnerships and a lighter-touch governance approach compared to previous forest carbon funds attest to the potential for rapid successes of nimble programs with a smaller number of aligned actors. Such programs work best when a small number of government and corporate actors comprise the decisive set of stakeholders for success on the ground. Where broader buy-in of community and local and national government is required to establish enabling regimes, more painstaking readiness work is required to lay the groundwork for results-based (i.e., carbon or avoided deforestation) finance solutions bankrolled at scale by international investors and governments.

⁶³ Ibid.

⁶⁴ “[D]ue to the slow pace of negotiations, the FCPF is de facto influencing UNFCCC negotiations by providing a platform for donor and REDD country participants to debate the definitions and measurement criteria for REDD readiness — steps that are necessary for the development of a credible mitigation instrument and any future financing scheme.” World Bank. 2012. “Forest Carbon Partnership Facility.” *Global Program Review* 6 (3): 2.

⁶⁵ World Bank. 2017. *Engaging the Private Sector in Results-Based Landscape Programs: Early Lessons from the World Bank’s Forests and Landscapes Climate Finance Funds*. Washington, D.C.: World Bank.

⁶⁶ World Bank, 2011. *FCPF: Final Evaluation Report*. Report. Washington, D.C.: World Bank.

⁶⁷ World Bank. 2017. *Engaging the Private Sector in Results-Based Landscape Programs: Early Lessons from the World Bank’s Forests and Landscapes Climate Finance Funds*. Washington, D.C.: World Bank.

⁶⁸ DAI. 2019. *BioCarbon Fund Initiative for Sustainable Forest Landscapes: First Program Evaluation*. Washington, D.C.: BioCarbon Fund ISFL.

Lessons Learned and Recommendations



Over nearly 30 years since the adoption of the UNFCCC in 1992, the World Bank has pioneered the use of climate finance to achieve climate and development outcomes. While the Bank's efforts in the climate finance space have evolved over time, it has continually pushed boundaries and influenced overall global progress on climate change. Much of the progress achieved in client countries' policies and markets and many innovative climate investments driven by the World Bank would not have been possible without the Bank's use of climate-related trust funds.

This report focuses on two crucial climate finance mechanisms used by the World Bank to support mitigation efforts, namely the GEF and the Bank's carbon finance funds. Stakeholder interviews and analysis of reports and evaluations point to some specific lessons upon which the Bank may seek to build.

LESSONS LEARNED

Lesson #1: Early World Bank activity on the topic of climate change and climate finance was both ground-breaking and instrumental in accelerating mitigation efforts, particularly for promoting innovation, technology transfer, and building carbon markets.

The World Bank's use of climate-related trust funds, particularly the GEF and carbon funds, helped the Bank pilot new approaches to climate mitigation. GEF funding provided early support to test new technologies, business models, and policies, laying the foundation for programs that later became mainstreamed within World Bank operations and with other MDBs.

In carbon funds, the World Bank can be credited with helping to launch the CDM and international trading in carbon units, building the capacity of national governments and market actors, and demonstrating methodologies, business models, and best policy practices for a carbon market with high environmental integrity. The Bank was not only an innovator, but also a significant driver of private financing, a convenor of policymakers and private actors, and a contributor to knowledge about carbon finance.

In the AFOLU sector, the Bank was able to catalyze a body of work that has helped to enable the global REDD+ community to understand how to bring about meaningful change to land use and forest conservation practices.

Lesson #2: Risk-taking is essential for results, creating development impact, catalyzing market transformation, and mobilizing private investment. Climate-related trust funds have been a source of funding that has enabled greater risk-taking, piloting, and innovation than the Bank's on-balance sheet funding.

Climate-related trust funds remain a vital source of risk-inclined funding to support Bank strategies, whether through grants or concessional blended finance instruments. Many sectors, technologies, and markets remain beyond the acceptable risk/return profile of private investors, carbon markets, and even development finance institutions. The ability of the Bank to access a limited pool of capital that is more patient and can bear higher risks has been, and will continue to be, valuable to delivering on the Bank's climate strategy and goals.

Though not always successful, the GEF has provided grant support for many early-stage clean energy technologies over the decades and funded a variety of cutting-edge and experimental implementation mechanisms and modalities. These vanguard programs of climate finance have enabled substantial learning-by-doing and have provided a vital complement to and accelerant for market-based and concessional investments made by private investors and the development finance community. The promotion of new renewable energy technologies highlighted in Case Study 1, is one good example; others include support for efficient lighting and distributed energy systems.

The carbon funds at the World Bank were a testing ground, with the Bank serving as an indispensable early funder and consolidator of carbon trading under the Kyoto Protocol flexible mechanisms. The Bank has continued to innovate in response to the wildly changing policy and political landscape of carbon finance through initiatives such as the PMR and the PAF. It remains an essential anchor and knowledge center for global efforts to promote carbon pricing. Much as it did for the Kyoto Protocol, the World Bank can help build efficient and ambitious carbon trading and transfers under Article 6 of the Paris Agreement.

Hard lessons learned paved the way for future evolution and improvement across an array of climate finance subdisciplines, including REDD+ implementation, program-scale adaptation and mitigation, carbon market development, country ownership/direct access, and blended finance approaches.

Lesson #3: Partnership and shared vision with strategic donors allowed the Bank to create transformative products and programs and allowed the Bank to innovate.

The Bank has been able to utilize carbon and climate trust funds most effectively when donor partners have allowed the Bank the flexibility to innovate and transform the climate and carbon finance space, as was the case with the PCF. In cases where the Bank has engaged with partners without a shared broader strategic vision the results have been less conclusive and significant.

Lesson #4: As the external policy, scientific, and financial environments have evolved, the innovative and responsive capacity of the World Bank's trust fund approach allowed it to adapt and be flexible to meet the needs of clients and countries, and continue to create results in climate and carbon finance.

For example, the PMR was initially established in 2010 to promote "market readiness" for the anticipated emergence of domestic and international carbon markets. However, when the momentum behind international carbon markets stalled and carbon prices collapsed between 2011 and 2013, the PMR adapted its approach to become more flexible in its objectives and, now, works to scale up mitigation efforts through various domestic carbon pricing mechanisms, such as carbon taxes, crediting and offsets, and other market-based instruments. The PMR remains unique in its work to support countries in developing carbon pricing policy choices for subsequent implementation and is a central knowledge hub on designing carbon markets, carbon pricing instruments, and best practices.

Lesson #5: Climate-related trust funds have been an essential source of funding in building capacity at the national level in the public and private sectors and in underpinning global policy, rules, and best practices.

Beyond the continuing need for increased provision of climate finance from donor governments, significant barriers for scaling up climate finance exist within the enabling environment globally and in many client countries. These include policies, standards, and rules, as well as deficiencies in the adoption of best practices, that do not sufficiently incentivize the mobilization of domestic savings and internal sources of capital for climate-related investment.

Much of the work funded by climate-related trust funds has enabled the World Bank to address these types of barriers. For example, programmatic approaches to carbon finance for REDD+ and national-level capacity building improved governance around forest conservation and carbon markets. Cooperation and peer learning have enabled better decision making on the essential prerequisites for market-scale investment, and in some countries like Mexico, have laid the foundations for large-scale public and private investments in land-use sectors.

Lesson #6: Project-based approaches are most successful when anchored within broad programmatic approaches that consider not only the direct financing of individual projects, but also project and pipeline development and funding and frameworks for the mobilization of private finance flows.

The World Bank recognized early that programmatic approaches were more efficient in helping to manage projects supported by climate-related trust funds. For example, the World Bank "actively supported the move to" Programmes of Activities (PoAs) under the CDM, to get away from what was a purely project-based mechanism and build more programmatic approaches at scale. The Ci-Dev helped to show how programmatic funds could be managed and deployed efficiently and effectively, and the CPF demonstrated how it could achieve scale.

While many climate and non-climate related trust funds are still not entirely comfortable with fully delegating project level approvals, early tests of programmatic approaches have provided useful lessons to build programmatic frameworks that exist today. The GEF was an early supporter of testing programmatic strategies to address operational and administrative challenges its processes presented to World Bank staff who perceived the GEF project cycle as lengthy and time-consuming. The GEF has recently stated its intention to expand its focus on blended finance and to be more effective in attracting private investment, a strategy that may facilitate greater World Bank engagement.

Lesson #7: Aligning climate-related trust fund activities with the World Bank's own strategic goals is critical.

While early climate-related trust fund activities did not always align with the Bank's (then existing) priorities, addressing climate change is now one of the core cross-cutting strategic goals of the Bank, and existing climate-related trust funds align squarely with it. This allows the Bank to take a more strategic approach in partnering and financing its priorities and allows for a higher-level policy dialogue with donors and shareholders. It also enables efficiency gains by aligning with already existing operational teams and programs, global practices, and regions. And, importantly, it brings trust funds into the Bank's country engagement processes, ensuring alignment with country strategies and NDCs.

Lesson #8: The World Bank benefits from staff involvement in climate projects and trust funds, as they become technical experts and leaders in their field.

Numerous experts and members of staff and management from across the World Bank and its climate finance initiatives were interviewed for this inquiry. Their insights underscore the wealth of intellectual capital and experience that has accrued in the workforce engaged in climate finance. These interviewees have worked on donor-funded clean energy, AFOLU, carbon market, and other projects over many years and have become distinguished experts within the Bank and internationally. The emergence of such broad and deep repositories of expertise employed in climate-related sectors now central to the Bank's strategy and operations has been a significant indirect institutional benefit to the World Bank.



Recommendations



The World Bank is fully committed to helping and enabling its clients and the international community to meet their pledges under the Paris Agreement and to achieve sustainable development. Using climate-related trust funds efficiently and effectively is consistent with the Bank's maximizing finance for development (MFD) "whole-of-finance" approach to systematically leverage all sources of finance, expertise, and solutions to support developing countries' sustainable and climate-related goals. The following recommendations result from the review and analysis contained within this retrospective report and should be considered as the World Bank strategizes on the next phase of climate-related trust funds.

Recommendation #1: Continue to use trust funds strategically to address critical barriers and challenges for scaling up climate action at all levels, including helping clients to meet their Paris commitments and Sustainable Development Goals (SDGs).

The World Bank should use climate-related trust funds to transform markets and create the building blocks of low-carbon, climate-resilient economies in emerging markets. They can fill financing gaps that others are unable or unwilling to support through technical assistance, capacity building, standard-setting, and support for climate-compatible policies and innovative technologies and approaches.

Recommendation #2: Increase focus on using climate-related trust funds to promote emerging high-impact, neglected, and priority niches for rapidly addressing climate change at a scale consistent with the ambition of the Paris Agreement, both in mitigation and adaptation.

Addressing climate change is no longer about merely mitigating emissions. Locked-in warming requires serious efforts to help vulnerable countries adapt to the inevitable impacts of climate change. Climate-related trust funds should reflect this growing reality. Climate efforts in the mitigation space have not yet achieved satisfactory results in a range of sectors and domains where technological progress and climate finance innovation offer significant potential for near-term impact. New climate change-related imperatives, such as nature-based solutions for adaptation, resilient infrastructure, off-grid energy access, financial market transformation, urban livability, and sustainable cooling, have emerged as global priorities that help address both mitigation and adaptation needs and are gaining prominence in NDCs.

Leveraging its expertise, skills, and unique role, the Bank should consider catalyzing action in areas such as:

- i. **Sustainable cooling:** The Bank has already developed a dedicated sustainable cooling program through its Energy Sector Management Assistance Program (ESMAP) trust fund and is spearheading a sustainable cooling strategic roadmap to address the need for transformative change in appliance efficiency, sustainable urban design, cold chain, refrigerants, and resilience to extreme heat, among other cooling-related challenges. Dedicated funding would help enable scope, scale, and integration into national development plans, other climate finance and development initiatives, and core World Bank lending operations.
- ii. **Linkages between climate and biodiversity:** The UN has declared 2020 a biodiversity super year⁶⁹ in response to a worsening anthropogenic biodiversity decline. Long recognized by the GEF, the challenges of climate change and biodiversity are deeply intertwined. The Bank has an opportunity to redouble its commitment to both through dedicated programming that holistically addresses both domains.
- iii. **Livable cities:** Urbanization has been one of the defining megatrends in the developing world since the middle of the 20th century, and yet urban populations are acutely vulnerable to climate challenges, such as the urban heat island effect, water insecurity, air pollution, inadequate and environmentally unsustainable mobility, and vulnerability to sea-level rise and related threats. An increasing number of global initiatives have recognized that cities and subnational jurisdictions are a critical locus of decision-making authority and agency for devising and delivering climate solutions.
- iv. **Sustainable infrastructure:** With the emergence of the IFC performance standards, the environmental, social, and governance (ESG) investment industry, and climate risk management and disclosure best practices, sustainable infrastructure has achieved widespread recognition as a global policy and investment priority, but implementation and impact lag. The World Bank is uniquely positioned to help shepherd a new generation of sustainable infrastructure planning, financing, construction, and operating practices across the developing world, addressing both development and climate imperatives.
- v. **Carbon markets and Article 6 of the Paris Agreement:** Enshrined in the Paris Agreement as a core solution, market mechanisms remain an enormous but mostly unexploited opportunity to drive finance and action for emissions reduction. World Bank-led initiatives such as the Carbon Pricing Leadership Coalition, the Partnership for Market Implementation, the TCAF, and other carbon finance programs have positioned the Bank to deepen its current leadership role in this space.
- vi. **Agriculture, food, and land use:** Food and job insecurity surrounding climate-exacerbated natural disasters have been a significant driver of instability, conflict, and involuntary migration across the developing world, from Central America to the Sahel to the Levant. In addition to the compelling environmental rationale for sustainable and climate-compatible agriculture, land use and food security remain paramount economic and political concerns across the world. Agriculture is also a lagging sector in terms of action on both emissions reduction and adaptation. Appropriate agriculture-related initiatives have tremendous potential to deliver myriad benefits for climate and beyond.
- vii. **Climate risk management:** Following the Bank of England, a widening circle of financial oversight bodies and private institutions has embraced the call to manage climate risks at the project, asset, institution, and market levels. Recent research by the IMF and Bank for International Settlements has reinforced the systemic concern presented by climate risks, which cannot be hedged. Entities such as the Task Force on Climate-related Financial Disclosures, the UN Principles for Responsible Investment, the Network for Greening the Financial System, and the Coalition of Finance Ministers for Climate Action are some of the key players driving improved risk management in the financial sector. The World Bank is well-positioned to support efforts by its client countries and global cooperation aimed at reallocating capital to climate-compatible investment to safeguard financial stability and development progress.

69 UNDP. 2019. "Wildlife films to animate the 'biodiversity super year.'" *UNDP News*. <https://www.undp.org/content/undp/en/home/news-centre/news/2019/wildlife-films-to-animate-the--biodiversity-super-year-.html>.

Recommendation #3: Continue to seek alignment and efficiencies among existing climate-related trust funds, including consolidating where possible.

The World Bank's Umbrella 2.0 concept under its existing trust fund reform program allows a more strategic approach, including greater donor coordination and aligned funding objectives. Moving to fewer and larger trust funds can enable the Bank to streamline planning and budgeting cycles, strengthen the program management function to increase focus on results, and improve reporting, communications, and operations more directly.

Recommendation #4: Ensure climate-related trust funds are integrated into the strategy, planning, and budgeting of World Bank Group operational teams, global practices, and regions, and institutions, including IFC and MIGA.

The World Bank recognizes that achieving climate objectives requires a more coordinated approach to building both the public and private sectors. The financing needed to address climate change and its impacts far surpasses domestic public budgets and available aid. Much of the transformation required is in the hands of private actors.

In addition to continued efforts to meet agreed international assistance targets, it will be imperative to leverage private capital and private sector participation to transition to a low-carbon, climate-resilient world. Climate-related trust funds should deliberately and explicitly incorporate in planning and execution an approach that is inclusive of both public and private sector development and should align fully with the strategy, planning, and budgeting of Bank operational teams at the country and regional level, as well as with the Bank's global practices. Doing so can help to ensure full alignment of trust fund-supported efforts with institutional delivery for clients and with country-driven planning processes (including NDCs and other country-driven climate strategies). It can promote the use of resources in line with the Bank's comparative advantage and enable the Bank to broaden its reach and strengthen its ability to generate and share knowledge.

Recommendation #5: Ensure climate-related trust funds add to the overall climate finance architecture, complement existing efforts among peers, and "crowd in" rather than "crowd out" private finance and markets.

The World Bank plays a unique role among DFIs and others in the climate finance architecture, with its global footprint, deep expertise, and convening power. The Umbrella 2.0 approach will allow current and future trust funds to support the Bank's keystone role in the global climate finance architecture, not only for convening across countries, regions, and stakeholders, but also elevating best practices and thought leadership on climate finance at the global level.

In areas such as carbon finance and climate finance approaches for international financial markets, the Bank has a unique position and ability to catalyze common frameworks and approaches across countries and regions. More broadly, complementarity with private markets should encourage the Bank to use trust funds to take appropriate levels of risk at the project and portfolio level, including providing trust fund support in local currency to strengthen alignment with project cash flows, related risks and barriers, and local financial markets.

Recommendation #6: Ensure trust funds have sufficient grant-equivalent resources (not just concessional funding) to fund a range of activities in neglected high-impact areas and to be complementary to private finance.

As the World Bank considers how climate-related trust funds can support evolving climate finance needs, it should embrace its unique capacity to bear risk and to deliver grants, concessional loans, and other instruments, such as guarantees either separately or layered within programmatic approaches.

The activities identified in this report that were the most catalytic required grant-based funding, including technical assistance, capacity building for enabling environments and market development, as well as

convening and knowledge development and sharing. Models must be tested before they can be scaled up with less concessional forms of financing. Significant risk needs to be taken in new technologies or frontier markets, and many Bank client countries, including LDCs, small island developing states (SIDs), and other low-income countries, require mostly grant-based resources to suit their national circumstances and levels of vulnerability.

Recommendation #7: Continue to invest in building staff and technical capacity across climate-related impact areas.

The trust fund approach has proven an excellent learning model for the World Bank as an institution. It can continue to be used as a way to learn, innovate, and rapidly develop and deploy staff and technical capacity that can then be mainstreamed more widely within the Bank and the markets in which it operates. Investing up front in both in-house and contracted analysis and knowledge projects should continue to be a fundamental way that the Bank stays abreast of emerging issues and positions itself to respond.

Recommendation #8: Ensure strengthened climate-related trust funds are at the heart of the World Bank's growing role in the provision of global public goods in support of its clients' sustainable development priorities.

Climate change touches upon so many areas of client country societies and economies that it cannot—and should not—be separate from broader efforts to support the provision of public goods, such as health (through support for clean air and managing the spread of diseases due to changes in climate), potable water (through climate-resilient water management and improvement in waste handling), and food security (through innovation in agricultural practices and the spread of climate-resilient agriculture).

The Umbrella 2.0 trust fund reform provides an opportunity for the World Bank, in partnership with donors, to define a clear vision and long-term strategy for carbon and climate finance that will enable it to better serve its keystone role in global efforts to supply public goods as mandated by its shareholders.

Annex I: Case Studies



Case Study 1: World Bank/GEF early experience promoting innovative technologies: CSP

GEF Support in Morocco: Ain Beni Mathar Power Plant	
Date established: 2010	Size of Project: \$43 million GEF grant
Type of Funding: Grant	Use of funding: Project preparation, development and construction
Purpose of Project: <ul style="list-style-type: none">• To install CSP at a scale that sufficiently tests and demonstrates the storage technology component, triggers important cost reductions, and fosters associated economic benefits, such as local manufacturing industries, improved energy security, and a shift away from fossil fuels.• To test a business model that could attract and increase private sector backing and enhance the availability of capital and 'know-how' to support the development of a CSP portfolio.	
How these funds enabled the Bank to innovate and address barriers: <p>The initial World Bank/GEF grant to the Ain Beni Mathar project helped pilot Integrated Solar Combined Cycle power in the country's northeast. The pilot project, also supported by an African Development Bank loan, built capacity and generated interest among investors. Further investment followed from the CIF's Clean Technology Fund; the African Development Bank and World Bank; bilateral agencies; and the private sector, through the Bank Group's private sector arm, the IFC; and enhanced by another GEF grant.</p>	

The GEF has a long history of supporting innovative technologies premised on learning curves and driving down production costs through economies of scale and innovation. The GEF was one of the first funders of concentrated solar power (CSP), approving large grants for four World Bank projects in India (which ultimately did not materialize), Mexico, Morocco, and Egypt between 1996 and 2004. Of the many aims of these projects, one central theme was to buy-down capital costs to accelerate the commercialization of CSP technology.^{70,71} Even though each project was significantly delayed and the India project canceled, the learning from these projects was valuable in providing the World Bank and GEF with experience on how to best bring down production costs.

⁷⁰ World Bank. 1999. *Mexico - Hybrid Solar Thermal Power Plant Project: Project Information Document*. Washington, D.C.: World Bank..

⁷¹ World Bank. 2007. *Morocco - Integrated Solar Combined Cycle Power Project: Project Appraisal Document*. Washington, D.C.: World Bank.

The difficulties these projects encountered were “predominately associated with non-technical issues.”⁷² Regulatory and institutional issues presented significant barriers, especially a lack of incentives to maximize operation of the solar field and a supportive framework for renewable energy.⁷³ It was also challenging to adopt technologies that were not yet fully commercialized. Construction costs were substantially underestimated, resulting in additional cost and risks as projects became increasingly delayed.⁷⁴

The project in Ain Beni Mathar, Morocco, supported by a \$43 million GEF grant to finance construction of a 20 MW CSP component in a 472 MW solar/gas hybrid power plant, was eventually completed and began operations in 2010, nearly hitting its targets for environmental benefits and power generation.⁷⁵ In 2012, building on the initial experience with CSP, the World Bank helped to catalyze support for the Noor-Ouarzazate (Noor I) project, a 582 MW CSP project and the largest of its kind in the world, with a field of 2,000 mirrors covering more than 3,000 hectares with melted salt for energy storage.⁷⁶ The CIF was the primary source of concessional funds with a commitment of \$435 million, part of a larger regional commitment of \$750 million attracting more than \$3 billion in capital investment in CSP technologies to Morocco. The GEF made a \$10 million contribution to the project in 2014 via the IFC. The first of Noor’s three phases was completed and entered into operation in 2016. The associated learning in the first phase has led to significant cost reductions.⁷⁷ Nonetheless, CSP uptake worldwide remains slow, as production costs are still higher than commercially viable in most locations, and there is a lack of partnerships and global focus on the technology.

Following on the same logic the GEF formulated in the 1990s, the World Bank, continues to support innovative technologies to catalyze commercialization. In 2018, the World Bank committed \$1 billion for a program to accelerate investments in battery storage,⁷⁸ and in 2019, it approved a \$300 million loan for a battery storage project in China.⁷⁹ Initial donor support for the program was announced in September 2019: \$250 million from the CIF provided by the UK.⁸⁰ Energy storage has received much wider global attention and support than CSP. Since 2010, lithium-ion battery costs have fallen by 87 percent,⁸¹ and several private enterprises have built large-scale manufacturing plants around the world.⁸² However, barring some markets, battery storage is often still too expensive for deployment. The World Bank’s large, long-term commitments to energy storage technologies are, in many ways, similar to the GEF’s financial commitments to CSP over two decades ago; those early CSP projects were crucial precedents for the Bank’s support of the next wave of innovative technologies.

72 World Bank. 2006. *World Bank GEF: Assessment of the World Bank/GEF Strategy for the Market Development of Concentrating Solar Thermal Power*. Washington, D.C.: World Bank. The Mexico project was originally scheduled to close in 2009 and closed in 2016, the solar field was originally planned to be 31 MW and was reduced to 14 MW, and the project was initially appraised for \$348 million but ultimately cost \$525 million. As of May 2017, the solar plant had yet to be fully commissioned. IEG Review Team. 2017. *Mexico - MX Hybrid Solar Thermal (Agua Prieta)*. Washington, D.C.: World Bank.

73 Ibid.

74 GEF. 2009. *Investing in Renewable Energy: The GEF Experience*. Washington, D.C.: GEF.

75 GEF. 2016. *Follow the Sun: how Morocco pioneered investment in clean energy*. Washington, D.C.: GEF.; World Bank. 2014. “Demonstrating the Viability of Solar Thermal Power in Morocco.” *Projects & Operations*. <https://www.worldbank.org/en/results/2014/04/15/demonstrating-the-viability-of-solar-thermal-power-in-morocco>

76 CIF. “Ouarzazate: Lighting Up the Sky.” <https://www.climateinvestmentfunds.org/CIF10/morocco/ouarzagate>; Shields, N. and J. Masters. 2019. “Morocco in the Fast Lane with world’s largest concentrated solar farm.” *CNN.com*. <https://www.cnn.com/2019/02/06/motorsport/morocco-solar-farm-formula-e-spt-intl/index.html>.

77 World Bank. 2016. “Learning from Morocco: Why Invest in Concentrating Solar Power?” *World Bank News*. <https://www.worldbank.org/en/news/feature/2016/11/08/learning-from-morocco-why-invest-in-concentrated-solar-power>; Parke, P. and C. Giles. 2018. “Morocco’s megawatt solar plant powers up.” *CNN Marketplace Africa*. <https://www.cnn.com/2016/02/08/africa/ouarzagate-morocco-solar-plant/index.html>.

78 World Bank. 2018. “World Bank Group Commits \$1 Billion for Battery Storage to Ramp Up Renewable Energy Globally.” *World Bank News, Press Release*. <https://www.worldbank.org/en/news/press-release/2018/09/26/world-bank-group-commits-1-billion-for-battery-storage-to-ramp-up-renewable-energy-globally>.

79 World Bank. 2019. “World Bank to Help China Develop Renewable Energy with Battery Storage.” *World Bank News, Press Release*. <https://www.worldbank.org/en/news/press-release/2019/06/11/world-bank-to-help-china-develop-renewable-energy-with-battery-storage>.

80 CIF. 2019. “CIF Receives Record Contribution for Energy Storage.” *CIF News, Press Release*. <https://www.climateinvestmentfunds.org/news/cif-receives-record-contribution-energy-storage>.

81 “Battery Pack Prices Fall As Market Ramps Up With Market Average at \$156/kWh in 2019.” *BloombergNEF*, December 3, 2019. *Blog*. <https://about.bnef.com/blog/battery-pack-prices-fall-as-market-ramps-up-with-market-average-at-156-kwh-in-2019/>

82 Benchmark Mineral Intelligence. 2019. “Who is winning the global lithium-ion battery arms race?” *Benchmark Mineral Intelligence Blog*. <https://www.benchmarkminerals.com/who-is-winning-the-global-lithium-ion-battery-arms-race/>.

Case Study 2: The PMR at the heart of evolving carbon finance cooperation

Partnership for Market Readiness		
Date established: December 2010	Size of Project: \$43 million GEF grant	Donors: 13 countries and the European Commission
Type of Funding: Grants	Use of funding: <ul style="list-style-type: none"> • Technical assistance • Capacity building • Knowledge management 	
Purpose: To create a platform for sharing experience, fostering new and innovative carbon market instruments, harnessing financial flows, and building market readiness capacity for countries to scale up their climate change mitigation efforts.		
How these funds enabled the Bank to innovate and address barriers: The PMR helps the World Bank innovate and achieve impact by serving as a repository of knowledge on various carbon market instruments and expertise necessary for delivering its work program. Combined with the World Bank's country teams, the PMR's technical assistance can be customized to each country.		

Launched during the 2010 Cancun Climate Change Conference, the Partnership for Market Readiness (PMR) became operational in early 2011.⁸³ The PMR was established to promote market readiness for the anticipated emergence of domestic and international 'post-Kyoto' carbon markets, despite the regulatory uncertainty around the second Kyoto Protocol commitment period at the time.

As a result of PMR-implementing countries' carbon policy priorities and capacity needs, the PMR adapted its approach and expanded the scope of its work, placing arguably more emphasis on domestic carbon pricing policy development. It now aims to scale up mitigation efforts through assorted carbon pricing mechanisms, such as carbon taxes, crediting and offsets, and other market-based instruments.⁸⁴ The PMR remains unique in its work to support countries in developing carbon pricing policy choices and their future implementation, and still has a strong knowledge base on designing carbon markets, carbon pricing instruments and best practices.

Despite having to adapt to changes in the global carbon markets since 2012 and post-Paris, evaluations in 2015 and 2018 deemed the PMR to be mostly successful in its evolving goals.⁸⁵ While both evaluations recognized the PMR's ability to redefine its goals and evolve to remain relevant, they also acknowledged an uneven track record. The PMR has been successful in establishing itself as a platform to promote the exchange of knowledge and build understanding, provide practical and technical assistance (including in-country support and policy analysis), and sustain policy dialogue, but it has been less successful in spurring the implementation of new concepts.

Apart from its technical assistance and support, the PMR is valued for its convening power that brings together developed and developing countries in partnership to cooperate, network, and access expertise.⁸⁶ Such a partnership approach generates country ownership, which further helps to promote country engagement, commitment, and knowledge exchange. Taken together, the PMR demonstrates several best practices for carbon finance cooperation.⁸⁷

⁸³ Aguilar, S. 2010. "World Bank Launches Partnership for Market Readiness." *International Institute for Sustainable Development News*. <http://sdg.iisd.org/news/world-bank-launches-partnership-for-market-readiness/>.

⁸⁴ USC Development Portfolio Management Group. 2015. *Partnership for Market Readiness: First Independent Evaluation Report*. Washington, D.C.: World Bank.

⁸⁵ Ibid; Ipsos MORI and SQ Consult. 2018. *Second Independent Evaluation of the PMR – Final Report*. Washington, D.C.: World Bank.

⁸⁶ Ipsos MORI and SQ Consult. 2018. *Second Independent Evaluation of the PMR – Final Report*. Washington, D.C.: World Bank.

⁸⁷ Ibid.

- 1. Participatory approach:** The large number and diversity of countries participating in the PMR allow for greater networking and learning. This also contributes to creating a shared language and a common understanding on carbon pricing issues.
- 2. In-country support:** The PMR offers tailored support for countries, providing both a mix of technical and practical support. The breadth of representatives from different organizations also helps to build capacity at all levels, assisting countries in developing market readiness plans suited to each country's individual circumstances.
- 3. Adapting to the global context:** The PMR will need to continue to evolve to remain relevant as carbon markets continue to transform. This will become increasingly important as the Paris Agreement (especially Article 6) comes into effect, and countries increasingly introduce carbon pricing instruments to help in meeting their NDC mitigation objectives.

The PMR will be succeeded by the Partnership for Market Implementation—PMI— which was announced at COP-25 and will launch in late 2020 to help countries embarking on carbon pricing move from readiness to rollout.

The objective of the renewed Partnership is to assist participant countries to design, pilot and implement explicit carbon pricing instruments aligned with domestic development priorities. As a 10-year program with a capitalization target of US\$250 million, the PMI brings an ambitious and long-term vision of introducing a strong price signal on carbon emissions through programs and policies across jurisdictions and sectors to contribute to the Paris Agreement goal of limiting temperature rise to 1.5°C.



Case Study 3: Biocarbon Fund: Western Kenya Smallholder Agriculture project

BioCarbon Fund		
Date established: May 2004	Total contributions: \$90 million	Donors: Six public entities and 12 private companies
Type of Funding: Grants and ERPA's	Use of funding: <ul style="list-style-type: none"> • Technical assistance • Capacity building • Knowledge management 	
Purpose: Aims to foster the role of land use, land-use change and forestry (LULUCF) in carbon markets and the CDM to extend the benefits of the carbon market.		
How these funds enabled the Bank to innovate and address barriers: The BioCarbon Fund (BioCF) has facilitated testing of the World Bank's triple-win-for-farmers strategy in which the forestry, agriculture, and rural energy sectors are treated in an integrated way to increase food security, improve the rural poor's resilience to cope with the impacts of climate change, and mitigate climate change.		

When it was launched in 2004, the BioCarbon Fund was the first and only fund dedicated to land use. The World Bank understood that such a large-potential sector required its own fund. Since then, the BioCF has pioneered land-based projects and activities that have generated high-quality emission reductions with strong environmental and socio-economic benefits for local communities.

The Kenya Agricultural Carbon Project (KACP) in Western Kenya, implemented by the NGO Vi Agroforestry, was the first soil and agricultural carbon finance project in Africa to benefit rural communities and smallholder farmers. After the KACP project's six-year duration, it reached 60,000 farmers, organized in 3,000 registered farmer groups on 45,000 hectares.⁸⁸

The World Bank and the BioCF both played important roles in the project. Firstly, the project was the test case for sustainable agricultural land management practices⁸⁹ developed by the World Bank to generate carbon credits within the project, enabling smallholder farmers to track and improve farm production. Secondly, generated carbon credits were purchased by the BioCF and used to fund approximately a third of the costs of the project.⁹⁰ For smallholder farmers, the new skills taught as part of the project changed agricultural practices, allowing for increased risk-adjusted crop yields and incomes, with the revenue from carbon credits an additional co-benefit.

This project yielded important lessons. It demonstrated that a focus on carbon emissions reductions can generate a number of other positive outcomes, both increasing agricultural productivity and enhancing resilience to climate change, and improved ways to communicate and incentivize farmers (emphasizing the increased productivity that would benefit the farmers themselves and less on carbon payment).⁹¹ A similar methodology has been used in a number of other projects, such as the BioCF Initiative for Sustainable Forest Landscapes Zambia Integrated Forest Landscape Project. This project has trained over 10,000 farmers to date in sustainable, climate-smart agriculture, and has boosted both food production, food security, and household income.⁹²

88 Tennigkeit, T., K. Solymosi, M. Seebauer, and B. Lager. 2013. "Carbon Intensification and Poverty Reduction in Kenya: Lessons from the Kenya Agricultural Carbon Project." *Field Actions Science Reports* 7 (2013 Livelhoods). <https://journals.openedition.org/factsreports/2600>.

89 Examples of such practices include soil nutrient management, tillage and residue management, agronomic practices, integrated pest management, agroforestry, soil and water management, and improved livestock management.

90 Shames, S., E. Wallenberg, L. Buck, P. Kristjanson, M. Masiga, and B. Biryahaho. 2012. *Institutional innovations in African smallholder carbon projects*. CCAFS Report no. 8. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

91 Based on interviews with World Bank staff

92 World Bank. 2019. "Zambian Farmers at Field School Reap Benefits of Climate-Smart Agriculture." *World Bank News*. <https://www.worldbank.org/en/news/feature/2019/05/20/zambian-farmers-at-field-school-reap-benefits-of-climate-smart-agriculture>.

Case Study 4: Comprehensive Forestry Cooperation in Mexico

The World Bank's support for Mexico's forest and land-use sector demonstrates that successful programming in carbon finance can require a comprehensive, long-term approach. Over the course of many years, this work has spanned readiness activities to the signing of ERPA's and robust, national sovereign lending programs.

The World Bank has a long history of developing trust fund-supported forestry projects in Mexico beginning with small GEF pilots in 2000 to significant FCPF programming today. Mexico was one of the first countries to join the FCPF in 2008. GEF-supported initiatives in Mexico that have helped to build toward carbon finance and forest management capacity include the following:

- **The Indigenous and Community Biodiversity Conservation Project:**⁹³ Approved in 2000 with a \$7.5 million GEF grant, the project targeted 150–200 indigenous communities in the Mexican states of Oaxaca, Michoacan, and Guerrero, and piloted a positive model for channeling technical assistance to interested communities, providing a more decentralized, grassroots-led conservation program and responding to unmet needs at the community level.
- Mexico's national **Payment for Hydrological Environmental Services Program (PSAH):**⁹⁴ This payment for environmental services (PES) program focused on watershed protection, as well as carbon sequestration. Supported by a \$15.3 million GEF grant, the project was designed by the Mexican federal government and launched in 2003 to pay forest owners for the benefits of watershed protection and aquifer recharge. It was a scheme based on water fees, creating a direct link between those who benefit from the environmental services and those who provide them.

These two projects paved the way for more recent investment in Mexico's forestry sector, including the **Mexico Forests and Climate Change Project**. Launched in 2012, it incorporated both community forestry management and payments for environmental services.⁹⁵ Supported by the World Bank, FCPF, and the FIP, the project was part of the World Bank's package supporting Mexico's ambitious forests and climate change agenda within the overall framework of its National Development Plan and vision for REDD+.⁹⁶ An IEG report indicated that the program helped to increase the area of forests being sustainably managed by 20 percent.⁹⁷

More recently, the FCPF has played a large part in assisting the development of REDD+ markets in Mexico, working with Mexico's National Forestry Commission (CONAFOR) to formulate readiness packages and program documents, with the aim to develop an ERPA between CONAFOR and the FCPF for REDD+ emissions reductions in five Mexican states with the country's highest deforestation rates.⁹⁸ FCPF funds have also financed CONAFOR's Technical Unit Specialized in MRV, which aims to further improve REDD+ and strengthen technical and national capacities on MRV.⁹⁹ With the assistance of carbon finance funds like the FCPF and the PMR,¹⁰⁰ Mexico is preparing for issuance of REDD+ credits to be potentially available for future participation in domestic or international compliance markets or other mechanisms,¹⁰¹ and will begin piloting its own emissions trading scheme in 2020, aiming for a fully operational national ETS by 2023.¹⁰² The support of the World Bank and various trust funds has enabled the development of Mexico's forest management capacity and the inclusion of forestry and carbon finance in its development and policy goals. Mexico's NDC explicitly mentions the use of carbon markets as a means to reduce emissions. The Mexican government is also pioneering the development of a new domestic emissions offset trading platform on the Mexican stock exchange, which aims to strengthen stakeholder engagement and engage market participants.¹⁰³

93 World Bank. 2000. *Mexico Indigenous and Community Biodiversity Conservation Project: Project Appraisal Document*. Washington, D.C.: World Bank.

94 GEF. 2014. *GEF Investments on Payment for Ecosystem Services Schemes*. Washington, D.C.: GEF.

95 World Bank. 2018. *Mexico Forests and Climate Change Project Implementation Completion and Results Report*. Washington, D.C.: World Bank.

96 World Bank. 2018. *Mexico Country Program Evaluation: An Evaluation of the World Bank Group's Support to Mexico (2008–17)*. Washington, D.C.: World Bank.

97 Ibid.

98 FCPF. 2016. *Forest Carbon Partnership Facility (FCPF) Technical Assessment of Final ER-PD Mexico*. https://www.forestcarbonpartnership.org/system/files/documents/Technical_Assessment_of_Final_ER-PD_Mexico_20112016%20%28002%29.pdf.

99 Deschamps Ramirez, P. and A.M. Larson. *The politics of REDD+ MRV in Mexico: The interplay of the national and subnational levels*. Occasional Paper 171. Bogor, Indonesia: CIFOR.

100 Partnership for Market Readiness. "Mexico." <https://www.thepmr.org/country/mexico-0>.

101 IETA, EDF, and Mexico2. 2018. *Mexico: A Market Based Climate Policy Case Study*. https://www.edf.org/sites/default/files/mexico_case_study.pdf

102 International Carbon Action Partnership. 2019. "Mexico publishes cap for its ETS pilot phase." ICAP News. <https://icapcarbonaction.com/en/news-archive/677-mexico-publishes-cap-for-its-ets-pilot-phase>

103 IETA, EDF, and Mexico2. 2018. *Mexico: A Market Based Climate Policy Case Study*. https://www.edf.org/sites/default/files/mexico_case_study.pdf

