

## Approach Paper

# “Cool Markets” for GHG Emission Reduction in a Warming World:

Evaluation of World Bank Group’s Support to Carbon Finance

26 June 2017

## Background and Context

### INTRODUCTION TO THE EVALUATION

1. **Carbon finance (CF) has been one of the Bank Group’s first and longest engagements for mitigating climate change.** Carbon finance as a subcomponent of climate finance is a generic term used for the revenue streams that can be generated by sale of project-based GHG emission reductions or from payments involving carbon sequestration and storage from forests (World Bank 2010b).<sup>i</sup> The WBG launched CF with interest to support development of a global carbon market that will reduce the cost of achieving GHG emission reductions and facilitate sustainable development (World Bank 2010b). The Independent Evaluation Group (IEG) has not conducted a comprehensive evaluation of CF operations. While IEG has evaluated some climate change related operations (World Bank 2008a; World Bank 2010c; World Bank 2012a), the performance of CF support and the Bank Group’s roles and contributions have not been fully assessed, despite the growing need to integrate climate change into WBG development operations and financing mechanisms. IEG plans to conduct this evaluation to better understand the Bank Group’s roles and contributions relative to the needs and priorities of its clients and draw lessons and provide evidence to inform future directions in CF. The evaluation will focus entirely on the CF component of the Bank Group’s broader climate finance portfolio.

### DESCRIPTION OF CONTEXT AND ISSUES (THE WORLD BEYOND THE WBG)

2. **Climate change is a threat to global development and to the core mission of the World Bank Group (WBG).** The emission of greenhouse gases (GHGs) has increased substantially since the industrial revolution and contributes to global warming and climate change (IPCC 2014).<sup>ii</sup> Globally, the main emissions of GHGs – CO<sub>2</sub>, methane, nitrous oxide and industrial gases – result from energy (35%), agriculture and forestry (24%), industry (21%), transport (14%), and construction (6%) (World Bank 2010a)

3. **Reducing GHG emissions<sup>iii</sup> using various policy instruments is the key for mitigating climate change, protecting livelihoods in vulnerable areas and supporting low carbon development.** The effects of unabated emissions and climate change on poverty and sustainable development have particularly attracted attention at the global level. A recent study by the WBG concluded that climate shocks could wipe out hard-won gains in poverty reduction and force more than 100 million people into poverty by 2030, especially in Africa and South Asia (World Bank 2016a). There is growing recognition that the global effort to end poverty will need to reduce carbon emissions and integrate strategic climate actions.

4. **The Kyoto Protocol (KP) adopted in 1997 provided an international legal framework for carbon markets.** The Protocol defined agreed binding emission reduction targets for industrialized countries (Annex B parties)<sup>iv</sup>. These countries can meet their commitments through domestic actions as well as one of the three market mechanisms: Clean Development Mechanism (CDM), Joint Implementation (JI) and International Emission Trading (IET). The CDM generates Certified Emission Reductions (CERs) through carbon projects in developing countries while JI generates Emission Reduction Units (ERUs) through projects in Annex B countries (mainly economies in transition). Both CERs and ERUs can be transferred through carbon markets to meet compliance needs. Under IET, Annex B countries can trade emission units with other Annex B countries and use them towards meeting their targets. <sup>v</sup>

5. **When the KP entered into force in 2005 the nascent and emerging carbon markets received a boost.** Within few years, several thousand CDM projects were registered that have generated over 1.8 billion Certified Emission Reductions (CERs) to date. Due to the unexpectedly large inflow of projects, CDM initially suffered from weak governance and processing delays (Michaelowa and Buen 2012, World Bank 2010a; 2010b). While the additionality<sup>vi</sup> of a significant share of CDM projects has been contested (Schneider 2009) there is substantial evidence that the CDM has made significant contributions in stimulating learning, raising awareness and building capacity, and also improved additionality determination (Michaelowa 2009). It has also attracted investment for mitigation actions in developing countries to supply emission credits for compliance markets<sup>vii</sup> (Ellis et al. 2007; World Bank 2010a). CER prices reached a peak of 27 USD/t CO<sub>2e</sub> at the height of the market in 2007 (Lecocq and Ambrosi 2007). However, the completion of the first commitment period of the Kyoto Protocol (KP I)<sup>viii</sup> and failure to agree on the post-2012 regulatory framework, and CER import restrictions in Annex B countries following the financial crisis, led to a CER price collapse between 2011 and 2013, with prices oscillating between USD 0.4 and 0.9 since then.

6. **The signing of the Paris Agreement (PA) in 2015 has re-ignited interest in market mechanisms.** The PA established that every country will contribute to global mitigation efforts through Nationally Determined Contributions (NDCs). <sup>ix</sup> The agreement also allows parties to use internationally transferred mitigation outcomes (ITMOs) towards fulfilment of the (NDCs), though the way this will be done remains unspecified and is subject to debate.<sup>x</sup> This opens a possibility that the WBG could contribute in piloting and operationalizing a new generation of carbon finance instruments under the Paris framework. However, key features of these instruments and the detailed rules and procedures of the Paris framework are still being developed (Hoch and Michaelowa 2016; DEHSt 2016) and the Marrakech conference of 2016 has set a deadline of 2018 for finalizing these negotiations. This evaluation will generate evidence based on review of the WBG's strategic roles and contributions and its general experience in CF and its specific experience with carbon markets which could provide useful lessons for the future.

## WBG POLICIES AND INTERVENTIONS

7. The WBG's involvement in CF started in the late 1990s immediately after the Kyoto Protocol had been negotiated in the context of shifts at the global level towards environment and sustainable development.<sup>xi</sup> The first carbon fund - the Prototype Carbon Fund (PCF) - was launched in 2000. Progressively, the WBG recognized the challenge of climate change and developed strategies (World Bank 2008b; World Bank 2016b) to integrate mitigation and adaptation into its development assistance and financing mechanisms. The mainstreaming of climate change issues in the WBG was formalized in 2008 when the first comprehensive Strategic Framework on Development and Climate Change (SFDCC)<sup>xii</sup> was developed based on the request by the Development Committee during the World Bank/IMF Annual Meeting in 2007 and endorsed on October 12, 2008 (World Bank 2008)<sup>xiii</sup>. The need for increasing global commitment for reducing emissions and combating climate change was reflected in the 2010 World Development Report on Development and Climate Change (World Bank 2010a). In 2016, the WBG developed its new Climate Change Action Plan which aims to provide customized action and support to developing countries to accelerate their efforts to tackle climate change and implement the Paris Agreement (World Bank 2016b).

8. The WBG conceptualized carbon funds to experiment, pioneer and demonstrate a “proof of concept” for a carbon market as an instrument for climate change mitigation and global public good in support of the Bank Group's larger development goals. This aimed to catalyze private and public sector action towards a global carbon market that reduces the cost of achieving emission reductions and supports sustainable development (World Bank 2010b).

9. **The CF strategy and the main objectives varied over time.** The WBG prepared its first carbon finance strategy in 2003 which outlined three objectives: (a) expand support for carbon market development and increasing the viability of project-based mechanisms, (b) extend the benefits of carbon finance to the smallest, poorest countries and poor communities, (c) demonstrate carbon finance for carbon sinks (sequestration) (World Bank 2003). The CF strategy was revised in 2006 with a focus in the following areas: (a) ensure that carbon finance contributes substantially to sustainable development; (b) assist in building, sustaining, and expanding the international carbon market; (c) further strengthen the capacity of developing countries to benefit from the emerging markets (World Bank, 2006). The CF strategy was further updated in 2012, targeting the following objectives: (a) support countries in their domestic carbon pricing/market programs and policies to mitigate the impact of the global market crisis, and (b) move from a project by project to an integrated programmatic approach to manage risks and support scaling-up of emission reductions (World Bank 2012b).

10. **The WBG progressively assumed four key roles in implementing its CF activities** (World Bank 2010b).

- Catalyzing and developing carbon markets – create, build and expand international carbon markets; enhance access to and stability of carbon markets; and leverage private and public investments into projects that reduce carbon emissions.
- Innovating carbon finance – develop new tools, methodologies and financial instruments that increase stability or reduce other market or delivery risks;
- Building capacity – provide technical and advisory services to clients to benefit from carbon markets and carbon pricing instruments; and
- Strengthening global and national partnerships for carbon markets, and carbon pricing more generally.

In addition, the WBG served as the “trustee” and “convener” as crosscutting functions for carbon finance activities across funds and facilities.<sup>xiv</sup>

11. The WBG launched several funds, facilities and initiatives at different times primarily supported through multi-donor trust funds. Following the launching of the PCF which aimed to “operationalize the Kyoto market mechanisms”, multiple funds were progressively developed to acquire emission credits for Annex B government compliance with Kyoto targets and private company compliance with domestic emission trading system requirements. Currently, the WBG has over 25 different CF vehicles supporting its multiple roles. Many of the initiatives support more than one of the WBG’s roles.<sup>xv</sup> Some of the initial funds were designed to “catalyze” carbon markets, followed by the next generation of carbon funds and instruments aiming to “build and expand” carbon markets (World Bank 2010b). Progressively, new funds targeting ASA activities for capacity building in market-based mitigation (e.g. Partnership Market Readiness), providing ‘insurance’ against price risks using put options (e.g. Pilot Auction Facility), supporting forest-rich countries reduce emissions through forests and landscapes (e.g. Forest Carbon Partnership Facility), and strengthening global and national partnerships for carbon pricing (e.g. Carbon Pricing Leadership Coalition) were launched. For a full list and overview of the CF vehicles (funds, facilities, instruments) see Attachment 11.

12. **The WBG CF interventions can be broadly classified into two major components:**

- Carbon market activities: development of the essential architecture for the functioning of carbon markets and the identification and design of projects for buying carbon credits through Emission Reduction Purchase Agreements (ERPAs);<sup>xvi</sup> and
- ASA activities: Advisory services and analytics for capacity building and strengthening global and national partnerships for carbon pricing.

The CF activities however also include non-project activities such as targeted efforts for innovation, convening or strengthening global and national partnerships. The detailed portfolio is presented under the “Evaluation Scope”.

13. **The synthetic results framework and causal chain briefly describes the underlying “theory of change (ToC)” for this evaluation.** The synthetic framework is developed around the four roles (first column) and the main activities (second column) defined in terms of ERPA and ASA projects activities and some non-project activities. The framework links the various CF interventions with expected outputs and intended sequence of outcomes (Figure 1).

14. **Several outputs and outcomes could emerge from CF interventions in this framework.**

- Activities related to “catalyzing and developing” carbon markets contribute to piloting and operationalizing the Kyoto market mechanisms, which together with investments in low carbon alternatives and up-scaling of emission reductions and expanded access to carbon finance would lead to increased private and public sector participation and further development of international carbon markets and generation of co-benefits for sustainable development. <sup>xvii</sup>
- CF innovations and development of new methodologies, tools and financing instruments would support further development of carbon markets and market-based climate mitigation actions.
- The increased transfer of knowledge and technologies through technical assistance and advisory services also contributes to improving capacity and institutional and technical readiness in client countries for carbon pricing and market-based mitigation policies.
- The WBG’s convening and thought leadership role in CF manifests itself through project and non-project activities targeted for strengthening global and national partnerships for carbon pricing and help establish collaborative systems and platforms for knowledge sharing, networking, outreach and advocacy. These in turn contribute to building domestic political support and wider acceptance of carbon markets and market-based climate mitigation actions in national climate policies.
- These outputs, conditional on domestic and external factors, produce a set of outcomes which culminate in the three eventual results that contribute to the twin goals of the WBG: (a) Sustained and stable carbon markets, (b) Low cost climate change mitigation, and (c) Environmentally sustainable social and economic development.

15. While this broader results framework shows the different interventions and the potential outputs and outcomes at an aggregate level for WBG support to CF, a more detailed causal theory of change with the causal pathways and underlying assumptions will be developed for selected intervention category(ies) to guide data collection and analysis as part of the case studies (discussed under the Evaluation Design section).

## PREVIOUS EVALUATIONS

16. Three previous IEG evaluations relevant to CF include the Prototype Carbon Fund (World Bank 2004), the Climate Change and the World Bank Group – Phase II: The Challenge of Low-Carbon Development (World Bank 2010c), and Global Program Review: Forest Carbon Partnership Facility (World Bank 2012c). A brief description of the findings from the IEG evaluations is given under Attachment 9. In addition, the evaluation will benefit from external evaluations of the CF vehicles. <sup>xviii</sup>

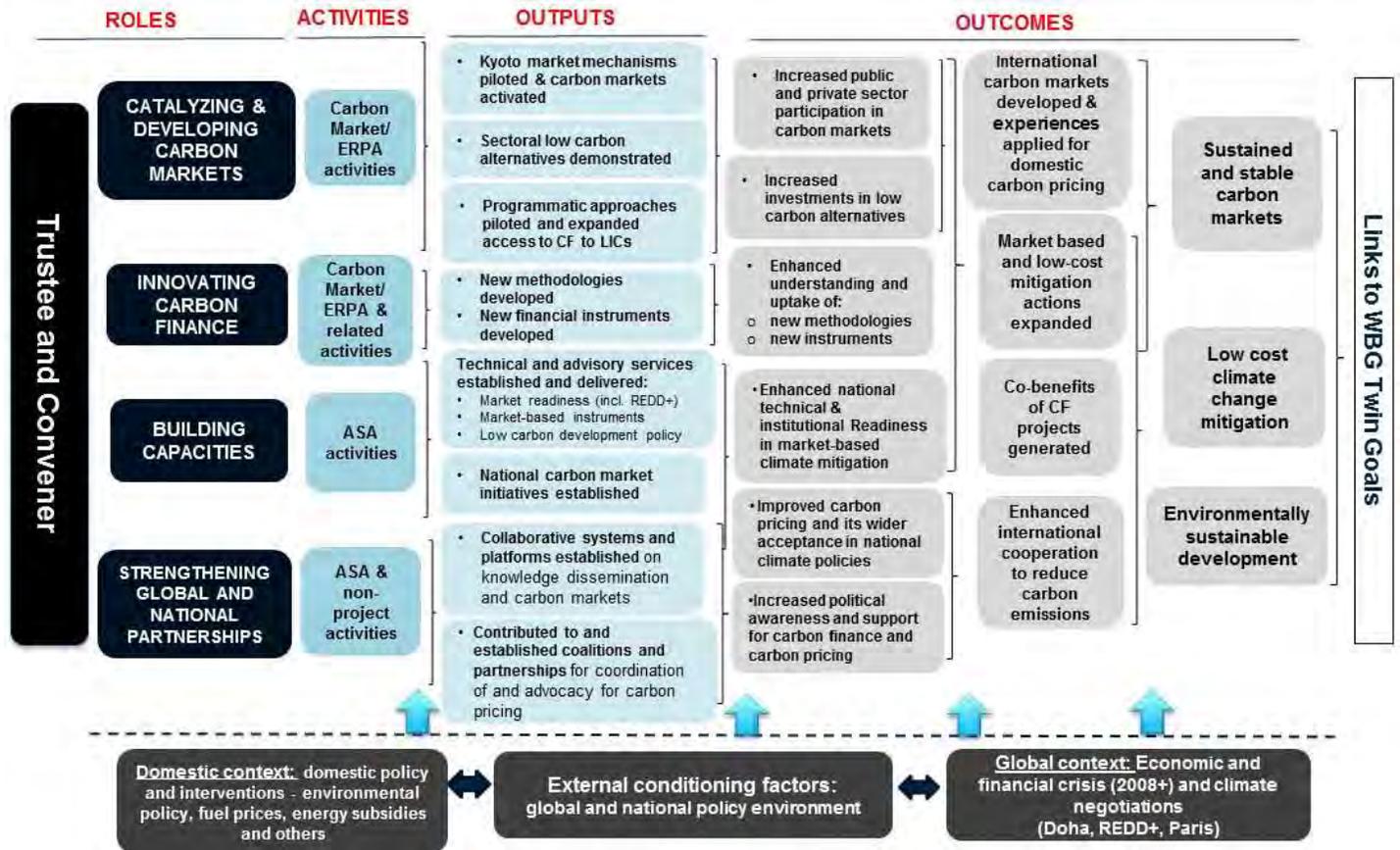
## Purpose, Objectives and Audience

### PURPOSE AND OBJECTIVE

17. **The purpose of this evaluation is to assess the role and contributions of the WBG in CF in relation to the needs and priorities of its clients and its potential comparative**

advantages and draw lessons to inform the WBG’s strategic direction in CF. Understanding comparative advantages in CF requires careful analysis of the four dimensions: (i) the Bank Group’s past experience, resources and expertise; (ii) the needs and priorities of its clients; (iii) unique role and contribution and how its activities relate to the work of others; and (iv) its effectiveness in delivering results. The evaluation is expected to inform the WBG’s plan to develop a new carbon markets strategy. The new strategy is conceived to support the next generation of carbon markets under the framework of the Paris Agreement.<sup>xix</sup> The lessons and evidence from this evaluation are also expected to be relevant to the broader strategic direction of the WBG in CF and will support efforts to develop a new set of priorities and interventions in the future.

Figure 1: Synthetic theory of change for WBG carbon finance activities



Source: IEG

**EVALUATION SCOPE**

18. The evaluation will look at the four dimensions described above to assess the potential comparative advantages of the WBG in CF.<sup>xx</sup> On the WBG portfolio, the focus will only be on the CF portfolio and will not include the broad scope of climate finance.<sup>xxi</sup> Whereas the term “carbon finance” in the WBG mainly covers resources that are provided for the purchase of carbon credits or payments for maintaining forest cover under REDD+ (World Bank 2006; 2010b),<sup>xxii</sup> “carbon finance” under this evaluation, mirroring on the broadening of

the carbon finance portfolio itself, will span all financial flows that influence generation of carbon credits including support for capacity building, technical assistance for “market readiness” and carbon pricing and global and national partnerships. Other climate finance projects and activities to support climate mitigation and adaptation (including Green Bonds, investments for clean energy, etc. which do not involve carbon markets) are out of scope for this evaluation.

19. **The evaluation under the WBG portfolio will cover the two main categories or components of CF interventions** – carbon market development and ERPA activities for purchase of emission credits from projects,<sup>xxiii</sup> and ASA activities targeting capacity building and partnerships. The ASA activities are either: (i) supported under the specific GHG mitigation technologies for emission reduction or targeted efforts for developing national institutional and private sector capacity (“market readiness”) for pricing carbon or participating in carbon markets (e.g. REDD+), or (ii) under general technical assistance or advisory services. The WBG project portfolio for CF is summarized in Table 1 (for details on the initial portfolio analysis see Attachment 6).<sup>xxiv</sup>

Table 1: Overview of WBG’s carbon finance portfolio

WBG	Amount (US\$M)	2000-2005		2006-2011		2012-2016		Total	
		ERPA	ASA	ERPA	ASA	ERPA	ASA	ERPA	ASA
World Bank	4,288.7	28		152	72	24	94	204	166
IFC	505.12	3		13	2	1	1	17	3
MIGA	50.6			1		1		2	
<b>Total</b>	<b>4,844.42</b>	<b>31</b>	<b>0</b>	<b>166</b>	<b>74</b>	<b>26</b>	<b>95</b>	<b>223</b>	<b>169</b>

\*There are 223 Emission Reduction Purchase Agreements (ERPAs) (204 World Bank +17 IFC+2 MIGA) but 179 emission reduction projects, indicating that some projects contract more than one entity to supply the required volume of carbon credits. Advisory Services and Analytics (ASA) include capacity building and advisory activities such as technical assistance, training and analytical studies. The amount shown for MIGA is the value of the gross exposure for the guarantees (portfolio data not confirmed).

Source: IEG based on initial analysis (see Attachment 6 for more details)

20. **The evaluation will include CF related project and non-project activities of the WBG.** For activities defined as projects, the key interventions for this evaluation include 181 carbon credit projects (implemented through 223 ERPAs) (including 17 projects supported by IFC and 2 projects by MIGA) and 169 projects for capacity building, including TA and advisory services implemented through various initiatives (see Table 1). IFC had four funds and instruments (some including own capital) and implemented 16 ERPA and 3 ASA projects, accounting for about 10% of the CF budget and 5% of the projects. Its activities in creating and developing carbon markets continued until the market crisis in 2012 but launched a Forest Bond providing support for one carbon market (REDD+) project in 2016. Some WBG activities however are not captured in the project portfolio as they are not implemented through a defined project. This includes activities related to CF innovations (e.g. developing new tools and methods or price insurance for carbon provided through zero coupon puttable bonds issued by the treasury) or knowledge sharing and networking activities (e.g. through regional and global partnerships).

## STAKEHOLDERS AND AUDIENCE

21. **The primary audience for this evaluation is the WBG’s Board of Directors**, senior management and staff involved in carbon finance, climate mitigation policy and related operations. The program managers and technical staff involved in the design, implementation and management of various carbon finance operations and initiatives will benefit from the evaluation insights which could inform their current and future activities.

22. **Other stakeholders include the donor sponsors providing trust funds to the WBG.** These stakeholders will have an incentive to know about the performance and effectiveness of the carbon finance activities, the key drivers of success, how those drivers changed over time, and how future operations can be improved. The evaluation will also be of interest to climate policy evaluation specialists and researchers as well as policymakers and regulatory agencies who want to understand the impact of WBG operations on international carbon finance and how carbon finance operations or similar GHG mitigation policies could be made more effective. Bilateral and multilateral institutions may also be interested to know about what works in carbon finance. Host country governments, civil society and NGOs will also have an interest in this evaluation, especially in terms of how such interventions contribute to reducing GHG emissions and create opportunities for sustainable social and economic development at different levels.

## Evaluation Questions

### SPECIFIC QUESTIONS

24. **The overarching question that IEG needs to answer in this evaluation is:** *What has been the strategic objective, nature of engagement and contribution of the WBG in supporting Carbon Finance? And going forward, what lessons can be drawn from this to inform the WBG’s strategic direction in supporting the next generation of market-based carbon mitigation activities given its potential comparative advantage?*

25. This overarching question will be addressed by answering selected evaluation questions (EQ) identified to understand the strategic opportunities and comparative advantages of the WBG in carbon finance, with special emphasis on the four dimensions:

**(i) Interventions, experience, and capacity:**

**Question 1:** *What has been the nature and extent of engagement of WBG support to CF since its inception around 2000?*

- 1.1. What has been the nature and the evolution of the WBG’s support to CF over time?
- 1.2. What has been its strategic objective and to what extent has the support been underpinned by and aligned to relevant WBG strategies?

**(ii) Needs and priorities of clients:**

**Question 2:** *What have been the evolving needs and priorities in CF for stakeholders at global and national levels from Kyoto to Paris and how did the WBG respond to these?*

- 2.1. How have stakeholder needs and priorities at global and national levels evolved over time and how is it likely to evolve in the near future? How have markets and global regulatory regimes evolved over time?
- 2.2. How and to what extent did the WBG adjust or respond to changes and uncertainties in markets and in the global regulatory regime? How and to what extent has the WBG been responsive to the evolving needs and priorities of its clients (funders and countries)?

**(iii) Results achieved:**

**Question 3:** *To what extent and in what ways has the WBG contributed to developing and innovating carbon markets and building capacities through its multiple roles and support to carbon finance?*

- 3.1. How effectively has the WBG been able to fulfill its role in:
  - o catalyzing and developing carbon markets and leveraging private investments;
  - o innovating carbon finance,
  - o building capacity of its clients, and
  - o convening and thought leadership at the global and national levels?
- 3.2. What does the existing and new evidence tell us about the effectiveness of the main CF interventions in reducing GHG emissions and generating co-benefits for sustainable development?

**(iv) Role and value added relative to other actors:**

**Question 4:** *To what extent and in what ways does the WBG support to Carbon Finance distinguish itself from support provided by other institutional actors and contribute to its own operations?*

- 4.1 How has the WBG positioned itself relative to other major institutional actors in its carbon finance support?
- 4.2 How and to what extent has the WBG been able to leverage carbon finance internally to augment its operational core business and scale up results (e.g. through ‘blending’ or more coherent programmatic integration of carbon finance with other WBG operations)?

**Evaluation Design and Evaluability Assessment**

26. **The evaluation can be characterized as a multi-level, multi-site evaluation.** The multi-level dimension of the evaluation refers to the different data collection and analysis activities conducted at global (portfolio), country, and intervention category levels. The multi-site aspect concerns the purposive selection of countries for in-depth data collection. The detailed methods for multi-level data collection and analysis are first developed around each of the evaluation questions (see Attachment 8) and described further under an overview presented below. IEG will apply its protocol for confidentiality of data and sources, consistent with its Access to Information Policy.<sup>xxv</sup>

**OVERVIEW OF MAIN METHODS**

27. On the basis of the foregoing, we can identify the following main methodological approaches: case study design for in-depth causal analysis, PRA, desk reviews and structured

literature reviews, stakeholder interviews, Delphi expert panel and project evaluations (PPARs)<sup>xxvi</sup>. The case study design in itself encompasses multiple methods and will therefore merit a more elaborate discussion.

28. **Case study design for in-depth causal analysis.** Taking into account considerations of time and available resources, the evaluation team will design and conduct a case study analysis on effectiveness for one or two selected intervention categories (one carbon market or ERPA and possibly one ASA; Question 3). The case study design will encompass the following main elements:<sup>xxvii</sup>

- Development of a **causal theory of change** of the intervention category, which captures in detail the main causal pathways as well as underlying assumptions for each of the causal steps. The detailed causal theory can be ‘nested’ in the broader more general theory of change of the entire WBG support to CF (discussed above).
- Data collection and analysis at the **intervention type or category level**. A PRA will be conducted on the population of projects pertaining to the selected intervention category (ERPA/ASA). The main focus will be on the identification and description of the main activities, the contextual factors influencing implementation and processes of change and different types of outcomes. Parallel to this, a structured literature review will be conducted (covering the policy and academic literature on effectiveness of the type of intervention under study).
- Data collection and analysis **at the level of specific interventions** under selected categories or sub-categories (see below for criteria for choice of sub-categories) in selected countries. Interviews with different project-level stakeholders will be undertaken (WBG, government, implementing partners, carbon credit suppliers and buyers). In addition, a desk review of WBG documents and covering all selected interventions will be conducted to support the theory-based causal analysis (see below).
- The **methodology for causal inference** will rely on theory-driven causal analysis, whereby the causal theory of change will continuously be refined and populated with new empirical evidence to eventually support a grounded causal narrative on “what works under what circumstances”. The evaluation will potentially explore the use of particular case-based methods for causal inference such as Process Tracing and Qualitative Comparative Analysis (QCA). Regarding the latter, the evaluation will ensure that all data collected for the selected interventions are amenable to feed into a QCA template for analysis. Where quantitative data on carbon emission reductions (or other outcome variables of interest) are available, the evaluation may consider conducting statistical analyses to assess the key determinants of effectiveness.
- Selection and sampling issues are described below.

29. **Portfolio review and analysis (PRA).** Different PRA exercises will be conducted sequentially and in parallel. The main PRA exercise concerns the overall mapping and description of the global CF portfolio, including mapping of implemented activities under each of the main roles of the WBG in CF, and WBG project-level results frameworks (questions 1.1 and 1.2). Subsequently, the evaluation will include a number of additional PRA exercises:

- WBG responsiveness to needs/priorities (global/portfolio level; question 2.2)

- The effectiveness of relevant CF activities (globally and country level; question 3.1)
- (more in depth) The effectiveness of selected interventions in selected countries (intervention category level, selected countries question 3.2)
- The nature and extent of CF reinforcing other WBG operational activities (question 4.2)

30. **Desk reviews (DR) and structured literature reviews (SLR).** All SLRs are based on protocols that specify (in a concise manner) the search, identification, information extraction and synthesis processes of the literature reviews. The following DRs and SLRs will be conducted:

- DR on architecture of WBG CF initiatives, strategic objectives and activities (global/portfolio level; question 1.2)
- SLR on evolving stakeholder priorities at global and national levels as well as changes in markets and regulatory regimes in the field of CF (global/portfolio level; question 2.1)
- DR on national strategy documents relating to CF needs and priorities in selected countries (country level; question 2.1)
- DR on the WBG's role in catalyzing and developing markets, innovating CF, capacity building and convening and thought leadership in key global debates/platforms/during major events related to CF within the evaluation period (global/portfolio level; question 3.1)
- SLR on the effectiveness of the selected intervention sub-categories on reducing emissions or generating sustainable development co-benefits. <sup>xxviii</sup>This review will be covering all the relevant policy-oriented and academic literature on the subject (intervention category level; question 3.2)
- DR on the global institutional landscape in CF (websites and strategy documents of key institutions) (global/portfolio level; question 4.1)

31. **Interviews** will be conducted at all levels of analysis. For each set of interviews (represented by one bullet point in the list below) at least one template with questions/topics will be developed which will be consistently applied across interviews and settings. More specifically, the following stakeholder groups and levels will be covered by the evaluation:

- WBG staff (global/portfolio level) on the nature and extent of the WBG's activities and main roles in CF, alignment between strategies and activities, country needs and priorities in selected countries, effectiveness of the main roles, WBG responsiveness to evolving trends (markets, regulatory regimes, priorities); and how WBG has been able to leverage CF to reinforce its operations (question 1.1, 1.2, 2.1, 2.2, 3.1, 4.2).
- WBG stakeholders (country level) on country needs and priorities, WBG responsiveness to evolving trends (markets, regulatory regimes, priorities) in CF, effectiveness of the main roles the WBG has been playing in CF, effectiveness of selected interventions, the institutional landscape of CF in selected countries, and the nature and extent of CF in reinforcing other WBG operational activities (questions 2.1, 2.2, 3.1, 3.2, 4.1, and 4.2). This will be supported by interviews of selected global stakeholders (private, public sector, environmental community) on "needs and priorities" at the global level and responsiveness of the WBG to the evolving needs of its clients.

32. **Global Delphi expert panel.** The evaluation will establish a global panel comprised of leading experts in CF and related fields. The panel will be subject to a Delphi process that will involve anonymous responses to one or more standardized surveys and subsequent consensus-building (or “consolidated opinion” -building) on the following topics:

- Global emerging needs and priorities in CF (markets, regulatory regimes, client needs and priorities) (global/portfolio level; question 2.1)
- The effectiveness of the WBG’s global (potential) convening role and thought leadership (in relation to other key institutions in the field) (global/portfolio level; question 3.1)
- The global institutional landscape in CF and the role of the WBG therein (global/portfolio level; question 4.1)

33. **PPARs** will be conducted on selected IDA/IBRD attached CF projects which have been validated by IEG.<sup>xxix</sup> CF currently does not have any project level verified evidence (no PPARs conducted). The PPARs will be selected to supplement case studies with project level evidence on issues related to effectiveness in demonstrating and promoting new technologies, the driving factors and constraints for delivering carbon emission credits or social and environmental co-benefits (questions 3.1 and 3.2) and the practical challenges and opportunities in combining CF to augment IDA/IBRD operations (question 4.2).

#### **(Multi-level) Sampling/selection considerations**

34. To ensure acceptable levels of generalization of findings as well as trade-offs between depth and breadth of analysis, the evaluation carefully considers the following sampling/selection issues at multiple levels:

- **Selection of countries** for in-country data collection and analysis. The countries for in-country data collection and analysis are purposively selected based on screening criteria to identify a set of countries that will give the best combination and diversity of carbon finance cases (both carbon credit and ASA activities in the same country) to capture the relevant heterogeneity of the interventions and the socio-economic, policy and biophysical context which could affect the outcomes. In the first criteria-based selection, 55 countries (out of 77 total) with at least one ERPA activity during the first 10 years were retained. In the 2nd stage, 31 countries which hosted at least one ASA activity during the first 10 years were retained. The next level of screening retained 25 countries that hosted at least three projects during that past 10 years (2006-2016). Additional criteria were used to narrow the sample considering:
  - Presence of ICR reports;
  - Presence of the most common CF operations (e.g. sector, technologies used);
  - Potential to generate socioeconomic and environmental co-benefits;
  - Coverage and depth of capacity building (e.g. PMR, CF Assist and Forest Funds);
  - Distribution of cases across regions and income-groups; and
  - Presence of interventions pertaining to the selected intervention category(ies) for in-depth causal analysis.

Applying these additional considerations to the 25 eligible countries led to the purposive selection of six countries (two from Africa, Latin America and Asia) for potential inclusion in case studies (see Table 2).<sup>xxx</sup> This leaves out MENA and ECA regions mainly

because of the limited diversity of CF activities (especially carbon market/ERPA and ASA activities in the same country) in these regions. However, considering the available budget, only four countries are expected to be included for case studies which will be decided after careful review of the country portfolio for potential intervention types and sub-categories that will be considered for the detailed theory-based analysis. The proposed PPARs may slightly contribute to improve the coverage of regions and countries, but will only provide data on the performance of the specific project implemented in that country. See Attachment 10 for details on the CF activities in the countries proposed for Case Studies and for the proposed PPARs.

**Table 2: Proposed case studies in selected countries**

Main intervention types (categories) and sub-categories	China	India	Ethiopia	Kenya	Colombia	Chile
1. Carbon market/ERPA activities	(Markets, Innovation, Convening)					
• Renewable energy	X	X	X	X	X	X
• Energy efficiency	X	X			X	
• Forestry/Agriculture	X	X	X	X	X	X
• Waste management /methane	X	X			X	X
2. ASA activities	(Capacity building, Partnerships, Convening)					
• Market readiness	X	X			X	X
• Forestry/Agric readiness			X	X	X	X

Note: ASA = Advisory Services and Analytics include ESW = Studies (Economic and Sector Work); TA= Technical Assistance (workshops, technical advice, etc.) and TE= external training [related to capacity building and global and national partnership activities].

- **Selection of intervention sub-category(ies)** for in-depth causal analysis. The intervention sub-category selected for in-depth analysis will be based *inter alia* on the following criteria: volume in portfolio, stakeholder demand, innovative nature of work, existing evidence on effectiveness.
- **Selection of specific interventions** (project and non-project activities under the selected sub-category) in the framework of the in-depth causal analysis of the selected intervention category(ies). In the selection of countries for in-country data collection and analysis the prevalence and diversity of different interventions under the selected intervention category(ies) will be taken into account. Giving due consideration to the challenges arising from the status of the interventions (time period, open/closed) and the time and resources available for identifying documents and/or key stakeholders for interviews, the evaluation will attempt to cover the entire population of interventions (of the selected intervention category) in a particular country. In practice, it is likely that this will be too difficult as the number of stakeholders may be too large to cover and staff turnover may affect availability. As a result, the evaluation will anticipate a bias toward more recent interventions. A minimum coverage of interventions (under the selected intervention sub-category) at country level will be ensured to strengthen the overall external validity of findings.

- **Selection of stakeholders** for interviews at global and country levels. Purposive samples of relevant stakeholder groups will be developed for each interview exercise at global, country or intervention category level (see above). Taking into account time and resource constraints, the number of stakeholder interviews will be optimized to allow for the largest diversity in coverage and coverage of key stakeholders at a minimum cost. The principles of triangulation and reaching the “point of theoretical saturation” will be used to inform a decision on the amount of interviews to be conducted.
- **Selection of PPARs** will be based on the potential to supplement case studies with project-level evidence from different regions/countries and/or effectiveness of selected interventions on reducing emissions or generating co-benefits (question 3.2) or on how the WBG leverages CF to support its operations (question 4.2).

## DESIGN LIMITATIONS

35. **Despite its strength, the design faces certain limitations.** Whereas the CF portfolio is narrow and implemented by well-defined units in the WBG, it remains complex and difficult to identify mainly due to lack of fully harmonized data, protocols and procedures, including limited independent and external evaluations. The proposed design is also complex and wide in terms of its multiple levels of analysis to answer key questions that go beyond the WBG portfolio. The theory based causal analysis of case studies requires detailed information on the causal chain for intervention categories within the context of multiple contributing and conditioning factors (Stern et al. 2012; Befani and Mayne 2014).<sup>xxxix</sup> Such data may be difficult to gather because of weak responses, reluctance to share “sensitive” information or fatigue and lack of incentives to participate. Because of decisions taken in design (e.g. fewer countries, in-depth analysis of just one or two intervention types) the evaluation may be limited in terms of its portfolio coverage (especially on ASA activities) and may not offer conclusive evidence on the effectiveness of all key CF interventions. The Delphi expert panel approach may not also lead to consensus-building and convergence. While the evaluation will draw from review of several carbon funds and facilities, it will not provide evidence on the effectiveness of specific vehicles or instruments. The effect of programmatic integration of carbon finance on continued innovation will not also be fully covered while issues around the trustee role, including hosting and fund governance will not be covered because of the decision taken on the scope.

## Quality Assurance Process

36. **This Approach Paper has been peer reviewed by experts to ensure relevance of evaluation questions, scope and issues covered, and appropriateness of the methodology.** Peer reviewers come from outside IEG: Dr Regina Betz (Joint Head of Energy Policy Analysis Group, Zurich University of Applied Science); Dr Massamba Thioye (Manager, Sustainable Development Mechanisms Program, UNFCCC Secretariat); Dr Michael Toman (Lead Economist and Manager, Development Research Group, Development Economics Vice Presidency, World Bank).

## Expected Outputs, Outreach and Tracking

37. **Planned reporting vehicle.** A final report that summarizes the findings of the evaluation regarding the performance of the WBG will be the primary output to the Board’s Committee on

Development Effectiveness (CODE). It will be tailored to strategic decision makers within WBG and contain key lessons learned and recommendations. At the same time the evaluation will be disseminated publically in the form of internal and external publications, working papers (technical background papers), learning products, blogs, presentations, audiovisuals and social media. The evaluation team will solicit feedback during the evaluation through ongoing engagement of key stakeholders in order to enhance relevance and accuracy and inform the process. Feedback particularly from the WBG practitioners, managers and project leaders, carbon market actors, and government agencies will enhance the evaluation's quality and accuracy.

38. **Outreach strategy.** The preliminary outreach plan specifies activities and timelines for disseminating results. Once it is approved by CODE, IEG will launch the report in Washington DC in the presence of internal and external actors and institutions. A preliminary selection of relevant stakeholders will include WBG management and staff, policy makers, carbon market and climate policy experts, governments, bilateral and multilateral banks and the civil society with insight into the outcomes of the evaluation. Other venues with effective outreach potential are the Innovate 4 Climate (I4C) launched in May 2017, regional Carbon Fora for Latin America, Africa and Asia and a side event at UNFCCC meetings. Efficient outreach in collaboration with the Knowledge and Communication (KC) team of IEG to key stakeholders using various outlets will maximize the value of the evaluation findings and recommendations.

## Resources

39. **Timeline and budget.** The evaluation will be submitted to CODE by the end of Q4 FY18. The budget for the study is estimated at \$1.0 million, an amount consistent with other major IEG sector studies. The budget for PPARs will be separately covered.

40. **Team and Skills Mix.** The skills mix required to complete this evaluation includes expertise in climate change; GHG mitigation economics and policies; evaluation experience and knowledge of methods, including statistical and portfolio analysis; familiarity with the policies, procedures, and operations of IFC and the World Bank; and knowledge of the Bank Group and external sources.

41. **The evaluation will be conducted by a team led by Bekele Shiferaw (task manager),** Andrew Stone (co-task team leader), April Connelly (evaluation specialist, environment), Stephen Hutton (senior evaluation specialist), Victoria Alexeeva (evaluation specialist, energy), Mari Noelle L. Roquiz (evaluation analyst), and Axel Michaelowa (senior climate policy and carbon markets consultant). The evaluation team will be supported by additional subject matter experts (being identified) and advisors: Jozef Vaessen (methods advisor), Rasmus Heltberg (lead evaluation specialist, partnerships advisor) . The team has substantial knowledge and experience around the issues and the respective institutions of the Bank Group. It will build methodological skills in new areas. The report will be prepared under the direction of Midori Makino, Manager, IEGSD; and Jose Carbajo Martinez, Director, IEGSP.

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## End Notes

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<sup>i</sup> For the purpose of this evaluation, *carbon finance* includes activities and support for implementing carbon market mechanisms (including the creation and operationalization of the carbon market architecture, carbon pricing and associated capacity building and TA and advisory services) for GHG mitigation. This is different from the umbrella concept of *climate finance* which includes public support for interventions to promote climate mitigation and/or adaptation with or without revenue from the sale of emission reductions.

<sup>ii</sup> The Intergovernmental Panel on Climate Change (IPCC) in its fifth assessment report clarifies that “human influence on the climate system is clear” and “warming of the climate system is unequivocal” (IPCC, 2014).

<sup>iii</sup> We use the term “carbon emissions” to denote all GHG emissions.

<sup>iv</sup> The emission targets were expressed in terms of allowed emissions or “assigned amounts” for the first commitment period (2008-2012), collectively amounting to a reduction of 5.2 percent against 1990 levels.

<sup>v</sup> Under IET, Annex B countries can acquire emission units (called assigned amount units, AAU) from other Annex B countries and use them towards meeting their targets, or sell unused AAUs to Annex B countries that are exceeding their targets.

<sup>vi</sup> Additionality refers to a requirement under the Kyoto Protocol that emission reductions resulting from CDM projects have to be ‘real, measurable and long-term’, and they have to be ‘additional to any that would occur in the absence of the certified project activity’ (UNFCCC 1997). The CDM and JI projects therefore seek to demonstrate additionality through procedures that have evolved over time. While an attractive concept in theory, the demonstration of additionality has turned out to be very challenging to implement and evaluate objectively in practice. Many different approaches to additionality determination have been developed over the past three decades, but continues to be a subject of debate between project entities and CDM regulators as well as among stakeholders.

<sup>vii</sup> Carbon markets can be domestic, regional or international in scope. These markets have generally emerged under two different systems: compliance schemes or voluntary programs. Compliance markets are created and regulated through mandatory national, regional or international emission reduction regimes (e.g. cap-and-trade schemes). On the other hand, voluntary carbon markets function outside of the compliance market and enable corporations, governments, and non-state actors to voluntarily offset their emissions by purchasing carbon credits that were created either through the CDM (e.g. CERs) or in the voluntary market (e.g. using Verified or Voluntary Emissions Reductions, VERs). Trading volumes in the voluntary market are much smaller than the compliance market because demand is mainly created through voluntary buyers (businesses, institutions and individuals). VERs cannot be used in compliance markets. Because of this and the limited demand, VERs for a long period tended to be cheaper than carbon credits sold in the compliance market, but this has no longer been the case after 2011. Voluntary markets therefore serve a niche market and can be especially suitable to small projects that cannot afford the full regulatory costs under the CDM or JI for validation and certification of carbon emission reductions.

<sup>viii</sup> The second commitment period of the Kyoto Protocol for 2013-2020 (Doha Amendment) has not yet been ratified. As of 12 April 2017, 77 countries have ratified the Doha Amendment out of a total of 144 instruments of acceptance required for its entry into force.

[http://unfccc.int/kyoto\\_protocol/doha\\_amendment/items/7362.php](http://unfccc.int/kyoto_protocol/doha_amendment/items/7362.php)

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<sup>ix</sup> Art. 6 of the Paris Agreement introduced two new market mechanisms: Cooperative Approaches (CAs) under Art. 6.2 and a “Mechanism to contribute to mitigation and sustainable development” (often called sustainable development mechanism, SDM) under Art. 6.4.

<sup>x</sup> The ITMOs are the new market-based mitigation crediting provisions established under the Paris Agreement. The new trading provisions are open to all countries; both developed and developing countries are able to host the crediting mechanism and use credits generated towards meeting their NDCs (Nationally Determined Contributions) – voluntary mitigation actions deposited by each country under the Paris Agreement. A future mechanism for ITMOs is expected to be designed to achieve net global emission impacts rather than purely serve as an offsetting mechanism as conceived under the Kyoto Protocol.

<sup>xi</sup> At the Earth Summit in 1992 several important global frameworks were created: (a) Agenda 21, (b) UN Convention on Biodiversity (CBD), (c) UN Convention to Combat Desertification (UNCDD), (d) United National Framework Convention on Climate Change (UNFCCC).

<sup>xii</sup> The 2008 Strategic Framework identified six priority action areas each providing tools for supporting both adaptation and actions with mitigation co-benefits: (a) Support climate actions in country-led development processes; (b) Mobilize additional concessional and innovative finance; (c) Facilitate the development of market-based financing mechanisms; (d) Leverage private sector resources; (e) Support accelerated development and deployment of new technologies; and (f) Step up policy research, knowledge, and capacity building. Of these, the third, fourth and six priority actions were directly relevant to carbon finance.

<sup>xiii</sup> Nine major initiatives were proposed to implement the new strategic framework (SFDCC), including the following four directly relevant to carbon finance: (a) Operationalize, execute, and share lessons from CIF, CPF and FCPF and work with partners to improve monitoring of climate-related finance and its “additionality”; (b) Support carbon market development through investments in longer-term assets and currently by-passed reduction potentials, financial and quality enhancements of carbon assets, methodology development, and sharing lessons of experience; (c) Promote packaging of its development finance instruments with instruments provided by Carbon Finance, GEF, and the CIF; and (d) Enhance the knowledge and capacity of clients and staff to analyze and manage development-climate linkages at the global, regional, country, sector, and project levels.

<sup>xiv</sup> The “trustee” role includes the hosting, fiduciary, governance and program implementation roles. However, this evaluation will mainly look at the “convening” role with emphasis on the thought leadership and effectiveness of the global and national partnerships to support carbon markets and carbon pricing instruments. A “convener” is an entity for bringing different stakeholders and players together to address an issue, problem, or opportunity. A convener uses its knowledge and authority (thought leadership), resources, and unique position (e.g. as trusted neutral broker) to influence desired change by bringing different stakeholders and players together (e.g. common platforms, networks, conferences, funding partnerships, etc.) to deliberate on specific issues and collaborate in finding solutions. Depending on circumstances, the WBG may have played different roles: main convener, joint convener or collaborator.

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<sup>xv</sup> The initial classification into the four roles is summarized in Table 3A (Attachment 6).

<sup>xvi</sup> The full cycle for developing and implementing CDM/JI projects involves multiple steps for due diligence that go from the Project Idea Note (PIN) to Project Concept Note (PCN) to Project Concept Document, baseline and monitoring methodologies, risk assessment, validation by UNFCCC, project design and contracting, periodic supervision, verification by external authorized entities, payments and transfer of credits and completion of the project.

<sup>xvii</sup> The Kyoto Protocol's flexible mechanisms were developed with the aim of mitigating climate change while at the same time contributing to sustainable development in host countries. Accordingly, the co-benefits from CF include the additional benefits beyond climate change mitigation in terms of improvements in public health, education, energy security, increased income from employment or higher productivity, and environmental sustainability gains that contribute to sustainable development in host countries. The co-benefits linked to CDM projects may include: (i) enhanced local infrastructure (e.g., roads, health clinics, schools, water, parks, community centers, etc.); (ii) access to cleaner and affordable energy for heating and/or cooking; (iii) improved income and employment; and (iv) improved access to electricity and/or energy-efficient lighting.

<sup>xviii</sup> The external evaluations include PMR which had one independent evaluation and annual reviews (2012-2016) conducted by one of the donors (the UK); FCPF which had two external evaluations (2011, 2016) as well as an IEG Global Program Review (2012); and the CF-Assist mid-term evaluation (2009). IEG will carefully review the external evaluation reports and other relevant information as part of the performance assessment and complement the available information, to the extent possible, through this evaluation.

<sup>xix</sup> The newly established Carbon Markets and Innovation Practice of the Climate Change CCSA is coordinating the development of the new carbon markets strategy and roadmap, which is expected to be implemented over the next three to five years. Following several discussions with the Carbon Markets and Innovation Practice, the new strategy is expected to benefit during its process of development from the findings and recommendations of this evaluation.

<sup>xx</sup> The WBG had different CF business models, mandates, clients and market contexts. The World Bank (IBRD, IDA) conceptualized carbon funds as a global public good for climate change mitigation. The Bank aimed to catalyze private and public sector funds to pioneer, expand and develop global carbon markets. The Bank continued to leverage and crowd in private sector clients through: (i) private sector participation in the carbon funds (on the ER buyer side), and (ii) the private sector participation as project entities (on the ER seller side). The Bank's business model also included extending carbon markets to the "smallest, poorest countries and poor communities" and "demonstrate carbon finance for carbon sinks (sequestration)". Along with capacity building and technical assistance, its business model included developing and piloting new tools, methodologies and financing mechanisms for increasing quality, access, efficiency, stability and predictability of carbon markets. IFC initially participated in the creation of carbon markets by collaborating with the World Bank under two European trust funds but progressively experimented with its own specific CF products, e.g. the CDG which aimed to provide risk cover (using its own AAA balance sheet) for companies who are unwilling to take ER supply risks in emerging markets. It also launched the post-2012 carbon facility, mobilizing private capital for forward purchasing ERs produced by client companies, and aiming to create a new pathway to

future carbon markets given the regulatory uncertainties beyond 2012. It also launched “Forest Bonds” in 2016 leveraging private capital to test and develop a new business line using bonds in voluntary REDD+ markets. MIGA’s business model was limited to providing few guarantees that cover non-commercial risks in CF investments (expropriation, war and civil disturbance and breach of contract, including government commitment under a letter of approval for the undertaking CDM projects).

<sup>xxi</sup> There are several reasons why this evaluation was conceived to focus on Carbon Finance (CF).

(i) The WBG is currently transitioning from its long time support to carbon finance under the Kyoto mechanisms into supporting client countries in achieving their Nationally Determined Contributions (NDCs) under the Paris Agreement. Hence, the evaluation is key and timely and will inform the WBG’s plan to develop a new strategy for the next generation of carbon markets; (ii) Whereas CF constitutes one the Bank Group’s first and longest engagements for mitigating climate change since 2000, IEG has not undertaken a comprehensive evaluation of the complex and long-time support to CF. The CF portfolio has expanded over time with commitments reaching about \$5 billion and including over 25 different CF vehicles (trust funds, facilities and instruments). However, despite the scale of the Bank’s involvements, CF projects (except when part of a larger IDA/IBRD lending) are not evaluated by IEG through the existing accountability mechanisms (ICRR/XPCR/EvNote) – leaving a wide gap in the overall performance of these longstanding activities; (iii) Careful review and understanding of the lessons from the multiple roles played by the WBG in creating and developing markets is essential to determine the comparative advantages of the WBG in CF in the future. A climate finance evaluation will need to include both mitigation as well as adaptation aspects (many of which have an emerging portfolio and not ready for evaluation) and will significantly reduce the ability to generate timely and relevant evidence on the CF experience that is under the risk of being lost if not documented and highly relevant in the current process of transitioning to the Paris mechanisms.

<sup>xxii</sup> The 2006 Annual Report of Carbon Finance at the World Bank “Carbon Finance for Sustainable Development” (World Bank 2006) defines carbon finance as “resources provided to projects generating (or expected to generate) GHG (carbon) emission reductions in the form of the purchase of such emission reductions.”

<sup>xxiii</sup> The ERPA activities could also encompass the related non-project activities for developing new baseline and monitoring methodologies for accounting GHG emissions required for implementing CDM/JI registered projects and effecting transactions in carbon assets.

<sup>xxiv</sup> The portfolio shows that about 61% of the activities were launched during the height of CF (2006-2011 period), including 75% of the ERPAs. About 8% and 31% of the activities were initiated during the pre-2006 and post-2011 period, respectively. The main carbon market (ERPA) activities are in renewable energy (32%), waste management & methane (29%), energy efficiency (14%) and forestry/agriculture (14%). Most of the ASA activities include initial REDD+ activities undertaken by the Forest Funds (39%), TA (30%) and country “market readiness” supported mainly by PMR (19%).

<sup>xxv</sup> “IEG will not act in a way that contravenes the policies on Disclosure or Access to Information of any of the WBG entities. This policy is guided by, and fully consistent with, the second principle set out in the World Bank’s Access to Information Policy—a clear list of exceptions.” Independent Evaluation Group. *Access to Information Policy*, July 1, 2011 p. 3.

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<sup>xxvi</sup> Since IEG does not validate standard CF self-evaluations, there are only 8 ICRRs on CF activities attached to IDA/IBRD operations. Project Performance Assessment Reports (PPARs) will be conducted only on a selected set of the existing ICRRs.

<sup>xxvii</sup> For simplicity, we refer to the complex carbon market activities for establishment of ERPAs that involve development of the required market architecture for carbon credit transactions to occur as “ERPA”. The signing of the transaction agreement (ERPA) on its own does not however capture the associated activities involved in establishing the institutional architecture for creating and operationalizing the underlying carbon markets, especially at the early stages where significant learning and experimenting could be involved to catalyze carbon markets.

<sup>xxviii</sup> The structured literature review will not attempt to isolate the effects of carbon credit activities on emission reductions or co-benefits. It will look at the literature on “additionality” and how it was used to ensure ‘environmental integrity’ of carbon credits (i.e. project level emission reductions), the level of emission reductions achieved for CDM projects and review the existing evidence on social and environmental co-benefits associated with CF projects. This will supplement data from case studies and PPARs.

<sup>xxix</sup> Based on the availability of the self-assessment reports, the potential choices include Brazil (**municipal waste management**), Mali (**Hydropower**), Kenya (**geothermal - renewable energy**), Bulgaria (**energy efficiency**), Tunisia (**municipal waste management**), and Niger (**agriculture/forestry**). In addition to time and resources, the choice will depend on the potential evidence that the micro evaluation will provide to supplement case studies and answer specific questions related to effectiveness of selected sub-categories of interventions on reducing emission or generating co-benefits (question 3.2) and on how the WBG leverages CF to support its operations (question 4.2).

<sup>xxx</sup> Within the limited resources available, the selected countries allow us capture the existing diversity of the key carbon finance interventions (ERPA/ASA activities) in the same country and generate comparable data using similar and consistent methodologies from different socio-economic and policy environments.

<sup>xxxi</sup> In the context of multiple causation, interventions work as part of a “causal package” in combination with other ‘helping factors’ such as stakeholder behavior, related interventions and policies, institutional capacities, cultural factors or socio-economic trends (Stern et al. 2012). The factors might also combine in complex ways to produce certain results, making it difficult to draw an inference between one single factor and an outcome. The “causal package” and the combination of factors produces the outcomes (Befani and Mayne 2014).



## Attachment 2: Detailed evaluation design matrix

Evaluation Questions	Information required	Information sources	Data collection methods	Data analysis methods	Limitations
<b>Overarching question</b> <i>What has been the strategic objective, nature of engagement and contribution of the WBG in supporting Carbon Finance? And going forward, what lessons can be drawn from this to inform the WBG's strategic direction in supporting the next generation of market-based carbon mitigation activities given its potential comparative advantage?</i>					
<b>1. What has been the nature and extent of engagement of WBG support to Carbon Finance since its inception around 2000?</b>					
1.1. What has been the nature and the evolution of the WBG's support to Carbon Finance over time (stand-alone and blended)?	<ol style="list-style-type: none"> <li>Information about the different types of CF facilities, funds and instruments (initiatives or vehicles) managed by WBG since 2000 and their attributes.</li> <li>Information on how WBG manages and implements these facilities, funds and instruments and how it interacts with its clients and operational units?</li> <li>Detailed project-level data on carbon credit (ERPA) and Advisory Services (ASA) projects supported by different initiatives since 2000</li> </ol>	<ol style="list-style-type: none"> <li>Data from WBG internal reporting systems and portfolio databases.</li> <li>WBG documents on CF funds, facilities and instruments (e.g. annual reports and external review reports).</li> <li>Meeting with relevant WBG Task-Team Leads and Managers in WBG</li> </ol>	<ol style="list-style-type: none"> <li>Data extraction from Portfolio and external (UNEP DTU, IGES) databases.</li> <li>Review of identified CF documents and selected literature relevant to the CF portfolio.</li> <li>Purposive sample of Task-Team Leads and Managers relevant to the CF evaluation.</li> </ol>	<ol style="list-style-type: none"> <li>Portfolio analysis involving mapping and description of the main categories (ERPA and ASA) and sub-categories as relevant.</li> <li>Desk review of relevant CF</li> <li>Semi-structured interviews with relevant WBG staff.</li> </ol>	Portfolio data on CF are limited; lack of harmonized information storage may limit access to relevant documents.
1.2. What has been its strategic objective and to what extent has the support been underpinned by and aligned to relevant WBG strategies?	<ol style="list-style-type: none"> <li>Information on the strategic objectives of CF in WBG as documented in various CF strategies and business plans and its evolution over time</li> <li>Alignment of WBG's work and support on CF to</li> </ol>	<ol style="list-style-type: none"> <li>WBG carbon finance strategy documents or business plans since 2000</li> <li>WBG sectoral and corporate strategy documents and action</li> </ol>	<ol style="list-style-type: none"> <li>Mapping the activities or objectives of WBG CF initiatives to the WBG CF strategies during the period.</li> </ol>	<ol style="list-style-type: none"> <li>Desk review of WBG strategic documents and carbon funds and facilities.</li> </ol>	CF strategy documents and business plans may not be well documented; Strategic alignment alone

	relevant sectoral and corporate WBG's strategies	plans (e.g. environment and climate change)	2. Mapping the Objectives of WBG CF strategies to corporate and sectoral strategies and action plans during the period.	2. Desk review of WBG sectoral and corporate strategies	does not provide the full picture on relevance.
<b>2. What have been the evolving needs and priorities in Carbon Finance for stakeholders at global and national levels from Kyoto to Paris and how did the WBG respond to these?</b>					
(2.1). Needs and priorities in response to changes in markets and regulatory regimes: <ul style="list-style-type: none"> <li>How have stakeholder priorities at global and national levels (including private sector) evolved over time and how is it likely to evolve in the near future?</li> </ul>	<ol style="list-style-type: none"> <li>Evolution of needs and priorities of global clients, including regulatory agencies, funders and investors</li> <li>Evolution of needs and priorities of national clients under the Kyoto Protocol (Annex B &amp; Annex A countries) and Paris Agreement.</li> <li>Evolution of needs and priorities of private sector clients.</li> </ol>	<ol style="list-style-type: none"> <li>Literature, relevant documents and websites from global agencies like UNFCCC and national institutions from selected countries.</li> <li>Stakeholders from global-level stakeholders (e.g. UNFCCC, Carbon Market Participants etc.) and selected national level respondents</li> <li>Global expert panel</li> </ol>	<ol style="list-style-type: none"> <li>Desk review of relevant literature and documents from UNFCCC and other national institutions and private sector stakeholders</li> <li>Purposive sample global-level stakeholders (e.g. commercial banks and multinational companies invested in WBG CF etc.).</li> <li>Purposive sample national-level (e.g. designated authorities, regulatory agencies etc.)</li> <li>Probe global expert panel (including public and private sector stakeholders)</li> </ol>	<ol style="list-style-type: none"> <li>Synthesis from review of literature and other relevant documents (global and country level including private sector.</li> <li>Analyze data from semi-structured interviews</li> <li>Summarize findings from global expert panel.</li> <li>Triangulate and summarize key findings</li> </ol>	Recall interviews may lack depth; expert panels may not converge or reach consensus on few core issues or regularities in trends/priorities
(2.1). Needs and priorities in response to changes in markets and regulatory regimes:	1. Information on evolution of international carbon markets and global regulatory regimes since 2000 (challenges, risks,	1. Structured review of existing literature including information from relevant websites (e.g. UNFCCC).	1. External publications, relevant WBG documents and websites.	1. Synthesis of literature reviews on evolution of carbon markets and global regulatory regime.	External literature on carbon markets expected to be narrow and dated

<ul style="list-style-type: none"> <li>How have markets and global regulatory regimes evolved over time?</li> </ul>	uncertainties and opportunities).	2. Information on various Conferences of the Parties (COPs) from UNFCCC sources	2. Information from carbon market service provider websites, e.g. on carbon credit prices and volume levels.		
<p>(2.2). Adjusting to changes and responsiveness to client demand:</p> <ul style="list-style-type: none"> <li>How and to what extent did the WBG adjust or respond to changes and uncertainties in markets and in the global regulatory regime?</li> </ul>	<ol style="list-style-type: none"> <li>Information on WBG responses to risks and uncertainties faced in carbon markets.</li> <li>Information on WBG responses to changes and uncertainties in the global regulatory regime since 2000.</li> </ol>	<ol style="list-style-type: none"> <li>Portfolio review to see how WBG adjusted to changes and uncertainties</li> <li>Relevant staff and management of WBG (e.g. TTLs, Managers of Carbon Finance).</li> </ol>	<ol style="list-style-type: none"> <li>PRA showing project trends in relation to major events</li> <li>Interview of relevant WBG TTLs and Managers and Senior Management</li> <li>Data extraction from Portfolio.</li> </ol>	<ol style="list-style-type: none"> <li>Portfolio analysis involving content analysis, including carbon credit prices paid by WBG at different times.</li> <li>Analysis of data from semi-structured interviews with relevant WBG staff.</li> </ol>	Limitations of CF portfolio data; lack of IEG micro level evidence; interviewees may not provide desired details based on recall
<p>(2.2). Adjusting to changes and responsiveness to client demand:</p> <ul style="list-style-type: none"> <li>How and to what extent has the WBG been responsive to the evolving needs and priorities of its clients (fund participants, both public and private sector, CF grant donors and client countries)?</li> </ul>	1. Information on the responsiveness of the WBG to the evolving needs and priorities of its clients in CF.	<ol style="list-style-type: none"> <li>Portfolio review at country level</li> <li>WBG Country Assistance Strategies, and other relevant documents (e.g. carbon funds and facilities).</li> <li>Relevant WBG staff and management</li> <li>Interviews with selected country level stakeholders</li> </ol>	<ol style="list-style-type: none"> <li>PRA content analysis at country level</li> <li>Mapping the WBG strategies to the client priorities</li> <li>Interviews with purposive sample of WBG staff and managers</li> <li>Purposive sample of WBG clients (via case studies)</li> </ol>	<ol style="list-style-type: none"> <li>PRA</li> <li>Desk review of WBG strategic documents and carbon funds and facilities.</li> <li>Analysis of data from semi-structured interviews</li> </ol>	Limitations of CF portfolio data; lack of IEG validated evidence; interviewees may not provide desired details based on recall
<b>3. To what extent and in what ways has the WBG effectively contributed to developing and innovating carbon markets and building capacities through its multiple roles and support to carbon finance?</b>					
<p>3.1. How effectively has the WBG been able to fulfill its role in:</p> <ul style="list-style-type: none"> <li>catalyzing and developing carbon markets and leveraging private investments?</li> </ul>	1. Information on the effectiveness of WBG interventions through its various facilities, funds and instruments in catalyzing and developing carbon markets and how this changes over time.	1. Relevant annual reports and data from different periods on tradable carbon assets (e.g. reports from PointCarbon/Thomson Reuters on volume and prices of international carbon market)	<ol style="list-style-type: none"> <li>Desk review of existing external literature and internal documents</li> <li>Data extraction from Portfolio.</li> <li>Semi-structured interviews with relevant WBG staff.</li> </ol>	1. Portfolio analysis involving content level analysis of CER/ERU and verified carbon credit transactions, prices, volumes, etc. from different periods.	Country level data needs to be supported by desk review of related carbon markets data and interviews to better understand WBG's role and

	2. Level of new public and private sector investment leveraged through CF into projects that reduce GHG emissions and how this changed over time.	2. WBG Task-Team Leads of CF units in WBG. 3. Stakeholders at global and national-level for selected countries	4. Semi-structured interviews with purposive sample of stakeholders and market players at the global and national level.	2. Drawing lessons from desk review of literature and internal reports 3. Analysis of carbon market data 4. Analysis of data from semi-structured interviews	contributions in 'catalyzing and developing' international markets (
<ul style="list-style-type: none"> <li>innovating carbon finance?</li> </ul>	<ol style="list-style-type: none"> <li>Information on the effectiveness of various WBG interventions in developing important baseline and monitoring methodologies and other tools for developing or expanding carbon markets to new sectors</li> <li>Information on the effectiveness of various WBG instruments in bringing innovation in carbon markets (e.g. increasing quality, access, efficiency, and reduce risks in carbon markets).</li> </ol>	<ol style="list-style-type: none"> <li>Literature and internal CF reports</li> <li>Data from WBG internal reporting systems and Data on CDM and JI methodologies provided by UNEP DTU (<a href="http://www.cdmpipeline.org">www.cdmpipeline.org</a>), as well as IGES (<a href="http://www.iges.or.jp/en/client/database.html">http://www.iges.or.jp/en/client/database.html</a>)</li> <li>CER price trends and market data from PointCarbon/ThomsonReuters</li> <li>WBG Task-Team Leads of Carbon Finance units in WBG.</li> <li>Stakeholders at national-level for selected countries</li> </ol>	<ol style="list-style-type: none"> <li>Desk review of external literature and internal CF reports</li> <li>Data extraction from internal reporting systems and external databases.</li> <li>Interviews with purposive sample of WBG TTLs and managers of CF</li> <li>Interviews with purposive sample of main stakeholders at the National and project level.</li> </ol>	<ol style="list-style-type: none"> <li>Compiling main findings from literature reviews</li> <li>Analysis of internal and external data on CDM&amp;JI methodologies and their level of use supported by WBG.</li> <li>Analysis of case studies</li> <li>Analysis of data from semi-structured interviews</li> </ol>	Methodologies may have been revised after initial approval, thus WBG role may change over time; limited information on some "financial instruments" after the carbon market crisis (post 2012).
<ul style="list-style-type: none"> <li>building capacity of its clients?</li> </ul>	<ol style="list-style-type: none"> <li>Information on the effectiveness of WBG's capacity building activities.</li> </ol>	<ol style="list-style-type: none"> <li>Literature and internal CF reports</li> <li>Data from WBG internal reporting systems.</li> </ol>	<ol style="list-style-type: none"> <li>Desk review of external literature and internal CF reports</li> <li>Data extraction from Portfolio.</li> </ol>	<ol style="list-style-type: none"> <li>Compiling main findings from desk reviews</li> <li>Portfolio analysis involving content level analysis.</li> </ol>	Requires closer understanding and knowledge of the country context to see the effect of capacity building

		<ol style="list-style-type: none"> <li>3. WBG Task-Team Leads of Carbon Finance units in WBG.</li> <li>4. Stakeholders at National-level for selected countries</li> </ol>	<ol style="list-style-type: none"> <li>3. Interviews with WBG TTLs and managers of CF</li> <li>4. Interviews with main stakeholders at the national and project level</li> </ol>	<ol style="list-style-type: none"> <li>3. Analysis of case studies</li> <li>4. Analysis of data from semi-structured interviews</li> </ol>	<p>interventions; portfolio data on ASA activities can be narrow</p>
<ul style="list-style-type: none"> <li>• convening and thought leadership at the global and national levels?</li> </ul>	<ol style="list-style-type: none"> <li>1. Information on WBG's role and influence as convener or thought leader in key global debates and platforms and at national level in building support for carbon pricing instruments.</li> </ol>	<ol style="list-style-type: none"> <li>1. External and internal literature</li> <li>2. Global-level expert panel (e.g. UNFCCC, CDM-Board, COP participants, WBG, donors, participants, etc.)</li> <li>3. National stakeholders from Annex A and B countries.</li> </ol>	<ol style="list-style-type: none"> <li>1. Desk review of external literature and internal reports</li> <li>2. Facilitate a global expert panel.</li> <li>3. Interviews of purposive sample of main stakeholders at the national-level (part of case study)</li> </ol>	<ol style="list-style-type: none"> <li>1. Triangulate and extract main findings from global expert panel, literature review and interviews of selected stakeholders from case study countries</li> </ol>	<p>Expert panels may not converge on few issues (familiarity with the WBG's CF activities and roles would be useful)</p>
<p>3.2. What does the existing and new evidence tell us about the effectiveness of the main CF interventions in reducing GHG emissions and generating co-benefits for sustainable development?</p>	<ol style="list-style-type: none"> <li>1. Information on project-level GHG emission reductions achieved through WBG's CF facilities, funds and instruments.</li> <li>2. Information on project-level environmental and social co-benefits derived from WBG's CF facilities, funds and instruments in support of sustainable development in client countries.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review of existing external literature and annual reports from funds targeting LICs and co-benefits (e.g. CDCF, BioCF, CI-DEV, etc)</li> <li>2. Data on CER / ERU issuance for the CDM and JI project pipeline provided by UNEP DTU (<a href="http://www.cdmpipeline.org">www.cdmpipeline.org</a>), as well as IGES (<a href="http://www.iges.or.jp/en/climate/database.html">http://www.iges.or.jp/en/climate/database.html</a>)</li> <li>3. Reports on sustainable development of CDM projects of WBG on UNFCCC website (<a href="http://cdmcobenefits.unfccc.int/Pages/SD-Reports.aspx">http://cdmcobenefits.unfccc.int/Pages/SD-Reports.aspx</a>)</li> <li>4. Stakeholders at National-level for selected countries</li> </ol>	<ol style="list-style-type: none"> <li>1. Structured review of existing evidence on emission reduction and co-benefits</li> <li>2. Descriptive statistics of CERs/ERUs generated from WBGs, facilities, funds and instruments since 2000.</li> <li>3. Interviews with purposive sample of main stakeholders at the project level.</li> </ol>	<ol style="list-style-type: none"> <li>1. Extracting evidence from structured reviews</li> <li>2. Analysis of CERs/ERUs data at project level</li> <li>3. Analysis of case studies and PPARs</li> <li>4. Triangulation of evidence and identify key findings and the main drivers of success</li> </ol>	<p>External literature and country level information on co-benefits (including negative impacts) might be limited especially in LICs</p>
<p><b>4. To what extent and in what ways does the WBG support to Carbon Finance distinguish itself from support provided by other institutional actors and contribute to its own operations?</b></p>					

<p>4.1. How has the WBG positioned itself relative to other major institutional actors in its carbon finance support?</p>	<ol style="list-style-type: none"> <li>1. Information about the work and support provided by other institutional actors including MDBs and market participants (e.g. large commercial banks)</li> <li>2. Information on the distinguishing features and complementarities of the WBG's CF activities compared to the activities undertaken by other institutional actors.</li> </ol>	<ol style="list-style-type: none"> <li>1. Strategy documents of other institutional actors (e.g. MDBs and market participants).</li> <li>2. Purposive sample of stakeholders in selected case study countries</li> <li>3. Global expert panel</li> </ol>	<ol style="list-style-type: none"> <li>1. Desk review of strategies of relevant institutional actors MDBs and market participants.</li> <li>2. Interviews with relevant stakeholders in selected countries and WBG senior staff and management</li> <li>3. Probe global expert panel on how the WBG support to CF distinguishes itself from others (e.g. creating value going beyond support provided by others)</li> </ol>	<ol style="list-style-type: none"> <li>1. Synthesis of results from desk reviews of strategies of selected institutional actors</li> <li>2. Analysis of responses from semi-structured interviews</li> <li>3. Triangulation of findings with results from the global expert panel</li> </ol>	<p>Institutional actors are not tightly defined group; global expert panels may lack the incentive or knowledge to reach consensus; solid evidence on WBG's comparative advantages may require other studies, including interviews of actors.</p>
<p>4.2. How and to what extent has the WBG been able to leverage carbon finance internally to augment its operational core business and scale up results?</p>	<ol style="list-style-type: none"> <li>1. Information on the extent to which CF has been mainstreamed into WBG projects and programs to facilitate integration and scaling up of mitigation outcomes.</li> <li>2. Information on risks, challenges and opportunities from mainstreaming CF into WBG operations</li> </ol>	<ol style="list-style-type: none"> <li>1. Portfolio data</li> <li>2. WBG Task-Team Leads across relevant units of WBG</li> <li>3. ICRRs and PPARs from CF activities attached to WBG lending operations</li> </ol>	<ol style="list-style-type: none"> <li>1. Portfolio review (content analysis and mapping by sector and GP) to see ties with operations</li> <li>2. Semi-structured interviews with purposive sample of Task-Team Leads and Managers across relevant units of WBG</li> <li>3. Desk review of existing ICRRs and new PPARs from blended operations</li> </ol>	<ol style="list-style-type: none"> <li>1. Analysis of portfolio data</li> <li>2. Analysis of responses from semi-structured interviews</li> <li>3. Triangulation of findings with micro-level evidence from ICRRs and PPARs</li> </ol>	<p>The WBG experience in blending or programmatic mainstreaming approaches could be limited, especially for landscape/ jurisdictional initiatives</p>

## Attachment 3: Detailed time line

<b>Draft AP circulated to IEG and Peer Reviewers prior to One Stop</b>	<b>May 2 2017</b>	
Comments from ELT + Peer Reviewers due in 7 business days/ <b>Virtual one stop</b>	May 11, 2017	
<b>Team reviews comments and creates matrix</b>	May 12 2017	
<b>Circulate final minutes to IEG</b>	May 13 2017	
<b>Circulate revised AP to Mgr., Director</b>	May 14 2017	
<b>Send revised AP to DGE for clearance</b>	May 15 2017	
<b>AP submitted to Bank Management for Comments (15 business days to comment)</b>	<b>May 16, 2017</b>	
<b>Meeting with Management TBD</b>	June 6 2017	
<b>Comments due from Management</b>	<b>June 13 2017</b>	
<b>Incorporate comments from Mgt.</b>	<b>June 20 2017</b>	
<b>Circulate AP to Mgr., Director for clearance</b>	<b>June 22 2017</b>	
<b>Send AP to DGE for clearance</b>	<b>June 26 2017</b>	
<b>Circulate final AP to Bank Mgt. for info</b>	<b>June 28 2017</b>	
<b>AP finalized and e-Submitted to CODE</b>	<b>June 30 2017</b>	

Draft Report circulated to IEG and Peer Reviewers prior to One Stop	April 16 2018	
Team reviews comments and creates matrix	April 24 2018	
Mgr./TTLs meet with FO	April 25 2018	
Send Agenda and Comments to IEG and Peer Reviewers	April 25 2018	
One Stop meeting for Evaluation Report	April 26 2018	
Send draft One Stop minutes to DGE (3 bus. days after One Stop)	May 1 2018	
Circulate final minutes to IEG	May 2 2018	
Report is revised by team post-One Stop meeting	May 5 2018	
Circulate revised Report to Mgr., Director	May 6 2018	
Send revised Report to DGE for clearance	May 7 2018	
Report submitted to Bank Management for Comments (15 business days to comment)	May 10 2018	
Meeting with Management TBD	May 29 2018	
Comments due from Management	June 4 2018	
Incorporate comments from Mgt.	June 12 2018	
Circulate Report to Mgr., Director for clearance	June 14 2018	
Send Report to DGE for clearance	June 21 2018	
Circulate final Report to Bank Mgt. for info	June 22 2018	
Report finalized and e-Submitted to CODE	June 26 2018	

## Attachment 4: Detailed Budget

## Attachment 5: Team skill mix

	Skill areas	Main responsibility
April Connelly	Evaluation specialist (Agriculture/Forestry evaluation)	EQ3 (1 case study) + EQ4 (interviews and report) + main report
Victoria Alexeeva	Evaluation specialist (Infrastructure)	EQ3 (1.5 case study) + EQ1 (interviews and report) + main report
Mari Noelle L.Roquiz	Portfolio Review	All
Stephen Hutton	Senior evaluation specialist (Environment)	Panel reviews, advise field missions, development of survey instruments, etc.
Axel Michaelowa	Carbon markets and climate policy specialist	Case study in India/Ethiopia; Literature review evolution of markets and regulatory systems (EQ2); Literature review on Paris Agreement and future of market-based mechanisms (EQ2); Literature review on CF innovations (EQ3.2)
Subject matter expert (TBD)	Stakeholder consultation/interviews (AP stage was supported by Shilpa Patel)	Stakeholder consultation; Literature review on capacity building (EQ3.3) and Convening (EQ3.4)
Subject matter expert	Carbon finance and climate markets/business	Stakeholder interviews on needs and priorities of clients (EQ2), Institutional mapping and analysis (EQ4), WBG positioning (EQ4)
Subject matter expert	Carbon capture Forests and Landscapes (REDD+)	Literature review on carbon capture through forests and landscapes (EQ3.3 and EQ3.5)
Subject matter expert	Qualitative comparative analysis; Process Tracing	Theory-based causal analysis
Jozef L. Vaessen*	Methods advisor (IEG)	Advise on methods across all areas
Rasmus Heltberg*	Lead evaluation specialist	Advisor on “partnership” evaluation
Andrew Stone	Advisor to Director	Co-TTL and advise on Bank portfolio and macro evaluation approach
Peer reviewers	<ul style="list-style-type: none"> <li>• Dr Mike Toman (DEC, WBG),</li> <li>• Dr Masamba Thioye (UNFCCC),</li> </ul>	All areas

	<ul style="list-style-type: none"> <li>Prof Regina Betz (Zurich University of Applied Sciences and Centre for Energy and Environmental Markets, University of New South Wales, Australia)</li> </ul>	
Bekele Shiferaw (TTL)	Lead evaluation specialist (Agricultural and Environmental Economist)	Manage and coordinate tasks and lead data collection, analysis, and report writing

**Note:** (\*) advisory role only

## Attachment 6: Preliminary Portfolio Review

### Carbon Finance Preliminary Portfolio Identification

#### 1. World Bank Group Support for Carbon Finance, FY00-16

The primary instrument of World Bank Group (WBG) support for carbon finance is through multi-donor trust funds (Attachment 11). Unlike other standard WBG lending portfolio, the carbon finance portfolio does not follow all the WBG standard procedures and protocols for harmonized documentation, reporting, self-evaluation and independent verification. As a result, is not fully structured for quick identification, coding and analysis and a conventional portfolio review and analysis will not be performed until all the information at the project level is collected and coded. However, the identification of the portfolio follows a similar methodology as other IEG macro-evaluations, complemented by information gathered from the relevant units managing the carbon finance activities.

The first step in defining the scope of the carbon finance evaluation was to identify all WBG interventions that have involved support for carbon finance activities between fiscal years (FY) 2000 and 2016. Based on literature review and consultations with stakeholders and relevant WBG units, the carbon finance activities were broadly categorized into two groups:

- i) Group 1: These are projects involved in carbon markets and the purchase of carbon emission reduction credits and for which there are Emission Reduction Purchase Agreements (ERPAs) outlining the legal conditions underpinning the carbon transactions.
- ii) Group 2: These are non-lending projects, either ASA or Advisory Services, primarily targeting provision of technical assistance and capacity building for client countries to develop and adopt carbon pricing instruments or support to prepare carbon projects that will help them access carbon markets and generate revenue in support of sustainable development.

#### 2. Methodology and data sources

Given the absence of a harmonized system for tracking all the WBG support for carbon finance activities, the portfolio was constructed through a multi-stage process involving sourcing and triangulation of data from the different sources listed below:

##### 2.1 WB Carbon Finance Portfolio

###### (A) Group 1 – carbon market projects targeting purchase of carbon credits

**Step 1: Project portfolio from the World Bank’s Business Intelligence database:** All World Bank carbon finance projects approved as of July 1, 2016 were extracted from the Business Intelligence (BI) database using a screening criteria. An initial screening of relevant projects from the eligible universe was performed with the use of World Bank theme code classifications available in the BI system.<sup>1</sup> The first stage involved was the identification of all World Bank projects that supported climate change relevant activities. These projects were identified on the basis of an assigned World Bank theme code: *climate change theme code 81*. Out of the 8,778 projects<sup>2</sup> approved between FY00 and FY16, 733 projects were assigned with the theme code 81 (Table 1A).

The second stage involved identifying the subset of climate change projects that supported carbon finance activities. This set of projects was identified on the basis of an *assigned product line in BI* for carbon finance: *carbon offset*. The above two stages resulted in a list of 138 carbon finance projects with unique project identification numbers (PID). Using the FY00-16 approved project universe, a *carbon offset* product line filter was performed. An additional 9 projects with carbon-offset product line but were not assigned the theme code *81*, were added to this list. This resulted in a preliminary portfolio of 147 carbon finance projects.

**Step 2: Project portfolio from the Carbon Finance Unit:** The above list of 147 projects was supplemented with project data compiled and provided by the World Bank’s Carbon Finance Unit (CFU) which maintains basic data on World Bank carbon finance projects, and the associated ERPA contracts. In order to ensure accuracy and consistency of the carbon finance portfolio, the data from CFU was compared with the data obtained from the BI system.

Combining both data sets, IEG realized 162 unique projects and an additional 42 ERPAs which consisted of the purchase of emission reduction credits. There are 18 projects not reported in the BI system but were identified from the CFU database. This exercise resulted in a preliminary carbon finance portfolio consisting of 162 projects.

#### **(B) Group 2 – Advisory Services and Analytics (ASA)**

**Step 1: Project portfolio information from the World Bank’s Business Intelligence database:** To identify these capacity building projects, the IEG team conducted a similar comprehensive assembly of the relevant World Bank analytical work that addresses carbon markets and related emission activities during the same time period. The first stage involved the screening of relevant projects available in the BI system under Analytic

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<sup>1</sup> The Bank’s thematic and sector coding system forms the basis for analysis of and standard reporting on the nature of Bank interventions. Thematic codes are meant to capture Bank support to corporate priorities such as Millennium Development Goals and global public goods. Each WB projects is assigned up to five, separate theme classifications, which can be assigned any percentage weights by relevance, that add up to 100 percent. The theme code classifications assigned, are not mutually exclusive implying that a single project can be cross listed in different themes.

<sup>2</sup> The 8,778 World Bank projects include all IBRD/IDA projects as well as projects financed by World Bank trust funds.

and Advisory Activities (AAAs). There were 486 projects assigned *climate change theme code 81* out of the 9,562 World Bank AAA projects approved between FY00 and FY16.

The second stage was combining capacity building portfolio with additional information related to size, trustee nature, sectors and disbursement process to cover the universe of selected projects in sufficient detail and depth. The main source for this exercise was the Trust Fund database and Operations Portal.

**Step 2: Project portfolio information from the Carbon Finance Unit:** Since the capacity building projects were not classified in the Bank system as carbon finance relevant projects, the CFU provided a list of carbon finance capacity building projects supported by the World Bank's different carbon facilities and funds. The Carbon Finance Unit provided a list of 118 projects targeting capacity building through technical assistance, analytic and advisory services related to carbon finance (Table 1A).

Combining these two steps resulted in 166 relevant carbon finance ASA projects to be examined further in the evaluation.

## 2.2 IFC Carbon Finance Portfolio

A similar methodology was applied on IFC projects in order to realize trends across the WBG portfolio.

**Step 1: Project portfolio information from the Management Information System (MIS) and Advisory Services Operational Portal (ASOP) Database:** Project portfolio data on relevant projects was extracted from the IFC MIS database for Investment projects and ASOP for Advisory Services as of July 1, 2016. There were 4,125 IFC Investments and 2,730 IFC Advisory Services. However, IEG did not initially find any carbon finance relevant investment projects using sector and industry group filters as well as a project name search. By expanding this, using simple text analytics on development objectives and project descriptions revealed 22 Advisory Services projects that seemed relevant to carbon finance. However, after reviewing these projects, they do not seem to have carbon finance as the primary objective and do not involve generation of emission reductions or carbon credits. Hence, these projects were initially excluded from the portfolio. This was verified by IFC in Step 2.

**Step 2: Project portfolio information from IFC:** A set of 17 projects and 3 advisory services projects was provided by the IFC Carbon Finance Unit for comparison with the IEG portfolio list. All of these projects involved the purchase of carbon credits and constitute the entirety of carbon finance activities managed by IFC.<sup>3</sup> These projects (except for one) are not disclosed in the MIS database because they are Non-Investment Project Related projects and most are classified as *Confidential*. Further, IFC provided 3

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<sup>3</sup> The IFC managed carbon facilities include (i) IFC-Netherlands Carbon Facility (INCaF); Netherlands European Carbon Facility (NECaF); (iii) Carbon Delivery Guarantee; and (iv) P12C Facility.

AS projects which were part of the initial 22 projects IEG extracted. The rest of the projects were beyond implementation of the carbon credit projects and were therefore excluded from the portfolio.

### *2.3 MIGA Carbon Finance Portfolio*

A quick review of the MIGA portfolio consisting of 499 projects from FY00-16 revealed two possible carbon finance related project guarantees against the risks of expropriation, war and civil disturbance, and breach of contract.

## **3. Validation of Carbon Finance datasets**

The final step in the portfolio identification and selection process involved cross-checking the list of projects identified by IEG with the list provided by the Carbon Finance Units of the World Bank, IFC and MIGA. For the Group 1 projects targeting purchase of carbon credits (ERPA), the IEG list of 138 carbon finance projects was first cross-checked with the list of ERPA projects shown on the Bank's carbon facilities websites. A comprehensive list of the World Bank's carbon funds and facilities was retrieved from the [Carbon Finance Unit website](#)<sup>4</sup> along with a list of carbon markets/ERPA projects funded under each facility. The expanded list was then compared and matched against 162 projects provided by CFU. The cross-checking and triangulation confirmed the 162 carbon market (ERPA) projects identified through the multi-step process (Table 1A). However, IEG found that the ERPA project list shown on the carbon finance website was not complete and did not include all of the relevant projects (see Figure 1A).

The ASA projects identified through several filters including theme code, keyword search and compared to the CFU list helped identify the preliminary carbon finance ASA portfolio of 166 projects. A thorough review will be performed during the course of the evaluation.

For IFC, none of the 16 carbon market projects in the IFC portfolio are currently active. However, one additional carbon credit project developed in 2016 (IFC Forest Bond) which signaled the return of IFC to the carbon finance business was added with interest to assess its design features and strategic future opportunities. This give a total of 17 IFC carbon credit projects. Two of the 3 AS projects are related (one is still active and the other was terminated) and the third project is closed.

[Pending confirmation from MIGA] Lastly for MIGA, both of the projects are not active. Consultations with IEG MIGA staff and review of project documents, annual reports and news articles were used to validate these first-ever support for projects that will sell carbon credits gained by reducing greenhouse gas emissions.

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<sup>4</sup> <https://wbcarbonfinance.org>

#### 4. Preliminary Analysis

Based on the selection criteria outlined above, the following set of WBG carbon finance interventions were identified:

Carbon market or ERPA related projects consist of activities that aim to mitigate GHG emissions by purchasing carbon credits through interventions that deploy clean low-carbon technologies or replacing or modernizing activities and processes that improve energy efficiency or environmental performance and reduce GHG emissions.

Carbon finance ASA activities consist of technical assistance, training or ESW that aim to strengthen regulations, build capacity for specific technology development and national readiness strategies, and piloting of carbon pricing policy instruments. The usual outputs for such projects include “How-To” guidance notes, workshops, knowledge sharing forums and best practices, sector or thematic studies and training.

The World Bank is the predominant player in the design and implementation of carbon finance and has been involved in both development of carbon markets and delivery of advisory services and capacity building in developing countries. The preliminary analysis shows that out of the estimated 223 carbon market activities for purchase of carbon credits (ERPAs), the World Bank undertakes about 204 ERPAs (91.5%). Similarly, the World Bank is also involved in 166 ASA projects (98%) for delivery of advisory services and capacity building (Table 1A). These activities are supported through several carbon finance funds and facilities implemented across many developing countries. In terms of the total carbon finance support, the World Bank accounts for about 88.5%, followed by IFC (10.4%) and MIGA (0.1% unconfirmed) (Table 2A).

The IFC carbon finance investment portfolio consists of 17 carbon credit projects (mostly renewable energy) that enable clients sell carbon credits to IFC under the Kyoto mechanisms and three advisory services. IFC also had a carbon finance-specific product, Carbon Delivery Guarantee (CDG), which provides risk cover for companies who are unwilling to take risks in emerging markets for buying carbon credits and for companies in developing countries selling carbon credits an opportunity to access a wider range of potential buyers. The IFC advisory services (AS) projects provide technical assistance and capacity building to clients for acquiring new skills and tools to expand their internal procedures to incorporate carbon finance or to support use of new approaches and broaden market participation in carbon markets.

The MIGA portfolio (which currently is narrow and unconfirmed) consists of two projects - solid waste management project and agribusiness project in LAC - providing guarantees that cover risks of expropriation, war and civil disturbance and breach of contract, the former including the breach of the government’s commitments under a letter of approval for the undertaking the carbon emission reduction project under the CDM of the Kyoto Protocol. The guarantee holder has completed the validation process and has agreed to

sell carbon credits to a private carbon fund on delivery of the CERs. Both projects have a gross exposure of up to US\$50.6 million<sup>5</sup>.

Collectively, 52% of the total carbon finance projects are closed in which 74 projects have ICRs/PCRs and only 10 were validated by IEG. More than a quarter of the total number of carbon credit contracts are in the LAC region, mostly in Brazil, Mexico and Columbia. About 24% are in EAP, especially in China, Indonesia and the Philippines. About 17% are in Africa and 14% in South Asia. For ASA activities, the Africa region (26%) and LAC region (25%) account for more than half of the total number of activities (Figure 1A). In terms of total carbon finance commitments, about a quarter of the total funding is used in the LAC region, followed by Africa region (22%) and EAP region (21%) (Figure 2A).

About 8% of the total number of ERPA (carbon market) and ASA activities is blended with WBG lending operations. This increases to about 13% for ERPA activities alone, but only 3.6% of the ASA activities are blended. For IFC, all of the projects are standalone activities. Table 2A lists the funds/facilities tallying the total funding, total number of ERPA and ASA activities. Table 3A presents the preliminary grouping of carbon finance initiatives according to the main role of the WBG in carbon finance (based on initial review of the main objectives of the different carbon finance vehicles or initiatives). A breakdown by fund and facility of the total volume of carbon credits delivered as of September 2016 is listed in Table 4A with the Umbrella Carbon Facility (UCF) delivering the most at 62.73M CO<sub>2</sub>e. Table 5A presents the distribution of the carbon finance activities by sector/technology based on preliminary analysis of data from the available carbon portfolio. About a third of the activities are in the renewable energy sector, followed by waste management (methane reduction) (29%), and forestry/agriculture (14%), and energy efficiency (14%). These sectors jointly account for about 90% of the carbon credit projects (numbers). Table 6A presents the distribution of the ASA activities based on initial analysis of the limited ASA data. Further refinements are required after proper coding of project-level ASA activities from all the funds using the standard ASA classifications.

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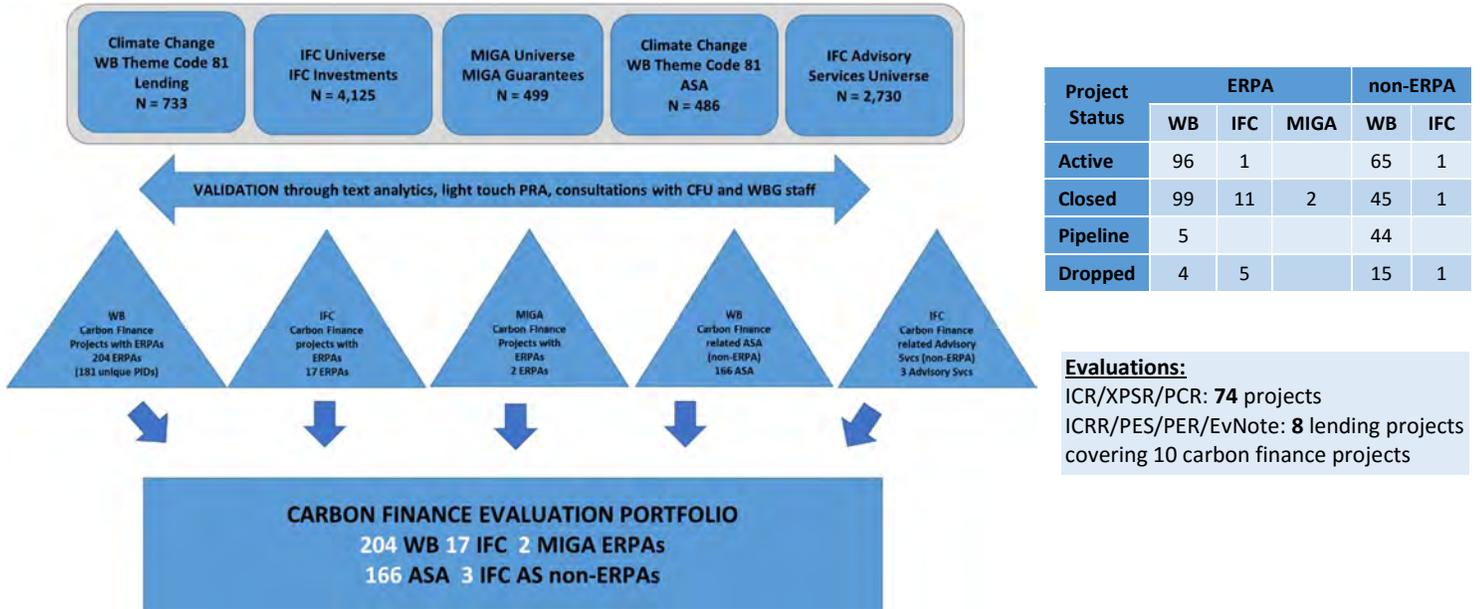
<sup>5</sup> The Agribusiness MIGA project guarantee contains two contracts (original plus an extension) with gross exposures of US\$27M and US\$21.8M respectively. The waste management project has a gross exposure of US\$1.8M.

**Table 1A: World Bank Group Climate Change and Carbon Finance Commitments by GP/Sector, FY00-16**

Global Practice /CCSA	World Bank				IFC		MIGA
	Climate Change projects <sup>a</sup>	Carbon credit projects (P-Codes)	Carbon credit activities (ERPAs) <sup>b</sup>	Non-lending and non-ERPA projects <sup>c</sup>	Carbon credit activities (ERPAs) <sup>d</sup>	Non-lending and non-ERPA projects <sup>e</sup>	Carbon credit activities (ERPAs) <sup>f</sup>
Agriculture/Agribusiness	54	8	10	10	1		1
Climate Change	9	11	17	24			
Education	3		-	-			
Energy & Extractives	305	58	75	19	16		1
Environment & Natural Res.	229	64	79	105			
Finance & Markets	2		-	-		2	
Macro-Economics & Fiscal Mgt	5		-	-			
Social Protection & Labor	1		-	-			
Social, Urban, Rural and Resili.	62	15	16	6			
Trade & Competitiveness	2		-	-			
Transport & ICT	40	3	4	-			
Water	18	2	2	-			
Not assigned	1			-			
Other	2	1	1	1		1	
<b>Total</b>	<b>733</b>	<b>162</b>	<b>204</b>	<b>166</b>	<b>17</b>	<b>3</b>	<b>2</b>

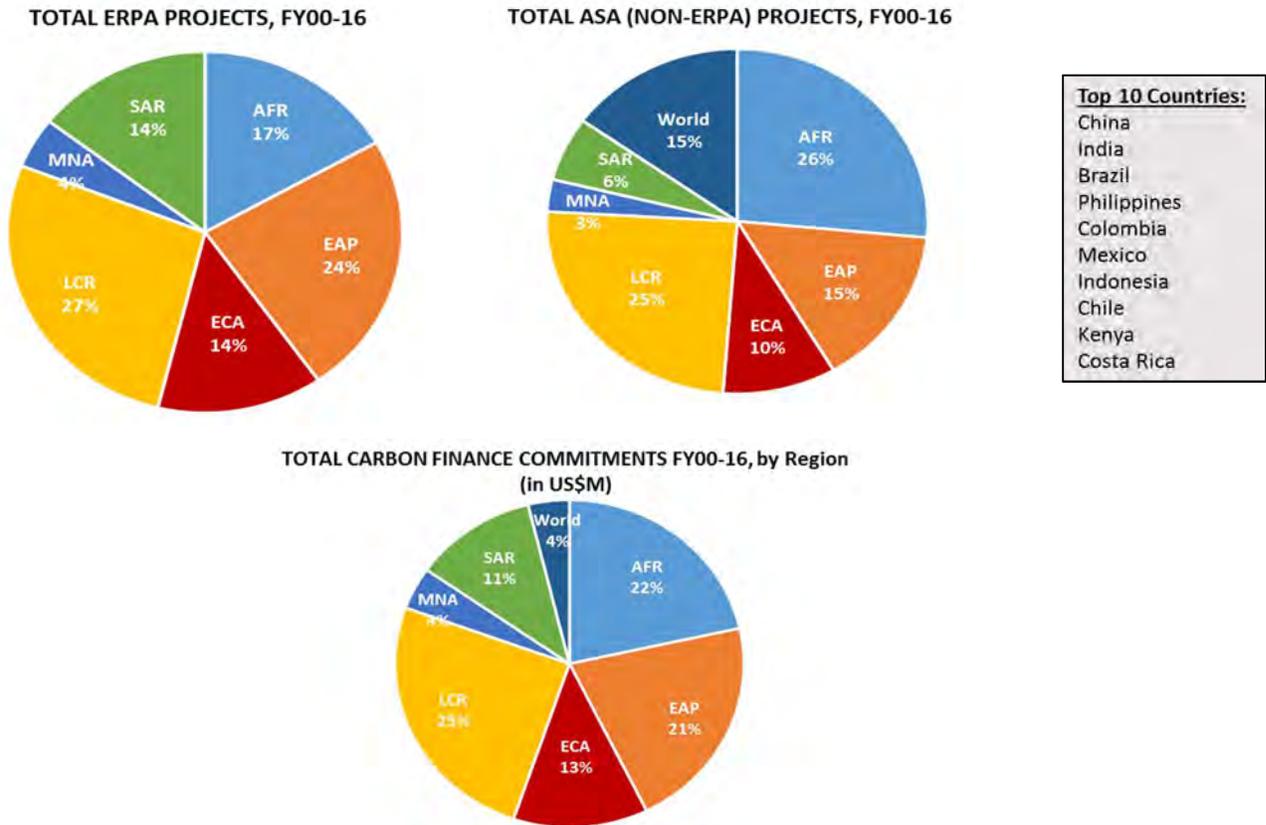
- a) WB projects relevant to climate change with theme code 81. Carbon finance portfolio includes carbon market activities including purchase of carbon credits (ERPA activities) and other activities targeting capacity building and partnerships (non-ERPA activities). The latter group includes ASA activities – technical assistance (TA), external training (TE) and analytical studies (ESW).
- b) Emission Reduction Purchase Agreements (ERPAs)
- c) Non-ERPA ASA activities include projects targeting capacity building and technical assistance and advisory services
- d) IFC Investment projects provided by IFC.
- e) IFC Advisory Services validated by IFC.
- f) MIGA portfolio based on projects identified through expert consultation (still under discussion and to be confirmed by MIGA).

**Figure 1A: Process for Identification of the Carbon Finance Portfolio (unique P-codes)**



Source: Business Intelligence; Carbon Finance Unit, IFC, and MIGA.

**Figure 2A. Total Carbon Finance Projects and Total Carbon Finance Commitments in US\$M by Region (aggregate)**



**Table 2A: Carbon finance portfolio by facility, fund or initiative**

Funds and facilities	Total funding (millions US\$ equivalent)	2000-2005		2006-2011		2012-2016		Total emission reduction ERPA	Total ASA activities
		ERPAs	Non-ERPA	ERPAs	Non-ERPA	ERPAs	Non-ERPA		
1. Prototype Carbon Fund (PCF) (2000)	185.4	17	0	7	1	0	0	24	1
2. IFC Netherlands CDM Facility (INCaF) <sup>a</sup> (2002)	89.2	3	0	7	0	0	0	10	0
3. WB Netherland CDM Facility <sup>a</sup> (2002)	93.7	6	0	11	2	0	0	17	2
4. Community Development Carbon Fund (CDCF) (2003)	92	3	0	33	5	0	1	36	6
5. Italian Carbon Fund (ICF) (2003)	155.6	0	0	5	0	1	0	6	0
6. Spanish Carbon Fund (SCF) T1 and T2 (2004)	290	1	0	28	1	5	0	34	1
7. Bio-Carbon Fund (BioCF) – Tran. 1 and 2 (2004)	90.4	1	0	31	24	4	7	36	31
8. IFC Netherlands European Carbon Facility (NECF) <sup>a</sup> (2004)	35.8	0	0	2	0	0	0	2	0
9. Netherlands European Carbon Facility (NECF) <sup>a</sup> (2004)	22.3	0	0	4	0	0	0	4	0
10. Danish Carbon Fund (DCF) a (2005)	69.6	0	0	9	0	0	0	9	0
11. CF-Assist (2005)	22.09	0	0	0	20	0	25	0	45
12. Umbrella Carbon Facility (UCF) <sup>a</sup> (2006 /10 Tran 1 & Tran 2)	1,113	0	0	13	0	4	0	17	0
13. IFC Carbon Delivery Guarantee (CDG) (2007)	21.5	0	0	3	0	0	0	3	0
14. Carbon Fund for Europe (CFE) <sup>a</sup> (2007)	32.5	0	0	7	0	2	0	9	0
15. Forest Carbon Partnership Facility (FCPF) (2008)	1,100	0	0	0	15	0	18	0	33
16. Carbon Partnership Facility (CPF) <sup>a</sup> (2009)	133.7	0	0	4	1	4	3	8	4
17. Partnership for Market Readiness (PMR) (2010)	127	0	0	0	2	0	32	0	34
18. Carbon Initiative for Development (CI-DEV) (2011)	125	0	0	0	1	4	2	4	3
19. IFC Post 2012 Carbon Facility <sup>a</sup> (2011)	205.1	0	0	1	0	0	0	1	0
20. Bio-Carbon Fund (ISFL) – Tranche 3 <sup>a</sup> (2013)	353.7	0	0	0	0	0	4	0	4
21. Pilot Auction Facility (PAF) <sup>b</sup> (2013)	53	0	0	0	0	0	0	0	0
22. Transformative Carbon Asset Facility (TCAF) <sup>c</sup> (2016)	220	0	0	0	0	0	0	0	0
23. IFC Forest Bond (2016) <sup>d</sup>	152	0	0	0	0	1	0	1	0
24. Carbon Pricing Leadership Coalition (CPLC) (2016)	3.9	0	0	0	0	0	1	0	1
25. Networked Carbon Markets (2016)	5.81	0	0	0	0	0	1	0	1
IFC Advisory Services	1.52				2		1		3
MIGA Guarantees	50.6			1		1		2	0
<b>Total</b>	<b>4,844.42</b>	<b>31</b>	<b>0</b>	<b>166</b>	<b>74</b>	<b>26</b>	<b>95</b>	<b>223</b>	<b>169</b>
<b>World Bank Total</b>	<b>4,288.7</b>	<b>28</b>	<b>0</b>	<b>152</b>	<b>72</b>	<b>24</b>	<b>94</b>	<b>204</b>	<b>166</b>
<b>IFC Total</b>	<b>505.12</b>	<b>3</b>	<b>0</b>	<b>13</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>17</b>	<b>3</b>
<b>MIGA Total</b>	<b>50.6</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>

**Source:** IEG summary based on WBG data. (a) Euro denominated funds (including adjustments for exchange rate movements, extra fees, and changes in capitalization) (b) Final target is to reach \$100 million; (c) Final target is to reach \$500 million; and (d) includes total capitalization of the Bond (not amount allocated to REDD+ credits). TCAF, IFC Forest Bond and NCM are included in the portfolio mainly to look at their strategy and design features as part of this evaluation but were developed after the signing of the Paris Agreement to support the relaunching of carbon markets. Similar to PCF for the Kyoto Mechanisms, TCAF in particular is expected to pioneer new tools and financing approaches for implementing the Paris Mechanisms. The IFC Advisory Services portfolio are not linked to a particular Fund/Facility because they are implemented primarily for IFC business development activities. The MIGA portfolio is based on IEG search and identification of projects that seem to be relevant to CF (consultation is underway to confirm the portfolio).

**Table 3A: Preliminary grouping of carbon finance initiatives according to the four role of the WBG**  
 (based on initial review of the main objectives of the different initiatives).

Roles (see codes)					Funds/facilities	Amount (US\$ million)	ERPA projects	Non-ERPA projects
1	2	3	4	5				
Yes	Yes	Yes		Yes	PCF, CDCF, BioCF	367.8	96	37
Yes					ICF, CFE, INCaF, IFC-NECF, WB-NECF, DCF, UCF1, UCF2	1,539.5	60	0
Yes	Yes	Yes	Yes		CPF, CI-DEV	258.7	12	7
Yes	Yes				Forest Bond, IFC-CDG, MIGA Guarantees	202.6	3	0
Yes		Yes		Yes	WB-NCDM, SCF	383.7	51	3
Yes	Yes			Yes	IFC-P12CF, TCAF	425.1	1	0
	Yes	Yes	Yes	Yes	FCPF, BioCF-ISFL	1,453.7	0	40
	Yes				PAF	53	0	0
		Yes	Yes	Yes	CF-Assist, PMR	149.09	0	77
			Yes	Yes	CPLC, NCM, IFC AS	11.23	0	5
						<b>4,844.42</b>	<b>223</b>	<b>169</b>

**Codes:** 1= Catalyzing and developing carbon markets; 2= Innovating CF; 3= Capacity building; 4=Strengthening global and national partnerships; 5=Convening

Source: IEG based on initial literature and portfolio review

**Table 4A: Contracted Volume and Carbon Credits Delivered as of September 2016 (tons of CO<sub>2</sub>e)**

Fund/Facility	Last Contracted volume	Total Volume Delivered Sept 2016
<i>Umbrella Carbon Facility</i>	68,661,346.00	62,725,681.00
<i>Prototype Carbon Fund</i>	16,049,648.00	12,510,746.00
<i>Spanish Carbon Fund</i>	15,750,277.00	7,917,928.00
<i>Netherland CDM Facility</i>	11,312,306.00	6,286,009.00
<i>Bio-Carbon Fund</i>	10,607,586.00	4,412,955.00
<i>Community Development Carbon Fund</i>	7,975,305.00	3,463,211.00
<i>Italian Carbon Fund</i>	7,013,689.00	4,701,049.00
<i>Carbon Partnership Facility</i>	4,639,774.00	800,550.00
<i>Danish Carbon Fund</i>	4,231,879.00	1,907,877.00
<i>Carbon Fund for Europe</i>	3,519,293.00	2,574,019.00
<i>Carbon Initiative for Development</i>	3,508,242.00	0.00
<i>Netherlands European Carbon Facility</i>	2,846,254.00	2,598,814.00
<b>Grand Total</b>	<b>156,115,599.00</b>	<b>109,898,839.00</b>

Source: Data available from the Carbon Finance Unit

**Table 5A. Carbon market/ERPA and ASA Activities by Technology/Sector (preliminary analysis)**

ERPA activities (number)					ASA Activities (projects)				
Sectors or technologies used	World Bank	IFC	MIGA	Total	TA and Advisory services	World Bank	IFC	MIGA	Total
Energy efficiency (EE)	30	1		31	Energy efficiency	4			4
Renewable energy (RE)	65	6		71	Renewable energy	10			10
Forestry/ Agriculture	31	1	1	33	Forestry/ Agriculture	65			65
Waste Mgt /Methane	57	6	1	64	Waste Mgt /Methane	5			5
Industrial gases	9	2		11	Industrial gases	1			1
Fuel switch	6			6	Fossil fuel switch	2			2
Mixed (EE+RE)	5	1		6	TA-Market readiness	32			32
Transport	1			1	TA/ TE/ESW	47	3		50
<b>Total</b>	<b>204</b>	<b>17</b>	<b>2</b>	<b>223</b>		<b>166</b>	<b>3</b>	<b>0</b>	<b>169</b>

Source: IEG (preliminary analysis).

**Table 6A. The ASA activities by funds and facilities**

ASA Category	BioCF	CDCF	CF-ASSIST	Ci-Dev	CPF	FCPF	ISFL	NCDMF	PCF	PMR	SCF	IFC AS	Total
TA - Forests/REDD+	31					33	1		1				66
TA - Market Readiness										32			32
TA/AS - Other Carbon Finance		6	28	3	4		3	2			1	3	50
TE - External Training			16										16
PA - Programmatic Approach			2							2			4
ESW - Carbon Finance			1										1
<b>Grand Total</b>	<b>31</b>	<b>6</b>	<b>47</b>	<b>3</b>	<b>4</b>	<b>33</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>34</b>	<b>1</b>	<b>3</b>	<b>169</b>

Note: Programmatic Approach (PA) is an umbrella product line allowing for the combination of more than one ASA activity under one common development objective.

Source: IEG (preliminary analysis based on available information).

## Attachment 7: Outline of evaluation report

1. Evaluation summary
2. Introduction – The role of carbon markets for GHG mitigation
  - a) Reducing GHG emissions – role of carbon markets and pricing instruments
  - b) The WBG’s role in carbon finance
  - c) Objectives and key evaluation issues
  - d) Evaluation approach and methods
3. The nature and extent of engagement of WBG support to CF
  - a. WBG in CF – evolution of the vision and strategic objectives
  - b. Structure and architecture of funds – Kyoto to Paris
    - i. Testing and operationalizing Kyoto market mechanisms
    - ii. Catalyzing international markets for carbon
    - iii. Building, expanding and sustaining markets in times of crisis
    - iv. Relaunching markets after Paris
  - c. CF and alignment with relevant WBG strategies
  - d. CF and links with WBG operations
  - e. Lessons
4. Evolving needs and priorities at the global and national level
  - a. Evolution of needs and priorities of at the global level
  - b. Evolution of needs and priorities of Annex A and B parties
  - c. WBG responsiveness to the evolving needs and priorities of its clients
  - d. Evolution of markets and global regulatory regimes
  - e. WBG response to changes and uncertainties in markets and in regulatory regimes
  - f. Lessons
5. Effectiveness of WBG roles
  - a. WBG performance in catalyzing and developing carbon markets
    - i. The early 2000s: Catalyzing international carbon markets
    - ii. Post 2005: Building and expanding carbon markets
    - iii. Post 2012: Sustaining markets in times of crisis
    - iv. Crowding in the private sector
    - v. Technology transfer to low income countries
    - vi. Emission reductions
    - vii. Co-benefits for sustainable development
  - b. WBG performance in innovating in carbon finance
    - i. Development of baseline and monitoring methodologies for CDM/JI projects in different sectors
    - ii. Uptake of tools and methodologies by the market
    - iii. New financing instruments
    - iv. Contributions to enhancing access to, quality and predictability of carbon markets

- c. WBG performance in building capacity
    - i. Building capacity for carbon market readiness
    - ii. Building capacity for carbon capture through forests and landscapes
    - iii. Other technical support and advisory services
  - d. WBG performance as “convener” in carbon finance
    - i. Enhancing efficiency in implementation of the Kyoto mechanisms
    - ii. Rallying the private sector in CF
    - iii. Influencing through knowledge sharing and networking - coalitions, fora and platforms for carbon markets
    - iv. Influencing through global and national partnerships
6. Global positioning of WBG in CF and leveraging internal synergies
- a. Landscape of major institutional actors
  - b. WBG positioning relative to other actors
    - i. Role and value added relative to other actors
    - ii. Capacity and expertise
    - iii. Risks and opportunities
  - c. Leveraging CF internally to augment its operational core business
7. Future of carbon finance in the WBG
- a) Comparative advantages in supporting the next generation of carbon markets
  - b) Relaunching markets after Paris – challenges and opportunities
  - c) Programmatic mainstreaming and scaling up CF – risks and opportunities
  - d) Leveraging CF for sustainable development
  - e) Lessons and implications for strategic direction of the WBG

## Attachment 8: Overview of Questions and Corresponding Methods

*Question 1: What has been the nature and extent of engagement of WBG support to CF since its inception? To address this question and underlying sub questions, the evaluation will explore the use of the following methods:*

- *1.1. What has been the nature and the evolution of the WBG's support to CF over time? (Global/portfolio level)* A portfolio review and analysis (PRA) will be conducted to identify key characteristics of the WBG CF portfolio, by the different funding modalities and types of interventions (carbon market/ERPA and ASA), technologies and sectors, volumes and evolution over time, by regions and country typologies. Portfolio mapping will be structured so that the magnitude and the nature of the WBG's work in CF is adequately captured and described under the four different roles. Interviews with WBG staff on how CF engages with operational units.
- *1.2. What has been its strategic objective and to what extent has the support been underpinned by and aligned to relevant WBG strategies? (Global/portfolio level)* This question will be addressed using mainly desk review of relevant WBG strategic documents (ENV, climate change, carbon finance). The main strategic priorities from WBG strategy documents will be compared to WBG CF strategies, activities and results frameworks (identified through PRA).
- (Global/portfolio level) Interviews with WBG staff will be conducted to further elicit details on both questions.

*Question 2: What have been the evolving needs and priorities in CF for stakeholders at global and national levels from Kyoto to Paris and how did the WBG respond to these? To address this question and underlying sub questions, the evaluation will explore the use of the following methods and data sources:*

- *2.1. How have stakeholder priorities at global and national levels evolved over time and how is it likely to evolve in the near future? How have markets and global regulatory regimes evolved over time? (Global/portfolio level)* A Delphi expert panel will be established to analyze global trends and issues. Recognizing that the stakeholders are not a fixed and well-defined group, a structured literature review will be conducted to capture the main trends in needs and priorities (including private sector) within the evaluation period. (Country level) Interviews with relevant stakeholders, supported by desk review of (strategic) documents, will be conducted in selected countries.
- *2.2. How and to what extent did the WBG adjust or respond to changes and uncertainties in markets and in the global regulatory regime? How and to what extent has the WBG been responsive to the evolving needs and priorities of its clients (funders and countries)? (Global/portfolio level)* PRA will be used to analyze how WBG activities respond to global and country trends. Interviews with WBG staff and

selected stakeholders (private, public) will be conducted to further explore these issues, supported by interviews with relevant stakeholders in selected countries (Country level).

*Question 3: To what extent and in what ways has the WBG effectively contributed to developing and innovating carbon markets and building capacities through its multiple roles and support to carbon finance?* To address this question and underlying sub questions, the evaluation will use a two-pronged approach: (1) For the full portfolio a broad data collection strategy will be applied to assess the effectiveness of the WBG's different roles in supporting carbon markets and (2) One or two intervention types or categories (carbon market/ERPA and possibly ASA) will be selected and subjected to an in-depth causal analysis. The two approaches will strengthen each other. In particular, the in-depth causal analysis on a well-defined selected part of the CF portfolio will include an in-depth exploration of different pathways of change in the framework of the WBG's main roles in CF for selected countries and interventions. Subsequently, the findings can be set in a broader perspective to support the overall analysis of effectiveness of the WBG's main roles in supporting CF. The two approaches are described under the following two questions:

- *3.1. How effectively has the WBG been able to fulfill its role in: catalyzing and developing carbon markets; innovating carbon finance; building capacity of its clients; and convening and thought leadership at the global and national levels?* (Global/portfolio level) The effectiveness around the key roles will first be assessed through desk review of existing documents on each role. In addition, a Delphi expert panel will be probed on the convening role of the WBG in relation to other key institutional players at the global level. (Country level) PRA on CF activities in selected countries focused on performance-related information will be conducted. Interviews with relevant stakeholders in selected countries will also be conducted. Finally, project level evaluations (PPARs) on selected projects will be conducted.
- *3.2. What does the existing and new evidence tell us about the effectiveness of key selected CF interventions in reducing GHG emissions and generating co-benefits for sustainable development?* (Global) The effectiveness of selected key interventions will be assessed first using structured literature review. (Intervention category level and country level) A detailed case study analysis will be conducted which will include data collection and analysis activities at the level of the portfolio of the selected intervention category(ies) and in selected countries. The case study design is discussed below. The case studies will be supported by selected project evaluations (PPARs – see below).

*Question 4: In what ways does the WBG support to Carbon Finance distinguish itself from support provided by other institutional actors and contribute to its own operations?* To address this question and underlying sub questions, the evaluation will explore the use of the following methods and data sources:

- 4.1. *How has the WBG positioned itself relative to other major institutional actors in its carbon finance support?* (Global/portfolio level) Institutional mapping through desk review of key institutions engaged in CF will be conducted (websites and strategy documents). In addition, a Delphi expert panel will be probed to explore this issue. (Country level) Institutional mapping through standardized surveys or interviews with relevant stakeholders from other institutions that support CF in selected countries will be undertaken.

4.2. *How and to what extent has the WBG been able to leverage carbon finance internally to augment its operational core business and scale up results?* (Global/portfolio level) Interviews with WBG staff. (Country level) PRA on CF activities in selected countries focused on how the WBG leverages CF to support its operations. In addition, interviews with relevant stakeholders in selected countries and PPARs will be conducted to gather relevant information.

## Attachment 9: Previous Evaluations

### A. IEG carbon finance related evaluations

**The Prototype Carbon Fund** – The IEG study conducted as part of the Global Programs evaluation analyzed the performance of PCF in regard to its relevance and efficacy (World Bank 2004). It concludes that the PCF has played an important demonstration role in catalyzing markets for emission reductions through innovative public- private partnerships. It highlighted the need for the WBG to formulate a board-approved carbon finance strategy to reflect its early lessons and address implications for operations and implementation risks.<sup>6</sup>

**Climate Change and the World Bank Group – Phase II: The Challenge of Low-Carbon Development** (World Bank 2010c). The evaluation looked at the performance of the WBG’s mitigation activities in the key sectors energy, forestry and transport. The early performance of carbon finance was assessed briefly as a special topic. It concludes that while the WBG played a crucial role in demonstrating the idea of carbon markets it failed to transition from its initial role as carbon offset buyer to innovations in higher risk areas. It also concludes that carbon finance had a mixed success as a vehicle for catalytic finance to enhance project bankability and technology transfer; much of the support has gone to energy technologies (e.g. hydropower) with low financial leverage factor.<sup>7</sup> The evaluation also noted that while the WBG was expected to relinquish its role as carbon offset buyer as the private market began to flourish, it continued to build up its lower-risk Kyoto-oriented business after that market was already thriving (Michaelowa and Michaelowa 2011). But, the Bank pushed for expanding carbon markets into new sectors like avoided deforestation (e.g. FCPF) and increase access to carbon finance for low income countries (e.g. Ci-DEV) (World Bank 2010b).

**Global Program Review: Forest Carbon Partnership Facility (World Bank 2012c).** The review concludes that FCPF has contributed to the development of global REDD+ modalities and roadmaps for countries to achieve readiness. However, concerns remained around the uncertain global regulatory framework and the prospects for large-scale compliance markets in REDD+ credits. It proposed a strategic approach to

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<sup>6</sup> The World Bank developed a carbon finance strategy in 2003 seemingly in parallel with the IEG evaluation but this was not approved by the Board.

<sup>7</sup> The report concludes that much of the CFU’s support for energy technologies has gone to projects where its financial leverage - and hence it’s catalytic impact in terms of enhancing the bankability of the project - was relatively small. For examples, the study finds that carbon finance revenue has little impact on the bankability of wind power and hydropower, but significant impact for landfill gas projects.

REDD+ for the WBG that will minimize risks while also moderating stakeholder expectations and own commitments.

## **B. IEG Micro-evaluations**

The CF facilities largely operate outside of the WBGs normal procedures and this has implications for the type of information that is documented and its accessibility. IEG does not review the project Implementation Completion Reports (ICRs) of carbon finance operations unless when it is part of a blended Bank lending operation (IDA/IBRD). As a result, for the entire CF portfolio, there are no published Project Performance Assessment Reports (PPARs) with field level IEG project verifications and only 8 lending projects with CF components have received an IEG validation - Implementation Completion and Review Reports (ICRR)- but half of them were on municipal waste management and methane emission reduction.<sup>8</sup> In addition, some 89 ERPA (72 projects) have self-evaluation reports (ICRs/XPSR), while 129 projects have Implementation Supervision Reports (ISRs). In addition, two of the IFC Advisory Services (non-ERPA) projects have Project Completion Reports (PCRs) but do not have IEG validation. The IEG team will capture relevant information from the self-assessment reports, IEG validations and others and use all available reliable and robust studies and sources to assess performance.

## **C. External evaluations**

The carbon finance operations of the WBG confirmed that there are only three completed external evaluations on the CF funds and facilities. These include PMR which had one independent evaluation and annual reviews (2012-2016) conducted by one of the donors (the UK); FCPF which had two external evaluations (2011, 2016) as well as an IEG Global Program Review (2012); and the CF-Assist mid-term evaluation (2009). IEG will carefully review these external evaluation reports and other relevant information as part of the performance assessment and complement the available information, to the extent possible, through this evaluation.

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<sup>8</sup> The 8 ICRRs cover 10 carbon finance projects. In some cases, two projects were covered in one (blended IDA/IBRD project) ICRR. For example, Carbon Finance projects PIDs P09970 and P09972 were evaluated under IDA/IBRD project P095012. The other project was CF Project P088002 and P094573 were evaluated under IDA/IBRD project P070899. The 10 projects include China (agriculture/forestry), Bulgaria (energy efficiency), India (renewable energy), Jordan (municipal waste/methane), Latvia (municipal waste/methane), Madagascar (agriculture/forestry), Niger (agriculture/forestry), Tunisia (municipal waste/methane), Brazil (solid waste/methane); and Egypt (municipal waste/methane).

## Attachment 10: Proposed PPARs and Case Studies

- I. Proposed field level evaluations or PPARs (based on available ICRRs on IDA/IBRD linked carbon finance operations):**
- a) **Brazil: Brazil Integrated Solid Waste and Carbon Finance (P106702, P124663).** The project combined a financial intermediary loan (FIL) to the second largest development bank in Brazil (CAIXA), a technical assistance package and a carbon finance operation. A Financial Intermediary Loan of US\$50 million was signed between IBRD and Caixa Economic Federal with a guarantee from the Federal Republic of Brazil, with 33% of the loan disbursed at closure (US\$16.7 million). A carbon finance operation (P124663) was linked to the project, under which the Emission Reduction Purchase Agreement was signed between IBRD and CAIXA on December 5, 2011; the carbon finance operation is ongoing with the scheduled closing date of December 2019. A field level evaluation with a PPAR would verify on the ground the performance of the project in terms of its demonstration of landfill gas as clean technology option to reduce emission of methane from solid municipal waste and landfills in Brazil. The assessment would focus on the aspects of additionality and how carbon finance revenue can be strategically leveraged, identifying the enabling factors at the project and country level; if there has been any contribution towards replication of the model to other similar conditions in Brazil; the schedule for delivery of certified emission reductions (CERs) and any risk factors that affect future delivery; and document the specific experience and evidence in the project registration and verification process as well as generation of social and environmental co-benefits.
- b) **Kenya: Energy Sector Recovery Project (ESRP - P083131 and P103458).** The **renewable geothermal energy** project (blended with Bank lending for Energy Sector Recovery) supported through CDCF aimed to reduce emissions (0.9 million tCO<sub>2e</sub>) by supply renewable energy from Olkaria Geothermal power plant to Kenya's grid. The project's development objectives were: (a) enhance the policy, institutional and regulatory environment for sector development, including private sector participation; and (b) increase access to electricity in urban and peri-urban areas while improving the efficiency, reliability and quality of service to customers. The ESRP's carbon finance (CF) component (Kenya Olkaria II (Unit Three) Geothermal Expansion) was designed in 2006 and aimed at reducing carbon emissions by generating additional geothermal energy at the existing Olkaria II geothermal plant (Unit Three), displacing electricity that would otherwise be generated by fossil fuel-based power plants equivalent to about 149,632 tCO<sub>2e</sub> a year. Part of the carbon revenues received from the CDCF was earmarked to implement a Community Benefits Plan (CBP) for poor communities living in the vicinity of the CF project. The PPAR will verify the performance of the project with field level data and explore the extent to which the lessons from the ICRR have been implemented.

- c) **Mali: Félou HEP Hydropower project (OMVS Felou - P075994, P094916, P114935, P099312, P094919):** The OMVS Felou is a regional power pooling project among three African countries (Mali, Mauritania, and Senegal) and allows a unique opportunity to draw multiple lessons on how a transboundary river like Senegal can be used to generate cleaner energy for the benefit of three countries in the region and provide development co-benefits through selling of carbon credits. The project was registered on May 6, 2010 as a CDM project activity and has the potential to generate 1,342,355 CERs for the first seven years of operation. The revised ERPA aims to generate 701,665 CERs from July 2, 2013 to December 31, 2018. In June 2015, the Félou HEP was issued its first carbon credits of about 90,000 CERs. The proceeds are to be earmarked for electrification of rural communities that reside along the transmission “right of way” of the OMVS Power System. At the time of the ICR, the second verification was completed and the issuance of about 172,000 CERs for the second reporting period was expected by end of September 2015. The PPAR will check the extent to which revenues from carbon finance were able to generate co-benefits for the indicated communities in Mali and how it has contributed to enhancing the capacity of Mali as an FCS country to participate in the CDM markets and the capacity of OMVS to strengthen regional cooperation in utilizing transboundary water resources for regional hydropower generation. The PPAR will provide evidence to two planned macro evaluations: (i) carbon finance, and (ii) renewable energy.

Additional options being considered for PPAR:

- Bulgaria (**energy efficiency**)
- Tunisia (**municipal waste management**), and
- Niger (**agriculture/forestry**).

## II. Proposed case studies (based on selection criteria)

**China:** China has the largest carbon finance portfolio in terms of the number of projects and the diversity of activities – covering all the common sectors and technologies and the largest transactions on destruction of industrial gases. There were a total of 30 carbon transactions or ERPAs in China. As of September 2016, a total volume of 127,201,675 tons of carbon dioxide equivalent (CO<sub>2</sub>e) had been delivered. The portfolio is diversified across energy efficiency, renewable energy, industrial gases, waste management, agriculture and forestry. This included operations to sequester carbon dioxide and improve the local ecological environment, expanding electric power generation capacity in an economically and environmentally sustainable manner and enhancing the efficiency of the electricity sector, reducing greenhouse gas emissions by capturing of coal mine methane for power generation and replacing grid electricity generated by coal-fired power plants.

The five technical assistance activities included creating an enabling environment for the generation of emission reductions; piloting and testing new concepts for market instruments, both for domestic schemes and new international offsetting mechanisms; creating a platform to enable policy makers from both developed and developing countries, practitioners, and public and private entities to share experiences and information regarding elements of market readiness, to learn from each other, and to explore and innovate together on new instruments and approaches; as well as enabling China to design a national carbon emissions trading scheme. China is expected to launch its national Emission Trading System (ETS) in 2017. The national ETS will cover power generation, petrochemicals, chemicals, building materials, steel, non-ferrous metals, paper and aviation.

**India:** A total of 19 carbon transactions or ERPAs were done in India with most of them in renewable energy and energy efficiency, followed by waste management, fuel switch, agriculture and forestry. As of September 2016, a total volume of 4,130,784 tons of carbon dioxide equivalent (CO<sub>2</sub>e) were delivered. The activities aimed at reducing emissions of greenhouse gases by improving energy efficiency of street lighting applications, by increasing the market penetration of a more climate-friendly brick manufacturing technology, by reducing losses and energy consumption of agriculture feeders, and by supplying electricity generated from wind power to the grid, among others. In addition, India has received capacity building support through six ASA projects mostly linked to the ERPA activities but also technical assistance for piloting domestic carbon pricing instruments, in particular support for market-based instruments provided through PMR. India also hosts the India Climate Policy and Business Conclave supported by CF-Assist which provides opportunities for policy dialogue, South-South Knowledge Exchange and development of carbon business.

**Colombia:** Provides a rich and diversified carbon finance portfolio in the LCR, covering renewable energy, energy efficiency, forestry/agriculture and waste management/methane. There were eight carbon transactions in Colombia, and as of September 2016, a total of 1,001,830 tons of carbon dioxide equivalent (CO<sub>2</sub>e) were delivered. The projects were to contribute to the reduction of greenhouse gas (GHG) emissions from the “panela” (brown sugar) sector, through reforestation and avoided deforestation, from the wastewater treatment sector in Colombia through the modernization of the wastewater treatment plan, and from the power sector.

Advisory activities included promotion of participatory territorial planning and adoption of sustainable land management practices in selected areas and develop the emission Reduction program for the selected region, as well as supporting a participatory and inclusive process with key stakeholders for the preparation of Colombia's REDD+ strategy.

**Table 7A: Summary of carbon finance interventions in selected countries for case studies**

Country (income group)	Region	Project type	2000-2005	2006-2011	2012-2016	Total (ERPA/projects)
China (UMIC)	EAP	ERPA	3	20 + 4 (IFC)	3	30
		ASA		4	1	5
India (LMIC)	SAR	ERPA	1 (IFC)	12 + 5 (IFC)	1	19
		ASA		6		6
Ethiopia (LIC)	AFR	ERPA		1	2	3
		ASA		2	3 (+REDD+)	5
Kenya (LMIC)	AFR	ERPA		5	1+1 (IFC)	7
		ASA		4 (+1 REDD+)		5
Colombia (UMIC)	LCR	ERPA	2	4	2	8
		ASA		2 (+1 REDD+)	3 (+1 REDD+)	7
Chile (HIC)	LCR	ERPA	3	4		7
		ASA		2	2	4
<b>Total</b>	Global	ERPA	9	55	10	74
		ASA	0	22	10	32

**Chile:** A total of 7 carbon transactions or ERPAs were initiated in Chile with most of them in renewable energy, followed by waste management, and agriculture and forestry. As of September 2016, a total volume of 3,035,644 tons of carbon dioxide equivalent (CO<sub>2</sub>e) were delivered. In addition, Chile has received support for four ASA activities. This includes technical assistance linked to ERPA projects in specific sectors as well as advisory services and technical support to the Government of Chile for designing and

piloting domestic carbon pricing instruments, in particular PMR support for market-based instruments to implement the National Climate Change Policy and to facilitate the achievement of voluntary GHG emissions reductions targets in ways that are consistent with the country development priorities. Chile is also a participating country for FCPF and involved in the Forestry sector ‘readiness’ initiative to build capacity for implementing REDD+ as a market-based mechanism for avoided emissions from forests and landscapes.

**Table 8A: Summary of carbon finance interventions by key sectors/technologies in selected countries for case studies.**

Country	Region	Project type	Energy efficiency	Renew. Energy	Agric/ Forestry	Fuel switch	WM/ Methane	Indust-gases	Other TA (PMR+CF Assisit)	Total
China (UMIC)	EAP	ERPA	7	8	2		5	8		30
		ASA	1		2				2	5
India (LMIC)	SAR	ERPA	5	7	2	2	3			19
		ASA	1	1	2				2	6
Ethiopia (LIC)	AFR	ERPA		2	1					3
		ASA	1		4					5
Colombia (UMIC)	LCR	ERPA	1	3	3		1			8
		ASA	1	0	5				1	7
Chile (HIC)	LCR	ERPA		4	1		2	0		7
		ASA		1	2		0		1	4
Kenya (LMIC)	AFR	ERPA		4	3					7
		ASA		1	3				1	5
<b>Total</b>	<b>ALL</b>	ERPA	<b>13</b>	<b>28</b>	<b>12</b>	<b>2</b>	<b>11</b>	<b>10</b>	<b>0</b>	<b>74</b>
		ASA	<b>4</b>	<b>3</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>32</b>

Note: the case studies are not planning to cover all these projects but instead identify a purposive sample of the main interventions to assess and draw broadly relevant conclusions.

**Ethiopia:** There were three carbon transactions in Ethiopia- two in renewable energy and one in agriculture. As of September 2016, a total volume of 113,048 tons of carbon dioxide equivalent (CO<sub>2</sub>e) were delivered. The activities included purchasing carbon emission reductions generated from nationwide clean cooking activities under IDA credit line of market development of off-grid renewable energy technologies. Ethiopia joined the Forest Carbon Partnership Facility and submitted a Readiness Preparation Proposal in April 2010. All three stages of the ongoing REDD+ (Reducing Emissions from Deforestation and Forest Degradation) process are supported by the World Bank, i.e., readiness, investments, and payments for performance. Advisory services and technical

assistance included strengthening the capacity of the ministries and agencies engaged with implementing Ethiopia's Climate Resilient Green Economy (CRGE) strategy and CRGE Facility to attract, manage and implement results-based financing of operations in the area of land use and REDD+; as well as improving the enabling environment for sustainable forest management and investment in the selected regional state (Oromiya).

Technical assistance included building national capacity for implementation of comprehensive coastal management approach in the country, and piloting the integrated coastal zone management approach in selected states; establishment of an integrated data management system for India's GHG emissions, including tracking various types of carbon assets. India's engagement in the Partnership for Market Readiness aimed to promote north-south and south-south knowledge exchange of the design and performance of market instruments to increase energy efficiency and promote renewable energy.

**Kenya:** A total of seven transactions or ERPAs were delivered in Kenya in the following two sectors: renewable energy, agriculture and forestry. The projects aimed to reforest degraded public land (public land and private land with community access) in major watersheds; carbon sequestration through the adoption of sustainable agricultural land management practices in Western Kenya; and reducing greenhouse gas (GHG) emissions by displacing fossil fuel-based electricity generation in the Kenyan grid with clean hydropower.

In addition, Kenya is a REDD+ country where financial and technical assistance focuses on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, the sustainable management of forests, and the enhancement of forest carbon stocks in developing countries. As of September 2016, a total volume of 355,704 tons of carbon dioxide equivalent (CO<sub>2</sub>e) were delivered.

## Attachment 11: Brief on Carbon Finance Funds and Initiatives

<b>Fund or Facility</b>	<b>Launch year</b>	<b>Main Objectives</b>	<b>Special Features</b>
Prototype Carbon Fund (PCF)	2000	Pioneer carbon markets and Kyoto mechanisms. Define project cycle and MRV processes. Develop CDM and JI projects PCF Plus as a technical assistance vehicle	<ul style="list-style-type: none"> <li>• Carbon markets innovation</li> <li>• Public and private sector participation</li> <li>• Fellowship program for Host Country representatives and participants</li> </ul>
IFC-Netherlands Clean Development Mechanism Facility (INCaF)	2002	Assist Netherlands' Ministry of Infrastructure and the Environment to purchase approximately €100 million worth of Emission Reductions ("ERs") from eligible private sector projects in Non-Annex I Countries on or before December 31, 2006	<ul style="list-style-type: none"> <li>• First carbon finance facility managed by IFC.</li> <li>• Plan to purchase a target of 16 million CERs</li> <li>• Played a role for IFC to establish its own Carbon Finance Unit.</li> </ul>
Netherlands Clean Development Mechanism Fund (NCDMF)	2002	Assist Netherlands to meet its obligations toward Kyoto. Complement the PCF in attending the demand from host countries.	<ul style="list-style-type: none"> <li>• The Netherlands government negotiated a "first right of refusal" clause, that gave the fund project selection priority over all funds launched after the NCDMF.</li> </ul>
Italian Carbon Fund (ICF)	2003	Assist Italy to meet its obligations toward Kyoto. Access to additional resources to attend the demand from host countries	<ul style="list-style-type: none"> <li>• Helped to respond to the demand from WB country clients to develop projects under the CDM or JI rules.</li> </ul>
Community Development Carbon Fund (CDCF)	2003	Develop small scale CDM projects in poor developing countries that would generate some volume of ERs.	<ul style="list-style-type: none"> <li>• Launched to meet a specific niche of the market not covered by PCF and the other funds.</li> <li>• Strong co-benefit or development component.</li> <li>• CER price may have reflected co-benefits</li> </ul>
Carbon Finance Assist (CF Assist)	2003	Provide capacity building to the WB country clients on carbon markets, CDM and JI projects. Disseminate knowledge on carbon markets.	<ul style="list-style-type: none"> <li>• Important component of the CFU outreach and advocacy strategy.</li> <li>• Carbon Expo and State and Trends of the Carbon Markets are co-financed by CF Assist</li> </ul>
IFC & IBRD-Netherlands European Carbon Facility ("NECaF")	2004	Assist Netherlands' Ministry of Economic Affairs in acquiring a target of 10 million tons of ERs by 2012. The Government of Netherlands committed a total of €47.72 million.	<ul style="list-style-type: none"> <li>• First carbon finance facility managed by both IFC and IBRD.</li> <li>• Helped to foster and build the JI market, particularly in the Eastern Europe.</li> </ul>
Bio Carbon Fund (Bio CF)	2004	Develop CDM projects in afforestation and reforestation exclusively. Develop and pilot rules for afforestation and reforestation.	<ul style="list-style-type: none"> <li>• First fund launched by the CFU to attend forest related projects.</li> <li>• Deal with "temporary" credits and offer replacement credits to participants.</li> </ul>
Spanish Carbon Fund (SCF)	2004	Assist Spain to meet its obligations. Access to additional resources to attend the demand from host countries toward Kyoto.	<ul style="list-style-type: none"> <li>• Helped to respond to the demand from WB country clients to develop projects under the CDM or JI rules.</li> </ul>

<b>Fund or Facility</b>	<b>Launch year</b>	<b>Main Objectives</b>	<b>Special Features</b>
Danish Carbon Fund (DCF)	2005	Assist Denmark to meet its obligations toward Kyoto.	<ul style="list-style-type: none"> <li>Helped to respond to the demand from WB country clients to develop projects under the CDM or JI rules.</li> </ul>
Carbon Fund for Europe (CFE)	2005	Assist several European countries to meet their obligations toward Kyoto.	<ul style="list-style-type: none"> <li>Helped to respond to the demand from WB country clients to develop projects under the CDM or JI rules.</li> <li>Participants are governments from several EU countries and the European Investment Bank (EIB)</li> </ul>
Umbrella Carbon Facility (UCF)	2006	The UCF was created to inject large volumes of ERs to the market. Pilot industrial gases projects Concentrate a large number of buyers (Private and public) to purchase emission from two projects.	<ul style="list-style-type: none"> <li>Develop specific methodology for HFC23 projects.</li> <li>The UCF was created at a time when there was high demand from buyers.</li> </ul>
IFC-Carbon Delivery Guarantee (“CDG”)	2007	<ul style="list-style-type: none"> <li>Instrument to provide a delivery guarantee to buyers (e.g. Commercial Banks) who are unwilling to take emerging market projects and credit risks.</li> <li>IFC would take the project and credit risk on its AAA-rated balance sheet.</li> <li>IFC to procure CERs based on projects procured from developing countries offering them prices based on market conditions</li> <li>Buyers willing to pay premium prices for CERs, which in-turn enable IFC to offer better prices to project owners in developing countries.</li> </ul>	<ul style="list-style-type: none"> <li>New instrument using the concept of Financial Derivatives</li> <li>IFC underwriting the risk using its own balance sheet to guarantee delivery of CERs to Buyers.</li> <li>Potential to improve Market Access to Buyers and Sellers of CERs.</li> <li>Maximize value of Sellers CERs.</li> </ul>
Forest Carbon Partnership Facility (FCPF)	2008	<ul style="list-style-type: none"> <li>assist WB country clients to materialize their REDD Plus efforts.</li> <li>Contribute to the definitions of REDD Plus activities and disseminate knowledge on REDD Plus.</li> <li>It focuses on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, sustainable management of forests and enhancement of forest carbon stocks.</li> </ul>	<ul style="list-style-type: none"> <li>First facility dedicated to pilot activities in the REDD field.</li> <li>Changed the governance pattern in the CFU funds of facilities, incorporating host countries to the governance of the facility</li> </ul>
Carbon Partnership Facility (CPF)	2009	<ul style="list-style-type: none"> <li>The CPF was launched with the ambition to scale up the size of the projects or activities. CPF aimed to develop large scale projects and activities using KP rules, including Program of Activities approach.</li> <li>It targets areas that were not reached effectively by the CDM.</li> </ul>	<ul style="list-style-type: none"> <li>The CPF promoted the development of activities under the POA approach.</li> <li>Incorporate host countries to the governance of the facility.</li> </ul>

Fund or Facility	Launch year	Main Objectives	Special Features
Partnership for Market Readiness (PMR)	2010	<ul style="list-style-type: none"> <li>To support country clients to assess, prepare and implement carbon pricing instruments.</li> <li>Technical assistance on the countries carbon pricing policies.</li> </ul>	<ul style="list-style-type: none"> <li>Provides support to countries to develop carbon pricing policy choices and their future implementation.</li> </ul>
Carbon Initiative for Development (CI-Dev)	2011	<ul style="list-style-type: none"> <li>To implement performance-based payments for ERs in low income countries.</li> <li>Influence on the penetration of carbon markets as a tool to expand energy access in poor countries.</li> <li>Uses performance payments to support projects that use clean and efficient technologies in low income countries to reduce GHG emissions.</li> </ul>	<ul style="list-style-type: none"> <li>Develop standardized baselines and suppress accounting standards in key energy related areas.</li> <li>Focused on energy.</li> <li>Payment for additional co-benefits.</li> </ul>
Post-2012 Carbon ("P12C") Facility	2011	<ul style="list-style-type: none"> <li>Address carbon market concerns related to uncertain regulatory regimes after 2012</li> <li>The price would be indexed to SPOT (or Market) price available at the time of CER delivery, subject to FLOOR (a pre-determined lowest price) and a CAP (a pre-determined highest price).</li> <li>Forward purchase CERs produced by IFC client companies until 2020</li> </ul>	<ul style="list-style-type: none"> <li>First facility on Carbon Finance that was established by an MDB.</li> <li>Create a new pathway to markets by mobilizing funds from utilities and other energy companies.</li> <li>Aimed at helping to: (i) reduce GHG emissions; (ii) extend carbon markets; and (iii) increase access to finance.</li> </ul>
Initiative for Sustainable Forest Landscapes (ISFL)	2013	<ul style="list-style-type: none"> <li>Strengthen the capacity of government institutions engaged with developing and implementing land use activities under REDD+</li> <li>Improve the understanding of how financial incentives for reducing GHG emissions from REDD+ can help forest-rich countries seeking to promote rapid, large-scale investments to achieve economic development</li> </ul>	<ul style="list-style-type: none"> <li>Jurisdictional 'landscape' level at scale programs</li> <li>Blended climate and development impacts</li> <li>Aligning public and private sector interests</li> </ul>
Pilot Auction Facility (PAF)	2014	<ul style="list-style-type: none"> <li>Pay for performance mechanism which uses auctions to allocate funds to projects that generate emission credits from methane, using the existing CDM infrastructure.</li> <li>Pilot a global pay-for-performance approach to stimulate the implementation of shovel-ready projects that reduce methane emissions.</li> </ul>	<ul style="list-style-type: none"> <li>Provides carbon price guarantees through a put option to project developers.</li> <li>ERs will be retired by participants.</li> </ul>
Networked Carbon Markets (NCM)	2015	<ul style="list-style-type: none"> <li>Pilot and test a post 2020 scenario when multiple markets will co-exist.</li> <li>Linking different jurisdictions allowing the communications and potential transactions among them.</li> </ul>	<ul style="list-style-type: none"> <li>The NCM analyzes the multimarket global environment and help countries to understand how to position themselves and define their own strategies.</li> <li>The NCM is a CB and TA instrument.</li> </ul>

Fund or Facility	Launch year	Main Objectives	Special Features
Carbon Pricing Leadership Coalition (CPLC)	2015	<ul style="list-style-type: none"> <li>• A convening instrument to advance the knowledge and experience on effective carbon pricing systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Participation of government and private sector entities from both developed and developing countries.</li> <li>• It is a coalition and the bank acts as a Secretariat.</li> </ul>
Forest Bond	2016	<ul style="list-style-type: none"> <li>• Leverage IFC's decade long experience in the Carbon Finance business to test and develop a new business line using bonds in REDD+</li> <li>• IFC will purchase Carbon Credits from a REDD+ project in Kenya through a voluntary market</li> <li>• Leverage private sector resources to reduce emissions and prevent deforestation in developing countries</li> </ul>	<ul style="list-style-type: none"> <li>• Designed as a CSR activity for a private company underwriting implicit put option (buy any credits tendered)</li> <li>• Treasury product with proceeds applied to general IFC portfolio</li> <li>• PV of coupon used to structure an ERPA for an independent forestry project</li> <li>• Gives investors the option of getting paid in either Carbon Credits or cash.</li> </ul>
Transformative Carbon Facility (TCAF)	2016	<ul style="list-style-type: none"> <li>• Support activities for purchase carbon credits from transformative mitigation programs in countries (e.g. through scaling up existing experiences going beyond the traditional project based CDM approach).</li> </ul>	<ul style="list-style-type: none"> <li>• The TCAF is assisting countries to develop mitigation activities that will generate CERs at a much larger scale (Beyond POAs),</li> <li>• Includes a new approach on policy crediting.</li> </ul>